OU01, OU02, and OU03
Saranac Lake Gas Company, Inc.
Essex County
Saranac Lake, New York

Site Management Plan

NYSDEC Site No. 516008

Prepared for

New York State Department of Environmental Conservation
Division of Environmental Remediation
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December 2025

Revisions to Final Approved Site Management Plan

Revision Number	Date Submitted	Summary of Revision	New York State Department of Environmental Conservation Approval Date

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DECEMBER 2025

CERTIFICATION STATEMENT

I, Donald Conan, certify that I am currently a New York State registered Professional Engineer (P.E.) and that this Site Management Plan (SMP) was prepared in accordance with all applicable statutes and regulations and in substantial conformance with the Division of Environmental Remediation (DER) Technical Guidance for Site Investigation and Remediation (DER-10) and that all activities were performed in full accordance with the DER-approved work plan and any DER-approved modifications.

12/2/2025

Donald Conan, P.E. Date



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TABLE OF CONTENTS

Page

LIST OF TABLES iii
LIST OF FIGURES iv
LIST OF APPENDIXES v
LIST OF ACRONYMS AND ABBREVIATIONS vi
ES. EXECUTIVE SUMMARY ES-1

1. INTRODUCTION 1-1

1.1 GENERAL 1-1
1.2 REVISIONS AND ALTERATIONS 1-2
1.3 NOTIFICATIONS 1-2

2. SUMMARY OF PREVIOUS INVESTIGATIONS AND REMEDIAL ACTIONS 2-1

2.1 SITE LOCATION AND DESCRIPTION 2-1
2.2 PHYSICAL SETTING 2-1

2.2.1 Land Use 2-1
2.2.2 Surface Water 2-2
2.2.3 Geology 2-2
2.2.4 Hydrogeology 2-2

2.3 INVESTIGATION AND REMEDIAL HISTORY 2-3

2.3.1 Site History 2-3
2.3.2 Site Characterization 2-4
2.3.3 Remedial Investigation 2-5
2.3.4 Feasibility Study 2-6
2.3.5 Remedial Activities 2-6

2.4 REMEDIAL ACTION OBJECTIVES 2-7
2.5 REMAINING CONTAMINATION 2-10

2.5.1 Sediment and Soil 2-10
2.5.2 Groundwater 2-11
2.5.3 Surface Water 2-11
2.5.4 Soil Vapor 2-11

3. INSTITUTIONAL AND ENGINEERING CONTROL PLAN 3-1

3.1 GENERAL 3-1
3.2 INSTITUTIONAL CONTROLS 3-1
3.3 ENGINEERING CONTROLS 3-2

3.4 CRITERIA FOR COMPLETION OF REMEDIATION/TERMINATION OF REMEDIAL SYSTEMS 3-3

4. MONITORING AND SAMPLING PLAN 4-1

4.1 GENERAL 4-1
4.2 SITEWIDE INSPECTION 4-1
4.3 TREATMENT SYSTEM MONITORING AND SAMPLING 4-3

4.3.1 Remedial System Monitoring 4-3
4.3.2 Soil Sampling 4-4
4.3.3 Sediment Sampling 4-4
4.3.4 Groundwater Sampling 4-5
4.3.5 Surface Water Sampling 4-7
4.3.6 Soil Vapor Sampling 4-7
4.3.7 Soil Vapor Intrusion Sampling 4-8
4.3.8 Monitoring and Sampling Protocol 4-8

5. OPERATION AND MAINTENANCE PLAN 5-1

5.1 GENERAL 5-1

6. PERIODIC ASSESSMENTS/EVALUATIONS 6-1

6.1 CLIMATE CHANGE VULNERABILITY ASSESSMENT 6-1
6.2 GREEN REMEDIATION EVALUATION 6-1

6.2.1 Timing of Green Remediation Evaluations 6-2

6.3 REMEDIAL SYSTEMS 6-2
6.4 BUILDING OPERATIONS 6-2
6.5 FREQUENCY OF SYSTEM CHECKS, SAMPLING AND OTHER PERIODIC ACTIVITIES 6-2
6.6 METRICS AND REPORTING 6-3
6.7 REMEDIAL SYSTEM OPTIMIZATION 6-3

7. REPORTING REQUIREMENTS 7-1

7.1 SITE MANAGEMENT REPORTS 7-1
7.2 PERIODIC REVIEW REPORT 7-2

7.2.1 Certification of Institutional and Engineering Controls 7-4

7.3 CORRECTIVE MEASURES WORK PLAN 7-5
7.4 REMEDIAL SYSTEM OPTIMIZATION REPORT 7-5
7.5 RESTORATION MONITORING AND REPORTING 7-6

8. REFERENCES 8-1

LIST OF TABLES

Table 1-1. Notifications

Table 2-1. Property Owners within Site Boundaries

Table 2-2. Groundwater Elevation Measurements from Previous Site Visits

Table 2-3. Monitoring Well and Piezometer Construction Details

Table 2-4. Documentation Soil Samples at OU01

Table 2-5. Excavation Confirmation Soil Samples at OU01

Table 2-6. Remaining Sediment Sample Exceedances at OU02

Table 2-7. Remaining Soil Sample Exceedances at OU02

Table 2-8. Remaining Sediment Sample Exceedances at OU03

Table 4-1. Inspection and Monitoring Requirements and Schedule

Table 4-2. Post Remediation Sampling Requirements and Schedule

Table 4-3. Monitoring Well Construction Details

LIST OF FIGURES

Figure 2-1. Site Location Map

Figure 2-2. OU01, OU02 and OU03 and Approximate Parcel Boundaries

Figure 2-3. Interpreted Overburden Groundwater Flow

Figure 2-4. OU02 Engineering Controls and Long-Term Monitoring Locations

Figure 2-5. OU03 Engineering Controls and Long-Term Monitoring Locations

Figure 2-6. OU01 Engineering Controls and Long-Term Monitoring Locations

LIST OF APPENDIXES

Appendix A. List of Site Contacts

Appendix B. Site Surveys

Appendix C. As-Built Drawings

Appendix D. Excavation Work Plan

Appendix E. Health and Safety Plan

Appendix F. Quality Assurance Project Plan

Appendix G. Field Sampling Plan and Site Management Forms

Appendix H. ACOE Permit Information

LIST OF ACRONYMS AND ABBREVIATIONS

ACOE	Army Corps of Engineers
bgs	Below ground surface
BTOR	Below top of riser
cy	Cubic yard(s)
DER	Division of Environmental Remediation
EA	EA Engineeringand Geology, P.C.
EC	Engineering control
EWP	Excavation Work Plan
HASP	Healthy and Safety Plan
IC	Institutional control
ID	Identification
MACTEC	MACTEC Engineering and Consulting, P.C.
mg/kg	Milligram(s) per kilogram
MGP	Manufactured gas plant
NAPL	Non-aqueous phase liquid
No.	Number
NYS	New York State
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
NYCRR	New York Codes of Rules and Regulations
OU	Operable unit
PAH	Polycyclic aromatic hydrocarbon
P.E.	Professional Engineer
PRR	Periodic Review Report
RAO	Remedial action objective
RCM	Reactive core mat
RI	Remedial investigation
ROD	Record of Decision
SC	Site characterization
SCG	Standards, Criteria, and Guidelines
SCO	Soil Cleanup Objective

LIST OF ACRONYMS AND ABBREVIATIONS (continued)

SGV	Sediment Guidance Values
Site	OU01, OU02, and OU03 Saranac Lake Gas Company
SMP	Site Management Plan
SVI	Soil vapor intrusion
SVOC	Semivolatile organic compound
VOC	Volatile organic compound

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ES. EXECUTIVE SUMMARY

The following is a summary of the controls implemented for the Saranac Lake Gas Company, Inc. Site (Site), as well as the inspections, monitoring, maintenance and reporting activities required by this Site Management Plan (SMP):

Site Identification: New York State Department of Environmental Conservation
Site No. 516008
Saranac Lake Gas Company, Inc. Site
Saranac Lake, New York 12983

Institutional Controls	
Sitewide	1. The use and development of the controlled property (OU01) for commercial and industrial uses are allowed as defined by Part 375-1.8(g), although land use is subject to local zoning laws; OU02 and OU03 may be used for recreational use.
	2. Institutional controls are in place per this SMP.
	3. All engineering controls must be inspected at a frequency and in a manner defined in this SMP. Annual inspection of ECs will include visual and olfactory inspection of OU01, OU02, and OU03.
Engineering Controls	
Sitewide	1. Barrier/Cover Systems: • Reactive Core Mat (RCM) at OU02, • AquaBlok® at OU03, and • Soil Cover at OU01.

Site Management Activities	**Frequency**
Monitoring	
1.Sediment at OU02 *Note: Sediment sampling may not be conducted during the winter months if Brandy Brook is frozen.*	Year 1 (2022): Quarterly Year 2 (2023): Quarterly Year 3 (2024): Biannually Year 4 (2025): Annually Year 5+ (2026+): Every 5 Quarters
2. Surface Water at OU02 and OU03 *Note: Surface water sampling may not be conducted during the winter months if Brandy Brook is frozen.*	Year 1 (2022): Quarterly Year 2 (2023): Quarterly Year 3 (2024): Biannually Year 4 (2025): Annually Year 5+ (2026+): Every 5 Quarters
3. Groundwater at OU01 and OU02	Year 1 (2022): Quarterly Year 2 (2023): Quarterly Year 3 (2024): Biannually Year 4 (2025): Annually Year 5+ (2026+): Every 5 Quarters
Maintenance	
1. Barrier/Cover Systems at OU01, OU02, and OU03	As needed
Inspections	
1. Barrier/Cover Systems at OU01, OU02 and OU03	Year 1 (2022): Quarterly Year 2 (2023): Quarterly Year 3 (2024): Biannually Year 4+ (2025): Annually
Reporting	

1.Inspection Reports/SamplingReports	Within 90 days of a completed inspection or sampling event
2. Periodic Review Report (including groundwater monitoring results)	Every three years

Further descriptions of the above requirements are provided in detail in the latter sections of this SMP.

1. INTRODUCTION

1.1 GENERAL

This Site Management Plan (SMP) is a required element of the remedial program for the Saranac Lake Gas Company, Inc. Site (Site) located in the village of Saranac Lake, New York (hereinafter referred to as the "Site") (**Figure 1-1**). The Site is currently in the New York State (NYS) Inactive Hazardous Waste Disposal Site Remedial Program Site Number (No.) 516008, which is administered by New York State Department of Environmental Conservation (NYSDEC or Department).

Figure 1-1 shows the Site location. The Site is comprised of three operable units (OUs) (OU01, OU02, and OU03) which were remediated in accordance with the Records of Decision (RODs) dated March 2017, March 2016, and March 2015 (NYSDEC 2017, 2016, 2015). **Figure 1-2** shows the approximate parcel boundaries for OU01, OU02, and OU03. The site surveys area provided in **Appendix B** of this document.

After completion of the remedial work, some contamination was left at this site, which is hereafter referred to as "remaining contamination." Institutional controls (ICs) and engineering controls (ECs) have been incorporated into the site remedy to control exposure to remaining contamination to ensure protection of public health and the environment. An Environmental Easement granted to the NYSDEC and recorded with the Essex County Clerk, requires compliance with this SMP and all ECs and ICs placed on the Site.

This SMP was prepared to manage remaining contamination at the Site and off-site until the Environmental Easement is extinguished in accordance with ECL Article 71, Title 36. This plan has been approved by the NYSDEC, and compliance with this plan is required by the grantor of the Environmental Easement and the grantor's successors and assigns. This SMP may only be revised with the approval of the NYSDEC.

It is important to note that:

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

- Failure to comply with this SMP is also a violation of Environmental Conservation Law, 6 New York Codes of Rules and Regulations (NYCRR) Part 375 and thereby subject to applicable penalties.

All reports associated with the site can be viewed by contacting the NYSDEC or its successor agency managing environmental issues in NYS. A list of contacts for persons involved with the site is provided in **Appendix A** of this SMP.

This SMP was prepared by EA Engineering and Geology, P.C. on behalf of the NYSDEC, in accordance with the requirements of the NYSDEC's Division of Environmental Remediation

(DER)-10 *Technical Guidance for Site Investigation and Remediation*, dated May 2010 (NYSDEC 2010), and the guidelines provided by the NYSDEC. This SMP addresses the means for implementing the ICs and/or ECs that are required by the Environmental Easement for the Site.

1.2 REVISIONS AND ALTERATIONS

Revisions and alterations to this plan will be proposed in writing to the NYSDEC's Project Manager. The NYSDEC can also make changes to the SMP or request revisions from the remedial party. Revisions will be necessary upon, but not limited to, the following occurring: a change in media monitoring requirements, upgrades to or shutdown of a remedial system, post-remedial removal of contaminated sediment or soil, or other significant change to the Site conditions. All approved alterations must conform with Article 145 Section 7209 of the Education Law regarding the application of professional seals and alterations. For example, any changes to as-built drawings must be stamped by an NYS Professional Engineer. In accordance with the Environmental Easement for the Site, the NYSDEC Project Manager will provide a notice of any approved changes to the SMP and append these notices to the SMP that is retained in its files.

1.3 NOTIFICATIONS

Notifications will be submitted by the property owner to the NYSDEC, as needed, in accordance with NYSDEC's DER – 10 for the following reasons:

- 60-day advance notice of any proposed changes in Site use that are required by 6 NYCRR Part 375 and/or Environmental Conservation Law.

- 7-day advance notice of any field activity associated with the remedial program.

- 15-day advance notice of any proposed ground-intrusive activity pursuant to the Excavation Work Plan (EWP). If the ground-intrusive activity qualifies as a change of use as defined in 6 NYCRR Part 375, the above mentioned 60-day advance notice is also required.

- Notice within 48 hours of any damage or defect to the foundation, structures or EC that reduces or has the potential to reduce the effectiveness of an EC, and likewise, any action to be taken to mitigate the damage or defect.

- Notice within 48 hours of any non-routine maintenance activities.

- Verbal notice by noon of the following day of any emergency, such as a fire; flood; or earthquake that reduces or has the potential to reduce the effectiveness of ECs in place at the site, with written confirmation within 7 days that includes a summary of actions taken, or to be taken, and the potential impact to the environment and the public.

- Follow-up status reports on actions taken to respond to any emergency event requiring ongoing responsive action submitted to the NYSDEC within 45 days describing and documenting actions taken to restore the effectiveness of the ECs.

Any change in the ownership of the Site or the responsibility for implementing this SMP will include the following notifications:

- At least 60 days prior to the change, the NYSDEC will be notified in writing of the proposed change. This will include a certification that the prospective purchaser/Remedial Party has been provided with a copy of the ROD, and all approved work plans and reports, including this SMP.

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

Table 1-1 includes contact information for the above notifications. The information on this table will be updated as necessary to provide accurate contact information. A full listing of site-related contact information is provided in **Appendix A**.

Table 1-1. Notifications*

Name	Contact Information	Required Notification**
Jasmine Stefansky, NYSDEC Project Manager	518-402-9575 jasmine.stefansky@dec.ny.gov	All Notifications
Jeffrey Dyber, NYSDEC Chief, Remedial Section D, Remedial Bureau E Division of Environmental Remediation	518-402-9698 jeffrey.dyber@dec.ny.gov	All Notifications
Kelly Lewandowski, NYSDEC Site Control	518-402-9569 kelly.lewandowski@dec.ny.gov	Notifications 1 and 8
Gregory Rys, NYSDOH Project Manager	315-619-3194 gregory.rys@health.ny.gov	Notifications 4, 6, and 7
Adam Etringer, EA Senior Project Manager	315-565-6564 aetringer@eaest.com	All Notifications

Notes:
* Notifications are subject to change and will be updated as necessary.
** Numbers in this column reference the numbered bullets in the notification list in this section.
NYSDOH = New York State Department of Health

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2. SUMMARY OF PREVIOUS INVESTIGATIONS AND REMEDIAL ACTIONS

2.1 SITE LOCATION AND DESCRIPTION

The Site is located in the Village of Saranac Lake, Essex County, New York. The Site is comprised of three OUs, as follows:

- OU01, the former manufactured gas plant (MGP) property located at 24 Payeville Lane and identified on the Essex County tax map as #32.215- 3-1.000. OU01 is approximately 4.5 acres in size and is bounded by residential properties to the north and east; residential properties and the Adirondack Rail Trail to the west; and by North Country Community College soccer fields and facilities to the south.

- OU02, an approximately 0.75-mile stretch of Brandy Brook located north of OU01 and extending to Pontiac Bay of Lake Flower. OU02 extends northwest from OU01 and is bordered by the Adirondack Rail Trail to the west and residential properties to the north and east. At the intersection of Pine Street and Brandy Brook Road, OU02 turns west and is bordered by Brandy Brook Road to the north and residential properties to the south.

- OU03, the approximately 4-acre Pontiac Bay within the northeast portion of Lake Flower adjacent to the intersection of Lake Flower Avenue and River Street. Properties surrounding OU03 include the Saranac Lake Resort (under development), village owned property, and NYSDEC property.

Figure 2-1 shows the extent of OU01, OU02 and OU03 and the adjacent parcels, some of which are also depicted in site surveys included in **Appendix B**.

2.2 PHYSICAL SETTING

2.2.1 Land Use

OU01 is a vacant lot with a soil cover that can be used for parking and is surrounded by a perimeter fence. An access road extends from Payeville Lane west to the former gas plant setting. The Site (OU01) is zoned commerical and is currently unoccupied. Properties adjoining and surrounding OU01 are primarily residential and public recreation areas, as shown on **Figure 2-1**.

OU02 and OU03 are both water bodies which are used for recreational purposes. Properties abutting OU02 and OU03 are residential, commercial, and public recreation/greenspace areas. Lake Flower is a Class AA designated water body (MACTEC Engineering and Consulting, P.C. [MACTEC] 2015a.

Table 2-1 lists the property owners within or abutting the extent of the Site. The owners of the OU01 parcels at the time of issuance of this SMP is/are:

AmeriGas Propane, LP

460 North Gulph Road
King of Prussia, Pennsylvania 19406

NiSource, Inc.
801 E. 86th Avenue
Merrillville, Indiana 46410

2.2.2 Surface Water

Brandy Brook flows westerly along the northern boundary of OU01 before turning northwest and continuing in a northerly direction parallel to (east of) the rail trail for approximately 1,000 feet. The brook turns west at the intersection of Pine Street and Brandy Brook Road and flows parallel to (south of) Brandy Brook Road for approximately 700 feet before discharging to Pontiac Bay of Lake Flower. Brandy Brook is approximately 3 to 5 feet wide. The brook is culverted under the rail trail at the intersection of Pine Street and Brandy Brook Road, under four separate residential driveway crossings along Brandy Brook Road, and under Slater Avenue and Lake Flower Avenue. The driveway crossings range from 8 to 20 feet long and the culverted section below Slater Avenue and Lake Flower Avenue is approximately 250 feet long.

2.2.3 Geology

Overburden at the Site consists predominately of fluvial sand comprised of medium to fine sand with some silt (MACTEC 2007, 2015b). Bedrock underlying the site is comprised of gneiss (metamorphic rock) of uncertain origin and varying composition. The overburden thickness and depth to bedrock at the Site is not known. Bedrock was not encountered during previous investigations, which included soil logging to depths up to 56 feet below ground surface (bgs).

Sediment within OU02 and OU03 consists of silty fine-grained sand and fine-grained sandy silt with trace to few clay and trace gravel.

2.2.4 Hydrogeology

Groundwater elevations were evaluated during the remedial investigation (RI) (MACTEC 2015b). Groundwater elevation data from the RI is provided in **Table 2-2**. Many of the wells installed during the RI have since been destroyed and new wells have been installed. A summary of groundwater monitoring well construction for both existing and decommissioned wells is provided in **Table 2-3**.

Based on the sandy character of the overburden, the flat topography at OU01, and measurements of groundwater elevation, the former gasification plant (OU01) occupied a groundwater recharge area, or an area with downward vertical gradients. Depth to groundwater at OU01 generally ranged from 5 to 12 feet bgs. MGP-related waste at OU01, where present, would clog pore space and reduce the ability of the overburden to transmit water, and therefore measured groundwater elevations in shallow monitoring wells within OU01 were inconsistent during previous investigations. Therefore, the groundwater flow direction at OU01 was interpreted based on weight of evidence from the majority of monitoring wells, the distribution of contaminants detected in

these wells, and the local topography (groundwater flow direction is controlled partially by the presence of a hill to the west of OU01). An interpretation of generalized shallow overburden flow direction is shown on **Figure 2-3**. Interpolated lateral flow beneath the northernmost portion of OU01 is northwestward towards Pontiac Bay (OU03) in Lake Flower. However, flow beneath most of OU01 is likely directed southward towards the McKenzie Brook watercourse associated wetlands and small feeder ponds. Based on the sandy character of the overburden, the flat topography at OU01, and groundwater elevations, the former MGP (OU01) occupied a groundwater recharge area with downward vertical gradients.

The depth to groundwater in OU02 ranges from 6.28 feet bgs on the western edge of the brook to 8.65 feet bgs on the northern side of the brook adjacent to OU01. The bed of Brandy Brook along the northern edge of OU01 is approximately four feet above the water elevation in nearby wells indicating that the brook is a perched stream that recharges the groundwater table. The potential discharge point for groundwater beneath the impacted reach of Brandy Brook (OU02) is likely Pontiac Bay in Lake Flower (OU03). Seasonal variation in precipitation may affect surface water features (i.e., Brandy Brook to the north and drainage ditches located south of OU01) and influence shallow groundwater flow migrating from the Site.

2.3 INVESTIGATION AND REMEDIAL HISTORY

The following narrative provides a remedial history timeline and a brief summary of the available project records to document key investigative and remedial milestones for the Site. Full titles for each of the reports referenced below are provided in Section 8 – References.

2.3.1 Site History

The Saranac Lake Gas Company manufactured lighting gas (coal gasification) for the village of Saranac Lake from the late 1800s to approximately the 1940s (NYSDEC 2013). According to Sanborn insurance maps and photos obtained from the Saranac Lake Free Library, the Site included two above-ground gas holders, a building housing the purifier and retort (heating) operations, as well as additional areas for coal storage and offices. Based on the operational age of this MGP site, the most likely method of gas manufacturing was via the carbureted water gas process. In general, this method involved the following:

- Coal was heated in closed retorts which prevented the coal from combusting by limiting oxygen.
- During the heating process, steam was injected into the retort and a chemical reaction occurred that produced a flammable gas mixture.
- Liquid petroleum hydrocarbons were sprayed into the hot gas mixture creating additional methane.
- The gas was collected, cooled, and purified before being used.
- Condensed tar (coal-tar) was produced as a by-product.

During operation of the former MGP-plant, MGP-waste was released to site soil within OU01 , with surface discharge of waste to Brandy Brook (OU02) and migration downstream to Pontiac Bay of Lake Flower (OU03). Based on previous investigations, non-aqueous phase liquids (NAPLs) and residual product are present within the source area and impacting groundwater migrating from the Site.

The RI evaluated the nature and extent of contamination present in the environment related to historical activities at the former MGP. An RI report was completed in January 2015, which summarized the findings of the RI (MACTEC 2015b).

Coal-tar is a reddish brown oily liquid by-product that results from manufacturing of coal gas and contains several different chemical constituents that are a cause for concern when left untreated in the environment. Coal-tar does not readily dissolve in water. Although most coal-tars are slightly denser than water, the difference in density is slight. Consequently, they can either float or sink when in contact with water. The contaminants of concern resulting from the by-products in the MGP process include:

- Volatile organic compounds (VOCs) and semivolatile organic compounds (SVOCs), which are the predominant contaminant classifications present in coal-tar. MGP-related VOCs are specifically characterized by four compounds: benzene, toluene, ethyl benzene and xylene (BTEX). BTEX often represent a small percentage of the mass of MGP-related waste but are the most soluble and therefore the most likely to migrate in groundwater. BTEX are also the most volatile and thus the most likely to migrate through subsurface soil as vapors or soil gas. SVOCs found in coal-tar are known as polycyclic aromatic hydrocarbons (PAHs). Naphthalene, a PAH, is present in coal-tar in relatively high concentrations and was used as an indicator compound for detecting MGP-related waste in media.

- Light oil, which is a secondary by-product of the gasification process that contains VOCs including BTEX, naphthalene and trimethylbenzenes, collectively referred to as petroleum-related VOCs.

- Phenols in coal-tar acids, which form during the cooling of the manufactured gas.

- Purifier box waste (typically wood chips with tar residuals), which contains complex-cyanide compounds as well as sulfur (which may cause changes in pH).

- Coal ash and purifier waste, which contain metals including aluminum, antimony, arsenic, barium, cadmium, chromium, copper, iron, lead, manganese, mercury, nickel, selenium, silver, vanadium, and zinc.

2.3.2 Site Characterization

Site characterization (SC) field activities were conducted at the former Saranac Lake Gas Co., Inc. Site from 30 April to 4 May 2007. The purpose of this investigation was to determine whether a

consequential amount of hazardous waste had been disposed of at the Site due to past site activities related to the former MGP. Results of the SC investigation are summarized below and further detailed in the Site Characterization report (MACTEC 2007):

- Field observations from test pits and direct push soil boring indicated the presence of MGP-related waste on-site, including wood debris and fibers (purifier waste), tar-like and oily residues, elevated photoionization detector readings, strong MGP-related odors, and "Prussian blue" sheens.

- VOCs, including BTEX and naphthalene, were detected in nearly all soil samples within the perimeter fence and at two off-site locations at concentrations exceeding the NYSDEC Unrestricted soil cleanup objectives (SCOs). MGP-related SVOCs were detected in 13 of 21 soil samples.

- VOCs likely related to MGP waste were detected at concentrations above NYS Class GA groundwater standards at 8 of 12 locations tested. MGP-related SVOCs were detected at concentrations above groundwater standards at 7 of 11 locations analyzed.

- MGP-related VOCs and SVOCs were detected at concentrations exceeding sediment screening criteria in all locations adjacent to and downstream of the source area, with the highest concentration observed within Brandy Brook, roughly 300 feet north of the source area.

2.3.3 Remedial Investigation

RI field investigations were conducted at the Site between August 2013 and October 2014 to address data gaps identified during the SC and evaluate the nature and extent of contamination present in the environment related to historical activities at the former MGP (MACTEC 2015b). The RI included an evaluation of visual impacts to soil, groundwater, surface water, and sediment, and a comparison to applicable NYS Standards, Criteria, and Guidance values (SCGs). MGP-impacted soil and sediment was identified through field observations (visual, olfactory and photoionization detector field scan) and a sub-set of analytical sampling results. In areas where MGP-like product or staining was observed, analytical results exceeded SCGs; where no observable impacts of MGP-like wastes were noted, analytical concentrations were generally below applicable SCGs.

Results of the RI are summarized below and further detailed in the RI report (MACTEC 2015b):

- OU01 - Soil and groundwater are impacted with MGP waste. VOCs and SVOCs were detected in soils at concentrations exceeding the New York State Part 375 SCOs for residential, commercial, and industrial use scenarios. Groundwater concentrations within and downgradient from OU01 exceed the NYS Part 703 GA Standards. The extent of groundwater contamination downgradient of OU01 has not been fully delineated. The volume of MGP-impacted soil is estimated to be approximately 38,500 cubic yards (cy).

- OU02 - Sediment in Brandy Brook is impacted with MGP waste at concentrations exceeding both Class A and B Sediment Guidance Values (SGVs) and therefore meets the definition of a Class C sediment which has a high potential to be toxic to aquatic life. Contaminants were not detected in surface water at concentrations exceeding SCGs. The volume of MGP-impacted sediment exceeding Class A SGVs within the stretch of OU02 is estimated to be approximately 4,800 cy.

- OU03 - Sediment in Pontiac Bay of Lake Flower was found to be visually impacted with MGP waste at concentrations exceeding both Class A and B SGVs and therefore meets the definition of a Class C sediment which has a high potential to be toxic to aquatic life. Contaminants were not detected in surface water at concentrations exceeding SCGs. The volume of MGP-impacted sediment exceeding Class A SGVs is estimated to be approximately 16,900 cy.

2.3.4 Feasibility Study

Following the issuance of the RI report, feasibility studies were developed for OU01, OU02, and OU03 in December 2015, August 2015, and January 2015, respectively (MACTEC 2015c, 2015d, 2015a). Following the feasibility studies, NYSDEC issued RODs for OU01, OU02, and OU03 dated March 2017, March 2016, and March 2015, respectively (NYSDEC 2017, 2016, 2015), which outlined the selected remedial alternatives for each OU.

2.3.5 Remedial Activities

OU02 and OU03 were remediated between May and December 2018, in accordance with the March 2016 and March 2015 RODs (NYSDEC 2016, 2015). Remediation of OU01 was completed between 12 April 2021 and 2 June 2022 in accordance with the March 2017 ROD (NYSDEC 2017).

Remediation of the Site commenced with OU03, Pontiac Bay, which included the removal of contaminated sediment via dredging, solidification/stabilization of contaminated sediment in on-site staging areas, and off-site disposal of contaminated sediment at an approved disposal facility. Approximately 13,500 cy of material was removed from the bay over an approximately 76,000 square foot area. Turbidity curtains and constant turbidity monitoring were used during the remedial process to prevent migration of turbidity to the unaffected areas of Pontiac Bay and Lake Flower. Confirmatory sediment samples were collected after the estimated depth of contamination was dredged. Dredging continued until sample results were below the SGVs. In areas where the extent of contamination could not be dredged along the shoreline, Aquablok® was placed over contamination prior to backfilling. Aquablok® is an impermeable, patented, composite-aggregate technology typically comprised of a dense aggregate core, clay or clay-sized materials, and polymers. After installation of Aquablok®, backfill and/or rip-rap was placed to restore the excavated area.

In addition to the removal of impacted sediments from the Pontiac Bay, in situ stabilization was conducted in an area adjacent to the bay, over approximately 2,800 square feet, along the south and southeast bank to render impacted soils immobile. The top 5 feet of soil was excavated prior

to conducting in situ stabilization from 5 to 15 feet below ground surface. In-situ stabilization included mixing Portland cement into the soil using an excavator with a skeleton bucket and systematically conducting in situ stabilization one cell at a time. Soil cores of stabilized soil were collected from each cell and tested for strength at day 4, 7, 14 and 28 after mixing to ensure that a minimum of 40 pounds per square inch was achieved after 28 days. Once complete, and strength was achieved, the area was backfilled to pre-existing elevations.

Remediation of OU02 was conducted by isolating and dewatering Brandy Brook, excavating contaminated sediment via a long reach excavator, and backfilling with certified clean material. Contaminated sediment was solidified and stabilized as needed and disposed of at an approved off-site disposal facility. Approximately 6,400 cy of material was removed from the brook over an approximately 30,000 square foot area. Reactive core mat (RCM) was installed in areas where contaminated sediment could not be reached. RCM is a permeable material that absorbs NAPL but allows water to pass through. RCM was also used in Brandy Brook near OU01 where seeps with visual contamination were identified flowing into the brook. Multiple layers of RCM were installed in this area, with clean backfill and observation wells installed between each layer. These observation wells allowed for visual/olfactory inspection of mid-RCM layer water in order to identify RCM breakthrough.

Remedial actions at OU01 consisted of in situ stabilization of impacted soil material to prevent further leaching of contaminants of concern, primarily BTEX and PAHs (primarily naphthalene), to groundwater. Approximately 39,000 cy of soil was solidified using a 10-foot diameter auger to mix cement and bentonite into the formation. Reusable soil was first removed from the impacted soil, and later placed over the in-situ solidification area, and additional certified clean soil was placed over the in-situ solidification area to protect the solidified mass. In addition, two areas were excavated, including one on the Adirondack Rail Trail property and one adjacent to Brandy Brook. The excavation area adjacent to Brandy Brook extended to the extents of the OU02 remedy and removed several layers of RCM and the associate observation wells. Most of the existing monitoring wells within and near OU01 were damaged or destroyed during implementation of the remedy. Therefore, new wells and piezometers were installed to: 1) determine the effect of the remedy on improving groundwater quality over time; 2) assess the potential changes in groundwater flow direction due to the in situ solidification, which produced a large subsurface impermeable structure within the aquifer; and 3) assure predictions that such a feature in the aquifer would not adversely affect/increase groundwater levels at residences along Payeville Lane.

2.4 REMEDIAL ACTION OBJECTIVES

The following subsections present remedial action objectives (RAOs) identified in the associated RODs for OU01, OU02, and OU03.

2.4.1 OU01 Remedial Action Objectives

The RAOs for OU01 as listed in the March 2017 ROD (NYSDEC 2017) include:

Groundwater RAOs for Public Health Protection:

- Prevent ingestion of groundwater with contaminant levels exceeding drinking water standards.

- Prevent contact with, or inhalation of volatiles, from contaminated groundwater.

Groundwater RAOs for Environmental Protection:

- Prevent the discharge of contaminants to surface water.

- Remove the source of ground or surface water contamination.

Soil RAOs for Public Health Protection:

- Prevent ingestion/direct contact with contaminated soil.

- Prevent inhalation of or exposure from contaminants volatilizing from contaminants in soil.

Soil RAOs for Environmental Protection:

- Prevent migration of contaminants that would result in groundwater or surface water contamination.

- Prevent impacts to biota from ingestion/direct contact with soil causing toxicity or impacts from bioaccumulation through the terrestrial food chain.

Soil Vapor RAOs for Public Health Protection

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

2.4.2 OU02 Remedial Action Objectives

The RAOs for OU02 as listed in the March 2016 ROD (NYSDEC 2016) include:

Groundwater RAOs for Environmental Protection:

- Prevent the discharge of contaminants to surface water.

- Remove the source of ground or surface water contamination.

Soil RAOs for Public Health Protection:

- Prevent ingestion/direct contact with contaminated soil.

- Prevent inhalation of or exposure from contaminants volatilizing from contaminants in soil.

Soil RAOs for Environmental Protection:

- Prevent migration of contaminants that would result in groundwater or surface water contamination.
- Prevent impacts to biota from ingestion/direct contact with soil causing toxicity or impacts from bioaccumulation through the terrestrial food chain.

Sediment RAOs for Public Health Protection:

- Prevent direct contact with contaminated sediments.
- Prevent surface water contamination which may result in fish advisories.

Sediment RAOs for Environmental Protection:

- Prevent releases of contaminant(s) from sediments that would result in surface water levels in excess of (ambient water quality criteria).
- 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.

2.4.3 OU03 Remedial Action Objectives

The RAOs for OU03 as listed in the March 2015 ROD (NYSDEC 2015) include:

Sediment RAOs for Public Health Protection:

- Prevent direct contact with contaminated sediments.
- Prevent surface water contamination which may result in fish advisories.

Sediment RAOs for Environmental Protection:

- Prevent releases of contaminant(s) from sediments that would result in surface water levels in excess of (ambient water quality criteria).
- 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.

2.5 REMAINING CONTAMINATION

Areas of residual sediment/soil contamination (i.e., "remaining contamination") in OU02 and OU03 are presented in **Figures 2-4 and 2-5**). **Tables 2-6 and 2-7** present the sediment and soil sample results that exceeded the SCGs and/or had visual MGP impacts after completion of the remedial action for OU02. **Table 2-7** presents the sediment results that exceeded the SCGs after completion of the remedial action for OU03.

Impacts to solidified soil at OU01 remain beneath the soil. The material is not mobile; however, documentation samples exceeded the commercial SCOs as identified in **Table 2-4**, shown on **Figure 2-6**, and discussed in subsection 2.5.1 below.

2.5.1 Sediment and Soil

OU01, former MGP property, was remediated predominately by in situ solidification. Thirty-one documentation samples were collected along the perimeter of the OU01 in situ solidification area at approximate 30-foot intervals and at approximately 4 feet deep (**Table 2-4**). Three documentation samples, Confirm1R, Confirm1S and Confirm1T (along with its duplicate), exceeded the commercial SCO for cadmium (9.3 milligrams per kilogram [mg/kg]), with concentrations up to 290 mg/kg. Four (4) documentation samples, Confirm1I, Confirm1O, Confirm 1P and Confirm1T (along with its duplicate), exceeded the commercial SCO for Benzo(a)Pyrene (1 mg/kg), with concentrations up to 2.8 mg/kg. Each of the locations with exceedances of either cadmium or Benzo(a)Pyrene are located on the west side of the property adjacent to the Rail Trail.

Confirmation soil samples were also collected from the bottom of the two excavation areas (**Table 2-5**). None of the confirmation soil samples exceeded the Unrestricted SCOs. Elevated concentrations of PAHs above SCOs were detected in soil that underwent in situ solidification treatment. However, this contaminated soil no longer mobile and is located is beneath a soil cover consisting of approximately 4 feet of on-site re-usable soil and at least 12 inches of imported clean fill. This soil therefore meets the RAOs for OU01.

OU02, Brandy Brook, was remediated by excavating sediment contaminated with coal-tar related PAHs to class A SGVs except for areas presented in **Figure 2-4**. RCM was installed in areas with impacted sediment (as based on visual or laboratory results) that could not be reached or areas where remediation was logistically impractical to prevent migration of remaining NAPL from soils/groundwater to the sediment/surface water. In some instances, the extent of contamination could not be remediated because the impacts extended too close to structures (e.g., beneath the rail trail) or too deep to maintain an open excavation. Additionally, as presented in **Table 2-6**, there are three locations that are not located under RCM where pesticide Endosulfan 1 was detected at concentrations slightly above the sediment cleanup criteria.

OU03, Pontiac Bay of Lake Flower, was remediated by excavating sediment contaminated with coal-tar related PAHs to Class A SGVs. An area approximately 200 feet long along the southern sidewall of the Bay was not excavated to avoid cave-in of adjacent land. Based on confirmation soil results of this triangular wedge of contaminated sediment, Aquablok®, an impermeable barrier,

was installed over approximately 150 feet of the area to prevent migration of coal-tar from contaminated sediment. Clean backfill and rip-rap were used to restore the bay as shown in the "As Built" drawings provided in **Appendix C**.

2.5.2 Groundwater

No remediation for groundwater was conducted at OU02 or OU03. The source of potential groundwater contamination has been removed from these areas, and the conceptual site model does not suggest that groundwater is discharging to surface water.

No remediation for groundwater was conducted at OU01, however, the in-situ solidification remedy is likely to result in a reduction of groundwater impacts over time.

Groundwater at both OU01 and OU02 will be monitored to evaluate the effectiveness of the remedies over time.

2.5.3 Surface Water

There were no RAOs for surface water within OU01, OU02, or OU03.

2.5.4 Soil Vapor

There is no concern for SVI from OU02 or OU03 related sources. There are currently no buildings on-site that would be a concern for SVI at OU01. A vapor intrusion investigation would be warranted pending future development of the property.

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3. INSTITUTIONAL AND ENGINEERING CONTROL PLAN

3.1 GENERAL

Since remaining contamination exists at the site, ICs and ECs are required to protect human health and the environment. This IC/EC Plan describes the procedures for the implementation and management of all IC/ECs at the site. The IC/EC Plan is one component of the SMP and is subject to revision by the NYSDEC Project Manager.

This plan provides:

- A description of all IC/ECs on the Site
- The basic implementation and intended role of each IC/EC
- A description of the key components of the ICs set forth in the Environmental Easement
- A description of the controls to be evaluated during each required inspection and periodic review
- A description of plans and procedures to be followed for implementation of IC/ECs, such as the implementation of the EWP (as provided in **Appendix D**) for the proper handling of remaining contamination that may be disturbed during maintenance or redevelopment work on the Site
- Any other provisions necessary to identify or establish methods for implementing the IC/ECs required by the site remedy, as determined by the NYSDEC Project Manager.

3.2 INSTITUTIONAL CONTROLS

A series of ICs is required by the ROD to: (1) implement, maintain and monitor engineering control systems; (2) prevent future exposure to remaining contamination; and (3) limit the use and development of the site to recreational uses only. Adherence to these ICs on the Site is required by the Environmental Easement and will be implemented under this SMP. ICs identified in the Environmental Easement may not be discontinued without an amendment to or extinguishment of the Environmental Easement. These ICs are:

- The use and development of the controlled property (OU01) for commercial and industrial uses are allowed as defined by Part 375-1.8(g), although land use is subject to local zoning laws; OU02 and OU03 may be used for recreational use.
- All ECs must be maintained as specified in this SMP
- All ECs must be inspected at a frequency and in a manner defined in the SMP
- The use of groundwater underlying the property is prohibited without necessary water quality treatment as determined by the NYSDOH or the Essex County Department of

Health to render it safe for use as a source of potable or process water, and the user must first notify and obtain written approval to do so from the Department

- Environmental monitoring must be performed as defined in this SMP
- Data and information pertinent to site management must be reported at the frequency and in a manner as defined in this SMP
- All future activities that will disturb remaining contaminated material must be conducted in accordance with this SMP
- Monitoring to assess the performance and effectiveness of the remedy must be performed as defined in this SMP
- Maintenance, monitoring, inspection, and reporting of any physical component of the remedy shall be performed as defined in this SMP
- Access to the Site must be provided to agents, employees or other representatives of the State of New York with reasonable prior notice to the property owner to assure compliance with the restrictions identified in this SMP.

3.3 ENGINEERING CONTROLS

ECs utilized on-site include RCM, installed over remaining contamination in OU02, and Aquablok®, installed over remaining contamination within OU03. Areas where RCM and Aquablok® were placed are depicted on **Figures 2-4 and 2-5**. Backfill was placed over these barrier layers to protect them from environmental factors and anthropogenic disturbances. Clean, imported borrow material was installed as a soil cover the in situ solidification area at both OU01.

Inspection of these areas will be required quarterly for the first year following remediation, biannually the second year, and annually in all subsequent years; inspection reports will be distributed within 30 days of a site inspection.

3.3.1 Cover (or Cap)

Exposure to remaining contamination at the Site is prevented by a barrier cover system (cap) which is comprised of RCM (OU02) and Aquablok® (OU03), both covered with a minimum of 12 inches of clean soil. **Figures 2-4 and 2-5** present the locations of the cover systems and applicable barrier layers (RCM and Aquablok®). A soil cover system of at least 12 inches of imported clean soil over a demarcation layer is present above the in situ solidification area at OU01. **Figure 2-6** presents the locations of the cover system at OU01.

The EWP provided in **Appendix D** outlines the procedures required to be implemented in the event the cover system is breached, penetrated or temporarily removed, and any underlying remaining contamination is disturbed. Procedures for the inspection of this cover are provided in the Monitoring and Sampling Plan included in Section 4.0 of this SMP. Work conducted pursuant

to the EWP must also be conducted in accordance with a submitted Health and Safety Plan (HASP). The HASP in **Appendix E** includes investigative and monitoring activities conducted by and anticipated to be conducted by MACTEC. Information within the HASP may be used to develop a HASP specific to excavation activities.

3.4 CRITERIA FOR COMPLETION OF REMEDIATION/TERMINATION OF REMEDIAL SYSTEMS

Generally, remedial processes are considered completed when monitoring indicates that the remedy has achieved the remedial action objectives identified by the decision document. The framework for determining when remedial processes are complete is provided in Section 6.4 of NYSDEC DER-10. Unless waived by the NYSDEC, confirmation samples of applicable environmental media are required before terminating any remedial actions at the Site. Confirmation samples require Category B deliverables and a Data Usability Summary Report.

As discussed below, the NYSDEC may approve termination of a groundwater monitoring program. When a remedial party receives this approval, the remedial party will decommission all site-related monitoring, injection and recovery wells as per the NYSDEC CP-43 policy.

The remedial party will also conduct any needed site restoration activities, such as asphalt patching and decommissioning treatment system equipment. In addition, the remedial party will conduct any necessary restoration of vegetation coverage, trees and wetlands, and will comply with NYSDEC and U.S. Army Corps of Engineers regulations and guidance. Also, the remedial party will ensure that no ongoing erosion is occurring on the Site.

The composite cover systems, composed of RCM or Aquablok® and a protective backfill layer, or soil cover over a demarcation barrier, are permanent controls and the quality and integrity of these systems will be inspected at defined, regular intervals in accordance with this SMP in perpetuity.

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4. MONITORING AND SAMPLING PLAN

4.1 GENERAL

This Monitoring and Sampling Plan describes the measures for evaluating the overall performance and effectiveness of the remedy. This Monitoring and Sampling Plan may only be revised with the approval of the NYSDEC Project Manager. Details regarding the sampling procedures, data quality usability objectives, analytical methods, etc. for all samples collected as part of site management for the Site are included in the Quality Assurance Project Plan provided in **Appendix F**.

This Monitoring and Sampling Plan describes the methods to be used for:

- Sampling and analysis of surface water, groundwater, and sediment
- Assessing compliance with applicable NYSDEC SCGs, particularly surface water standards and SGVs for sediment
- Evaluating site information periodically to confirm that the remedy continues to be effective in protecting public health and the environment
- Monitoring water levels in and near Brandy Brook.

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

- Sampling locations, protocol and frequency
- Information on all designed monitoring systems
- Annual inspection and periodic certification.

Reporting requirements are provided in Section 7.0 of this SMP.

4.2 SITEWIDE INSPECTION

Inspections of OU01, OU02, and OU03 will be performed quarterly during the first year following the remedial action at OU01, quarterly the second year, biannually the third year, and annually in all subsequent years. Due to the potential for OU02 and OU03 to be frozen during winter months, inspections will take place following the spring thaw in April. Early spring inspection will identify any disturbances caused by winter weather or ice and will provide time for any issues to be resolved before the summer tourist season. An annual site inspection form (**Appendix G)** will be completed during the inspection, and an annual Site Inspection Report will be issued within 30 days of the completion of the Site inspection.

Site-wide inspections will be performed by a qualified environmental professional as defined in 6 NYCRR Part 375. Modification to the frequency or duration of the inspections will require

approval from the NYSDEC Project Manager. Site-wide inspections will also be performed after all severe weather conditions that may affect ECs or monitoring devices. During these inspections, an inspection form will be completed as provided in **Appendix G** – Field Sampling Plan and Site Management Forms. The form will compile sufficient information to assess the following:

- Compliance with all ICs, including Site usage
- An evaluation of the condition and continued effectiveness of ECs
- General site conditions at the time of the inspection
- The site management activities being conducted including, where appropriate, confirmation sampling and a health and safety inspection
- Confirm that site records are up to date.

Inspections of all remedial components installed at the site will be conducted. A comprehensive site-wide inspection will be conducted and documented according to the SMP schedule, regardless of the frequency of the Periodic Review Report (PRR). The inspections will determine and document the following:

- Whether ECs continue to perform as designed
- If these controls continue to be protective of human health and the environment
- Compliance with requirements of this SMP and the Environmental Easement
- Achievement of remedial performance criteria
- If Site records are complete and up to date.

Reporting requirements are outlined in Section 7 of this plan.

Inspections will also be performed in the event of an emergency. If an emergency, such as a natural disaster or an unforeseen failure of any of the ECs occurs that reduces or has the potential to reduce the effectiveness of ECs in place at the Site, verbal notice to the NYSDEC Project Manager must be given by noon of the following day. In addition, an inspection of the Site will be conducted within 5 days of the event to verify the effectiveness of the IC/ECs implemented at the Site by a qualified environmental professional, as defined in 6 NYCCR Part 375. Written confirmation must be provided to the NYSDEC Project Manager within 7 days of the event that includes a summary of actions taken, or to be taken, and the potential impact to the environment and the public. The remedial party will submit follow-up status reports to the NYSDEC within 45 days of the event on actions taken to respond to any emergency event requiring ongoing responsive action, describing and documenting actions taken to restore the effectiveness of the ECs.

4.3 TREATMENT SYSTEM MONITORING AND SAMPLING

4.3.1 Remedial System Monitoring

Monitoring of the barrier layer and location of in situ solidification will be performed on a routine basis, as identified in the table below: Inspection and Monitoring Requirements and Schedule. The monitoring of remedial systems must be conducted by a qualified environmental professional as defined in 6 NYCRR Part 375. Modification to the frequency or sampling requirements will require approval from the NYSDEC Project Manager. A visual inspection of the complete system will be conducted during each monitoring event. Unscheduled inspections and/or sampling may take place when a suspected failure of the RCM system or penetration of the in situ solidification or Aquablok® system has been reported or an emergency occurs that is deemed likely to affect the operation of the system. RCM, in situ solidification, and Aquablok® system components to be monitored include, but are not limited to, the components included in **Table 4-1** below.

Table 4-1. Inspection and Monitoring Requirements and Schedule

Remedial System Component	Monitoring Parameter	Operating Range	Monitoring Schedule
Barrier / Cover (Aquablok® / RCM)	Integrity Backfill Monitoring Points (Good / Bad)	Aquablok® and/or RCM is not visible. No visible sheen. No coal-tar odor. Monitoring points (if present) are in proper, upright position.	Year 1: Quarterly Year 2: Quarterly Year 3: Biannually Year 4+: Annually
In situ solidification location	Has the location of ISS been impacted?	Is there construction in the area? Are there subsurface impacts?	Year 1: Quarterly Year 2: Quarterly Year 3: Biannually Year 4+: Annually
In situ solidification / Soil Cover at OU01	Integrity/Condition Impacts	Erosion along sides of cover system. Areas of ponding. Check for construction in the area.	Year 1: Quarterly Year 2: Quarterly Year 3: Biannually Year 4+: Annually
Perimeter Fence	Integrity/Condition		Year 1: Quarterly Year 2: Quarterly Year 3: Biannually Year 4+: Annually

A complete list of components to be inspected is provided in the Inspection Checklist, provided in **Appendix G** – Field Sampling Plan and Site Management Forms. If any equipment readings are not within their specified operation range, any equipment is observed to be malfunctioning or the system is not performing within specifications; maintenance and repair, as per the Operation and Maintenance Plan, is required immediately.

POST-REMEDIATION MEDIA MONITORING AND SAMPLING

Sediment, surface water and groundwater samples will be collected to evaluate the effectiveness of the remedy within OU02 and OU03 as outlined below. Sampling locations, required analytical parameters, and schedule are provided in **Table 4-2** – Post Remediation Sampling Requirements

and Schedule below. Modification to the frequency or sampling requirements will require approval from the NYSDEC Project Manager.

Table 4-2. Post Remediation Sampling Requirements and Schedule

Operable Unit	Media	Location ID	Analysis	Sampling Frequency
OU02	Sediment	SD-400	PAHs, VOCs	Year 1 (2022): Quarterly Year 2 (2023): Quarterly Year 3 (2024): Biannually Year 4 (2025): Annually Year 5+ (2026+): 5 Quarters
		SD-401	PAHs, VOCs	
		SD-402	PAHs, VOCs	
	Surface Water	SW-400	PAHs, VOCs	
		SW-401	PAHs, VOCs	
		SW-402	PAHs, VOCs	
	Groundwater	PZ-301	PAHs, VOCs	
	Groundwater	MW-104	PAHs, VOCs	
OU03	Surface Water	SW-403	PAHs, VOCs	Year 1 (2022): Quarterly Year 2 (2023): Quarterly Year 3 (2024): Biannually Year 4 (2025): Annually Year 5+ (2026+): 5 Quarters
OU01	Groundwater	MW-106R	PAHs, VOCs	Year 1 (2022): Quarterly Year 2 (2023): Quarterly Year 3 (2024): Biannually Year 4 (2025): Annually Year 5+ (2026+): 5 Quarters
		MW-108R	PAHs, VOCs	
		MW-110R	PAHs, VOCs	
		MW-204S	PAHs, VOCs	
		MW-204D	PAHs, VOCs	
		MW-205S	PAHs, VOCs	
		MW-205D	PAHs, VOCs	

Notes:
ID = Identification

Detailed sample collection and analytical procedures and protocols are provided in **Appendix G** – Field Sampling Plan and Site Management Forms and **Appendix F** – Quality Assurance Project Plan.

4.3.2 Soil Sampling

No soil sampling will occur as soil at OU02 and OU03 was not the focus of the OU02 or OU03 remedial action.

4.3.3 Sediment Sampling

Sediment sampling will be performed every five quarters to assess the quality of the sediment following completion of the remedial actions.

The network of on-site sediment sample locations has been designed based on the following criteria:

- OU02

— Sediment samples within Brandy Brook will be collected at locations shown on **Figure 2-4** which represent depositional areas downstream of the barrier/cover areas. Samples will be collected starting at the furthest downstream sampling location (SD-400) and working upstream toward OU03.

- OU03

— Due to the depth of Pontiac Bay, a sediment sample from Brandy Brook will be collected just prior to the culvert that conveys flow to the bay as a representative sample given that new sediment in the Bay would result from discharge from Brandy Brook. This sampling location is also shown on **Figure 2-4**.

If areas are identified during site inspections that may indicate contamination has become exposed, the NYSDEC Project Manager will be contacted, and additional samples may be collected. Sampling location, description, and rationale will be recorded on field data records. If samples are collected in addition to the long-term monitoring locations, coordinates of each location will be collected and recorded.

The sampling frequency may only be modified with the approval of the NYSDEC Project Manager. This SMP will be modified to reflect any approved changes to the sampling plan.

Deliverables for the sediment sampling program are specified in Section 7.0 – Reporting Requirements.

4.3.4 Groundwater Sampling

The network of monitoring wells has been installed to monitor upgradient, on-site, and downgradient groundwater conditions at the Site. Groundwater monitoring will be performed once every five quarters or at the request of the NYSDEC to assess the performance of the remedy. The groundwater Field Sampling Plan and site management forms are included in **Appendix G** of this document.

Groundwater sampling will be conducted at MW-104 and PZ-301 located adjacent to Brandy Brook. These monitoring wells are located upstream and downstream of the first co-located sediment/surface sampling location. In addition, MW-106 located at OU01, just upgradient of the OU02/OU03 remedial activities, will be sampled as a comparison to PZ-301 and MW-104. PZ-301was installed during pre-design investigations for the purpose of evaluating dewatering during excavation activities and has not been tested for site contaminants. The groundwater results at PZ-301 will therefore be compared to previous groundwater results for monitoring well MW-201, which was in the same vicinity but destroyed during remedial activities. In addition, MW-06 will only be available for monitoring until remedial activities are initiated at OU01.

Table 4-3 summarizes the well identification numbers, as well as the location, depths, and screened intervals of the wells. As part of the groundwater monitoring, the wells are sampled to evaluate the effectiveness of the remedial system. The remedial party will measure depth to the water table for each monitoring well in the network before sampling.

Table 4-3. Monitoring Well Construction Details

Monitoring Well ID	Northing	Easting	Bottom of Well (BTOR)	Elevation (above mean sea level)			
				Casing	Surface	Screen Top	Screen Bottom
MW-101	1999449.36	592312.95	13.0	1543.18	1543.2	1540.2	1530.2
MW-102	1999596.91	592281.02	14.9	1543.51	1543.5	1538.6	1528.6
MW-103	1999401.39	592281.02	19.7	1542.45	1542.4	1532.7	1522.7
MW-104	1999833.87	592054.19	19.4	1545.27	1542.3	1535.9	1525.9
MW-105	1999766.01	592166.86	18.3	1545.98	1543.0	1537.7	1527.7
MW-106	1999701.42	592314.39	16.9	1543.23	1540.4	1536.3	1526.3
MW-107	1999701.42	592314.39	14.6	1542.21	1542.2	1537.6	1527.6
MW-108	1999615.19	592418.34	22.1	1546.75	1543.6	1534.6	1524.6
MW-109	1999403.28	592176.70	18.8	1546.10	1543.0	1537.3	1527.3
MW-110	1999524.97	592176.70	19.6	1543.33	1543.3	1533.7	1523.7
MW-201*	1999945.73	591954.15	18.6	1543.81	1540.6	1535.2	1525.2
MW-202	1999711.88	591841.61	22.4	1554.19	1554.2	1541.8	1531.8
MW-203	1999993.61	591740.99	17.3	1548.05	1548.1	1540.8	1530.8
MW-204	1999285.76	592297.69	28.3	1546.53	1543.5	1533.2	1523.2
MW-205S	1999119.02	592297.69	19.6	1545.44	1542.5	1532.9	1522.9
MW-205D	1999124.30	592295.88	33.5	1545.52	1542.4	1522.0	1512.0
GW-02	1999638.97	592352.87	9.8	1543.65	1543.7	1542.9	1533.9
GW-11	1999638.97	592352.87	10.5	1542.15	1542.1	1540.6	1531.6
GW-14	1999692.50	592120.08	10.4	1543.17	1543.2	1541.8	1532.8
PZ-301*	19999930.6	591913.4	12.0	1544.3	1540	*	*

Notes:
BTOR = Below top of riser
Wells Surveyed by Prudent Engineering
Northing/Easting = North American Datum 83/96 - NYSPCS EAST (US survey ft); Elevations = North American Vertical Datum 88 (US survey ft)
*PZ-301 was installed during OU02/OU03 pre-design investigations and will be monitored during the SMP in lieu of MW-201 (destroyed / abandoned). Other piezometers installed during that time were either destroyed during remedial activities or well be abandoned.

If biofouling or silt accumulation occurs in the on-site and/or off-site monitoring wells, as determined by high turbidity readings or comparing measured against installed well depths, the wells will be physically agitated/surged and redeveloped. Additionally, monitoring wells will be properly decommissioned and replaced if an event renders the wells unusable.

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

The NYSDEC Project Manager will be notified prior to any repair or decommissioning of any monitoring well for the purpose of replacement, and the repair or decommissioning and replacement process will be documented in the subsequent PRR. Well decommissioning without replacement will be done only with the prior approval of the NYSDEC Project Manager. Well abandonment will be performed in accordance with NYSDEC's guidance entitled "CP-43: Groundwater Monitoring Well Decommissioning Procedures." Monitoring wells that are decommissioned because they have been rendered unusable will be replaced in kind in the nearest available location, unless otherwise approved by the NYSDEC Project Manager.

The sampling frequency may only be modified with the approval of the NYSDEC Project Manager. This SMP will be modified to reflect approved changes in the sampling plan.

Deliverables for the groundwater monitoring program are specified in Section 7 – Reporting Requirements.

4.3.5 Surface Water Sampling

Surface water sampling will be performed every five quarters to assess the performance of the remedy. The network of on-site surface water sample locations has been designed based on the following criteria:

OU02

Brandy Brook surface water samples will be co-located with sediment samples and will be collected from a depth equal to half the water column. Surface water samples will be collected prior to sediment samples, as sediment sampling will disturb the stream bed and form a slug of turbidity.

OU03

One surface water sample is proposed to be collected from Pontiac Bay approximately 50 feet southwest of the culverted entrance of Brandy Brook. The surface water sample will be collected approximately one foot off the bottom of the bay adjacent to an area where Aquablok® was placed.

The sampling frequency may only be modified with the approval of the NYSDEC Project Manager. This SMP will be modified to reflect approved changes in the sampling plan.

Deliverables for the surface water sampling program are specified in Section 7 – Reporting Requirements.

4.3.6 Soil Vapor Sampling

Soil vapor sampling will not be performed on-site as soil vapor is not a concern with OU02 and OU03 related contamination.

4.3.7 Soil Vapor Intrusion Sampling

Soil vapor intrusion sampling will not be performed on-site as soil vapor is not a concern with OU02 and OU03 related contamination.

4.3.8 Monitoring and Sampling Protocol

Sampling activities and observations will be recorded in a field book and associated field data record as provided in **Appendix G**. Observations will include weather conditions, rain events in the past 24 hours, and field parameters. Additional detail regarding monitoring and sampling protocols are provided in **Appendix G**.

5. OPERATION AND MAINTENANCE PLAN

5.1 GENERAL

The Site remedy does not rely on any mechanical systems, such as groundwater treatment systems, sub-slab depressurization systems or air sparge/soil vapor extraction systems to protect public health and the environment. Therefore, the operation and maintenance of such components is not included in this SMP. The only ECs in place, Aquablok® and RCM, do not require any operation or regular maintenance, so only inspection of these systems is required.

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6. PERIODIC ASSESSMENTS/EVALUATIONS

6.1 CLIMATE CHANGE VULNERABILITY ASSESSMENT

Increases in both the severity and frequency of storms/weather events, an increase in sea level elevations along with accompanying flooding impacts, shifting precipitation patterns and wide temperature fluctuation, resulting from global climactic change and instability, have the potential to significantly impact the performance, effectiveness and protectiveness of a given site and associated remedial systems. Vulnerability assessments provide information so that the site and associated remedial systems are prepared for the impacts of the increasing frequency and intensity of severe storms/weather events and associated flooding.

This section provides a summary of vulnerability assessments that will be conducted for the site during periodic assessments and summarizes the vulnerability of the Site and/or ECs to severe storms/weather events and associated flooding.

A vulnerability assessment was included in the remedial design. The remedies implemented were intended to be protective in submerged conditions, which includes, but is not limited to, planting of trees and shrubs along Brandy Brook with the intent to provide shade along the brook to the extent possible.

No further vulnerability assessments are required. However, growth of planted trees and shrubs will be monitored in accordance with the Army Corps of Engineers (ACOE) permit (**Appendix H**).

6.2 GREEN REMEDIATION EVALUATION

NYSDEC's DER-31 Green Remediation requires that green remediation concepts and techniques be considered during all stages of the remedial program including site management, with the goal of improving the sustainability of the cleanup and summarizing the net environmental benefit of any implemented green technology. This section of the SMP provides a summary of any green remediation evaluations to be completed for the site during site management, and as reported in the PRR.

- Land and/or ecosystems
  - No land or ecosystems will be disturbed during routine Site management activities.
- Water Usage
  - No water will be used as all engineering controls are passive.
- Waste Generation
  - Remaining contamination is covered by a barrier cap system which does not require operation or schedule maintenance and, therefore, no waste will be generated.

- Energy usage

  — No electricity is needed to operate or regularly maintain the remedy.

- Emissions

  — Trips to the Site for inspections will be combined with other activities when possible, to limit the emissions produced.

6.2.1 Timing of Green Remediation Evaluations

For major remedial system components, green remediation evaluations and corresponding modifications will be undertaken as part of a formal remedial system optimization, or at any time that the NYSDEC Project Manager feels appropriate, e.g., during significant maintenance events or in conjunction with storm recovery activities.

Modifications resulting from green remediation evaluations will be routinely implemented and scheduled to occur during planned/routine operation and maintenance activities. Reporting of these modifications will be presented in the PRR.

6.3 REMEDIAL SYSTEMS

There are no remedial systems currently present on-site.

6.4 BUILDING OPERATIONS

There are no Site-related operational buildings present at OU02 or OU03, so no operations are required.

6.5 FREQUENCY OF SYSTEM CHECKS, SAMPLING AND OTHER PERIODIC ACTIVITIES

Transportation to and from the Site, use of consumables in relation to visiting the Site in order to conduct system checks and/or collect samples, and shipping samples to a laboratory for analyses have direct and/or inherent energy costs. The schedule and/or means of these periodic activities have been prepared so that these tasks can be accomplished in a manner that does not impact remedy protectiveness but reduces expenditure of energy or resources.

Green remediation has been evaluated for the activities in this SMP and the following actions will be implemented:

- Sampling frequency will be reduced gradually within the first two years of evaluating the remedy.

- Travel to the Site will be coordinated to accomplish multiple tasks when possible.

- Staff will mobilize from the closest office to the Site when possible.

6.6 METRICS AND REPORTING

Green remediation efforts will be reported in the PRR.

6.7 REMEDIAL SYSTEM OPTIMIZATION

A remedial site optimization is not anticipated as there are no operating remedial systems that would require inspections, upgrades, or replacements.

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7. REPORTING REQUIREMENTS

7.1 SITE MANAGEMENT REPORTS

All site management inspection, maintenance and monitoring events will be recorded on the appropriate site management forms provided in **Appendix G**. These forms are subject to NYSDEC revision. All site management inspection, maintenance, and monitoring events will be conducted by a qualified environmental professional as defined in 6 NYCRR Part 375.

All applicable inspection forms and other records, including media sampling data and system maintenance reports, generated for the Site during the reporting period will be provided in electronic format to the NYSDEC in accordance with the requirements identified in the table below.

Schedule of Interim Monitoring/Inspection Reports

Task/Report	Reporting Frequency*
Inspection Report/ Site Management Report	Year 1 (2022): Quarterly Year 2 (2023): Quarterly Year 3 (2024): Biannually Year 4+ (2025): Annually
Periodic Review Report (PRR)	Every three years.

Notes:
* The frequency of events will be conducted as specified until otherwise approved by the NYSDEC Project Manager.

All interim monitoring/inspection reports will include, at a minimum:

- Date of event or reporting period
- Name, company, and position of person(s) conducting monitoring/inspection activities
- Description of the activities performed
- Where appropriate, color photographs or sketches showing the approximate location of any problems or incidents noted (included either on the checklist/form or on an attached sheet)
- Type of samples collected (e.g., sediment, surface water, etc.)
- Copies of all field forms completed (e.g., well sampling logs, chain-of-custody documentation, etc.)
- Sampling results in comparison to appropriate standards/criteria
- A figure illustrating sample type and sampling locations
- Copies of all laboratory data sheets and the required laboratory data deliverables required for all points sampled (to be submitted electronically in the NYSDEC-identified format)

- Any observations, conclusions, or recommendations
- A determination as to whether contaminant conditions have changed since the last reporting event.

Routine maintenance event reporting forms will include, at a minimum:

- Date of event
- Name, company, and position of person(s) conducting maintenance activities
- Description of maintenance activities performed
- Any modifications to the system
- Where appropriate, color photographs or sketches showing the approximate location of any problems or incidents noted (included either on the checklist/form or on an attached sheet)
- Other documentation such as copies of invoices for maintenance work, receipts for replacement equipment, etc., (attached to the checklist/form).

Non-routine maintenance event reporting forms will include, at a minimum:

- Date of event
- Name, company, and position of person(s) conducting non-routine maintenance/repair activities
- Description of non-routine activities performed
- Where appropriate, color photographs or sketches showing the approximate location of any problems or incidents (included either on the form or on an attached sheet)
- Other documentation such as copies of invoices for repair work, receipts for replacement equipment, etc. (attached to the checklist/form).

Data will be reported in digital format as determined by the NYSDEC. Currently, data is to be supplied electronically and submitted to the NYSDEC EQuIS^{TM} database in accordance with the requirements found at this link http://www.dec.ny.gov/chemical/62440.html.

7.2 PERIODIC REVIEW REPORT

A PRR will be submitted to the NYSDEC Project Manager beginning 16 months after the approval of the Construction Completion Report for OU02 and OU03 is issued. After submittal of the initial PRR, the next PRR shall be submitted every three years to the NYSDEC Project Manager or at another frequency as may be required by the NYSDEC Project Manager. The report will be prepared in accordance with NYSDEC's DER-10 and submitted within 30 days of the end of each

certification period. Media sampling results will also be incorporated into the PRR. The report will include:

- Identification, assessment and certification of all ECs/ICs required by the remedy for the site.
- Results of the required annual site inspections, fire inspections and severe condition inspections, if applicable.
- Description of any change of use, import of materials, or excavation that occurred during the certifying period.
- All applicable site management forms and other records generated for the site during the reporting period in the NYSDEC-approved electronic format, if not previously submitted.
- Identification of any wastes generated during the reporting period, along with waste characterization data, manifests, and disposal documentation.
- A summary of any discharge monitoring data and/or information generated during the reporting period, with comments and conclusions.
- Data summary tables and graphical representations of contaminants of concern by media (groundwater, soil vapor, etc.), which include a listing of all compounds analyzed, along with the applicable standards, with all exceedances highlighted. These tables and figures will include a presentation of past data as part of an evaluation of contaminant concentration trends, including but not limited to:
  - Trend monitoring graphs that present groundwater contaminant levels from before the start of the remedy implementation to the most current sampling data
  - Trend monitoring graphs depicting system influent analytical data on a per event and cumulative basis
  - O&M data summary tables
  - A current plume map for sites with remaining groundwater contamination
  - A groundwater elevation contour map for each gauging event.
- Results of all analyses, copies of all laboratory data sheets, and the required laboratory data deliverables for all samples collected during the reporting period will be submitted in digital format as determined by the NYSDEC. Currently, data is supplied electronically and submitted to the NYSDEC EQuIS™ database in accordance with the requirements found at this link: http://www.dec.ny.gov/chemical/62440.html.
- A Site evaluation, which includes the following:

— The compliance of the remedy with the requirements of the site-specific Remedial Action Work Plan, ROD, or Decision Document

— The operation and the effectiveness of all treatment units, etc., including identification of any needed repairs or modifications

— Any new conclusions or observations regarding site contamination based on inspections or data generated by the Monitoring and Sampling Plan for the media being monitored

— Recommendations regarding any necessary changes to the remedy and/or Monitoring and Sampling Plan

— An evaluation of trends in contaminant levels in the affected media to determine if the remedy continues to be effective in achieving remedial goals as specified by the Remedial Action Work Plan, ROD, or Decision Document

— The overall performance and effectiveness of the remedy.

7.2.1 Certification of Institutional and Engineering Controls

Following the last inspection of the reporting period, a qualified environmental professional as defined in 6 NYCRR Part 375 or Professional Engineer licensed to practice and registered in NYS will prepare, and include in the PRR, the following certification as per the requirements of NYSDEC DER-10:

"*For each institutional or engineering control identified for the site, I certify that all of the following statements are true:*

- *The inspection of the site to confirm the effectiveness of the institutional and engineering controls required by the remedial program was performed under my direction*
- *The institutional control and/or engineering control employed at this site is unchanged from the date the control was put in place, or last approved by the Department*
- *Nothing has occurred that would impair the ability of the control to protect the public health and environment*
- *Nothing has occurred that would constitute a violation or failure to comply with any site management plan for this control*
- *Access to the site will continue to be provided to the Department to evaluate the remedy, including access to evaluate the continued maintenance of this control*
- *If a financial assurance mechanism is required under the oversight document for the site, the mechanism remains valid and sufficient for the intended purpose under the document*

- *Use of the site is compliant with the environmental easement*
- *The engineering control systems are performing as designed and are effective*
- *To the best of my knowledge and belief, the work and conclusions described in this certification are in accordance with the requirements of the site remedial program and generally accepted engineering practices*
- *The information presented in this report is accurate and complete.*

I certify that all information and statements in this certification form are true. I understand that a false statement made herein is punishable as a Class "A" misdemeanor, pursuant to Section 210.45 of the Penal Law. I, [name], of [business address], am certifying as [Owner/Remedial Party or Owner's/Remedial Party's Designated Site Representative] (and if the site consists of multiple properties): *[I have been authorized and designated by all site owners/remedial parties to sign this certification] for the site."*

If NYSDEC DER-10 requires a Professional Engineering certification, add the following certification:

"I certify that the New York State Education Department has granted a Certificate of Authorization to provide Professional Engineering services to the firm that prepared this Periodic Review Report."

The signed certification will be included in the PRR.

The PRR will be submitted, in electronic format, to the NYSDEC Project Manager and the NYSDOH Project Manager. The PRR may also need to be submitted in hard-copy format if requested by the NYSDEC Project Manager.

7.3 CORRECTIVE MEASURES WORK PLAN

If any component of the remedy is found to have failed, or if the periodic certification cannot be provided due to the failure of an institutional or engineering control or failure to conduct site management activities, a Corrective Measures Work Plan will be submitted to the NYSDEC Project Manager for approval. This plan will explain the failure and provide the details and schedule for performing work necessary to correct the failure. Unless an emergency condition exists, no work will be performed pursuant to the Corrective Measures Work Plan until it has been approved by the NYSDEC Project Manager.

7.4 REMEDIAL SYSTEM OPTIMIZATION REPORT

There is no remedial system optimization planned for the Site at this time.

7.5 RESTORATION MONITORING AND REPORTING

As previously noted, restoration that took place at and adjacent to Brandy Brook and Pontiac Bay will require annual monitoring and reporting for five years following completion of restoration activities. Additional information related to these activities including the ACOE permit, restoration plan, associated correspondences, and monitoring forms are included in **Appendix H**. To the extent possible, inspections related to restoration will take place concurrent to SMP inspections in order to reduce travel to the Site. Upon completion of the ACOE monitoring requirements, the SMP will be revised to remove them.

8. REFERENCES

6 NYCRR Part 375. 2006. Environmental Remediation Programs. December.

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———.2015c. *Focused Feasibility Study Report, Operable Unit 01. Saranac Lake Gas Company, Inc. Site, Site No. 516008*. December.

———.2015d. *Focused Feasibility Study Report, Operable Unit 02. Saranac Lake Gas Company, Inc. Site, Site No. 516008*. August.

———.2011. DER-31, Green Remediation. Revised January 2011.

———.2013. Work Assignment Issuance Request Memo for Standby Engineering Contracts. To Eric Obrect, Chief, Contracts and Payments Section, DER From Russell Huyck, Region 5 Regional Remediation Engineer through Jim Harrington Bureau Director. May.

New York State Department of Environmental Conservation (NYSDEC) Division of Environmental Remediation (DER)-10. 2010. *Technical Guidance for Site Investigation and Remediation.* May.

———.2015. *Record of Decision, Operable Unit (OU) 03: Pontiac Bay on Lake Flower. Saranac Lake Gas Company, Inc. Site. Site No. 516008. Saranac Lake, Essex County, New York*. March.

———.2016. *Record of Decision, Operable Unit (OU) 02: Brandy Brook. Saranac Lake Gas Company, Inc. Site. Site No. 516008. Saranac Lake, Essex County, New York*. March.

———.2017. *Record of Decision, Operable Unit (OU) 01: Former Gas Plant Property. Saranac Lake Gas Company, Inc. Site. Site No. 516008. Saranac Lake, Essex County, New York.*

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Tables

Table 2.1
Property Owners within Site Boundaries

Current Owner	Tax Map Parcel Number	Property Location	Owner Address	Site Description
Saranac Lake Gas Co. Inc c/o Amerigas Propane Lp and NiSource Inc.	32.231-1-11	24 Payeville Ln Saranac Lake, NY 12983	PO Box 798 Valley Forge, PA 19482 and 801 E. 86th Avenue Merrillville, IN 46410	OU1 Property
Gregory Peacock	32.215-6-2	1037 Pine St, Saranac Lake, NY 12983	2512 Main St. Lake Placid, NY 12983	OU01 abuts the Property to the south.
	32.215-6-3	1027 Pine St, Saranac Lake, NY 12983		OU01 abuts the Property to the south.
George C. Hutting	32.232-1-1	1011 Pine St, Saranac Lake, NY 12983	PO Box 245, Elizabethtown, NY 12932	OU01 abuts the Property to the south.
Aubrey B and Deborah A Fox	32.232-1-2	1001 Pine St, Saranac Lake, NY 12983	1003 Pine St, Saranac Lake, NY 12983	OU01 abuts the Property to the south.
Randolph Smith Jr and Lynn Louise Smith	32.232-1-5	14 Payeville Ln, Saranac Lake, NY 12983	PO Box 114, Bloomingdale, NY 12913	OU01 abuts the Property to the south.
Essex County 2004 Grub	32.232-1-15	Payeville Ln 311 Res Vacant Land	PO Box 217, Elizabethtown, NY 12932	OU01 abuts the Property to the west.
Janice Gauthier	32.232-1-6	32 Payeville Ln, Saranac Lake, NY 12983	32 Payeville Ln, Saranac Lake, NY 12983	OU01 abuts the Property to the west.
Robert Ohmann	32.232-1-7	36 Payeville Ln, Saranac Lake, NY 12983	36 Payeville Ln, Saranac Lake, NY 12983	OU01 abuts the Property to the west.
Steven and Monica Schmidt	32.232-1-8	44 Payeville Ln, Saranac Lake, NY 12983	974 McKenzie Pond Rd, Saranac Lake, NY 12983	OU01 abuts the Property to the west.
George Paye III	32.232-1-9	50 Payeville Ln, Saranac Lake, NY 12983	67 Payeville Ln., Saranac Lake, NY 12983	OU01 abuts the Property to the west.
	32.232-1-10	Payeville Ln 311 Res Vacant Land		OU01 abuts the Property to the west.
George Paye and Christine Sitterly	32.232-1-16	Payeville Ln 311 Res Vacant Land		OU01 abuts the Property to the west.
Essex / Franklin County Attn: Comptroller	32.248-1-10.1	149 Dorchester Rd, Saranac Lake, NY 12983	23 Sabtanoni Ave / PO Box 89 Saranac Lake, NY 12983	OU01 abuts the Property to the west.
Dormitory Authority Attn: Comptroller	32.231-1-19.000	Pontiac Street	23 Santanoni Ave PO Box 89 Saranac Lake, NY 12983	OU01 and OU02 extend on to portions of the railroad property.
National Bank & Trust Co C/O Brad Hall	32.215-3-1	209 Lake Flower Ave, Saranac Lake, NY 12983	52 S Broad St Norwich, NY 13185	OU02 - Brandy Brook runs along the north/northwest end of the Property.
Village of Saranac Lake Trustees	32.215-6-1	Pine Street Saranac Lake, NY 12983	3 Main Street Saranac Lake, NY 12983	OU02 - Brandy Brook runs along and adjacent to the southeast end of the Property.
Mark and Karla Nason	32.215-6-5	1071 Pine Street Saranac Lake, NY 12983	1071 Pine Street Saranac Lake, NY 12983	OU02 - Brandy Brook runs adjacent to the southeast end of the Property. Excavation and RCM likely extends beyond property line.
Barbara Kent	32.215-4-6	42 Brandy Brook Ave Saranac Lake, NY 12983	42 Brandy Brook Ave Saranac Lake, NY 12983	OU02 - Brandy Brook runs along the north/northwest end of the Property.
George Tolhurst	32.215-4-5	38 Brandy Brook Ave Saranac Lake, NY 12983	38 Brandy Brook Ave Saranac Lake, NY 12983	OU02 - Brandy Brook runs along the south end of the Property.
Essex County Cameron Property 2016	32.215-4-4	34 Brandy Brook Ave Saranac Lake, NY 12983	PO Box 217, Elizabethtown, NY 12932 Saranac Lake, NY 12983	OU02 - Brandy Brook runs along the north/northwest end of the Property.
NYSARC Inc.	32.215-4-3	26 Brandy Brook Ave Saranac Lake, NY 12983	12 Mohawk Street Tupper Lake, NY 12986	OU02 - Brandy Brook runs along the north/northwest end of the Property.
Stephanie Reynolds	32.215-4-2	20 Brandy Brook Ave Saranac Lake, NY 12983	20 Brandy Brook Ave Saranac Lake, NY 12983	OU02 - Brandy Brook runs along the north/northwest end of the Property.
Carlene Cloud	32.215-4-1	70 Slater Ave Saranac Lake, NY 12983	207 W Channing Ave Fergus Falls, MN 56537	OU02 - Brandy Brook runs along the north/northwest end of the Property.
Saranac Lake Resort Owner LLC	32.214-5-4	234 Lake Flower Ave, Saranc Lake, NY 12983	1936 Saranac Ave Lake Placid, NY	OU2 - Brandy Brook runs along the north end of the property. OU03 - Section of Pontiac Bay that includes Aquablok® and the location of In-Situ Solidification

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Table 2.2: Groundwater Elevation Measurements from Previous Site Visits

Monitoring Well Location ID	Riser Elevation	Bottom of Well (BTOR)	Depth to Water 08/19/2013 (BTOR)	Groundwater Table Elevation (08/19/2013)	Depth to Water 09/29/2014 (BTOR)	Groundwater Table Elevation (09/29/2014)
MW-101	1542.93	13.0	9.93	1533.00	8.56	1534.37
MW-102	1543.22	14.9	4.84	1538.38	5.17	1538.05
MW-103	1542.07	19.7	9.23	1532.84	10.02	1532.05
MW-104	1544.85	19.4	8.10	1536.75	7.68	1537.17
MW-105	1545.83	18.3	9.17	1536.66	8.65	1537.18
MW-106	1543.17	16.9	5.51	1537.66	5.96	1537.21
MW-107	1541.91	14.6	3.86	1538.05	4.16	1537.75
MW-108	1546.69	22.1	13.7	1532.99	13.51	1533.18
MW-109	1545.85	18.8	9.44	1536.41	10.25	1535.60
MW-110	1543.08	19.6	10.00	1533.08	9.93	1533.15
MW-201	1543.58	18.6	NM	NM	6.28	1537.30
MW-202	1553.97	22.4	NM	NM	14.92	1539.05
MW-203	1547.83	17.3	NM	NM	11.12	1536.71
MW-204	1546.29	28.3	NM	NM	13.42	1532.87
MW-205S	1545.24	19.6	NM	NM	12.34	1532.90
MW-205D	1545.37	33.5	NM	NM	12.35	1533.02
GW-02	1543.65	9.8	4.53	1539.12	6.42	1537.23
GW-11	1541.95	10.5	3.88	1538.07	4.71	1537.24
GW-14	1542.97	10.4	8.51	1534.46	9.37	1533.60
BB-1	1548.42	NA	NM	NM	5.98	1542.44
BB-2	1535.86	NA	NM	NM	6.06	1529.80
LF-1	1529.52	NA	NM	NM	1.97	1527.55

Notes:
TOC = top of casing
gs = ground surface
bgs = below ground surface
TOR = top of riser
BTOR = below top of riser
Wells Surveyed by Prudent Engineering
Northing/Easting = North American Datum 83/96 - NYSPCS EAST (US survey ft); Elevations = North American Vertical Datum 88 (US survey ft)
Water levels collected by MACTEC Engineering and Consulting
Many of these wells have since been destroyed, see Table 2.3 for a list of wells and their current status.

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Table 2.3: Monitoring Well and Piezometer Construction Details

Location ID	Northing	Easting	Casing Elevation (ft amsl)	Riser Elevation (ft amsl)	Ground Surface Elevation (ft amsl)	TOC (ft ags)	TOC - TOR (ft)	Bottom of Well (ft BTOR)	Screening Interval (ft bgs)	OU Location	Well Inventory Status
MW-101	1999449.36	592312.95	1543.18	1542.93	1543.2	0	0.25	13.0	3 - 13	OU-1	CNL - Presumed Destroyed During OU-2 Site Activities
MW-102	1999596.97	592281.02	1543.51	1543.22	1543.5	0	0.29	14.9	4.9 - 14.9	OU-1	CNL - Presumed Destroyed During OU-2 Site Activities
MW-103	1999401.39	592254.05	1542.45	1542.07	1542.4	0	0.38	19.7	9.7 - 19.7	OU-1	CNL - Presumed Destroyed During OU-2 Site Activities
MW-104	**1999833.87**	**592054.19**	**1545.27**	**1544.85**	**1542.3**	**3.0**	**0.42**	**19.4**	**6.4 - 16.4**	**OU-1**	**Existing Well**
MW-105	1999766.01	592166.86	1545.98	1545.83	1543.0	3.0	0.15	18.3	5.3 - 15.3	OU-1	Existing Well
MW-106	1999720.04	592151.21	1543.23	1543.17	1540.4	2.8	0.06	16.9	4.1 - 14.1	OU-1	Decommissioned During OU01 Pre-Design Investigations, casing had heaved.
MW-107	1999701.42	592314.39	1542.21	1541.91	1542.2	0	0.30	14.6	4.6 - 14.6	OU-1	CNL - Presumed Destroyed During OU-2 Site Activities
OBS-BB05	1999732.60	59133.26	1541.05	1541.05	NM	NM	NM	6.7	1.7 - 6.7	OU-1 / OU-2	Observation Well used in lieu of MW-106 for SM sampling, but detroyed during OU01 Construction.
MW-106R	**1999720.17**	**592160.58**	**1544.09**	**1541.39**	**1543.9**	**2.7**	**0.20**	**14.5**	**4.3 - 14.3**	**OU-1**	**Newly installed weplacement well (May 2022) for MW-106 and OBS-BB05**
MW-108	1999615.19	592418.34	1546.75	1546.69	1543.6	3.1	0.06	22.1	9.0 - 19.0	OU-1	Decommissioned During OU01 Construction Activities
MW-108R	**1999558.44**	**592455.82**	**1547.42**	**1544.52**	**1547.2**	**2.9**	**0.20**	**19.2**	**9 - 19**	**OU-1**	**Newly installed weplacement well (May 2022) for MW-108**
MW-109	1999403.28	592332.38	1546.10	1545.85	1543.0	3.1	0.25	18.8	5.7 - 15.7	OU-1	Decommissioned During OU01 Construction Activities
MW-110	1999524.97	592176.70	1543.33	1543.08	1543.3	0	0.25	19.6	9.6 - 19.6	OU-1	Decommissioned During OU01 Construction Activities
MW-110R	**1999536.11**	**592196.40**	**1547.33**	**1543.73**	**1546.1**	**3.6**	**1.20**	**20.1**	**9.9 - 19.9**	**OU-1**	**Newly installed weplacement well (May 2022) for MW-110**
MW-201	1999945.73	591954.15	1543.81	1543.58	1540.6	3.2	0.23	18.6	5.4 - 15.4	OU-1	CNL - Presumed Destroyed During OU-2 Remediation
MW-202	1999711.88	591841.61	1554.19	1553.97	1554.2	0	0.22	22.4	12.4 - 22.4	OU-1	CNL
MW-203	1999993.61	591740.99	1548.05	1547.83	1548.1	0	0.22	17.3	7.3 - 17.3	OU-1	Existing Well
MW-204S	**1999285.76**	**592255.49**	**1546.53**	**1546.29**	**1543.5**	**3.0**	**0.24**	**28.3**	**10.3 - 25.3**	**OU-1**	**Existing Well (previsouly called MW-204)**
MW-204D	**1999286.15**	**592260.28**	**1546.95**	**1546.95**	**1547.0**	**3.0**	**0.20**	**29.7**	**19.5 - 29.5**	**OU-1**	**Newly installed well (May 2022) to pair with MW-204**
MW-205S	**1999119.02**	**592297.69**	**1545.44**	**1545.24**	**1542.5**	**2.9**	**0.20**	**19.6**	**9.6 - 19.6**	**OU-1**	**Existing Well**
MW-205D	**1999124.30**	**592295.88**	**1545.52**	**1545.37**	**1542.4**	**3.1**	**0.15**	**33.5**	**20.4 - 30.4**	**OU-1**	**Existing Well**
GW-02	1999638.97	592352.87	1543.65	1543.53	1543.7	0	0.12	10.5	1.5 - 10.5	OU-1	Decommissioned During OU01 Construction Activities
TW-701	1999516.86	592469.52	NA	1544	1544	NA	NA	20.0	10 - 20	OU-1	Installed for OU-1 PDI, decomissioned
TW-702	1999487.00	592338.61	NA	1545	1543	NA	NA	18.0	8 - 18	OU-1	Decommissioned During OU01 Construction Activities

Table 2.3: Monitoring Well and Piezometer Construction Details

Location ID	Northing	Easting	Casing Elevation (ft amsl)	Riser Elevation (ft amsl)	Ground Surface Elevation (ft amsl)	TOC (ft ags)	TOC - TOR (ft)	Bottom of Well (ft BTOR)	Screening Interval (ft bgs)	OU Location	Well Inventory Status
PZ-PV1	**1999453**	**592713**	**1546.9**	**1546.6**	**1547**	**0.0**	**0.25**	**15.1**	**4.9 - 14.9**	**OU-1**	**Newly installed well (May 2022) for groundwater elevation measurements**
PZ-PV2	**1999776**	**592560**	**1548.1**	**1547.8**	**1545**	**3.1**	**0.30**	**15.1**	**4.8 - 14.8**	**OU-1**	**Newly installed well (May 2022) for groundwater elevation measurements. Flush Mount on Payeville Road.**
PZ-301	**1999930**	**591913**	**1544.3**	**1544.3**	**1540**	**4.3**	**0.00**	**12.0**	**2.0 - 12.0**	**OU-2**	**Existing Well. PCV Well with no casing.**
PZ-302	1999848	592090	NA	1553.9	1550	3.9	NA	19.9	3.0 - 16.0	OU-2	Decommissioned During OU01 Pre-Design Investigations
PZ-303	2000117	592005	NA	1540.9	1539	1.9	NA	9.9	3.0 - 8.0	OU-2	Decommissioned During OU01 Pre-Design Investigations
PZ-304	2000133	592036	NA	1546.9	1544	2.9	NA	14.9	1.0 - 11.0	OU-2	Decommissioned During OU01 Pre-Design Investigations
PZ-311	2000325	591770	NA	NA	1542	NA	NA	12.0	2.0 - 12.0	OU-2	CNL - Presumed Destroyed During OU-2 Remediation
PZ-317	2000475	591409	NA	NA	1536	NA	NA	8.0	3.0 - 8.0	OU-2	CNL - Presumed Destroyed During OU-2 Remediation
PZ-318	2000500	591399	NA	NA	1535	NA	NA	8.0	3.0 - 8.0	OU-2	CNL - Presumed Destroyed During OU-2 Remediation
PZ-337	2000303	591733	NA	NA	1549	NA	NA	17.0	7.0 - 17.0	OU-2	Decommissioned During OU01 Pre-Design Investigations
PZ-328	2000416	590853	NA	NA	1531	NA	NA	8.0	3.0 - 8.0	OU-3	Decommissioned During OU01 Pre-Design Investigations
PZ-331	2000308	590667	NA	NA	1533	NA	NA	25.0	15.0 - 25.0	OU-3	CNL - Presumed Destroyed During OU-3 Remediation
PZ-332	2000173	590565	NA	NA	1529	NA	NA	9.0	4.0 - 9.0	OU-3	CNL - Presumed Destroyed During OU-3 Remediation
PZ-333	2000391	590880	NA	NA	1532	NA	NA	NA	NA	OU-3	Decommissioned During OU01 Pre-Design Investigations
PZ-335	2000463	590668	NA	NA	1532	NA	NA	26.0	16.0 - 26.0	OU-3	Decommissioned During OU01 Pre-Design Investigations
PZ-336	2000495	590419	NA	NA	1533	NA	NA	20.0	10.0 - 20.0	OU-3	CNL - Presumed Destroyed During OU-3 Remediation

Notes:

MW - monitoring well
TOC - top of casing
ft - feet
NA - not available

PZ - Piezometer
TOR - top of riser
ags - above ground surface
CNL - Could not locate

TW - temporary well
BTOR - below top of riser
bgs - below ground surface

OBS - Observation Well
NA - not available
amsl - above mean sea level

Monitoring Wells in **bold print** are part of the Site Management montoring program.

Table 2.4: Documentation Soil Samples at OU01

	Media:	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
	Location:	CS-1A	CS-1B	CS-1C	CS-1D	CS-1E	CS-1F	CS-1G	CS-1H	CS-1I	CS-1J	CS-1K	CS-1L	CS-1M
	Sample Date:	5/25/2021 & 6/14/2021	5/25/2021	5/25/2021	5/25/2021	5/25/2021	5/25/2021 & 8/30/2021	5/25/2021 & 8/30/2021	5/25/2021 & 8/30/2021	5/25/2021	5/25/2021	5/25/2021	5/25/2021	5/25/2021
	Lab ID:	AD23682-015	AD23682-016	AD23682-017	AD23682-018	AD23682-019	AD23682-006	AD23682-007	AD23682-008	AD23682-020	AD23682-021	AD23682-022	AD23682-023	AD23682-024
	Description:	ISS Perimeter	ISS Perimeter	ISS Perimeter	ISS Perimeter	ISS Perimeter	ISS Perimeter	ISS Perimeter	ISS Perimeter	ISS Perimeter	ISS Perimeter	ISS Perimeter	ISS Perimeter	ISS Perimeter
Parameter	Commercial													
Metals (mg/kg)														
Mercury	2.8	<0.11	<0.11	<0.1	<0.097	<0.11	<0.11	<0.1	<0.1	<0.093	<0.11	<0.11	<0.11	<0.094
Aluminum	NA	2000	3500	3400	3800	3300	6600	7500	2700	1700	2700	2500	1700	1400
Barium	400	<13	<13	14	13	<13	<14	14	<12	<11	<13	15	<13	<11
Calcium	NA	<1300	<1300	<1200	<1200	<1300	<1400	<1200	<1200	<1100	<1300	<1300	<1300	<1100
Chromium	400	<6.4	<6.7	<6	<5.8	<6.4	<6.8	<6.2	<6.1	<5.6	<6.4	<6.5	<6.4	<5.6
Cobalt	NA	<3.2	<3.3	<3	<2.9	<3.2	<3.4	<3.1	<3	<2.8	<3.2	<3.2	<3.2	<2.8
Copper	270	<6.4	<6.7	<6	<5.8	<6.4	<6.8	<6.2	<6.1	<5.6	<6.4	<6.5	<6.4	<5.6
Iron	NA	8800	7800	9000	13000	6500	13000	7100	4200	6000	4400	10000	5500	5100
Lead	1,000	<6.4	<6.7	<6	<5.8	<6.4	<6.8	<6.2	<6.1	<5.6	<6.4	<6.5	<6.4	<5.6
Magnesium	NA	1100	970	960	1100	1000	1700	1400	880	790	740	1100	860	610
Manganese	10,000	43	38	43	40	43	55	49	23	23	18	61	67	86
Nickel	310	<6.4	<6.7	<6	<5.8	<6.4	<6.8	<6.2	<6.1	<5.6	<6.4	<6.5	<6.4	<5.6
Potassium	NA	<640	<670	<600	<580	<640	<680	<620	<610	<560	<640	<650	<640	<560
Sodium	NA	<320	<330	<300	<290	<320	<340	<310	<300	<280	<320	<320	<320	<280
Zinc	10,000	24	21	19	22	21	25	31	17	17	13	33	14	24
Antimony	NA	<1	<1.1	<0.96	<0.93	<1	<1.1	<1	<0.98	<0.89	<1	<1	<1	<0.9
Arsenic	16	0.29	0.76	0.62	0.71	0.34	0.49	0.48	0.36	0.59	0.32	0.37	0.37	0.32
Beryllium	590	<0.26	<0.27	<0.24	<0.23	<0.26	<0.27	<0.25	<0.24	<0.22	<0.26	<0.26	<0.26	<0.22
Cadmium	9.3	<0.51	<0.53	<0.48	<0.47	<0.51	<0.54	<0.5	<0.49	<0.44	<0.51	<0.52	<0.51	<0.45
Selenium	1,500	<2.6	<2.7	<2.4	<2.3	<2.6	<2.7	<2.5	<2.4	<2.2	<2.6	<2.6	<2.6	<2.2
Silver	1,500	<0.26	<0.27	<0.24	<0.23	<0.26	<0.27	<0.25	<0.24	<0.22	<0.26	<0.26	<0.26	<0.22
Thallium	NA	<0.51	<0.53	<0.48	<0.47	<0.51	<0.54	<0.5	<0.49	<0.44	<0.51	<0.52	<0.51	<0.45
Vanadium	NA	2.8	4.5	3.8	8.7	6.6	13	6.6	4	2.7	3.9	3.1	2.5	2
SemiVolatiles (mg/kg)														
2-Methylnaphthalene	NA	<0.043	<0.044	<0.04	<0.039	<0.043	<0.045	<0.042	<0.041	2.5	<0.043	<0.043	<0.043	<0.037
Acenaphthene	500	<0.043	<0.044	<0.04	<0.039	<0.043	<0.045	<0.042	<0.041	1.9	<0.043	<0.043	<0.043	<0.037
Acenaphthylene	500	0.14	0.3	<0.04	<0.039	<0.043	<0.045	<0.042	<0.041	1.4	<0.043	0.069	<0.043	<0.037
Anthracene	500	<0.043	0.084	<0.04	<0.039	<0.043	<0.045	<0.042	<0.041	1.4	<0.043	<0.043	<0.043	<0.037
Benzaldehyde	NA	<0.47	<0.48	<0.44	<0.42	<0.47	<0.49	<0.45	<0.44	<2	<0.47	<0.47	<0.47	<0.41
Benzo[a]anthracene	5.6	<0.043	0.11	<0.04	<0.039	<0.043	<0.045	<0.042	<0.041	2.4	<0.043	<0.043	<0.043	<0.037
Benzo[a]pyrene	1	0.32	0.2	<0.04	<0.039	<0.043	<0.045	<0.042	<0.041	**1.8**	<0.043	0.045	<0.043	<0.037
Benzo[b]fluoranthene	5.6	0.21	0.22	<0.04	<0.039	<0.043	<0.045	<0.042	<0.041	2.2	<0.043	0.056	<0.043	<0.037
Benzo[g,h,i]perylene	500	0.22	0.38	<0.04	<0.039	<0.043	<0.045	<0.042	<0.041	1.3	<0.043	0.046	<0.043	<0.037
Benzo[k]fluoranthene	56	0.056	0.055	<0.04	<0.039	<0.043	<0.045	<0.042	<0.041	0.47	<0.043	<0.043	<0.043	<0.037
Chrysene	56	0.057	0.14	<0.04	<0.039	<0.043	<0.045	<0.042	<0.041	2.3	<0.043	0.047	<0.043	<0.037
Dibenzo[a,h]anthracene	0.56	<0.043	0.05	<0.04	<0.039	<0.043	<0.045	<0.042	<0.041	0.26	<0.043	<0.043	<0.043	<0.037
Dibenzofuran	350	<0.011	<0.011	<0.01	<0.0098	<0.011	<0.011	<0.011	<0.01	0.16	<0.011	<0.011	<0.011	<0.0095
Fluoranthene	500	<0.043	0.13	<0.04	<0.039	<0.043	<0.045	<0.042	<0.041	5.5	<0.043	0.052	<0.043	<0.037
Fluorene	500	<0.043	<0.044	<0.04	<0.039	<0.043	<0.045	<0.042	<0.041	1.4	<0.043	<0.043	<0.043	<0.037
Indeno[1,2,3-cd]pyrene	5.6	0.15	0.25	<0.04	<0.039	<0.043	<0.045	<0.042	<0.041	0.9	<0.043	<0.043	<0.043	<0.037
Naphthalene	500	<0.012	<0.013	<0.012	<0.011	<0.012	<0.013	<0.012	<0.012	0.68	<0.012	0.028	<0.012	<0.011
Phenanthrene	500	<0.043	<0.044	<0.04	<0.039	<0.043	<0.045	<0.042	<0.041	5.2	<0.043	0.069	<0.043	<0.037
Pyrene	500	<0.043	0.3	<0.04	<0.039	<0.043	<0.045	<0.042	<0.041	10	<0.043	0.11	<0.043	<0.037
Volatiles (mg/kg)														
Acetone	500	<0.012	0.043	<0.011	<0.01	<0.012	<3.9	<0.42	<0.0097	0.032	0.025	<0.012	<0.012	<0.01
Ethylbenzene	390	<0.0012	<0.0013	<0.0011	<0.001	<0.0012	2.8	<0.084	0.001	0.005	0.073	<0.0012	<0.0012	0.0026
Isopropylbenzene	NA	<0.0012	0.0014	<0.0011	<0.001	<0.0012	<0.78	<0.084	<0.00097	<0.001	0.0079	<0.0012	<0.0012	<0.001
m&p-Xylenes	500	<0.0015	0.0028	<0.0013	<0.0012	<0.0015	2.9	<0.084	<0.0012	0.021	0.16	<0.0015	<0.0014	0.02
Methyl Acetate	NA	<0.0024	<0.0025	<0.0022	<0.0021	<0.0025	8.7	7	<0.0019	<0.0021	<0.0021	<0.0025	<0.0024	<0.0021
Methylene chloride	500	0.0046	0.01	<0.0022	0.0045	0.0043	<0.78	<0.084	0.0031	0.017	0.0038	0.0064	0.022	0.0087
o-Xylene	500	<0.0012	0.0027	<0.0011	<0.001	<0.0012	1.4	<0.084	<0.00097	0.037	0.11	<0.0012	<0.0012	0.032
Styrene	NA	<0.0024	0.0058	<0.0022	<0.0021	<0.0025	1.3	<0.084	<0.0019	<0.0021	0.11	<0.0025	<0.0024	<0.0021
Toluene	500	<0.0012	<0.0013	<0.0011	<0.001	<0.0012	1.6	<0.084	0.0011	0.0015	0.021	<0.0012	<0.0012	0.0027
Xylenes (Total)	500	<0.0012	0.0055	<0.0011	<0.001	<0.0012	4.3	<0.084	<0.00097	0.058	0.27	<0.0012	<0.0012	0.052
Wet Chemistry														
% Solids	NA	78	75	83	86	78	69	90	92	90	78	77	78	89

Notes:
Results are reported in milligrams per kilogram (mg/kg)
Nomenclature for actual sample ID's in lab reports begin with "Confirm" or "Confirm Sample", but were shortened to "CS" for simplicity.
Only parameters detected in at least one sample are shown here.
Highlighted values exceed the the Residential Use Criteria.
NA = No limit specified.
NT = Not tested
< = Not detected above the laboratory reporting limit
J = Result considered estimated.

Table 2.4: Documentation Soil Samples at OU01

	Media:	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
	Location:	CS-1N	CS-1O	CS-1P	CS-1R	CS-1S	CS-1T	CS-DUPLICATE	CS-2A	CS-2B	CS-2C	CS-2D	CS-2E	CS-2F
	Sample Date:	9/2/2021 & 11/30/2021	9/2/2021 & 11/30/2022	9/2/2021 & 11/30/2023	11/30/2021	11/30/2021	11/30/2021	11/30/2021	9/8/2021	9/8/2021	9/8/2021	9/8/2021	9/8/2021	9/8/2021
	Lab ID:	AD27646-001	AD27646-002	AD27646-003	AD27646-005	AD27646-006	AD27646-007	AD27646-008	AD25852-001	AD25852-002	AD25852-003	AD25852-004	AD25852-005	AD25852-006
	Description:	ISS Perimeter	ISS Perimeter	ISS Perimeter	ISS Perimeter	ISS Perimeter	ISS Perimeter	Duplicate of CS-1T	ISS Perimeter	ISS Perimeter	ISS Perimeter	ISS Perimeter	ISS Perimeter	ISS Perimeter
Parameter	Commercial													
Metals (mg/kg)														
Mercury	2.8	<0.097	<0.094	<0.094	<0.11	<0.086	<0.1	<0.098	<0.11	<0.11	<0.094	<0.091	<0.088	<0.089
Aluminum	NA	3400	4100	4400	2400 J	2000 J	4500 J	5200	2500	1700	1400	2500	1600	2500
Barium	400	17	17	18	<13	10	12	13	15	<13	<11	<11	<11	15
Calcium	NA	<1200	<1100	1300	<1300	<1000	2600	4600	<1300	<1300	<1100	<1100	<1100	<1100
Chromium	400	<5.8	<5.6	<5.6	<6.7	<5.2	<6	9.4	<6.5	<6.4	<5.6	<5.4	<5.3	<5.3
Cobalt	NA	<2.9	<2.8	<2.8	<3.3	<2.6	<3	3	<3.2	<3.2	<2.8	3.2	<2.6	2.8
Copper	270	<5.8	<5.6	<5.6	<6.7	<5.2	<6	<5.9	<6.5	<6.4	<5.6	<5.4	<5.3	<5.3
Iron	NA	13000	8600	7800	4400	6300	7800 J	12000	10000 J	5500 J	5100 J	6800 J	4400 J	6800 J
Lead	1,000	9.4	<5.6	8.2	<6.7	<5.2	13	11	<6.5	<6.4	<5.6	<5.4	<5.3	<5.3
Magnesium	NA	980	1300	950	710	820	960 J	2800	1100	860	610	1000	750	1000
Manganese	10,000	36	51	100	20 J	49 J	40 J	70	61	67	86	93	50	86
Nickel	310	<5.8	<5.6	<5.6	<6.7	<5.2	<6	<5.9	<6.5	<6.4	<5.6	<5.4	<5.3	<5.3
Potassium	NA	<580	<560	<560	<13	13	22	31	<650	<640	<560	<540	<530	<530
Sodium	NA	<290	<280	<280	<1.1	<0.82	<0.96	<0.94	<320	<320	<280	<270	<260	<270
Zinc	10,000	19	40	63	0.35	0.31	0.8	1.3	33	14	24	18	13	17
Antimony	NA	<0.93 J	<0.9 J	<0.9 J	<0.27 J	<0.21 J	0.25 J	0.32	<1 J	<1 J	<0.9 J	<0.87 J	<0.84 J	<0.85 J
Arsenic	16	0.95	0.68	1.4	<0.53	<0.41	<0.48 J	<0.47	0.37	0.37	0.32	0.53	0.4	0.5
Beryllium	590	<0.23	<0.22	<0.22	1.4	1.3	3.3	3.1	<0.26	<0.26	<0.22	<0.22	<0.21	<0.21
Cadmium	9.3	<0.47	<0.45	<0.45	**160**	**190**	**270**	**290**	<0.52	<0.51	<0.45	<0.43	<0.42	<0.43
Selenium	1,500	<2.3	<2.2	<2.2	<2.7	<2.1	<2.4	<2.4	<2.6	<2.6	<2.2	<2.2	<2.1	<2.1
Silver	1,500	<0.23	<0.22	<0.22	<0.27	<0.21	<0.24	<0.24	<0.26	<0.26	<0.22	<0.22	<0.21	<0.21
Thallium	NA	<0.47	<0.45	<0.45	<0.53	<0.41	<0.48	<0.47	<0.52	<0.51	<0.45	<0.43	<0.42	<0.43
Vanadium	NA	7.8	4.2	5.8	3	3	6.1	7.7	3.1	2.5	2	3.5	2.5	3.6
SemiVolatiles (mg/kg)														
2-Methylnaphthalene	NA	<0.039	<0.11	0.084	<0.044	0.042	2.6 J	9.7	<0.043	<0.043	<0.037	<0.036	<0.035	<0.035
Acenaphthene	500	<0.039	0.19	0.11	<0.044	<0.034	1.2 J	3.6	<0.043	<0.043	<0.037	<0.036	<0.035	<0.035
Acenaphthylene	500	0.13	0.57	0.63	<0.044	0.084	3.3 J	8	0.069	<0.043	<0.037	<0.036	<0.035	<0.035
Anthracene	500	0.043	0.41	0.37	<0.044	0.051	2.3 J	4.8	<0.043	<0.043	<0.037	<0.036	<0.035	<0.035
Benzaldehyde	NA	<0.42	<1.2	<0.41	<0.48	<0.37	<1.3	<4.3	<0.47	<0.47	<0.41	<0.39	<0.38	<0.39
Benzo[a]anthracene	5.6	0.098	1.2	0.96	<0.044	0.047	1.5 J	3.2	<0.043	<0.043	<0.037	<0.036	<0.035	<0.035
Benzo[a]pyrene	1	0.094	**1.1**	**1.1**	<0.044	0.048	1.4 J	**2.8**	0.045	<0.043	<0.037	<0.036	<0.035	<0.035
Benzo[b]fluoranthene	5.6	0.14	1.6	1.3	<0.044	0.052	1.4 J	3	0.056	<0.043	<0.037	<0.036	<0.035	<0.035
Benzo[g,h,i]perylene	500	0.095	1.2	0.96	<0.044	0.045	0.89 J	1.7	0.046	<0.043	<0.037	<0.036	<0.035	<0.035
Benzo[k]fluoranthene	56	0.049	0.48	0.4	<0.044	<0.034	0.34	0.73	<0.043	<0.043	<0.037	<0.036	<0.035	<0.035
Chrysene	56	0.094	1.3	0.95	<0.044	0.042	1.4 J	3	0.047	<0.043	<0.037	<0.036	<0.035	<0.035
Dibenzo[a,h]anthracene	0.56	<0.039	0.23	0.18	<0.044	<0.034	0.13	<0.39	<0.043	<0.043	<0.037	<0.036	<0.035	<0.035
Dibenzofuran	350	<0.0098	<0.028	0.021	<0.011	<0.0087	0.19	0.49	<0.011	<0.011	<0.0095	<0.0092	<0.0089	<0.009
Fluoranthene	500	0.12	2.9	1.8	<0.044	0.1	3.3 J	6.7	0.052	<0.043	<0.037	<0.036	<0.035	0.043
Fluorene	500	<0.039	0.19	0.14	<0.044	0.057	1.9 J	4.7	<0.043	<0.043	<0.037	<0.036	<0.035	<0.035
Indeno[1,2,3-cd]pyrene	5.6	0.08	0.88	0.69	<0.044	<0.034	0.59	1.2	<0.043	<0.043	<0.037	<0.036	<0.035	<0.035
Naphthalene	500	<0.011	0.048	0.13	<0.013	0.027	2.6 J	12	0.028	<0.012	<0.011	<0.01	<0.01	<0.01
Phenanthrene	500	0.044	0.41	0.62	<0.044	0.22	9.4	21	0.069	<0.043	<0.037	<0.036	<0.035	<0.035
Pyrene	500	0.16	5.1	2.9	<0.044	0.18	6.4	13	0.11	<0.043	<0.037	<0.036	<0.035	0.061
Volatiles (mg/kg)														
Acetone	500	<0.0048	<0.005	<3.3	<0.0082 J	<0.0048 J	0.013 J	0.051	<0.21	<0.0043	0.008	<0.0041	<0.0048	<0.0048
Ethylbenzene	390	<0.00048	<0.0005	<0.67	<0.00082	0.0067	<0.00055 J	0.016	0.069	<0.00043	0.027	<0.00041	<0.00048	<0.00048
Isopropylbenzene	NA	<0.00048	<0.0005	<0.67	<0.00082	0.00051	<0.00055	0.0015	<0.042	<0.00043	0.0015	<0.00041	<0.00048	<0.00048
m&p-Xylenes	500	<0.00058	<0.00061	0.94	<0.00098	0.0095	<0.00066 J	0.023	0.1	<0.00052	0.026	<0.00049	<0.00057	<0.00057
Methyl Acetate	NA	<0.00096	<0.001	<0.67	<0.0016	<0.00095	<0.0011	<0.00092	0.87	<0.00087	<0.00072	<0.00081	<0.00096	<0.00095
Methylene chloride	500	<0.00096	<0.001	<0.67	<0.0016	<0.00095	<0.0011	<0.00092	<0.042	0.0012	0.00086	0.0009 J	<0.00096	<0.00095
o-Xylene	500	<0.00048	<0.0005	<0.67	<0.00082	0.0053	<0.00055 J	0.012	0.078	<0.00043	0.013	<0.00041	<0.00048	<0.00048
Styrene	NA	<0.00096	<0.001	<0.67	<0.0016	0.0081	<0.0011	0.0098	<0.042	<0.00087	0.012	<0.00081	<0.00096	<0.00095
Toluene	500	<0.00048	<0.0005	<0.67	<0.00082	0.0028	<0.00055	0.0047	0.046	0.0007	0.017	<0.00041	<0.00048	<0.00048
Xylenes (Total)	500	<0.00048	<0.0005	0.94	<0.00082	0.015	<0.00055	0.035	0.18	<0.00043	0.039	<0.00041	<0.00048	<0.00048
Wet Chemistry														
% Solids	NA	96	93	83	75	97	83	85	96	95	98	92	95	94

Notes:
Results are reported in milligrams per kilogram (mg/kg)
Nomenclature for actual sample ID's in lab reports begin with "Confirm" or "Confirm Sample", but were shortened to "CS" for simplicity.
Only parameters detected in at least one sample are shown here.
Highlighted values exceed the the Residential Use Criteria.
NA = No limit specified.
NT = Not tested
< = Not detected above the laboratory reporting limit
J = Result considered estimated.

Table 2.5: Excavation Confirmation Soil Samples at OU01

	Media:	Soil	Soil	Soil	Soil	Soil	Soil
	Location:	CONFIRM BB 2	CONFIRM BB 3	CONFIRM BB 4	CONFIRM BB 5	CONFIRM RXR1	CONFIRM RXR2
	Bottom or Sidewall:	Bottom	Bottom	Bottom	Bottom	Bottom	Bottom
	Sample Date:	11/18/2021	11/18/2021	11/18/2021	11/18/2021	10/22/2021	10/22/2021
	Lab ID:	AD27487-002	AD27487-003	AD27487-004	AD27487-005	AD26829-001	AD26829-002
	Description:	Bottom of Excavation Adjacent to Brandy Brook	Bottom of Excavation Adjacent to Brandy Brook	Bottom of Excavation Adjacent to Brandy Brook	Bottom of Excavation Adjacent to Brandy Brook	Bottom of Excavation Area Adjacent to Rail Trail	Bottom of Excavation Area Adjacent to Rail Trail
Parameter	Residential Use SCO (mg/kg)						
Metals (mg/kg)							
Aluminum	NA	2,100	1300	1700	1700	1700	2000
Iron	NA	5,700	2500	5300	5400	5900	6900
Magnesium	NA	930	600	760	760	640	800
Manganese	1,600	31	16	19	20	56	68
Zinc	109	13	<12	<12	12	<11	<11
Arsenic	13	0.4	0.29	0.43	0.42	0.5	0.64
Silver	2	<0.24	<0.23	<0.24	<0.24	0.27	<0.22
Vanadium	NA	4.2	2.6	4.3	4.6	3.3	3.7
SemiVolatiles (mg/kg)							
2-Methylnaphthalene	NA	<0.040	<0.039	<0.04	<0.04	<0.035	<0.036
Acenaphthene	20	<0.040	<0.039	<0.04	<0.04	<0.035	<0.036
Acenaphthylene	100	<0.040	<0.039	<0.04	<0.04	<0.035	<0.036
Anthracene	100	<0.040	<0.039	<0.04	<0.04	<0.035	<0.036
Benzo[a]anthracene	1	<0.040	<0.039	<0.04	<0.04	<0.035	<0.036
Benzo[a]pyrene	1	<0.040	<0.039	<0.04	<0.04	<0.035	<0.036
Benzo[b]fluoranthene	1	<0.040	<0.039	<0.04	<0.04	<0.035	<0.036
Benzo[g,h,i]perylene	100	<0.040	<0.039	<0.04	<0.04	<0.035	<0.036
Benzo[k]fluoranthene	0.8	<0.040	<0.039	<0.04	<0.04	<0.035	<0.036
Chrysene	1	<0.040	<0.039	<0.04	<0.04	<0.035	<0.036
Dibenzo[a,h]anthracene	0.33	<0.040	<0.039	<0.04	<0.04	<0.035	<0.036
Fluoranthene	100	<0.040	<0.039	<0.04	<0.04	<0.035	<0.036
Fluorene	30	<0.040	<0.039	<0.04	<0.04	<0.035	<0.036
Indeno[1,2,3-cd]pyrene	0.5	<0.040	<0.039	<0.04	<0.04	<0.035	<0.036
Naphthalene	12	<0.012	<0.011	<0.011	<0.012	<0.01	<0.01
Phenanthrene	100	<0.040	<0.039	<0.04	<0.04	<0.035	<0.036
Phenol	0.33	<0.040	<0.039	<0.04	<0.04	<0.035	<0.036
Pyrene	100	<0.040	<0.039	<0.04	<0.04	<0.035	<0.036
Volatiles (mg/kg)							
Benzene	0.06	<0.00055	<0.00035	<0.00049	<0.00034	<0.00043	<0.00045
Chlorobenzene	1.1	<0.0011	<0.00071	0.0014	<0.00067	<0.00086	<0.00091
Ethylbenzene	1	<0.00055	<0.00035	<0.00049	<0.00034	<0.00043	<0.00045
m&p-Xylenes	0.26	<0.00066	<0.00042	<0.00059	<0.0004	<0.00052	<0.00054
Methylene chloride	0.05	0.0015	<0.00071	<0.00098	<0.00067	0.0012	0.0015
Toluene	0.7	<0.00055	<0.00035	<0.00049	<0.00034	<0.00043	<0.00045
Xylenes (Total)	0.26	<0.00055	<0.00035	<0.00049	<0.00034	<0.00043	<0.00045
Wet Chemistry							
% Solids	NA	83	86	84	83	94	93

Results are reported in milligrams per kilogram (mg/kg)
Only site contaminants of concern and parameters detected in at least one sample are show here.
Highlighted values exceed the the Residential Use Criteria.
NA = No limit specified.
NT = Not tested
< = Not detected above the laboratory reporting limit

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Table 2.6: Remaining Sediment Sample Exceedances at OU02

Media:		Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment
Location:		OU2-SED-008	OU2-SED-009	OU2-SED-029	OU2-SED-030	OU2-SED-037	OU2-SED-038	OU2-SED-039	OU2-SED-040	OU2-SED-046
Bottom or Sidewall:		Bottom	Bottom	Bottom	Bottom	Bottom	Bottom	Bottom	Bottom	Bottom
Sample Date:		16-Aug-18	16-Aug-18	01-Oct-18	01-Oct-18	18-Oct-18	23-Oct-18	15-Oct-18	29-Oct-18	07-Nov-18
Lab ID:		18H0885-03	18H0885-04	18J0087-01	18J0087-02	18J1036-01	18J1182-01	18J0816-01	18J1483-01	18K0426-01
Description:		Located under RCM	Located under RCM	Located under RCM	Excavate an additional foot, no resample.	Based on Visual, backfilled prior to receiving sample result.	Located under RCM	Located under RCM	Located under RCM	Located under RCM
Parameter	**Class A Sediment Criteria (mg/kg)**									
Volatile Organic Compounds (mg/kg)										
Benzene	0.53	<5.0	<0.049	<0.00049	<0.00046	<0.00047	<0.00047	<0.00047	<0.00045	<0.00099
Ethyl Benzene	0.43	**6.3**	0.065	<0.00056	<0.00053	<0.00054	0.00059 J	<0.00053	<0.00052	<0.0011
Isopropylbenzene	0.21	<5.0	<0.049	<0.00049	<0.00046	<0.00047	0.0012 J	<0.00047	<0.00045	<0.00099
Toluene	0.93	**8**	<0.049	<0.00056	<0.00053	<0.00054	<0.00053	<0.00053	<0.00052	<0.0011
1,2,4-Trimethylbenzene	3.4	**11**	0.11	<0.00056	<0.00053	<0.00054	0.0072	0.00073 J	<0.00052	<0.0011
Xylenes, m&p	0.59	**12**	<0.097	<0.0012	<0.0011	<0.0011	<0.0011	<0.0011	<0.0011	<0.0024
Xylenes, o	0.82	**5.4**	<0.049	<0.00049	<0.00046	<0.00047	<0.00047	<0.00047	<0.00045	<0.00099
Semivolatile Organic Compounds (mg/kg)										
Acenaphthene		5.4	1	<0.062	<0.059	<0.060	2.1	0.48	0.21	
Acenaphthylene		49	0.49	<0.070	<0.066	<0.067	0.23	0.08 J	0.085 J	<0.092
Anthracene		23	0.85	<0.060	<0.056	<0.058	1.8	0.61	0.25	3
Benzo(a)anthracene		8	0.51	<0.055	<0.052	<0.053	0.87	0.4	0.59	<0.073
Benzo(a)pyrene		8.1	0.57	<0.065	<0.061	<0.062	0.73	0.42	0.78	<0.086
Benzo(b)fluoranthene		6.1	0.48	<0.059	<0.055	<0.057	0.47	0.29	0.67	<0.078
Benzo(g,h,i)perylene		3.5	0.32 J	<0.092	<0.086	<0.088	0.3	0.21 J	0.48	<0.12
Benzo(k)fluoranthene		2.1	0.15 J	<0.065	<0.061	<0.062	0.15 J	0.091 J	0.24	<0.086
Chrysene		6.8	0.46	<0.065	<0.061	<0.062	0.74	0.36	0.55	<0.086
Dibenz(a,h)anthracene		0.61	<0.25	<0.13	<0.12	<0.12	<0.12	<0.13	<0.12	<0.17
Fluoranthene		25	1.2	<0.069	<0.064	<0.066	1.7	0.82	0.98	1.9
Fluorene		27	0.79	<0.067	<0.063	<0.065	1.4	0.34	0.12 J	4.7
Indeno(1,2,3-cd)pyrene		2.9	<0.30	<0.15	<0.14	<0.14	0.25	0.18 J	0.44	<0.20
2-Methylnaphthalene		120	2.1	<0.072	<0.068	<0.070	3.5	0.52	<0.070	<0.095
Naphthalene		140	1.1	<0.11	<0.10	<0.10	1.2	0.22	<0.10	0.19 J
Phenanthrene		88	2.6	<0.11	<0.10	<0.10	6.9	1.8	0.72	16
Pyrene		45	2	<0.069	<0.064	<0.066	2.9	1.3	1.4	1.8
Total PAHs	4	**560.51**	**14.15**	0	0	0	**25.09**	**7.56**	**7.31**	**27.4**
Pesticides (mg/kg)										
4,4'-DDE	0.044	<0.0037	<0.00036	<0.00037	<0.00035	<0.00034	<0.00034	<0.00036	<0.00033	<0.0045
4,4'-DDT	0.044	<0.0050	<0.00048	<0.00049	<0.00046	<0.00045	<0.00046	<0.00048	<0.00044	<0.0060
Endosulfan I	0.001	<0.0050	<0.00048	**0.0017 J**	**0.0012 J**	**0.0051 J**	<0.00046	<0.00048	<0.00044	<0.0060
Endosulfan II	0.001	<0.0037	<0.00036	<0.00037	<0.00035	<0.00034	<0.00034	<0.00036	<0.00033	<0.0045

Results are reported in milligrams per kilogram (mg/kg)
Highlighted values exceed the the Sediment Cleanup Objective
NT = Not tested
< = Not detected above the laboratory reporting limit

Prepared by: JDW 5/17/19
Checked by: KMS 9/17/19

Media:		Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment
Location:		OU2-SED-063	OU2-SED-109	OU2-SED-111	OU2-SED-126	OU2-SED-127	OU2-SED-128	OU2-SED-129	OU2-SED-155
Bottom or Sidewall:		Sidewall	Sidewall	Sidewall	Sidewall	Sidewall	Sidewall	Sidewall	Sidewall
Sample Date:		16-Aug-18	18-Oct-18	23-Oct-18	07-Nov-18	07-Nov-18	07-Nov-18	07-Nov-18	30-Oct-18
Lab ID:		18H0885-02	18J1036-02	18J1182-02	18K0426-03	18K0426-04	18K0426-05	18K0426-06	18J1483-06
Description:		Located behind RCM	Based on Visual, backfilled prior to receiving sample result.	Located behind RCM	Located behind RCM	Located behind RCM	Located behind RCM	Located behind RCM	Located behind RCM
Parameter	**Class A Sediment Criteria (mg/kg)**								
Volatile Organic Compounds (mg/kg)									
Benzene	0.53	<0.96	<0.00046	<0.00047	<0.00086	<0.00052	<0.00056	<0.00066	NT
Ethyl Benzene	0.43	**1.6**	<0.00053	0.00057 J	<0.00098	<0.00059	<0.00064	<0.00075	NT
Isopropylbenzene	0.21	<0.96	<0.00046	0.0009 J	<0.00086	<0.00052	<0.00056	<0.00066	NT
Toluene	0.93	**2**	<0.00053	<0.00054	<0.00098	<0.00059	<0.00064	<0.00075	NT
1,2,4-Trimethylbenzene	3.4	2.6	<0.00053	0.0047	0.0019 J	<0.00059	<0.00064	<0.00075	NT
Xylenes, m&p	0.59	**2.8**	<0.0011	<0.0011	<0.0021	<0.0013	<0.0014	<0.0016	<0.0014
Xylenes, o	0.82	**1.2**	<0.00046	<0.00047	<0.00086	<0.00052	<0.00056	<0.00066	<0.00057
Semivolatile Organic Compounds (mg/kg)									
Acenaphthene		2	<0.060	0.9	7.7	0.14 J	1.9	0.19 J	4.6
Acenaphthylene		15	<0.067	0.12 J	<0.10	<0.062	<0.067	<0.084	0.12 J
Anthracene		7.5	<0.057	0.75	<0.088	0.23	4.1	0.9	1.7
Benzo(a)anthracene		3.3	<0.053	0.38	<0.081	0.18 J	0.22	<0.067	0.84
Benzo(a)pyrene		3.3	<0.062	0.33	<0.095	0.077 J	<0.062	<0.078	1
Benzo(b)fluoranthene		2.4	<0.056	0.2	<0.086	0.062 J	<0.057	<0.071	0.7
Benzo(g,h,i)perylene		1.1	<0.088	0.14 J	<0.14	<0.082	<0.088	<0.11	0.55
Benzo(k)fluoranthene		0.77	<0.062	0.066 J	<0.095	<0.058	<0.062	<0.078	0.26
Chrysene		2.9	<0.062	0.32	<0.095	0.14 J	0.16 J	<0.078	0.73
Dibenz(a,h)anthracene		<0.26	<0.12	<0.12	<0.19	<0.11	<0.12	<0.15	<0.14
Fluoranthene		8.7	<0.065	0.69	<0.10	0.72	3.3	<0.083	1.8
Fluorene		7.6	<0.064	0.61	0.43	0.15 J	2	0.25 J	2
Indeno(1,2,3-cd)pyrene		1	<0.14	<0.14	<0.22	<0.13	<0.14	<0.18	0.47
2-Methylnaphthalene		35	<0.069	1.4	6.7	<0.065	<0.069	<0.087	1.7
Naphthalene		36	<0.10	0.41	2.7	<0.095	<0.10	<0.13	0.83
Phenanthrene		28	<0.10	2.6	<0.16	1.4	17	4.5	6.4
Pyrene		14	<0.065	1.2	<0.10	1.1	5	0.22 J	3
Total PAHs	4	**168.57**	0	**9.79**	**17.53**	3.45	**33.52**	**5.4**	**26.58**
Pesticides (mg/kg)									
4,4'-DDE	0.044	<0.0037	<0.00034	<0.00032	<0.00054	<0.00031	<0.00035	<0.0045	<0.00040
4,4'-DDT	0.044	<0.0049	<0.00046	<0.00043	<0.00071	<0.00041	<0.00047	<0.0060	<0.00053
Endosulfan I	0.001	<0.0049	**0.0021 J**	<0.00043	<0.00071	<0.00041	<0.00047	<0.0060	<0.00053
Endosulfan II	0.001	<0.0037	<0.00034	<0.00032	<0.00054	<0.00031	<0.00035	<0.0045	<0.00040

Results are reported in milligrams per kilogram (mg/kg)
Highlighted values exceed the the Sediment Cleanup Objective
NT = Not tested
< = Not detected above the laboratory reporting limit

Table 2.7: Remaining Soil Sample Exceedances at OU02

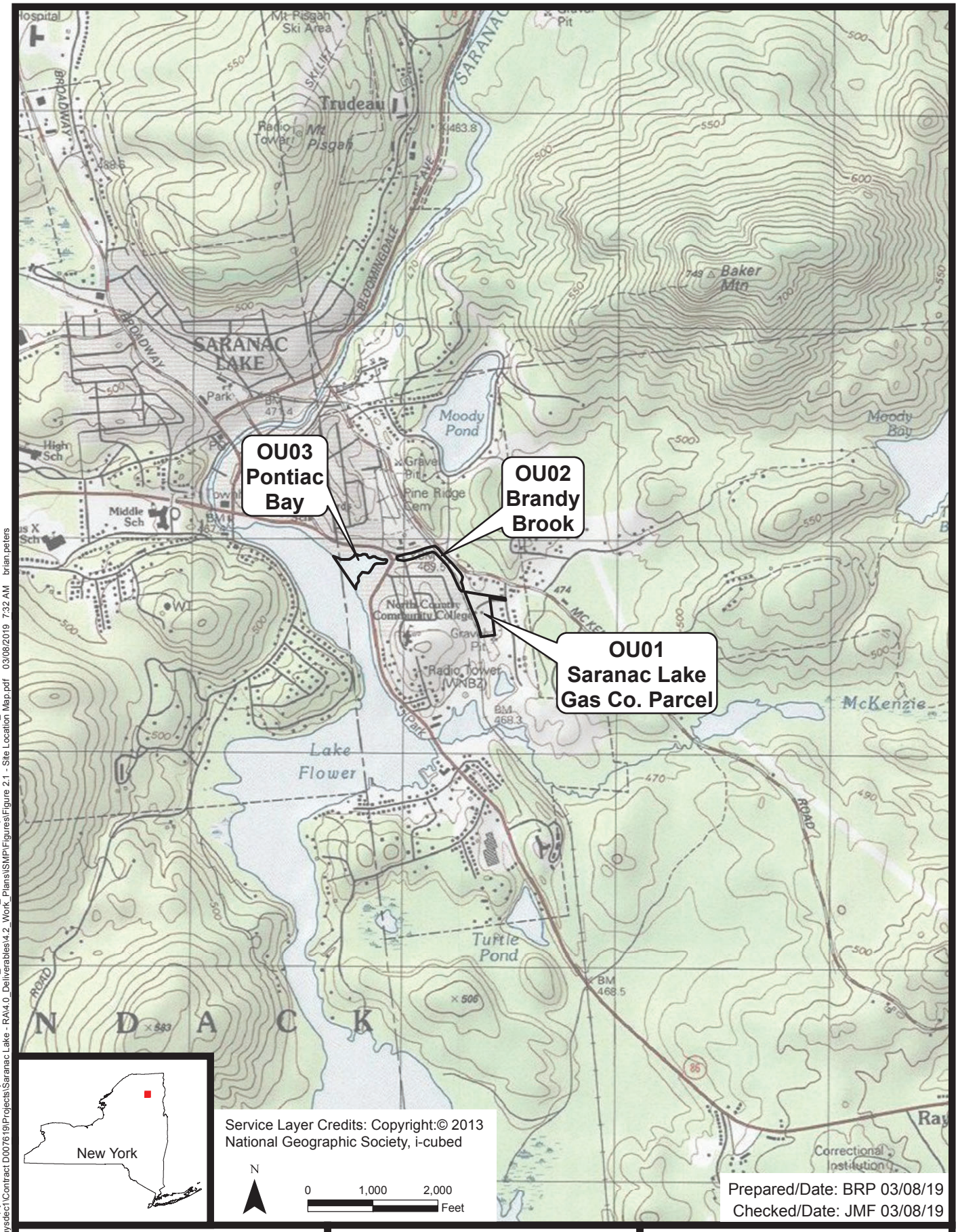
	Media:	Soil
	Location:	OU2-Soil-162
	Bottom or Sidewall:	Sidewall
	Sample Date:	07-Nov-18
	Lab ID:	18K0427-02
	Description:	Located behind RCM
Parameter	**Residential Use SCO[a] (mg/kg)**	
Volatile Organic Compounds (mg/kg)		
m+p Xylene	-	<0.0015
o-Xylene	-	<0.00063
Xylene (mixed)	100	<0.0015
Semivolatile Organic Compounds (mg/kg)		
Benzo(a)anthracene	1	**8.6**
Benzo (a) Pyrene	1	**8.2**
Benzo(b)fluoranthene	1	**5.2**
Benzo(k)fluoranthene	1	**2**
Chrysene	1.0	**6.8**
Dibenzo(a,h)anthracene	1	**0.7**
Indeno(1,2,3-cd)pyrene	0.5	**3.5**
Metals (mg/kg)		
Chromium (Total)	22	2.2
Pesticides (mg/kg)		
Alpha-BHC	0.097	<0.0053

Results are reported in milligrams per kilogram (mg/kg)
Highlighted values exceed the the Residential Use Soil Cleanup Objective (SCO)
"-" no SCO specified

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Figures



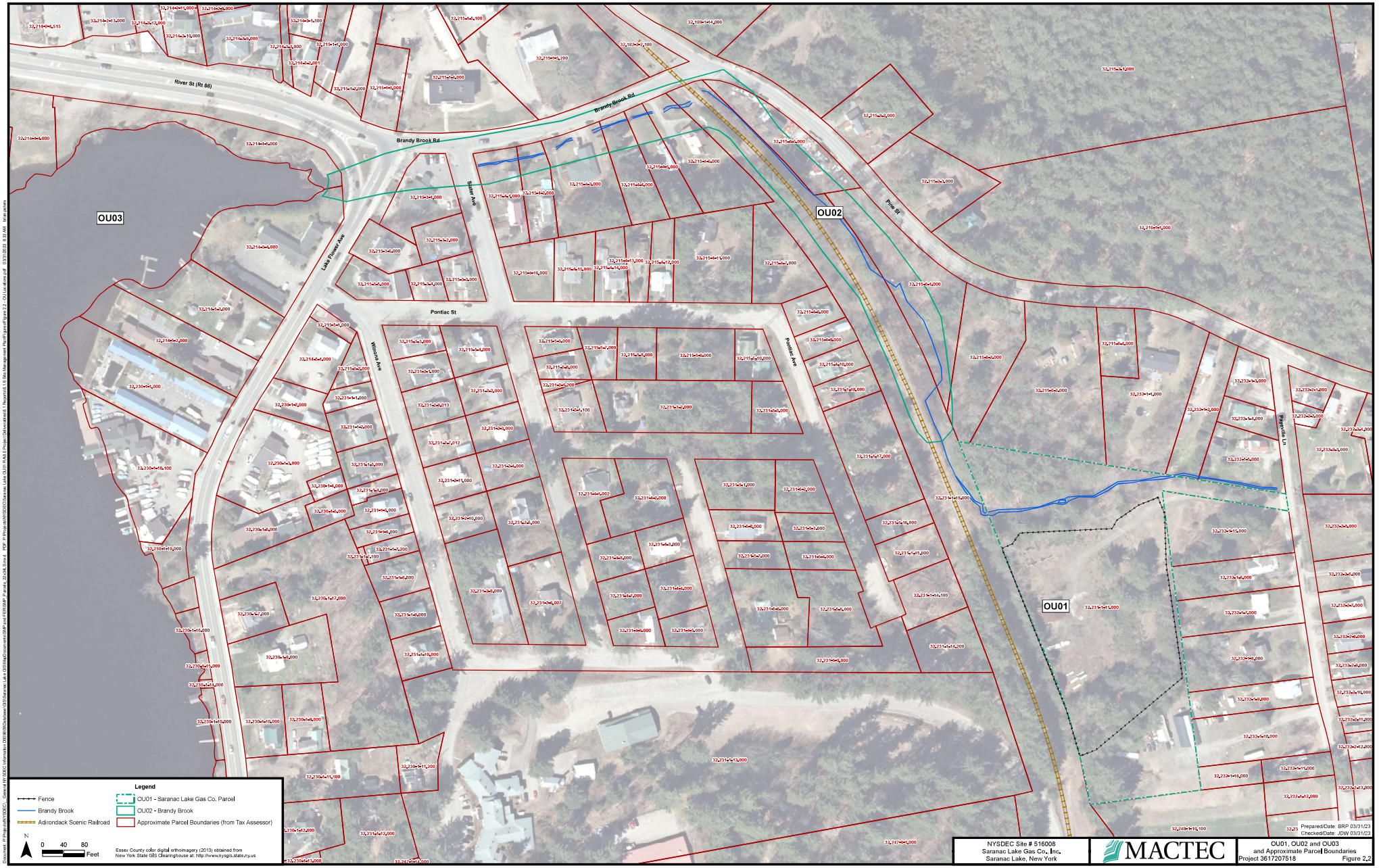
NYSDEC Site # 516008
Saranac Lake Gas Co., Inc.
Saranac Lake, New York

MACTEC

Site Location Map

Project 3611181219 Figure 2.1

Document: P:\Projects\nysdec1\Contract D007619\Projects\Saranac Lake - RD\4.0_Deliverables\4.5_Databases\GIS\MapDocuments\SiteLocation_OU123.mxd
PDF: P:\Projects\nysdec1\Contract D007619\Projects\Saranac Lake - RA\4.0_Deliverables\4.2_Work_Plans\ISMP\Figures\Figure 2.1 - Site Location Map.pdf 03/08/2019 7:32 AM brian.peters


OU01
OU02
OU03
River St (Rt 86)
Brandy Brook Rd
Brandy Brook Rd
Lake Flower Ave
Silver Ave
Pine St
Pontiac St
Winona Ave
Pontiac Ave
Pontiac Ln
Legend
Fence
Brandy Brook
Adirondack Scenic Railroad
OU01 - Saranac Lake Gas Co. Parcel
OU02 - Brandy Brook
Approximate Parcel Boundaries (from Tax Assessor)
N
0 40 80
Feet
Essex County color digital orthoimagery (2013) obtained from New York State GIS Clearinghouse at: http://www.nysgis.state.ny.us
NYSDEC Site # 516008
Saranac Lake Gas Co., Inc.
Saranac Lake, New York
MACTEC
OU01, OU02 and OU03
and Approximate Parcel Boundaries
Project 3617207518
Figure 2.2
Prepared/Date: BRP 03/31/23
Checked/Date: JDW 03/31/23

Pine St

Pontiac Ave

Payeville Ln

1537

1538

MW-203
1536.71

MW-201
1537.30

MW-104
1537.17

MW-105
1537.18

MW-106
1537.21

MW-107
1537.75

MW-202
1539.05

GW-11
1537.24

GW-2
1537.23

MW-108
1533.18

MW-102
1538.05

MW-110
1533.15

MW-101
1534.37

GW-14
1533.60

MW-103
1532.05

MW-109
1535.60

MW-204
1532.87

MW-205S
1532.90

MW-205D
1533.02

Legend

- Monitoring Well
- 1536.71 — September 2014 Groundwater Elevation Measurement
- 1537 — Groundwater Elevation shown in feet above mean sea level
- Interpreted Overburden Groundwater Contour
- Interpreted Groundwater Flow Direction
- Fence
- Brandy Brook
- Existing Structure
- Former Structure
- Adirondack Scenic Railroad
- Saranac Lake Gas Co. Parcel

N

0 60 120 Feet

Essex County color digital orthoimagery (2017) obtained from New York State GIS Clearinghouse at: http://www.nysgis.state.ny.us

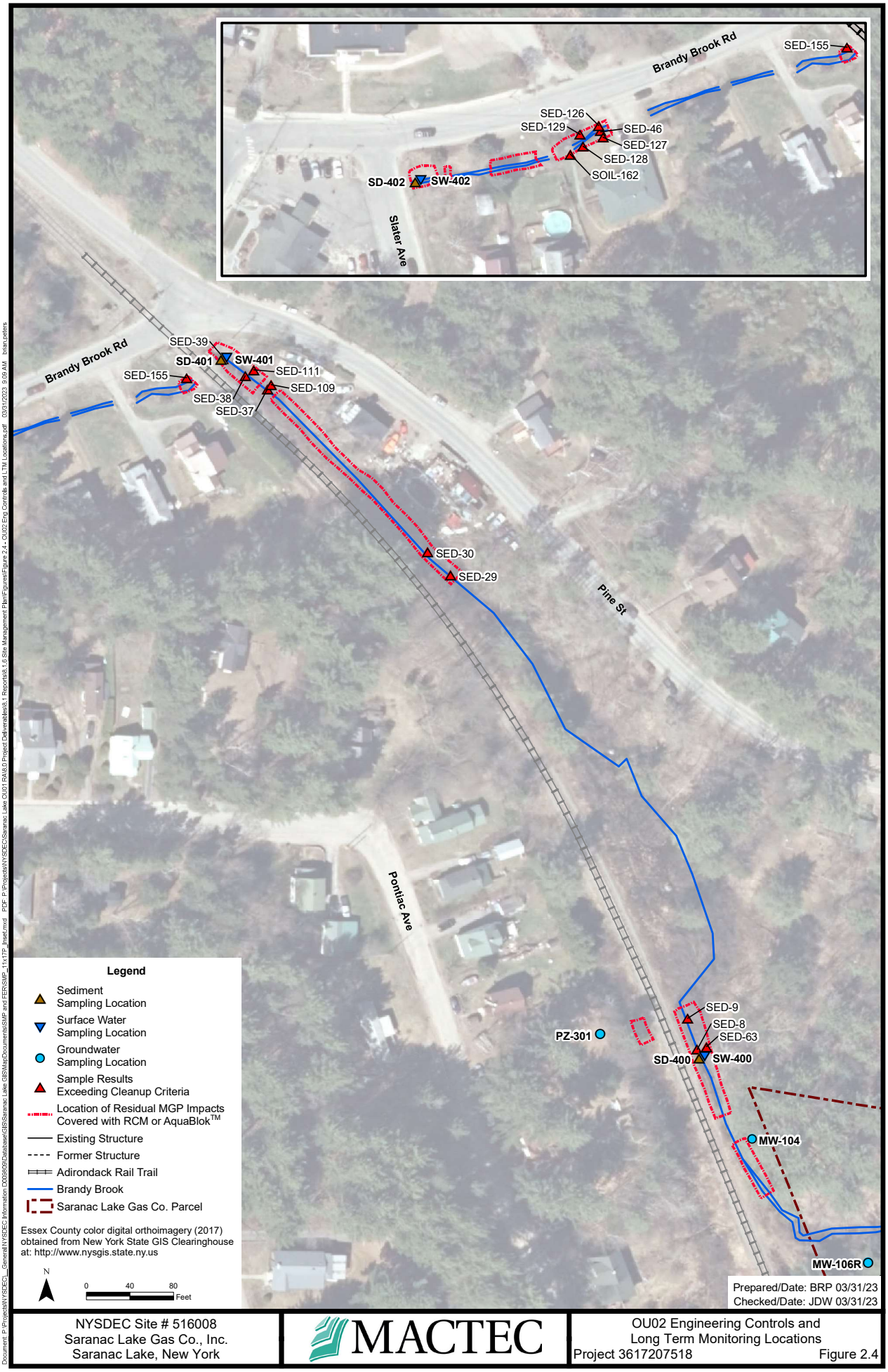
Prepared/Date: BRP 03/08/19
Checked/Date: JMF 03/08/19

NYSDEC Site # 516008
Saranac Lake Gas Co., Inc.
Saranac Lake, New York

MACTEC

Interpreted Overburden Groundwater Flow
Project 3611181219 Figure 2.3

Document: P:\Projects\nysdec1\Contract D007619\Projects\Saranac Lake - RD\4.0_Deliverables\4.5_Databases\GIS\MapDocuments\Interim SMP\Groundwater_11x17P.mxd PDF: P:\Projects\nysdec1\Contract D007619\Projects\Saranac Lake - RA\4.0_Deliverables\4.2_Work_Plans\SMP\Figures\Figure 2.3 - Overburden Groundwater.pdf 03/08/2019 7:53 AM brian.peters



NYSDEC Site # 516008
Saranac Lake Gas Co., Inc.
Saranac Lake, New York

MACTEC

OU02 Engineering Controls and Long Term Monitoring Locations
Project 3617207518 Figure 2.4

Document: P:\Projects\NYSDEC_General\NYSDEC Information D009909\Database\GIS\Saranac Lake GIS\MapDocuments\SMP and FER\SMP_11x17P_Inset.mxd PDF: P:\Projects\NYSDEC\Saranac Lake OU01 RA\8.0 Project Deliverables\8.1 Reports\8.1.6 Site Management Plan\Figures\Figure 2.4 - OU02 Eng Controls and LTM Locations.pdf 03/31/2023 9:09 AM brianpeters

River St (Rt 86)

Boat Launch

Brandy Brook Rd

Lake Flower

Pontiac Bay

SED-13

SED-14

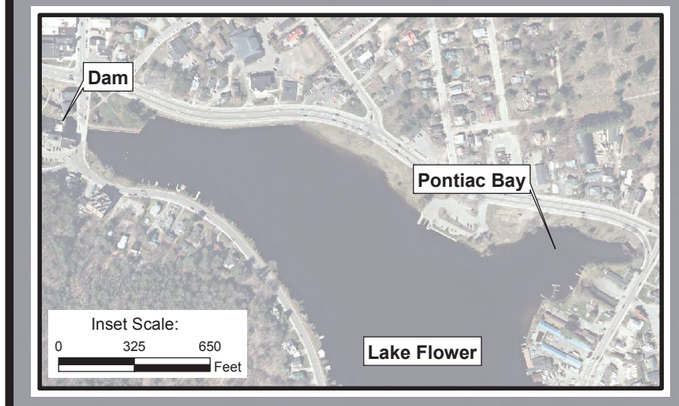
SED-16

SW-403

Lake Flower Ave

Pontiac St

Winona Ave



Legend

- Proposed Surface Water Sampling Location
- Sample Results Exceeding Cleanup Criteria
- Approximate Location of AquaBlok™
- Approximate location of In-Situ Stabilization

N

0 45 90
Feet

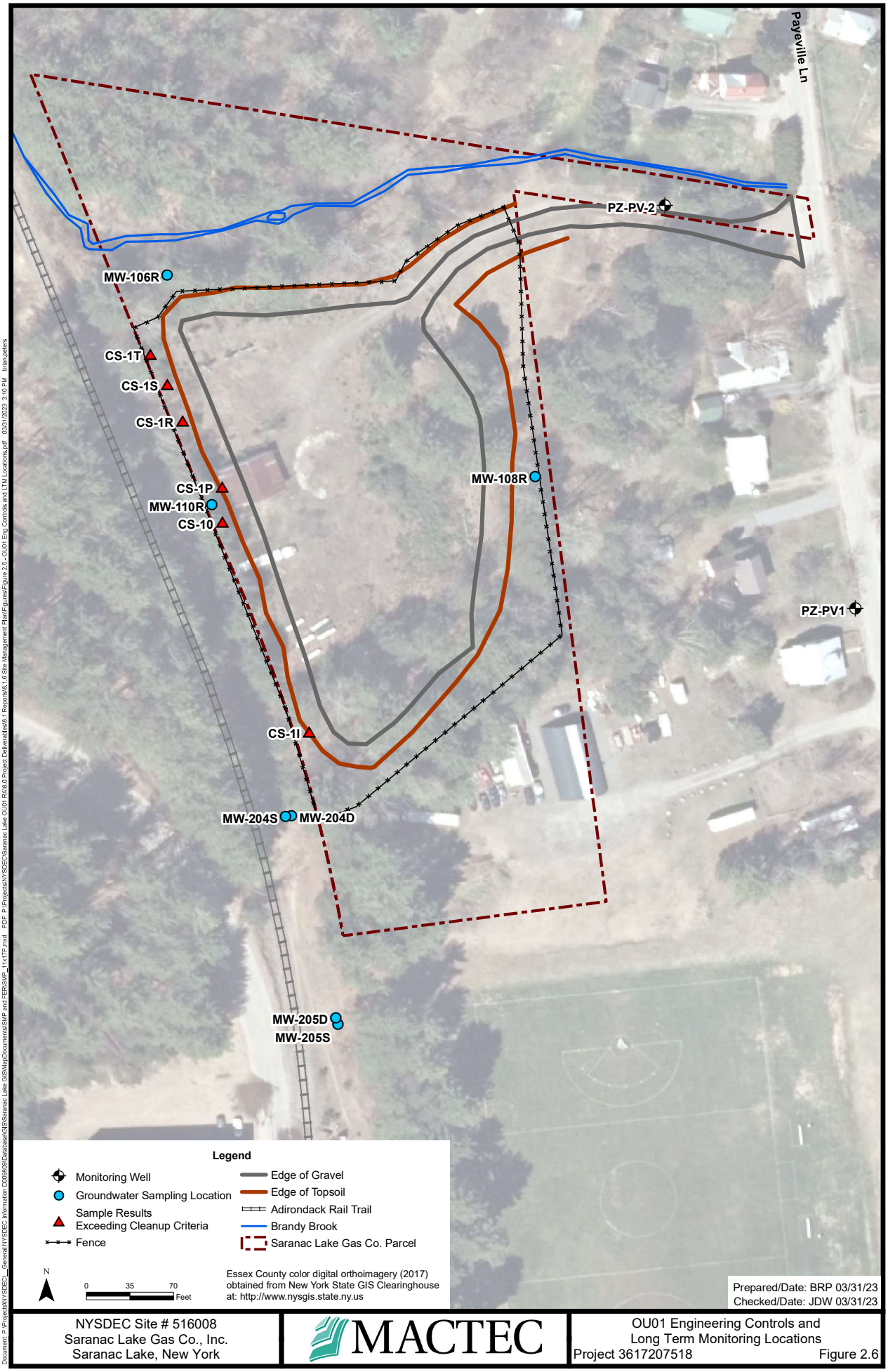
Essex County color digital orthoimagery (2017) obtained from New York State GIS Clearinghouse at: gis.ny.gov

Prepared/Date: BRP 08/23/19
Checked/Date: JDW 08/23/19

NYSDEC Site # 516008
Saranac Lake Gas Co., Inc.
Saranac Lake, New York

MACTEC

OU03 Engineering Controls and
Long Term Monitoring Locations
Project 3611181219 Figure 2.5



NYSDEC Site # 516008
Saranac Lake Gas Co., Inc.
Saranac Lake, New York

MACTEC

OU01 Engineering Controls and Long Term Monitoring Locations
Project 3617207518 Figure 2.6

Document: P:\Projects\NYSDEC_General\NYSDEC Information D009909\Database\GIS\Saranac Lake GIS\MapDocuments\SVP and FERS\MP_11x17P.mxd PDF: P:\Projects\NYSDEC\Saranac Lake OU01 RA\8.0 Project Deliverables\8.1 Reports\8.1.6 Site Management Plan\Figures\Figure 2.6 - OU01 Eng Controls and LTM Locations.pdf 03/31/2023 3:10 PM brian.peters

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Appendix A

List of Site Contacts

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APPENDIX A – LIST OF SITE CONTACTS

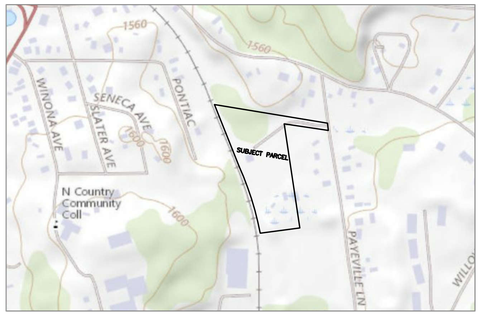
Name	Phone/Email Address/Mailing Address
Site Owner (OU01): Saranac Lake Gas Company	PO Box 798 Valley Forge Pennsylvania 19482
NYSDEC DER Project Manager: Jasmine Stefansky	518-402-9575 jasmine.stefansky@dec.ny.gov 625 Broadway Albany, New York 12233
NYSDEC Remedial Bureau E Director: Jeff Dyber	518-402-9698 jeffrey.dyber@dec.ny.gov 625 Broadway Albany, New York 12233
NYSDEC Region 5 HW Engineer: Russ Huyck	518-897-1242 russel.huyck@dec.ny.gov 1115 Route 86 PO Box 296 Ray Brook, New York 12977
NYSDOH Public Health Engineer: Wendy Kuehner	518-402-7860 beei@health.ny.gov Empire State Plaza Corning Tower Room 1787 Albany, New York 12237
EA Engineering and Geology, P.C.: Adam Etringer	315-565-6564 aetringer@eaest.com 333 W. Washington Street, Suite 300 Syracuse, New York 13202

Notes:
DER = Division of Environmental Remediation
NYSDEC = New York State Department of Environmental Conservation
NYSDOH = New York State Department of Health

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Appendix B

Site Surveys



LOCATION MAP
NOT TO SCALE

LEGEND

- Boundary Line
- Adjoiner Line
- Gravel Road
- Overhead wires
- Adjoiner Line
- Found iron pipe/rebar
- Set 5/8" capped rebar
- Calculated corner

MAP REFERENCES

1. "Map Showing Survey of Property for Adirondack Bottled Gas Corp." dated June 23, 1980 by Magurk & Odone, PC, Consulting Engineers and Land Surveyors.

LEGAL DESCRIPTION

All that certain parcel of land, being situate in Lot 12, Township No. 11, Old Military Tract, Village of Saranac Lake, Town of North Elba, County of Essex, and State of New York; being more particularly bounded and described as follows:

Beginning at a 1–1/2" iron pipe, being the northwest corner of property described in a deed to Saranac Lake Gas Co. Inc., recorded in Liber 384 at page 563 of deeds in the Franklin County Clerk's Office; thence

1. South 81 01'20" East 613.38 feet to a 1" iron pipe found of the west bounds of Payeville Road; thence
2. South 10 03'40" East along the west bounds of Payeville Road, 32.63 feet to a point; thence
3. North 81 06'30" West 236.41 feet to a point; thence
4. South 08 41'30" East 579.86 feet to a point on the north boundary of property described in a deed to Essex & Franklin Counties for North Country Community College, described in Liber 1143 at page 217; thence
5. South 82 04'15" West 215.75 feet to a 3/4" iron pipe on the east bounds of a former railroad bed, now property of State of New York, recorded in Liber 1951 at page 17; thence the following two courses along said railroad bounds
6. Northerly along a curve to the left, said curve having a radius of 1666.19 feet, an arc length of 383.06 feet, and a chord of North 17 58'50" West 382.21 feet to a point; thence
7. North 22 07'45" West 357.13 feet to the point of beginning.

Containing 4.317 acres of land, more or less, within the above described bounds. Bearings are based on Grid North for the East Zone of the New York State Plane Coordinate System.

Being the same property described in a deed to Saranac Lake Coal Gas Company, Inc. as recorded in Liber 384 at page 563, along with the same property described in a deed to Mountain Gas Company, Inc. recorded in Liber 186 at page 453.



40 0 40 80 120
1 Inch = 40 Feet
10 0 10 20 30
Metric Scale 1:120

Horizontal Datum: NAD 83

ONLY COPIES FROM THE ORIGINAL OF THIS SURVEY MARKED WITH AN ORIGINAL OF THE LAND SURVEYOR'S EMBOSSED SEAL SHALL BE CONSIDERED TO BE VALID TRUE COPIES.

Unauthorized alteration or addition to a survey map bearing a licensed land surveyor's seal is a violation of section 7209, sub–division 2, of the New York State Education Law.

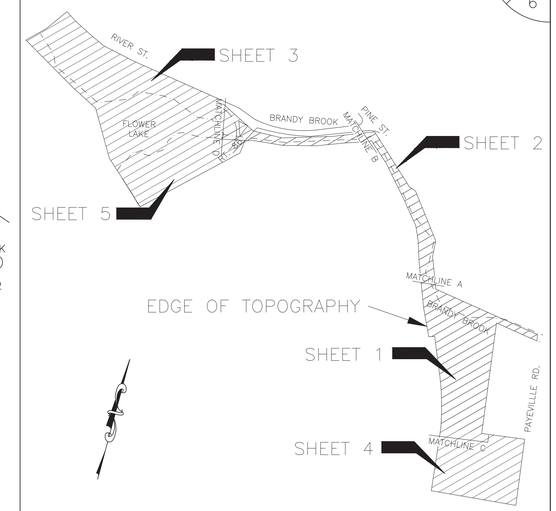
Certifications, if any, indicated hereon signify that this survey was prepared in accordance with the existing Code of Practice for Land Surveys adopted by the New York State Association of Professional Land Surveyors. Said certifications shall run only to the person for whom the survey is prepared, and on his behalf to the title company, governmental agency and lending institution listed hereon, and to the assignees of the lending in–stitution. Certifications are not transferable to any additional institutions or subsequent owners.

GEOMATICS
land surveying, pc
STACEY L. ALLOTT, L.S.
P.O. BOX 1277 SARANAC LAKE, NY
518–891–6218 Phone
geomaticslspc@gmail.com www.geomatics.pro

BOUNDARY SURVEY MAP
Showing Lands of
Saranac Lake Gas Company, Inc.
PREPARED FOR
D.A. COLLINS ENVIRONMENTAL SERVICES, LLC
24 PAYEVILLE LANE, SARANAC LAKE, NY
SITUATE IN LOT 12, TOWNSHIP 11, OLD MILITARY TRACT,
SARANAC LAKE, TOWN OF NORTH ELBA, COUNTY OF ESSEX AND STATE OF NEW YORK.

REVISIONS / DATE / BY	
COPYRIGHT	2021
CHECKED BY	SLA
DRAWN BY	REL
DATE SURVEY	06/08/22
DATE MAP	11/14/22
SCALE IN./FT.	1"=40'
SCALE RATIO	1:480
TAX MAP NO.	32.231–1–11
MAP NO.	21007 Boundary
	Sheet 1 of 1

CADD File: 21007SH1of1 Boundary.dwg



SITE MAP
NOT TO SCALE

TRUE NORTH AT THE 74°30' MERIDIAN OF WEST LONGITUDE

CRAIG A COLLIER
BARBARA L COLLIER
(REPUTED OWNERS)
L. 1337/ P. 66
TM#32.231-1-14.2

CRAIG A COLLIER
BARBARA L COLLIER
(REPUTED OWNERS)
L. 1337/ P. 66
TM#32.231-1-14.1

THE PEOPLE OF THE STATE OF NEW YORK (UNDER THE JURISIDICTION OF DORMITORY AUTHORITY OF THE STATE OF NEW YORK)
L 638 P 102
T.M. 32.231-1-19

GREGORY PEACOCK
(REPUTED OWNER)
L 1366 P 74
T.M. 32.215-6-2

GREGORY PEACOCK
(REPUTED OWNER)
L 1028 P 127
T.M. 32.215-6-3

PARCEL 1
ADIRONDACK BOTTLED GAS CORPORATION OF NEW YORK
(REPUTED OWNER PER DEED RESERVATION)
FOUND IN
L 1116 P 32
(3.188± ACRES)

PARCEL 2
NATIONAL PROPANE, L.P.
(REPUTED OWNER)
L 1116 P 32
(1.160± ACRES)

T.M. 32KC-1-11

MATCHLINE A

MATCHLINE C

BRANDY BROOK FLOW

1-STORY WOOD FRAME

CONC. PAD (REMAINS)

APPROX. LOCATION CONC. TANK PAD (REMAINS)

WOODEN SHED

MOVEABLE GARAGE/SHELTER

ASPHALT

BENCHMARK
ELEV.: 1545.86
"X" FLANGE BOLT
ON FH.

BENCHMARK
ELEV.: 1547.47
"X" FLANGE BOLT
ON FH

BENCHMARK
ELEV.: 1548.42
"X" CUT
HEADWALL

CBP 1
STA 13+50.29
N 1999774.084
E 592685.377
ELEV. 1545.69
MN SET IN PAVE

CBP 2
STA 10+00.00
N 1999709.874
E 592340.970
ELEV. 1542.82
MAG HUB SET IN GROUND

GRAPHIC SCALE
30 0 15 30 60 120
(IN FEET)
1 inch = 30 ft.

GEORGE PAYE JR.
(REPUTED OWNER)
L 258 P 575
32.232-1-16.000

MARGARET LOUISE PAYNE
& GEORGE E. PAYE JR.
(REPUTED OWNER)
L 286 P 373
T.M. 32.232-1-9&10

MELISSA A. MARMORALE &
ROSS X. BELSITO
(REPUTED OWNER)
L 1694 P 181
T.M. 32.232-1-8

ROBERT & MARY L.
OHMANN
(REPUTED OWNER)
L 656 P 120
T.M. 32.232-1-7

ESSEX COUNTY
(REPUTED OWNER)
L 1413 P 194
T.M. 32.232-1-15

GEORGE C HUTTING
(REPUTED OWNER)
T.M. 32.232-

SHANE S. FOX
(REPUTED OWNER)
L 1134 P 75
T.M. 32.232-1-2

RANDOLPH SMITH &
LYNN SMITH
(REPUTED OWNER)
L 884 P 333
T.M. 32.232-1-5

16.5' R.O.W (PER DEED REF. No. 1)
(ASSUMED LOCATION; NOT PLOTTABLE)

P.O.B. PARCEL 1

P.O.B. PARCEL 2

PAYEVILLE LANE

STREET BOUNDARY

℄ PINE STREET

CHORD S17°24'03"E 332.18'
R=1287.95' R=1288'±
L=333.11' (DEED 320'±)

N8°34'03"E 213.00'

S22°02'57"E 323.01'

S22°02'57"E 80.99'

190.41'

N67°57'03"E

S67°57'03"W

S22°02'57"E 208.00'

N22°02'57"W 208.00'

222.45' N80°54'57"W

409.08' N80°54'57"W

575.02' N07°25'57"W

244.32' S80°54'57"E

33.01' N09°32'57"W

NOTES:

1. HORIZONTAL COORDINATES REFERENCED TO THE NEW YORK STATE PLANE COORDINATE SYSTEM (NYSNET), EAST ZONE (3101) BASED ON NAD 83 (2011).

2. VERTICAL DATUM BASED ON NAVD 88 (NYSNET). CONTOURS ARE SHOWN AT 1/2 FOOT INTERVALS.

3. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO NOTIFY DIG SAFELY – NEW YORK FOR ALL UNDERGROUND UTILITY LOCATIONS PRIOR TO ANY EXCAVATION.

4. ALL SUBSURFACE LOCATIONS SHOWN ARE APPROXIMATE AND SHALL BE USED FOR PRELIMINARY ENGINEERING ONLY.

5. UTILITY INFORMATION HAS BEEN PLOTTED FROM AVAILABLE SOURCES AND THEIR LOCATIONS AND SIZE SHOULD BE CONSIDERED APPROXIMATE ONLY.

6. THE CONTRACTOR IS RESPONSIBLE FOR DETERMINING EXACT UTILITY LOCATIONS, SIZES, AND ELEVATIONS PRIOR TO COMMENCING CONSTRUCTION. IF UNCHARTED OR MISPLOTTED UTILITIES ARE ENCOUNTERED, THE CONTRACTOR IS REQUIRED TO NOTIFY THE OWNER IMMEDIATELY.

7. PRIOR TO BEGINNING ANY WORK: THE CONTRACTOR IS RESPONSIBLE FOR THE VERIFICATION OF SURVEY CONTROL POINTS USED IN THE VERTICAL AND HORIZONTAL POSITIONING OF DESIGNED IMPROVEMENTS AND FOR IMMEDIATELY NOTIFYING THE E.I.C. OF ANY DISCREPANCIES FOUND.

THE UNDERSIGNED SURVEYOR HEREBY CERTIFIES TO THE PEOPLE OF THE STATE OF NEW YORK ACTING THROUGH THE COMMISSIONER OF THE DEPARTMENT OF ENVIRONMENTAL CONSERVATION THAT THIS IS AN ACCURATE MAP OF AN ACTUAL SURVEY COMPLETED AND REVISED AS DATED. SUBJECT TO ANY STATE OF FACTS AN ACCURATE ABSTRACT DATED AFTER 5/5/2017 MAY SHOW.

On-Property portions of this survey have been superseded by the 2022 Survey by Geomatics (Page 1 of this Appendix).

LEGEND

T.M.	TAX MAP & PARCEL NO.
BM	BENCHMARK
MH	MANHOLE (UNKNOWN)
VA	VALVE (UNKNOWN)
C	COMMUNICATIONS MANHOLE
CP	SURVEY CONTROL POINT
E	ELECTRIC MANHOLE
GV	GAS VALVE
G	GAS LINE
CB	CATCH BASIN SQUARE
	UTILITY POLE
S	SANITARY MANHOLE
WV	WATER VALVE
	TEST HOLE
CU	UNDERGROUND CABLE
SAN	SANITARY SEWER
W	WATER LINE
	MONITORING WELL
	STREET RIGHT-OF-WAY
PL	PROPERTY LINE
O/E	ELECTRIC LINE
	CHAINLINK FENCE
	FIRE HYDRANT
	RAILROAD TRACKS
ST	STORM SEWER
EP	PAVEMENT EDGE
IPF/IRF	IRON PIPE/ROD FOUND
D	STORM MANHOLE
APL	APPROXIMATE PROPERTY LINE
AHB	APPROXIMATE ROW LINE
	EDGE OF WATER/STREAM

Saranac Gas Plant
Saranac Lake, NY

Part of LOT 13 TOWN North Elba County of Essex
State of New York
Scale of 1 inch = 30'
Date 1/7/14 - 12/08/14 (Revised) 1/6/17 (Revised) - 5/25/17 (Revised)

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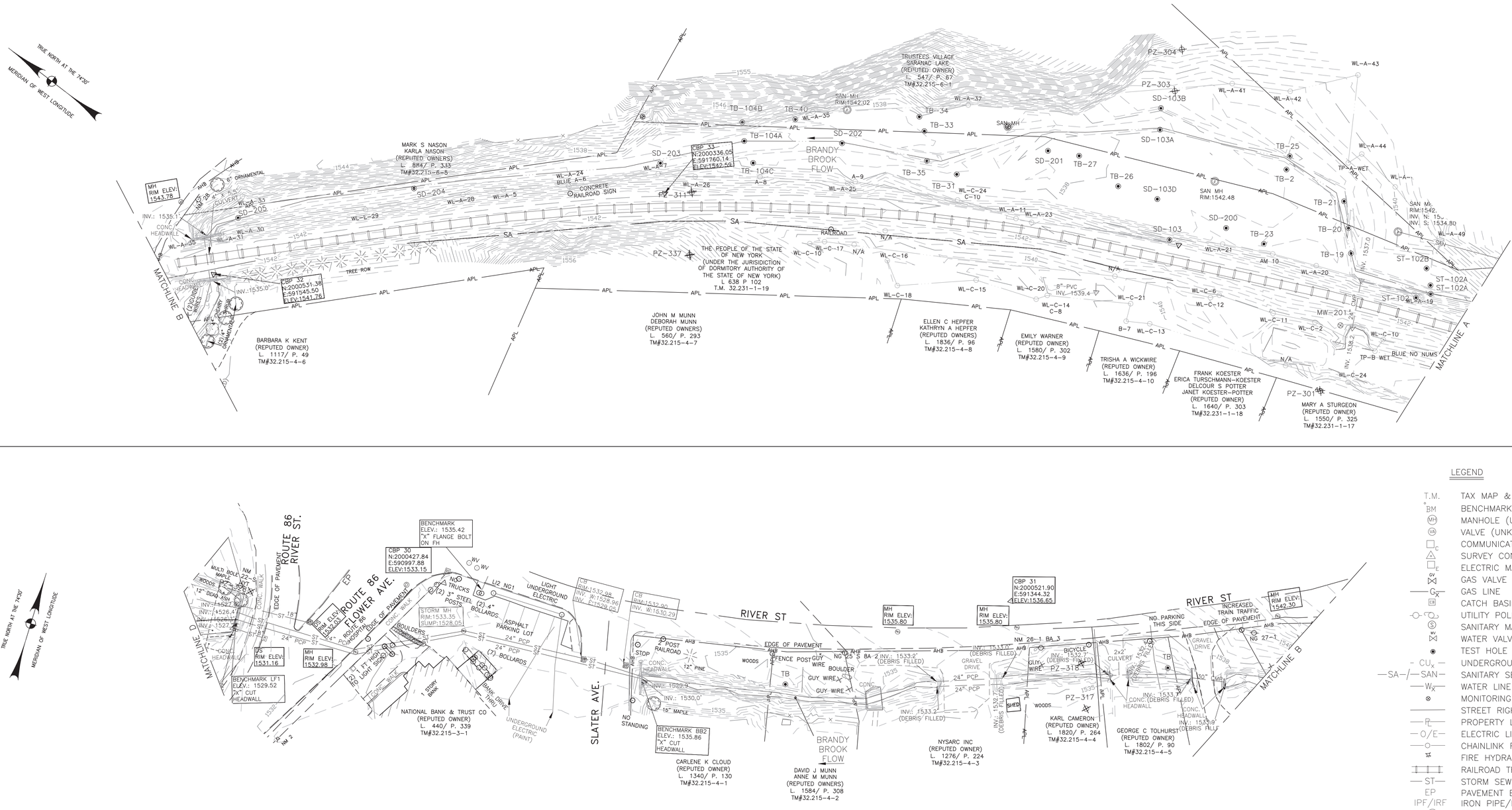
PHONE: (315) 748-7000
FAX: (315) 748-7780
6390 FLY ROAD
EAST SYRACUSE, N.Y. 13057
www.PrudentEng.com

Project No. 109.005-4

PRUDENT ENGINEERING

DRAFTED BY B.G.P. CHECKED BY M.A.V.
DESIGNED BY M.A.V. CHECKED BY
ESTIMATED BY
IN CHARGE OF

CADD File Name: M:\Drawings\109\005\Phase 04 – SARANAC GAS PLANT.DWG



GRAPHIC SCALE

30 0 15 30 60 120

(IN FEET)

1 inch = 30 ft.

LEGEND

T.M.	TAX MAP & PARCEL NO.
BM	BENCHMARK
MH	MANHOLE (UNKNOWN)
WV	VALVE (UNKNOWN)
C	COMMUNICATIONS MANHOLE
	SURVEY CONTROL POINT
E	ELECTRIC MANHOLE
GV	GAS VALVE
G	GAS LINE
CB	CATCH BASIN SQUARE
	UTILITY POLE
S	SANITARY MANHOLE
	WATER VALVE
	TEST HOLE
CU	UNDERGROUND CABLE
SA	SANITARY SEWER
W	WATER LINE
	MONITORING WELL
	STREET RIGHT-OF-WAY
P	PROPERTY LINE
O/E	ELECTRIC LINE
O	CHAINLINK FENCE
	FIRE HYDRANT
	RAILROAD TRACKS
ST	STORM SEWER
EP	PAVEMENT EDGE
IPF/IRF	IRON PIPE/ROD FOUND
D	STORM MANHOLE
APL	APPROXIMATE PROPERTY LINE
AHB	APPROXIMATE ROW LINE
	EDGE OF WATER/STREAM

NOTES:

1. HORIZONTAL COORDINATES REFERENCED TO THE NEW YORK STATE PLANE COORDINATE SYSTEM (NYSNET), EAST ZONE (3101) BASED ON NAD 83 (2011).

2. VERTICAL DATUM BASED ON NAVD 88 (NYSNET). CONTOURS ARE AT 1/2 FOOT INTERVALS.

Saranac Gas Plant
Saranac Lake, NY

Part of LOT 13 TOWN North Elba
State of New York
Scale of 1 inch = 30'
Date 1/7/14 - 12/08/14 (Revised) 1/6/17 (Revised) - 5/25/17 (Revised)

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PHONE: (315)748-7000
FAX: (315) 748-7780
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EAST SYRACUSE, N.Y. 13057
www.PrudentEng.com

Project No. 109.005-4

PRUDENT ENGINEERING

CADD File Name: M:\Drawings\109\005\Phase 04 - SARANAC GAS PLANT.DWG

IN CHARGE OF M.A.V. DESIGNED BY CHECKED BY ESTIMATED BY CHECKED BY DRAFTED BY B.G.P. CHECKED BY M.A.V.

IN CHARGE OF W.C.V. | DESIGNED BY | DRAWN BY | CHECKED BY | ESTIMATED BY | W.C.V.

ROUTE 86
RIVER ST.

LAKE
FLOWER
(PONTIAC BAY)
WATER ELEV.: 1528.7'

VILLAGE OF SARANAC LAKE
(REPUTED OWNER)
L. 603/ P. 68
TM#32.214-4-2

THE PEOPLE OF THE
STATE OF NEW YORK
L. 679/ P. 125
TM#32.214-4-4

VILLAGE OF SARANAC LAKE
(REPUTED OWNER)
TM#32.214-4-5

SARANAC LAKE BOYS' CLUB
(REPUTED OWNER)
L. 157 / P. 108

ROBERT W. WALASKY &
KIMBERLY K. WALASKY
L. 1153 / P. 165
TM#32.214-5-4

ORIGINAL CHANNEL OF LIVINGSTON BROOK PER NYS DOT KEY MAP FOR SARANAC LAKE VILLAGE: BROADWAY & RIVER ST. – S.H. 1222 / D95022

CBP 7091
N:2000553.39
E:590221.23
ELEV:1531.92

CBP 7089
N:2000486.58
E:590419.19
ELEV:1521.79

CBP 7001
N:2000532.20
E:590528.78
ELEV:1534.07

PZ-327

PZ-331

PZ-332

PZ-333

PZ-335

BM ELEV. 1532.79

BM ELEV. 1532.92

BM ELEV. 1532.7

BM ELEV. 1532.49

LEGEND

T.M.	TAX MAP & PARCEL NO.
BM	BENCHMARK
MH	MANHOLE (UNKNOWN)
VA	VALVE (UNKNOWN)
C	COMMUNICATIONS MANHOLE
	SURVEY CONTROL POINT
E	ELECTRIC MANHOLE
GV	GAS VALVE
G	GAS LINE
CB	CATCH BASIN SQUARE
	UTILITY POLE
S	SANITARY MANHOLE
WV	WATER VALVE
	TEST HOLE
CU	UNDERGROUND CABLE
SA / SAN	SANITARY SEWER
W	WATER LINE
	MONITORING WELL
	STREET RIGHT-OF-WAY
PL	PROPERTY LINE
O/E	ELECTRIC LINE
	CHAINLINK FENCE
	FIRE HYDRANT
	RAILROAD TRACKS
ST	STORM SEWER
EP	PAVEMENT EDGE
IPF/IRF	IRON PIPE/ROD FOUND
D	STORM MANHOLE
APL	APPROXIMATE PROPERTY LINE
AHB	APPROXIMATE ROW LINE
	EDGE OF WATER/STREAM

GRAPHIC SCALE

30 0 15 30 60 120

(IN FEET)
1 inch = 30 ft.

TRUE NORTH AT THE 74°30'

MERIDIAN OF WEST LONGITUDE

NOTES:

1. HORIZONTAL COORDINATES REFERENCED TO THE NEW YORK STATE PLANE COORDINATE SYSTEM (NYSNET), EAST ZONE (3101) BASED ON NAD 83 (2011).

2. VERTICAL DATUM BASED ON NAVD 88 (NYSNET). CONTOURS ARE AT 1/2 FOOT INTERVALS.

Saranac Gas Plant
Saranac Lake, NY

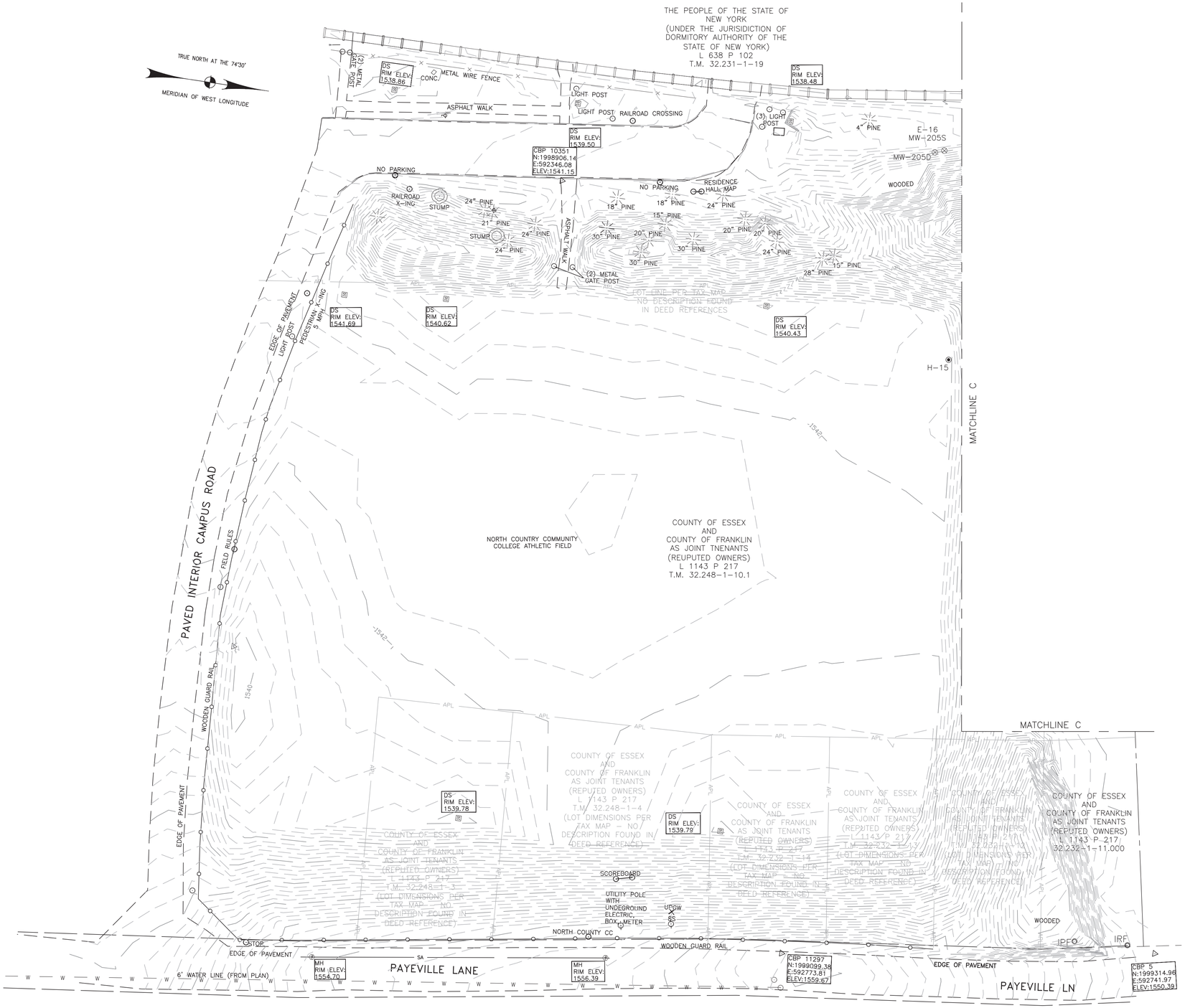
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Part of LOT 13 TOWN North Elba
State of New York
Scale of 1 inch = 30'
Date 1/7/14 - 12/08/14 (Revised)
1/6/17 (Revised) - 5/25/17 (Revised)

PHONE: (315)748-7000
FAX: (315) 748-7780
6390 FLY ROAD
EAST SYRACUSE, N.Y. 13057
www.PrudentEng.com

Project No. 109.005-4

PRUDENT ENGINEERING



NOTES:

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2. VERTICAL DATUM BASED ON NAVD 88 (NYSNET). CONTOURS ARE AT 1/2 FOOT INTERVALS.

LEGEND

T.M.	TAX MAP & PARCEL NO.
BM	BENCHMARK
MH	MANHOLE (UNKNOWN)
VA	VALVE (UNKNOWN)
C	COMMUNICATIONS MANHOLE
	SURVEY CONTROL POINT
E	ELECTRIC MANHOLE
GV	GAS VALVE
G_X	GAS LINE
CB	CATCH BASIN SQUARE
	UTILITY POLE
S	SANITARY MANHOLE
WV	WATER VALVE
	TEST HOLE
CU_X	UNDERGROUND CABLE
SA / SAN	SANITARY SEWER
W_X	WATER LINE
	MONITORING WELL
	STREET RIGHT-OF-WAY
PL	PROPERTY LINE
O/E	ELECTRIC LINE
O	CHAINLINK FENCE
	FIRE HYDRANT
	RAILROAD TRACKS
ST	STORM SEWER
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D	STORM MANHOLE
APL	APPROXIMATE PROPERTY LINE
AHB	APPROXIMATE ROW LINE
	EDGE OF WATER/STREAM

GRAPHIC SCALE

30 0 15 30 60 120

(IN FEET)
1 inch = 30 ft.

Saranac Gas Plant
Saranac Lake, NY

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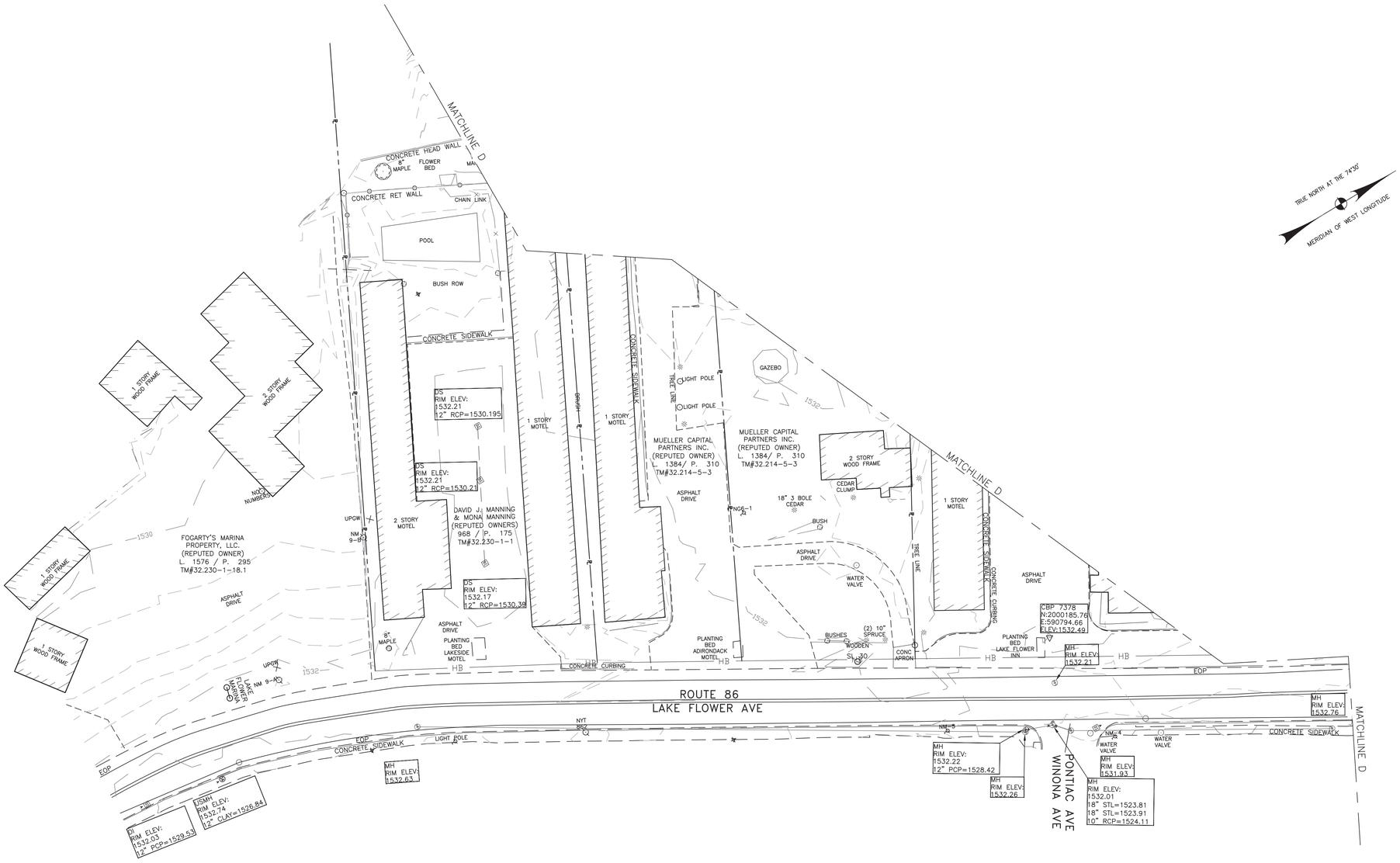
Part of LOT 13 TOWN North Elba
State of New York
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Date 1/7/14 - 12/08/14 (Revised)
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Project No. 109.005-4

PRUDENT ENGINEERING

IN CHARGE OF W.C.V. DESIGNED BY E.S.J. CHECKED BY ESTIMATED BY CHECKED BY W.C.V.



LEGEND

T.M.	TAX MAP & PARCEL NO.
BM	BENCHMARK
MH	MANHOLE (UNKNOWN)
VA	VALVE (UNKNOWN)
$\square_C$	COMMUNICATIONS MANHOLE
	SURVEY CONTROL POINT
$\square_E$	ELECTRIC MANHOLE
GV	GAS VALVE
G_X	GAS LINE
CB	CATCH BASIN SQUARE
	UTILITY POLE
S	SANITARY MANHOLE
WV	WATER VALVE
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APL	APPROXIMATE PROPERTY LINE
AHB	APPROXIMATE ROW LINE
	EDGE OF WATER/STREAM

GRAPHIC SCALE

30 0 15 30 60 120

(IN FEET)
1 inch = 30 ft.

NOTES:

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Saranac Gas Plant
Saranac Lake, NY

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Part of LOT 13 TOWN North Elba
State of New York
Scale of 1 inch = 30'
Date 1/7/14 - 12/08/14 (Revised)
1/6/17 (Revised) - 5/25/17 (Revised)

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EAST SYRACUSE, N.Y. 13057
www.PrudentEng.com

Project No. 109.005-4

PRUDENT ENGINEERING

CADD File Name: M:\Drawinas\109\005\Phase 04 – SARANAC GAS PLANT.DWG

IN CHARGE OF ____ M.A.V. ____ DESIGNED BY ____ CHECKED BY ____ DRAFTED BY ____ B.G.P. ____ CHECKED BY ____ ESTIMATED BY ____ M.A.V.

M.A.V. DRAFTED BY B.G.P. CHECKED BY
ESTIMATED BY CHECKED BY
IN CHARGE OF M.A.V. DESIGNED BY

NEW DESCRIPTION OF THE SURVEYED PROPERTY

A NEW DESCRIPTION WAS PREPARED WITH BEARINGS REFERENCE TO TRUE NORTH AT THE 74°30' MERIDIAN OF WEST LONGITUDE.

ALL THAT TRACT OR PARCEL OF LAND, SITUATE IN THE TOWN OF NORTH ELBA, COUNTY OF ESSEX AND STATE OF NEW YORK, BEING PART OF LOT NUMBER 13, TOWNSHIP 11, OLD MILITARY TRACT, BEING A PORTION OF TAX PARCEL NUMBER 32KC-1-11, AND BEING MORE PARTICULARLY BOUNDED AND DESCRIBED AS FOLLOWS:

PARCEL 1 - ADIRONDACK BOTTLED GAS CORPORATION OF NEW YORK

BEGINNING AT A POINT IN THE CENTER OF PAYEVILLE LANE, SAID POINT BEING DISTANT S 7°00' E, AS MEASURE ALONG THE CENTERLINE OF PAYEVILLE LANE, 280 FEET FROM THE CENTERLINE INTERSECTION OF PINE ST, SAID POINT ALSO BEING THE SOUTHEASTERLY CORNER OF A PARCEL OF LAND CONVEYED TO MARK S. NASON & KARLA NASON BY DEED AS RECORDED IN THE ESSEX'S COUNTY CLERK'S OFFICE IN LIEBER OF DEEDS 884 AT PAGE 333;

THENCE NORTHWESTERLY ALONG SAID SOUTHERLY BOUNDARY OF SAID MARK S. NASON & KARLA NASON, SHANE S. FOX BY DEED AS RECORDED IN THE ESSEX'S COUNTY CLERK'S OFFICE IN LIEBER OF DEEDS 1134 AT PAGE 75, GREGORY L. PEACOCK BY DEED AS RECORDED IN THE ESSEX'S COUNTY CLERK'S OFFICE IN LIEBER OF DEEDS 1190 AT PAGE 135, AND PARTIALLY ALONG GREGORY L. PEACOCK BY DEED AS RECORDED IN THE ESSEX'S COUNTY CLERK'S OFFICE IN LIEBER OF DEEDS 1028 AT PAGE 127 N80°54'57" W A DISTANCE OF 409.08 FEET TO NORTHEASTERLY CORNER OF A PARCEL OF LAND CONVEYED TO NATIONAL PROPANE, L.P. (PARCEL 2) BY DEED AS RECORDED IN THE ESSEX'S COUNTY CLERK'S OFFICE IN LIEBER OF DEEDS 1116 AT PAGE 32;

THENCE ALONG SAID EASTERLY AND SOUTHERLY LINE OF SAID PARCEL 2 THE FOLLOWING (2) COURSES AND DISTANCES: 1) SOUTHEASTERLY S 22°02'57" E, A DISTANCE OF 208.00 FEET; 2) SOUTHWESTERLY S 67°57'03" W, A DISTANCE OF 190.41FEET TO A POINT ON THE EASTERLY BOUNDS OF THE PEOPLE OF THE STATE OF NEW YORK (UNDER THE JURISDICTION OF THE DORMITORY AUTHORITY OF THE STATE OF NEW YORK) BY DEED AS RECORDED IN THE ESSEX'S COUNTY CLERK'S OFFICE IN LIEBER OF DEEDS 638 AT PAGE 102;

THENCE SOUTHEASTERLY ALONG THE EASTERLY LINE OF THE PEOPLE OF THE STATE OF NEW YORK (UNDER THE JURISDICTION OF THE DORMITORY AUTHORITY OF THE STATE OF NEW YORK) THE FOLLOWING (2) COURSES AND DISTANCES: 1) S 22°02'57" E A DISTANCE OF 80.99 FEET TO A POINT; 2) ALONG A NON TANGENT CURVE TO THE RIGHT WITH A RADIUS OF 1287.95 FEET A LENGTH OF 333.11 FEET (CHORD S 17°24'03" E, 332.18 FEET) TO A POINT BEING THE NORTHWEST CORNER OF A PARCEL OF LAND CONVEYED TO ESSEX & FRANKLIN COUNTY NEW YORK BY DEED AS RECORDED IN THE ESSEX'S COUNTY CLERK'S OFFICE IN LIEBER OF DEEDS 1143 AT PAGE 9273;

THENCE NORTHEASTERLY ALONG SAID NORTHERLY LINE OF ESSEX & FRANKLIN COUNTY NEW YORK N 82°34'03" E A DISTANCE OF 213.00 FEET TO A POINT, BEING THE SOUTHWEST CORNER OF A PARCEL OF LAND CONVEYED TO GEORGE PAYE JR. DEED AS RECORDED IN THE ESSEX'S COUNTY CLERK'S OFFICE IN LIEBER OF DEEDS 258 AT PAGE 575;

THENCE NORTHERLY ALONG THE WESTERLY LINE OF SAID GEORGE PAYE JR., MARGARET LOUISE PAYE & GEORGE E. PAYE JR. BY DEED AS RECORDED IN THE ESSEX'S COUNTY CLERK'S OFFICE IN LIEBER OF DEEDS 286 AT PAGE 373, MELISSA A. MARMORALE & ROSS X. BELSITO BY DEED AS RECORDED IN THE ESSEX'S COUNTY CLERK'S OFFICE IN LIEBER OF DEEDS 1694 AT PAGE 181, ROBERT & MARY L. OHMANN BY DEED AS RECORDED IN THE ESSEX'S COUNTY CLERK'S OFFICE IN LIEBER OF DEEDS 656 AT PAGE 120, JANICE M. GAUTHIER BY DEED AS RECORDED IN THE ESSEX'S COUNTY CLERK'S OFFICE IN LIEBER OF DEEDS 844 AT PAGE 112, AND ESSEX COUNTY BY DEED AS RECORDED IN THE ESSEX'S COUNTY CLERK'S OFFICE IN LIEBER OF DEEDS 1413 AT PAGE 194 N 07°25'57" E A DISTANCE OF 575.02 FEET TO A POINT BEING THE NORTHWEST CORNER OF A PARCEL OF LAND CONVEYED TO SAID ESSEX COUNTY;

THENCE EASTERLY ALONG SAID NORTHERLY LINE OF ESSEX COUNTY NEW YORK N 80°54'57" E A DISTANCE OF 244.32 FEET TO A POINT IN THE CENTER OF SAID PAYEVILLE LANE;

THENCE NORTHERLY ALONG THE SAID CENTERLINE OF PAYEVILLE LANE N 09°32'57" E A DISTANCE OF 33.01 FEET TO THE POINT AND PLACE OF BEGINNING.

CONTAINING 3.188 ACRES OF LAND, MORE OR LESS.

SUBJECT TO ANY EASEMENTS, RIGHT-OF-WAYS, AND/OR RESTRICTIONS OF RECORD, WHICH MAY AFFECT THIS PROPERTY.

PARCEL 2 - NATIONAL PROPANE, L.P.

COMMENCING AT A POINT IN THE CENTERLINE OF PAYEVILLE ROAD, SAID POINT BEING THE NORTHEASTERLY CORNER OF A PARCEL OF LAND CONVEYED TO ADIRONDACK BOTTLED GAS CORPORATION OF NEW YORK BY DEED AS RECORDED IN THE ESSEX'S COUNTY CLERK'S OFFICE IN LIEBER OF DEEDS 1116 AT PAGE 32 (PARCEL 1) AND THE SOUTHEASTERLY CORNER OF LANDS CONVEYED TO MARK S. NASON & KARLA NASON BY DEED AS RECORDED IN THE ESSEX'S COUNTY CLERK'S OFFICE IN LIEBER OF DEEDS 884 AT PAGE 333;

THENCE NORTHWESTERLY ALONG SAID NORTHERLY LINE OF PARCEL 1 N 80°54'57" W, A DISTANCE OF 409.08 FEET TO THE **POINT OF BEGINNING**, SAID POINT BEING THE NORTHWESTERLY CORNER OF PARCEL 1;

THENCE FROM SAID POINT OF BEGINNING N 80°54'57" W PARTIALLY ALONG THE SOUTHERLY LINE OF A PARCEL OF LAND CONVEYED TO GREGORY PEACOCK. BY DEED AS RECORDED IN THE ESSEX'S COUNTY CLERK'S OFFICE IN LIEBER OF DEEDS 1028 AT PAGE 127 AND ALONG OTHER LANDS OF GREGORY PEACOCK BY DEED AS RECORDED IN THE ESSEX'S COUNTY CLERK'S OFFICE IN LIEBER OF DEEDS 1366 AT PAGE 74 A DISTANCE OF 222.45 FEET TO AN IRON PIPE IN THE EASTERLY BOUNDS OF THE PEOPLE OF THE STATE OF NEW YORK (UNDER THE JURISDICTION OF THE DORMITORY AUTHORITY OF THE STATE OF NEW YORK) BY DEED AS RECORDED IN THE ESSEX'S COUNTY CLERK'S OFFICE IN LIEBER OF DEEDS 638 AT PAGE 102;

THENCE SOUTHEASTERLY ALONG THE EASTERLY LINE OF SAID THE PEOPLE OF THE STATE OF NEW YORK (UNDER THE JURISDICTION OF THE DORMITORY AUTHORITY OF THE STATE OF NEW YORK) S 22°02'57" E A DISTANCE OF 323.01 FEET TO A POINT BEING THE NORTHWEST CORNER OF SAID PARCEL 1;

THENCE SOUTHERLY AND EASTERLY LINE OF PARCEL 1 THE FOLLOWING (2) COURSES AND DISTANCES: 1) NORTHEASTERLY N 67°57'03" E, A DISTANCE OF 190.41 FEET; 2) NORTHWESTERLY N 22°02'57" W, A DISTANCE OF 208.00 FEET TO THE POINT AND PLACE OF BEGINNING.

CONTAINING 1.160 ACRES OF LAND, MORE OR LESS.

SUBJECT TO ANY EASEMENTS, RIGHT-OF-WAYS, AND/OR RESTRICTIONS OF RECORD, WHICH MAY AFFECT THIS PROPERTY.

SAMPLE LOCATIONS					
Pnt.	Northing	Easting	Ground Elev.	PVC Riser Pipe Elev.	Desc.
1197	1999701.4	592314.4	1542.21	-	MW-107/F-4
1198	1999700.1	592263.7	1541.62	-	E-4
1199	1999694.1	592216.1	1541.37	-	D-4
1200	1999692.3	592175.3	1541.58	-	C-4
1201	1999659.8	592131.4	1542.32	-	B-4
1205	1999627.4	592176.5	1542.43	-	C-5
1206	1999639.0	592218.4	1542.27	-	D-5
1207	1999650.2	592262.1	1542.67	-	E-5
1209	1999639.0	592352.9	1543.65	-	GW-2
1210	1999619.0	592337.5	1544.14	-	F-5
1211	1999597.0	592281.0	1543.51	1543.22	MW-102/E-6
1212	1999588.1	592242.3	1543.28	-	D-6
1263	1999595.0	592319.9	1543.25	-	F-6
1264	1999563.3	592331.1	1543.85	-	F-7
1266	1999566.6	592382.1	1543.62	-	G-7
1279	1999497.1	592270.3	1543.57	-	E-8
1280	1999549.6	592256.4	1543.51	-	D-7
1282	1999487.1	592226.6	1543.19	-	D-8
1283	1999508.7	592319.0	1543.27	-	F-8
1284	1999514.2	592380.7	1543.39	-	G-8
1285	1999573.2	592418.0	1543.65	-	H-7
1286	1999517.3	592440.5	1544.79	-	H-8
1287	1999478.2	592397.3	1543.65	-	G-9
1323	1999401.4	592254.1	1542.45	1542.07	MW-103/E-10
1324	1999445.3	592264.2	1543.14	-	E-9
1325	1999418.5	592261.8	1543.17	1542.97	GW-14
1326	1999449.4	592312.9	1543.18	1542.93	MW-101/F-9
1382	1999529.3	592469.7	1542.28	-	I-7
1484	1999365.4	592377.8	1542.27	-	F-11
1489	1999423.6	592400.6	1543.56	-	G-10
1499	1999403.3	592332.4	1546.10	1545.85	MW-109/F-10
1501	1999365.3	592299.6	1542.85	-	E-11
1519	1999304.6	592350.3	1548.51	-	F-12
1531	1999256.3	592411.4	1547.19	-	H-13
1550	1999214.6	592537.4	1548.29	-	J-14
1699	1999615.2	592418.3	1546.75	1546.69	MW-108/H-6

SAMPLE LOCATIONS					
Pnt.	Northing	Easting	Ground Elev.	PVC Riser Pipe Elev.	Desc.
1749	1999786.6	592297.3	1541.46	-	F-2
1767	1999747.5	592263.3	1541.36	-	E-3
1831	1999779.6	592249.6	1540.61	-	E-2
1882	1999766.0	592166.9	1545.98	-	MW-105/C-2
1892	1999720.0	592151.2	1543.23	-	MW-106/C-3
1931	1999833.9	592054.2	1545.27	1545.12	MW-104/A-1
1944	1999776.3	592087.3	1539.82	1539.76	A-2
1947	1999769.4	592115.3	1540.89	1540.47	B-2
2019	1999711.5	592085.6	1538.75	-	TB-13
2023	1999692.5	592120.1	1542.15	-	GW-11
2024	1999711.9	592117.5	1541.27	-	B-3
2034	1999525.0	592176.7	1543.33	-	MW-110 /C-7
2205	2000429.5	591223.3	1533.56	-	TEST BORING
2332	2000510.4	591451.8	1535.11	1534.86	TEST BORING
3842	1999912.6	592004.8	1537.04	-	ST-102A
3843	1999916.0	592009.0	1538.85	-	ST-102A
3844	1999924.5	592016.0	1538.59	-	ST-102B
3845	1999918.4	591997.1	1539.73	-	ST-102
3854	1999968.2	591994.3	1537.84	-	TB-19
3856	1999979.3	592006.1	1537.51	-	TB-20
3857	1999991.8	592017.9	1537.50	-	TB-21
3868	2000032.9	592011.6	1538.09	-	TB-2
3869	2000036.4	592019.6	1537.26	-	TB-25
3870	2000015.6	591965.5	1537.87	-	TB-23
3882	2000119.7	591994.0	1537.55	-	SD-103B
3883	2000111.8	591982.9	1537.11	-	SD-103A
3884	2000086.4	591946.9	1537.53	-	SD-103D
3885	2000111.0	591938.3	1537.56	-	TB-26
3886	2000142.3	591938.6	1537.36	-	TB-27
3908	2000196.6	591882.1	1537.17	-	TB-31
3909	2000216.8	591877.3	1536.05	-	TB-35
3910	2000229.5	591891.3	1537.05	-	TB-33
3911	2000237.6	591896.6	1537.24	-	TB-34
3912	2000064.6	591931.2	1541.23	-	SD-103
3921	2000298.9	591847.4	1536.40	-	TB-40
3922	2000324.4	591825.6	1537.36	-	SD-104B
3924	2000316.2	591816.8	1535.73	-	SD-104C
3926	2000303.2	591809.3	1536.76	-	SD-104C
	1999549.4	592288.0	-	-	E-7
	1999747.3	592307.1	-	-	F-3
	1999458.9	592239.3	-	-	D-9

**Horizontal Coordinates reference to the New York State Plane Coordinate System, East Zone (3101) based on NAD 83 (2011). Vertical Datum is NAVD88. Horizontal and Vertical control were established by NYSNET RTK.*

SAMPLE LOCATIONS 9-26-14						
Pnt.	Northing	Easting	Ground Elev.	Top of Well Elev.	PVC Riser Pipe Elev.	Desc.
10032	1999370.5	592338.7	1543.08	-	-	F-11A
10034	1999285.8	592255.5	1543.44	1546.53	1546.29	MW-204
11003	1999528.6	592285.2	1543.02	-	-	E-7A
11004	1999426.2	592314.4	1543.02	-	-	F-9A
11005	1999945.7	591954.2	1540.77	1543.81	1543.58	MW-201
11007	2000040.7	591958.9	1537.72	-	-	SD-200
11008	2000159.9	591929.1	1537.35	-	-	SD-201
11009	2000266.2	591853.5	1536.29	-	-	SD-202
11010	2000349.7	591773.5	1536.14	-	-	SD-203
11011	2000463.7	591665.8	1535.66	-	-	SD-204
11012	2000540.6	591583.1	1535.11	-	-	SD-205
11014	1999993.6	591741.0	1547.99	1548.05	1547.83	MW-203*
11017	1999711.9	591841.6	1554.26	1554.19	1553.97	MW-202*
11020	1999119.0	592297.7	1542.44	1545.52	1545.37	MW-205D*
11021	1999124.3	592295.9	1542.65	1545.44	1545.24	MW-205S*
11026	1999303.8	592387.3	1547.16	-	-	G-12
11027	1999144.7	592416.4	1542.10	-	-	H-15*
11028	1999792.2	592658.4	1548.42	-	-	BB1
11029	2000366.8	590878.9	1529.52	-	-	LF1
11030	2000406.2	591134.9	1535.86	-	-	BB2

Note: Horizontal Coordinates reference to the New York State Plane Coordinate System, East Zone (3101) based on NAD 83 (2011). Vertical Datum is NAVD88. Horizontal and Vertical control were established by NYSNET RTK.

**Test areas located off site.*

SAMPLE LOCATIONS 5-4-17						
Pnt.	Northing	Easting	Ground Elev	Top of Well Elev	PVC Riser Pipe Elev	Desc.
80055	1999930.6	591913.4	1541.15	-	1544.19	PZ-301
80035	1999841.6	592086.2	1548.34	-	1552.14	PZ-302
80062	2000119.2	592008.0	1538.40	-	1540.13	PZ-303
80063	2000131.7	592031.5	1542.25	-	1545.06	PZ-304
80021	2000322.7	591770.8	1542.29	-	1545.28	PZ-311
80015	2000470.5	591409.9	1535.49	1535.91	1535.84	PZ-317
80017	2000497.2	591398.6	1535.01	1535.41	1535.29	PZ-318
80010	2000386.6	590882.4	1531.63	1531.85	1531.67	PZ-328
80000	2000302.6	590671.3	1532.89	1533.12	1532.97	PZ-331
80003	2000171.7	590555.8	1528.98	1529.08	1528.95	PZ-332
80012	2000412.0	590854.7	1531.18	1531.33	1531.08	PZ-333
80007	2000457.7	590671.7	1531.56	1531.81	1531.59	PZ-335
80005	2000492.3	590420.6	1532.43	1532.28	1531.96	PZ-336
80023	2000299.5	591739.0	1547.72	-	1550.87	PZ-337

Note: Horizontal Coordinates reference to the New York State Plane Coordinate System, East Zone (3101) based on NAD 83 (2011). Vertical Datum is NAVD88. Horizontal and Vertical control were established by NYSNET RTK.

Saranac Gas Plant
Saranac Lake, NY

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Part of LOT 13 TOWN North Elba
State of New York
Scale of 1 inch = 30'
Date 1/7/14 - 12/08/14 (Revised)
1/6/17 (Revised) - 5/25/17 (Revised)

PHONE: (315)748-7000
FAX: (315) 748-7780
6390 FLY ROAD
EAST SYRACUSE, N.Y. 13057
www.PrudentEng.com

Project No. 109.005-4

PRUDENT ENGINEERING

CADD File Name: M:\Drawings\109\005\Phase 04 – SARANAC GAS PLANT.DWG

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Appendix C

As-Built Drawings



LOCATION MAP
NOT TO SCALE

LEGEND

- Boundary Line
- Adjoiner Line
- Gravel Road
- Overhead wires
- Chainlink Fenceline
- Adjoiner Line
- Easement Area
- ISS Limits / Final Cap
- Found iron pipe/rebar
- Set 5/8" capped rebar
- Calculated corner

TREE KEY

- Birch
- Cherry
- Hemlock
- Maple
- Pine
- Spruce



40 0 40 80 120
1 Inch = 40 Feet

Contour Interval: 1 Foot
Horizontal Datum: NAD 83
Vertical Datum: NAVD 88

MAP REFERENCES

1. See Map entitled "Map Showing Survey of Property for Adirondack Bottled Gas Corp." prepared by Magurk & Odone, PC, dated June 23, 1980.

NOTES

1. This survey was prepared without the benefit of an updated Abstract of Title and is subject to whatever facts an updated Abstract of Title may show.

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GEOMATICS
land surveying, pc
STACEY L. ALLOTT, L.S.
P.O. BOX 1277 SARANAC LAKE, NY
518-891-6218 Phone
geomaticslspc@gmail.com www.geomatics.pro

MAP OF SURVEY showing Final Conditions
Saranac Lake Gas Company Remediation
PREPARED FOR
D.A. COLLINS ENVIRONMENTAL SERVICES, LLC
SITUATE IN LOT 12, TOWNSHIP 11, OLD MILITARY TRACT, VILLAGE OF SARANAC LAKE, TOWN OF NORTH ELBA, COUNTY OF ESSEX AND STATE OF NEW YORK.

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TAX MAP NO.	32.231-1-11
MAP NO.	21007 Sheet 1 of 6

CADD File: 21007_SH1of6 final conditions.dwg



LOCATION MAP
NOT TO SCALE

LEGEND

- Boundary Line
- Adjoiner Line
- Gravel Road
- Overhead wires
- Chainlink Fenceline
- Adjoiner Line
- Easement Area
- ISS Limits
- Final Cap
- Found iron pipe/rebar
- Set 5/8" capped rebar
- Calculated corner

GREGORY L. PEACOCK
Reputed Owner
L. 1366 pg. 73
Tax parcel 32.215-6-2

GREGORY L. PEACOCK
Reputed Owner
L. 1028 pg. 187
Tax parcel 32.215-6-3

GEORGE C. HUTTIG
Reputed Owner
L. 1364 pg. 275
Tax parcel 32.232-1-1

DEBORAH FOX
AUBREY FOX
Reputed Owner
L. 1920 pg. 126
Tax parcel 32.232-1-2

RANDOLPH SMITH. Jr.
LYNN LOUISE SMITH
Reputed Owner
L. 721 pg. 87
Tax parcel 32.232-1-5

Found 1 1/2" iron pipe
0.2' above grade, leaning
Northerly

Found 1" iron pipe
0.1' above grade,
leaning Westerly

ESSEX COUNTY
Reputed Owner
L. 1413 pg. 194
Tax parcel 32.232-1-15

JANICE M. GAUTHIER
Reputed Owner
L. 844 pg. 112
Tax parcel 32.232-1-6

Found 3/4" iron pipe
0.5' above grade, leaning

ROBERT OHMANN
MARY L. OHMANN
Reputed Owner
L. 656 pg. 120
Tax parcel 32.232-1-7

STEVEN P. SCHMIDT
MONICA D. SCHMIDT
Reputed Owner
L. 1972 pg. 210
Tax parcel 32.232-1-8

GEORGE E. PAYE III
Reputed Owner
L. 1794 pg. 120
Tax parcel 32.232-1-9

GEORGE E. PAYE III
Reputed Owner
L. 1794 pg. 120
Tax parcel 32.232-1-10

GEORGE E. PAYE III
Reputed Owner
L. 1794 pg. 120
Tax parcel 32.232-1-16

Capped rebar
AEDA

PAYEVILLE ROAD

STATE OF NEW YORK
Reputed Owner
L. 1951 pg. 17
Tax parcel 32.247-4-1.2

SARANAC LAKE GAS CO INC.
Reputed Owner
L. 141 pg. 392
Tax parcel 32.231-1-11

COUNTY OF ESSEX
COUNTY OF FRANKLIN
Reputed Owner
L. 1143 pg. 217
Tax parcel 32.232-1-13

Capped rebar
AEDA

Found 3/4" iron pipe
0.3' above grade

CP

centerline of brook

edge of topsoil

edge of gravel

gravel trail



40 0 40 80 120
1 Inch = 40 Feet

Horizontal Datum: NAD 83
Vertical Datum: NAVD 88

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land surveying, pc
STACEY L. ALLOTT, L.S.
P.O. BOX 1277 SARANAC LAKE, NY
518-891-6218 Phone
geomaticslspc@gmail.com www.geomatics.pro

MAP OF SURVEY showing Final Cap Limits Location
Saranac Lake Gas Company Remediation
PREPARED FOR
D.A. COLLINS ENVIRONMENTAL SERVICES, LLC
SITUATE IN LOT 12, TOWNSHIP 11, OLD MILITARY TRACT, VILLAGE OF SARANAC LAKE, TOWN OF NORTH ELBA, COUNTY OF ESSEX AND STATE OF NEW YORK.

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TAX MAP NO.	32.231-1-11
MAP NO.	21007 SHEET 2 of 6

CADD File: 21007 SH2of6 final cap.dwg



LOCATION MAP
NOT TO SCALE

LEGEND

- Boundary Line
- Adjoiner Line
- Gravel Road
- Overhead wires
- Chainlink Fenceline
- Adjoiner Line
- Easement Area
- ISS Limits
- Final Cap
- Found iron pipe/rebar
- Set 5/8" capped rebar
- Calculated corner

GREGORY L. PEACOCK
Reputed Owner
L. 1366 pg. 73
Tax parcel 32.215-6-2

GREGORY L. PEACOCK
Reputed Owner
L. 1028 pg. 187
Tax parcel 32.215-6-3

GEORGE C. HUTTIG
Reputed Owner
L. 1364 pg. 275
Tax parcel 32.232-1-1

DEBORAH FOX
AUBREY FOX
Reputed Owner
L. 1920 pg. 126
Tax parcel 32.232-1-2

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LYNN LOUISE SMITH
Reputed Owner
L. 721 pg. 87
Tax parcel 32.232-1-5

Found 1 1/2" iron pipe
0.2' above grade, leaning
Northerly

Found 1" iron pipe
0.1' above grade,
leaning Westerly

GRAVEL ROAD

ESSEX COUNTY
Reputed Owner
L. 1413 pg. 194
Tax parcel 32.232-1-15

JANICE M. GAUTHIER
Reputed Owner
L. 844 pg. 112
Tax parcel 32.232-1-6

Found 3/4" iron pipe
0.5' above grade, leaning

ROBERT OHMANN
MARY L. OHMANN
Reputed Owner
L. 656 pg. 120
Tax parcel 32.232-1-7

STEVEN P. SCHMIDT
MONICA D. SCHMIDT
Reputed Owner
L. 1972 pg. 210
Tax parcel 32.232-1-8

GEORGE E. PAYE III
Reputed Owner
L. 1794 pg. 120
Tax parcel 32.232-1-9

GEORGE E. PAYE III
Reputed Owner
L. 1794 pg. 120
Tax parcel 32.232-1-10

GEORGE E. PAYE III
Reputed Owner
L. 1794 pg. 120
Tax parcel 32.232-1-16

Capped rebar
AEDA

PAYEVILLE ROAD

STATE OF NEW YORK
Reputed Owner
L. 1951 pg. 17
Tax parcel 32.247-4-1.2

SARANAC LAKE GAS CO INC.
Reputed Owner
L. 141 pg. 392
Tax parcel 32.231-1-11

Capped rebar
AEDA

Found 3/4" iron pipe
0.3' above grade

COUNTY OF ESSEX
COUNTY OF FRANKLIN
Reputed Owner
L. 1143 pg. 217
Tax parcel 32.232-1-13

centerline of brook
centerline of swale
12" CMP
edge of topsoil
edge of gravel
grade trail
final ISS limits
1543
1544
CP

N
EAST ZONE
N.Y.S. GRID NORTH

40 0 40 80 120
1 Inch = 40 Feet

Contour Interval: 1 Foot
Horizontal Datum: NAD 83
Vertical Datum: NAVD 88

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518-891-6218 Phone
geomaticslspc@gmail.com www.geomatics.pro

MAP OF SURVEY showing Final ISS Limits Location
Saranac Lake Gas Company Remediation
PREPARED FOR
D.A. COLLINS ENVIRONMENTAL SERVICES, LLC
SITUATE IN LOT 12, TOWNSHIP 11, OLD MILITARY TRACT, VILLAGE OF SARANAC LAKE, TOWN OF NORTH ELBA, COUNTY OF ESSEX AND STATE OF NEW YORK.

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MAP NO.	21007 Sheet 3 of 6

CADD File: 21007 SH3of6 ISS.dwg



LOCATION MAP
NOT TO SCALE

LEGEND

- Boundary Line
- Adjoiner Line
- Gravel Road
- Overhead wires
- Chainlink Fenceline
- Adjoiner Line
- Easement Area
- ISS Limits
- Final Cap
- Found iron pipe/rebar
- Set 5/8" capped rebar
- Calculated corner



40 0 40 80 120
1 Inch = 40 Feet

Horizontal Datum: NAD 83
Vertical Datum: NAVD 88

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STACEY L. ALLOTT, L.S.
P.O. BOX 1277 SARANAC LAKE, NY
518-891-6218 Phone
geomaticslspc@gmail.com www.geomatics.pro

MAP OF SURVEY showing Excavation Limits Location
Saranac Lake Gas Company Remediation
PREPARED FOR
D.A. COLLINS ENVIRONMENTAL SERVICES, LLC
SITUATE IN LOT 12, TOWNSHIP 11, OLD MILITARY TRACT, VILLAGE OF SARANAC LAKE, TOWN OF NORTH ELBA, COUNTY OF ESSEX AND STATE OF NEW YORK.

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TAX MAP NO.	32.231-1-11
MAP NO.	21007 Sheet 4 of 6

CADD File: 21007 SH4Of6 Excavation Limits.dwg



LOCATION MAP
NOT TO SCALE

LEGEND

- Boundary Line
- Adjoiner Line
- Gravel Road
- Overhead wires
- Chainlink Fenceline
- Adjoiner Line
- Easement Area
- ISS Limits
- Final Cap
- Found iron pipe/rebar
- Set 5/8" capped rebar
- Calculated corner

GREGORY L. PEACOCK
Reputed Owner
L. 1366 pg. 73
Tax parcel 32.215-6-2

GREGORY L. PEACOCK
Reputed Owner
L. 1028 pg. 187
Tax parcel 32.215-6-3

GEORGE C. HUTTIG
Reputed Owner
L. 1364 pg. 275
Tax parcel 32.232-1-1

DEBORAH FOX
AUBREY FOX
Reputed Owner
L. 1920 pg. 126
Tax parcel 32.232-1-2

RANDOLPH SMITH. Jr.
LYNN LOUISE SMITH
Reputed Owner
L. 721 pg. 87
Tax parcel 32.232-1-5

Found 1 1/2" iron pipe 0.2' above grade, leaning Northerly

Found 1" iron pipe 0.1' above grade, leaning Westerly

GRAVEL ROAD

ESSEX COUNTY
Reputed Owner
L. 1413 pg. 194
Tax parcel 32.232-1-15

JANICE M. GAUTHIER
Reputed Owner
L. 844 pg. 112
Tax parcel 32.232-1-6

Found 3/4" iron pipe 0.5' above grade, leaning

ROBERT OHMANN
MARY L. OHMANN
Reputed Owner
L. 656 pg. 120
Tax parcel 32.232-1-7

STEVEN P. SCHMIDT
MONICA D. SCHMIDT
Reputed Owner
L. 1972 pg. 210
Tax parcel 32.232-1-8

GEORGE E. PAYE III
Reputed Owner
L. 1794 pg. 120
Tax parcel 32.232-1-9

GEORGE E. PAYE III
Reputed Owner
L. 1794 pg. 120
Tax parcel 32.232-1-10

GEORGE E. PAYE III
Reputed Owner
L. 1794 pg. 120
Tax parcel 32.232-1-16

Capped rebar AEDA

PAYEVILLE ROAD

STATE OF NEW YORK
Reputed Owner
L. 1951 pg. 17
Tax parcel 32.247-4-1.2

SARANAC LAKE GAS CO INC.
Reputed Owner
L. 141 pg. 392
Tax parcel 32.231-1-11

COUNTY OF ESSEX
COUNTY OF FRANKLIN
Reputed Owner
L. 1143 pg. 217
Tax parcel 32.232-1-13

Capped rebar AEDA

Found 3/4" iron pipe 0.3' above grade

centerline of brook
centerline of swale
chainlink fenceline
edge of gravel
ISS Limits
gravel trail
chainlink fenceline
edge of gravel
ISS Limits
edge of gravel
chainlink fenceline
edge of gravel
chainlink fenceline
gravel trail

CP

EAST ZONE
N.Y.S. GRID NORTH

40 0 40 80 120
1 Inch = 40 Feet

Horizontal Datum: NAD 83
Vertical Datum: NAVD 88

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STACEY L. ALLOTT, L.S.
P.O. BOX 1277 SARANAC LAKE, NY
518-891-6218 Phone
geomaticslspc@gmail.com www.geomatics.pro

MAP OF SURVEY showing Fenceline Location
Saranac Lake Gas Company Remediation
PREPARED FOR
D.A. COLLINS ENVIRONMENTAL SERVICES, LLC
SITUATE IN LOT 12, TOWNSHIP 11, OLD MILITARY TRACT, VILLAGE OF SARANAC LAKE, TOWN OF NORTH ELBA, COUNTY OF ESSEX AND STATE OF NEW YORK.

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TAX MAP NO.	32.231-1-11
MAP NO.	21007 Sheet 5 of 6

CADD File: 21007 SH5of6 fenceline.dwg



LOCATION MAP
NOT TO SCALE

LEGEND

- Boundary Line
- Adjoiner Line
- Gravel Road
- Overhead wires
- Chainlink Fenceline
- Adjoiner Line
- Easement Area
- ISS Limits
  Final Cap
- Found iron pipe/rebar
- Set 5/8" capped rebar
- Calculated corner

GREGORY L. PEACOCK
Reputed Owner
L. 1366 pg. 73
Tax parcel 32.215-6-2

GREGORY L. PEACOCK
Reputed Owner
L. 1028 pg. 187
Tax parcel 32.215-6-3

GEORGE C. HUTTIG
Reputed Owner
L. 1364 pg. 275
Tax parcel 32.232-1-1

DEBORAH FOX
AUBREY FOX
Reputed Owner
L. 1920 pg. 126
Tax parcel 32.232-1-2

RANDOLPH SMITH. Jr.
LYNN LOUISE SMITH
Reputed Owner
L. 721 pg. 87
Tax parcel 32.232-1-5

Found 1 1/2" iron pipe
0.2' above grade, leaning
Northerly

Found 1" iron pipe
0.1' above grade,
leaning Westerly

PZ-PV1
piezometer
elev @ top=1548.12'

GRAVEL ROAD

ESSEX COUNTY
Reputed Owner
L. 1413 pg. 194
Tax parcel 32.232-1-15

centerline of brook

centerline of swale

12" CMP

MW-106R
monitoring well
elev @ top=1544.09'

edge of gravel

Found 3/4" iron pipe
0.5' above grade, leaning

JANICE M. GAUTHIER
Reputed Owner
L. 844 pg. 112
Tax parcel 32.232-1-6

ROBERT OHMANN
MARY L. OHMANN
Reputed Owner
L. 656 pg. 120
Tax parcel 32.232-1-7

MW-108R
monitoring well
elev @ top=1547.42'

STEVEN P. SCHMIDT
MONICA D. SCHMIDT
Reputed Owner
L. 1972 pg. 210
Tax parcel 32.232-1-8

PZ-PV2
piezometer
elev @ top=1546.87'

PAYEVILLE ROAD

MW-110R
monitoring well
elev @ top=1547.33'

GEORGE E. PAYE III
Reputed Owner
L. 1794 pg. 120
Tax parcel 32.232-1-9

STATE OF NEW YORK
Reputed Owner
L. 1951 pg. 17
Tax parcel 32.247-4-1.2

GEORGE E. PAYE III
Reputed Owner
L. 1794 pg. 120
Tax parcel 32.232-1-10

SARANAC LAKE GAS CO INC.
Reputed Owner
L. 141 pg. 392
Tax parcel 32.231-1-11

GEORGE E. PAYE III
Reputed Owner
L. 1794 pg. 120
Tax parcel 32.232-1-16

Capped rebar
AEDA

MW-204D
monitoring well
elev @ top=1546.95'

Capped rebar
AEDA

Found 3/4" iron pipe
0.3' above grade

COUNTY OF ESSEX
COUNTY OF FRANKLIN
Reputed Owner
L. 1143 pg. 217
Tax parcel 32.232-1-13

gravel trail

gravel trail

N.Y.S. GRID NORTH
EAST ZONE

40 0 40 80 120
1 Inch = 40 Feet

Horizontal Datum: NAD 83
Vertical Datum: NAVD 88

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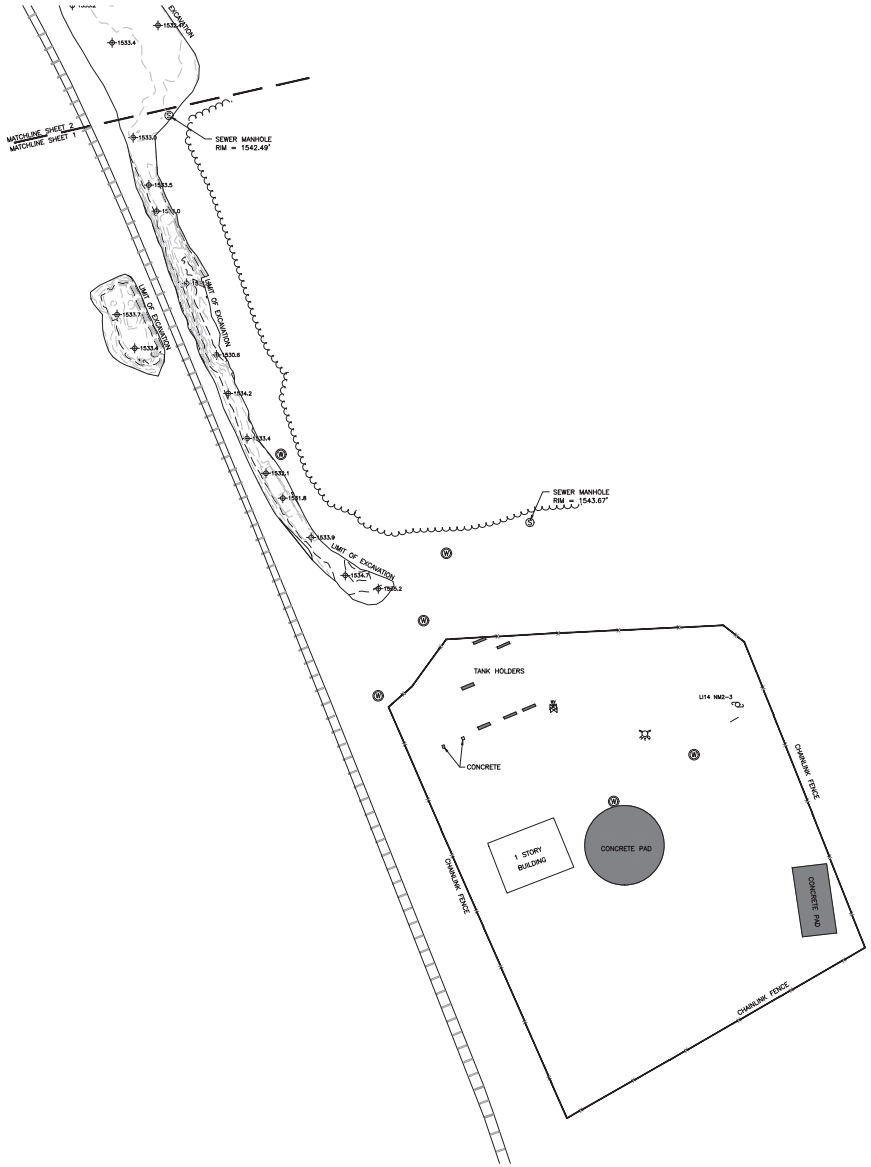
MAP OF SURVEY showing Monitoring Wells Locations Saranac Lake Gas Company Remediation

PREPARED FOR
D.A. COLLINS ENVIRONMENTAL SERVICES, LLC

SITUATE IN LOT 12, TOWNSHIP 11, OLD MILITARY TRACT, VILLAGE OF SARANAC LAKE, TOWN OF NORTH ELBA, COUNTY OF ESSEX AND STATE OF NEW YORK.

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SCALE	IN./FT. 1"=40' RATIO 1:480
TAX MAP NO.	32.231-1-11
MAP NO.	21007 Sheet 6 of 6

CADD File: 21007 SH6of6 mon wells.dwg





SITE LOCATION MAP

N.T.S.

LEGEND:

- UTILITY POLE
- TREE LINE
- WATER VALVE
- FIRE HYDRANT
- MONITORING WELL
- BOLLARD
- SIGN (1 POST)
- SIGN (2 POST)
- CHAINLINK FENCE
- LIGHT POST
- MINOR CONTOUR
- MAJOR CONTOUR
- GROUND SPOT ELEVATIONS
- WATER LINE
- GAS LINE
- UNDERGROUND ELECTRIC LINE
- SEWER MANHOLE
- DRAINAGE MANHOLE
- OVERHEAD UTILITY LINE
- GAS VALVE
- ASPHALT
- GRAVEL AREA
- CONCRETE

0 40 80 Feet

NOTES:

1. SURVEY SHOWN WAS PREPARED FROM A APRIL THROUGH MAY 2018 FIELD SURVEY.
2. SURVEY SUBJECT TO ANY SUBSURFACE CONDITIONS THAT MAY EXIST, IF ANY.
3. NO UNDERGROUND UTILITY INVESTIGATION WAS PERFORMED.
4. THE DATUM USED FOR THIS SURVEY IS BASED ON MAP REFERENCE 1.
5. SURVEY WAS PERFORMED UNDER ICE AND SNOW CONDITIONS, OTHER SITE FEATURES MAY EXIST.

MAP REFERENCES

MAP ENTITLED "REMEDIAL ACTION NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION SARANAC LAKE GAS CO., INC., SITE NO. 516008 OU02: BRANDY BROOK AND OU03 PONTIAC BAY ON LAKE FLOWER", DATED NOVEMBER 29, 2017 AND PREPARED BY MACTEC ENGINEERING AND CONSULTING, P.C..

NMB LAND SURVEYING PLLC
20 TROY AVE, WYNANTSKILL NY, 12198
518-376-4630

REVISIONS			
NO.	DATE	DESCRIPTION	BY

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NATHAN M. HURROWS L.S.
NEW YORK LIC. No. 50,724

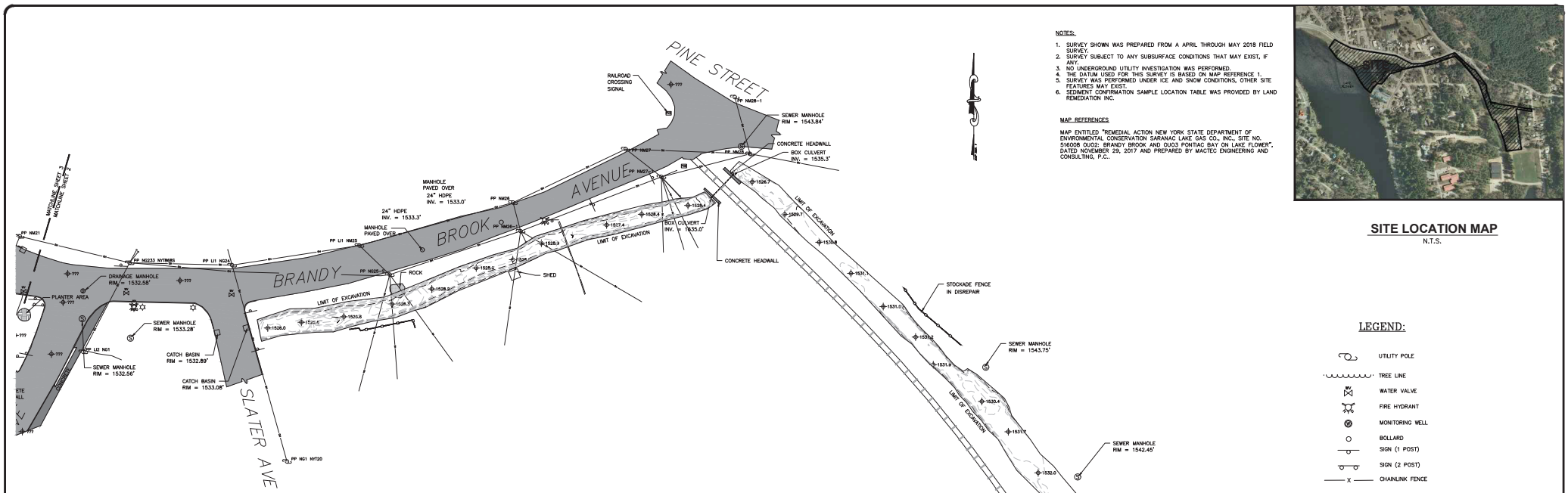
BOTTOM OF EXCAVATION TOPOGRAPHIC SURVEY

REMEDIAL ACTION NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
SARANAC LAKE GAS CO., INC., SITE 516008
OU02: BRANDY BROOK AND OU03 PONTIAC BAY ON LAKE FLOWER

VILLAGE OF SARANAC LAKE
COUNTY OF ESSEX STATE OF NEW YORK

SURVEYED BY: LR	CHECKED BY: NMB	DATE: 1-15-2019
DRAWN BY: AJK	JOB No. 6530	DWG No. EXCAVATION

SCALE: 1"=40' SHEET 1 OF 3



SITE LOCATION MAP
N.T.S.

NOTES:

1. SURVEY SHOWN WAS PREPARED FROM A APRIL THROUGH MAY 2018 FIELD SURVEY.
2. SURVEY SUBJECT TO ANY SUBSURFACE CONDITIONS THAT MAY EXIST, IF ANY.
3. NO UNDERGROUND UTILITY INVESTIGATION WAS PERFORMED.
4. THE DATUM USED FOR THIS SURVEY IS BASED ON MAP REFERENCE 1.
5. SURVEY WAS PERFORMED UNDER ICE AND SNOW CONDITIONS, OTHER SITE FEATURES MAY EXIST.
6. SEDIMENT CONFIRMATION SAMPLE LOCATION TABLE WAS PROVIDED BY LAND REMEDIATION INC.

MAP REFERENCES

MAP ENTITLED "REMEDIAL ACTION NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION SARANAC LAKE GAS CO., INC., SITE NO. 516008 OU02: BRANDY BROOK AND OU03 PONTIAC BAY ON LAKE FLOWER", DATED NOVEMBER 29, 2017 AND PREPARED BY MACTEC ENGINEERING AND CONSULTING, P.C..

LEGEND:

- UTILITY POLE
- TREE LINE
- WATER VALVE
- FIRE HYDRANT
- MONITORING WELL
- BOLLARD
- SIGN (1 POST)
- SIGN (2 POST)
- X — CHAINLINK FENCE
- LIGHT POST
- 1529 — MINOR CONTOUR
- 1530 — MAJOR CONTOUR
- 1531.8 GROUND SPOT ELEVATIONS
- W — WATER LINE
- G — GAS LINE
- E — UNDERGROUND ELECTRIC LINE
- S — SEWER MANHOLE
- D — DRAINAGE MANHOLE
- OH — OVERHEAD UTILITY LINE
- GAS VALVE
- ASPHALT
- GRAVEL AREA
- CONCRETE

0 40 80 Feet

Line	sys_loc_code	latitude	longitude	surf_elev	Line	sys_loc_code	latitude	longitude	surf_elev	Line	sys_loc_code	latitude	longitude	surf_elev	Line	sys_loc_code	latitude	longitude	surf_elev
1	OU-2 SOIL-131	44.323086	-74.121266	1527.977	56	OU2-SED-17-BOT	44.322233	-74.11858	1533.525	111	OU2-SED-65-SIDE	44.321851	-74.118386	1532.182	166	OU2-SOIL-152	44.321649	-74.118322	1532.551
2	OU-2 SOIL-132	44.323119	-74.121284	1528.376	57	OU2-SED-18-BOT	44.322305	-74.118636	1532.223	112	OU2-SED-66-SIDE	44.321843	-74.118433	1533.34	167	OU2-SOIL-153	44.321768	-74.118387	1532.983
3	OU-2 SOIL-133	44.323102	-74.121395	1527.012	58	OU2-SED-19-BOT	44.322332	-74.118534	1532.189	113	OU2-SED-67-SIDE	44.321932	-74.11843	1533.837	168	OU2-SOIL-154	44.322251	-74.118676	1534.139
4	OU-2 SOIL-134	44.323054	-74.121494	1528.74	59	OU2-SED-2_BOT	44.321278	-74.118026	1534.378	114	OU2-SED-68-SIDE	44.32192	-74.118468	1534.583	169	OU2-SOIL-155A	44.323389	-74.120113	1531.007
5	OU-2 SOIL-135	44.323092	-74.121515	1526.675	60	OU2-SED-20-BOT	44.322368	-74.118579	1533.074	115	OU2-SED-69-SIDE	44.322008	-74.118469	1533.551	170	XU2-SOIL-155A-SIDE	44.323376	-74.120158	1527.85
6	OU_2 SED-126	44.323194	-74.120985	1528.653	61	OU2-SED-21-BOT	44.322403	-74.118605	1531.435	116	OU2-SED-7	44.321617	-74.118283	1533.13	171	OU2-SOIL-156	44.323348	-74.12033	1528.67
7	OU_2 SED-127	44.323165	-74.12097	1528.996	62	OU2-SED-22-BOT	44.32245	-74.1187	1532.439	117	OU2-SED-70-SIDE	44.321991	-74.118514	1534.296	172	OU2-SOIL-157	44.323322	-74.120323	1528.721
8	OU_2 SED-128	44.323142	-74.12104	1526.419	63	OU2-SED-23-BOT	44.322496	-74.118791	1531.858	118	OU2-SED-71-SIDE	44.322087	-74.118436	1533.142	173	OU2-SOIL-158	44.323312	-74.120558	1526.864
9	OU_2 SED-129	44.323173	-74.12105	1527.806	64	OU2-SED-24-BOT	44.322571	-74.118844	1531.945	119	OU2-SED-72-SIDE	44.322089	-74.118559	1533.919	174	OU2-SOIL-159	44.323284	-74.120542	1526.056
10	OU_2 SED-130	44.323104	-74.121139	1528.432	65	OU2-SED-25-BOT	44.322638	-74.118897	1532.085	120	OU2-SED-73-SIDE	44.322179	-74.118347	1534.93	175	OU2-SOIL-160	44.323195	-74.120858	1528.996
11	OU_2 SED-144	44.323141	-74.121093	1525.904	66	OU2-SED-26-BOT	44.322702	-74.118962	1532.065	121	OU2-SED-74-SIDE	44.322157	-74.118601	1533.94	176	OU2-SOIL-161	44.323217	-74.120903	1528.91
12	OU_2 SED-145	44.323125	-74.121195	1528.65	67	OU2-SED-27-SIDE	44.322777	-74.119023	1531.589	122	OU2-SED-75-SIDE	44.322276	-74.118421	1533.054	177	OU2-WC01			0'
13	OU_2 SED-46	44.323182	-74.120979	1528.279	68	OU2-SED-28-BOT	44.322828	-74.119116	1531.667	123	OU2-SED-76-SIDE	44.322347	-74.118487	1533.293	178	OU2-WC02			0'
14	OU_2 SED-47	44.323157	-74.121037	1526.271	69	OU2-SED-29-BOT	44.32289	-74.119191	1530.909	124	OU2-SED-77-SIDE	44.322289	-74.118704	1533.884	179	OU2-WC03			0'
15	OU_2 SED-48	44.323117	-74.121157	1526.724	70	OU2-SED-3_BOT	44.321324	-74.118086	1534.304	125	OU2-SED-78-SIDE	44.322421	-74.118569	1532.607	180	OU2-WC04			0'
16	OU_2 SOIL-162	44.323123	-74.121085	1527.107	71	OU2-SED-30-BOT	44.322948	-74.119271	1531.168	126	OU2-SED-79-SIDE	44.322344	-74.11873	1534.202	181	OU2-WC05			0'
17	OU_2 SOIL-163	44.323156	-74.121109	1527.294	72	OU2-SED-31-BOT	44.323007	-74.11935	1531.028	127	OU2-SED-8_BOT	44.321693	-74.118334	1529.256	182	OU3-SED-1 COM	44.323122	-74.124219	1520.3426
18	OU2-SED-0164-BOT	44.321679	-74.118525	1533.097	73	OU2-SED-32-BOT	44.323068	-74.119428	1531.324	128	OU2-SED-80-SIDE	44.322484	-74.11865	1533.569	183	OU3-SED-1_1	44.323122	-74.124219	1520.3426
19	OU2-SED-1_BOT	44.321217	-74.117939	1534.672	74	OU2-SED-34-BOT	44.323185	-74.119589	1529.902	129	OU2-SED-81-SIDE	44.322396	-74.118762	1534.642	184	OU3-SED-1_2	44.323184	-74.124241	1519.8338
20	OU2-SED-10-BOT	44.321847	-74.11841	1531.311	75	OU2-SED-35-BOT	44.323244	-74.11967	1531.479	130	OU2-SED-82-SIDE	44.322557	-74.118712	1533.856	185	OU3-SED-1_3	44.323196	-74.124045	1520.2279
21	OU2-SED-100-SIDE	44.323079	-74.119409	1532.252	76	OU2-SED-36-BOT	44.323303	-74.119749	1530.655	131	OU2-SED-83-SIDE	44.322472	-74.118814	1533.67	186	OU3-SED-1_4	44.323105	-74.124034	1520.431
22	OU2-SED-101-SIDE	44.323058	-74.119444	1532.327	77	OU2-SED-37-BOT	44.323359	-74.11983	1526.655	132	OU2-SED-84-SIDE	44.322594	-74.118773	1533.263	187	OU3-SED-10 COM	44.323057	-74.123571	1520.1731
23	OU2-SED-102-SIDE	44.323136	-74.119463	1532.07	78	OU2-SED-38-BOT	44.323393	-74.119907	1526.433	133	OU2-SED-85-SIDE	44.322558	-74.118883	1533.435	188	OU3-SED-10-1	44.323057	-74.123571	1520.1731
24	OU2-SED-103-SIDE	44.323116	-74.119521	1531.75	79	OU2-SED-39-BOT	44.32344	-74.119985	1525.769	134	OU2-SED-86-SIDE	44.322658	-74.118964	1532.944	189	OU3-SED-11 COM	44.322935	-74.12387	1518.3213
25	OU2-SED-104-SIDE	44.323195	-74.119575	1532.312	80	OU2-SED-3A-BOT	44.321325	-74.118085	1533.655	135	OU2-SED-87-SIDE	44.322629	-74.118931	1533.087	190	OU3-SED-12 COM	44.322921	-74.123651	1518.9209
26	OU2-SED-105-SIDE	44.323173	-74.11961	1532.005	81	OU2-SED-4_BOT	44.321391	-74.118152	1533.845	136	OU2-SED-88-SIDE	44.322722	-74.118936	1532.574	191	OU3-SED-13 COM	44.322988	-74.12331	1518.0426
27	OU2-SED-106-SIDE	44.323231	-74.119689	1532.603	82	OU2-SED-40-BOT	44.323374	-74.120115	1529.194	137	OU2-SED-89-SIDE	44.322688	-74.119011	1533.313	192	OU3-SED-13-1	44.322988	-74.12331	1518.0426
28	OU2-SED-108-SIDE	44.323289	-74.119771	1532.301	83	OU2-SED-40A	44.323365	-74.120151	1527.434	138	OU2-SED-9_BOT	44.321771	-74.118367	1529.714	193	OU3-SED-14 COM	44.32295	-74.123323	1518.0412
29	OU2-SED-109-SIDE	44.32337	-74.119817	1526.733	84	XU2-SED-41-BOTTOM HI	44.323355	-74.120217	1528.745	139	OU2-SED-90-SIDE	44.322789	-74.119003	1532.264	194	OU3-SED-14-1	44.32295	-74.123323	1518.0412
30	OU2-SED-11-BOT	44.321925	-74.118447	1533.098	85	OU2-SED-42	44.32332	-74.120402	1526.907	140	OU2-SED-91-SIDE	44.322755	-74.119077	1532.139	195	OU3-SED-14-2	44.322935	-74.123233	1518.1339
31	OU2-SED-110-SIDE	44.323348	-74.119844	1527.611	86	OU2-SED-43	44.323305	-74.120495	1526.269	141	OU2-SED-92-SIDE	44.322854	-74.11908	1531.938	196	OU3-SED-15-1	44.322973	-74.123116	1519.4233
32	OU2-SED-111-SIDE	44.323407	-74.119877	1526.853	87	OU2-SED-44	44.323278	-74.120622	1529.008	142	OU2-SED-93-SIDE	44.322812	-74.119134	1532.45	197	OU3-SED-15-COM	44.322973	-74.123116	1519.4233
33	OU2-SED-112-SIDE	44.323385	-74.119929	1526.796	88	OU2-SED-45	44.323245	-74.120747	1528.593	143	OU2-SED-94-SIDE	44.322904	-74.119168	1531.693	198	J3-SED-15-COMP-DUP			0'
34	OU2-SED-113-SIDE	44.323445	-74.119993	1525.852	89	OU2-SED-49	44.323102	-74.121256	1527.407	144	OU2-SED-95-SIDE	44.322678	-74.119015	1531.987	199	OU3-SED-16-1	44.322921	-74.123111	1519.3997
35	OU2-SED-114-SIDE	44.323427	-74.119986	1528.226	90	OU2-SED-4A-BOT	44.321394	-74.118152	1531.935	145	OU2-SED-96-SIDE	44.322962	-74.119258	1532.326	200	OU3-SED-16-COM	44.322921	-74.123111	1519.3997
36	OU2-SED-115-SIDE	44.32336	-74.120102	1530.031	91	OU2-SED-5	44.321465	-74.118207	1533.483	146	OU2-SED-97-SIDE	44.322944	-74.119286	1532.645	201	OU3-SED-17-1	44.322955	-74.122934	1519.752
37	OU2-SED-116-SIDE	44.323343	-74.120217	1528.518	92	OU2-SED-50	44.323074	-74.121403	1526.547	147	OU2-SED-98-SIDE	44.323018	-74.119332	1531.902	202	OU3-SED-17-2	44.323016	-74.122916	1519.444
38	OU2-SED-117-SIDE	44.323366	-74.120219	1529.417	93	OU2-SED-51	44.323068	-74.12152	1526.363	148	OU2-SED-99-SIDE	44.322995	-74.119368	1532.324	203	OU3-SED-17-COM	44.322955	-74.122934	1519.752
39	OU2-SED-118	44.323302	-74.120403	1527.498	94	OU2-SED-52	44.323055	-74.121626	1526.318	149	OU2-SOIL-122	44.323293	-74.120633	1529.441	204	OU3-SED-18-1	44.322935	-74.122941	1518.4304
40	OU2-SED-119	44.323338	-74.120405	1528.292	95	OU2-SED-53	44.321186	-74.117942	1535.947	150	OU2-SOIL-123	44.32326	-74.120665	1529.696	205	OU3-SED-18-2	44.322933	-74.122904	1519.7386
41	OU2-SED-12-BOT	44.322002	-74.118488	1532.923	96	OU2-SED-53A-SIDE	44.321183	-74.117945	1535.677	151	OU2-SOIL-124	44.322229	-74.120734	1529.694	206	OU3-SED-18-COM	44.322935	-74.122941	1518.4304
42	OU2-SED-120	44.323291	-74.120476	1526.711	97	OU2-SED-54	44.321252	-74.117935	1535.612	152	OU2-SOIL-125	44.323252	-74.120765	1529.935	207	OU3-SED-2 COM			0'
43	OU2-SED-121	44.323322	-74.120508	1527.052	98	OU2-SED-55	44.321256	-74.118055	1536.926	153	OU2-SOIL-134	44.323054	-74.121494	1528.74	208	J3-SED-2 COMPOST	44.323138	-74.124499	1521.6327
44	OU2-SED-13-BOT	44.322082	-74.118499	1532.343	99	OU2-SED-56	44.321286	-74.11801	1535.547	154	OU2-SOIL-135	44.323092	-74.121515	1526.675	209	OU3-SED-3 COM	44.322947	-74.124246	1518.071
45	OU2-SED-14-BOT	44.32217	-74.118444	1532.708	100	OU2-SED-57	44.321313	-74.118105	1535.05	155	OU2-SOIL-136	44.323044	-74.121612	1526.579	210	OU3-SED-4 COM			0'
46	OU2-SED-140_BOT	44.321728	-74.118343	1528.843	101	OU2-SED-58	44.321336	-74.118069	1534.95	156	OU2-SOIL-137	44.32308	-74.12162	1526.417	211	J3-SED-4 COMPOST	44.322977	-74.124609	1519.8475
47	OU2-SED-143	44.322312	-74.120889	1528.478	102	OU2-SED-59	44.321408	-74.118119	1535.178	157	OU2-SOIL-138	44.323436	-74.118214	1537.074	212	OU3-SED-9 COM	44.323113	-74.123888	1519.5943
48	OU2-SED-15-BOT	44.322162	-74.118551	1533.542	103	OU2-SED-6	44.321542	-74.118249	1533.048	158	OU2-SOIL-139	44.321561	-74.118287	1535.364	213	OU3-SED-9-1	44.323113	-74.123888	1519.5943
49	OU2-SED-155-SIDE	44.323389	-74.120113	1531.007	104	OU2-SED-60	44.321475	-74.118178	1536.31	159	OU2-SOIL-141	44.323334	-74.120138	1528.096	214	OU3-SED-9-2	44.323202	-74.12388	1519.5342
50	OU2-SED-16-BOT	44.322258	-74.118485	1532.589	105	OU2-SED-61	44.321545	-74.118223	1535.13	160	OU2-SOIL-146	44.321275	-74.118068	1535.265	215	OU3-SED_5	44.322809	-74.124608	1518.2526
51	OU2-SED-165-BOT	44.321739	-74.11856	1533.361	106	OU2-SED-62	44.321623	-74.118269	1535.101	161	XU2-SOIL-147_BOT	44.321366	-74.118165	1536.411	216	OU3-SED_6	44.322628	-74.124628	1517.4143
52	OU2-SED-166-SIDE	44.321638	-74.118497	1534.05	107	OU2-SED-62A-SIDE	44.321625	-74.118265	1535.438	162	OU2-SOIL-148	44.321433	-74.118137	1535.245	217	OU3-SED_7	44.322461	-74.124517	1518.1193
53	OU2-SED-167-SIDE	44.321668	-74.118557	1534.037	108	OU2-SED-62_SIDE	44.3217	-74.118301	1530.853	163	OU2-SOIL-149	44.321453	-74.118231	1537.592	218	OU3-SED_8	44.322451	-74.124446	1519.5404
54	OU2-SED-168-SIDE	44.321729	-74.118592	1534.123	109	OU2-SED-64_SIDE	44.321778	-74.118336	1531.314	164	OU2-SOIL-150	44.321534	-74.118275	1535.363					
55	OU2-SED-169-SIDE	44.32178	-74.118572	1534.213	110	OU2-SED-64_SIDEWALL			0'	165	OU2-SOIL-151	44.321609	-74.118314	1535.706					

REVISIONS			
NO.	DATE	DESCRIPTION	BY

UNAUTHORIZED ALTERATION OR ADDITION TO THIS SURVEY MAP IS A VIOLATION OF SECTION 7209 SUBDIVISION 2 OF THE NEW YORK STATE EDUCATION LAW. COPIES OF THIS SURVEY MAP NOT BEARING THE LAND SURVEYOR'S EMBOSSED SEAL AND ORIGINAL SIGNATURE SHALL NOT BE CONSIDERED TO BE VALID TRUE COPIES. THE CERTIFICATIONS HEREON ARE EXPRESSED ONLY AS TO THE PARTIES FOR WHOM THE SURVEY IS PREPARED, AND ON THEIR BEHALF TO THE ADDITIONAL PARTIES LISTED HEREON. CERTIFICATES ARE NOT TRANSFERABLE TO ADDITIONAL PARTIES OR SUBSEQUENT OWNERS, NOT LISTED HEREON.

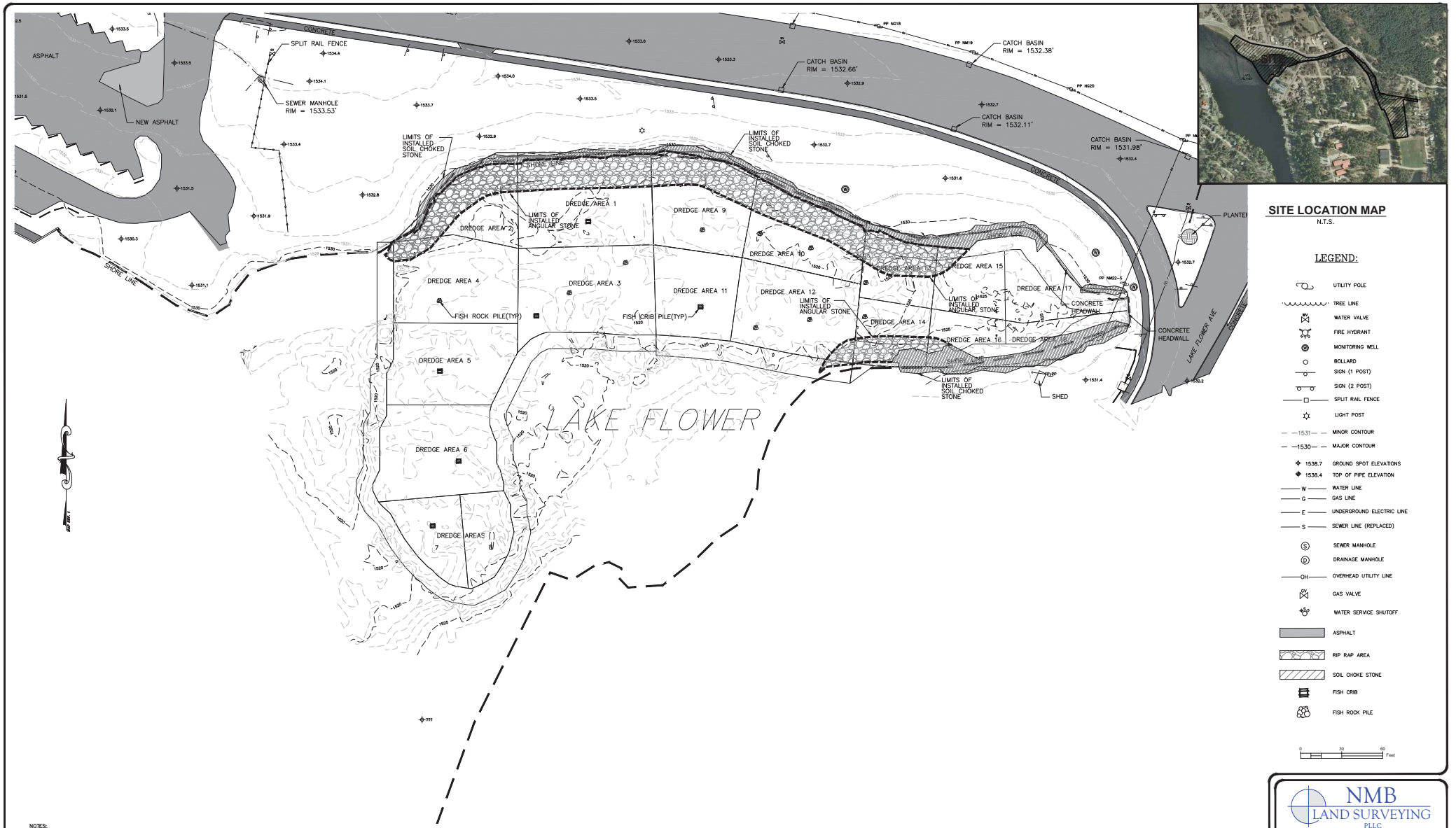
NATHAN M. HURROWS L.S.
NEW YORK LIC. No. 50,724

NMB LAND SURVEYING PLLC
20 TROY AVE, WYNANTSKILL NY, 12198
518-376-4630

BOTTOM OF EXCAVATION TOPOGRAPHIC SURVEY
REMEDIAL ACTION NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
SARANAC LAKE GAS CO., INC., SITE 516008
OU02: BRANDY BROOK AND OU03 PONTIAC BAY ON LAKE FLOWER
VILLAGE OF SARANAC LAKE
COUNTY OF ESSEX STATE OF NEW YORK

SURVEYED BY: LR	CHECKED BY: NMB	DATE: 1-15-2018
DRAWN BY: AW	JOB No. 6530	DWG No. EXCAVATION

SCALE: 1"=40' SHEET 2 OF 3



SITE LOCATION MAP

N.T.S.

LEGEND:

- UTILITY POLE
- TREE LINE
- WATER VALVE
- FIRE HYDRANT
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- BOLLARD
- SIGN (1 POST)
- SIGN (2 POST)
- SPLIT RAIL FENCE
- LIGHT POST
- 1531 MINOR CONTOUR
- 1530 MAJOR CONTOUR
- 1538.7 GROUND SPOT ELEVATIONS
- 1538.4 TOP OF PIPE ELEVATION
- W WATER LINE
- G GAS LINE
- E UNDERGROUND ELECTRIC LINE
- S SEWER LINE (REPLACED)
- S SEWER MANHOLE
- D DRAINAGE MANHOLE
- OH OVERHEAD UTILITY LINE
- GV GAS VALVE
- WS WATER SERVICE SHUTOFF
- ASPHALT
- RIP RAP AREA
- SOIL CHOKE STONE
- FISH CRIB
- FISH ROCK PILE

0 30 60 Feet

NOTES:

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4. THE DATUM USED FOR THIS SURVEY IS BASED ON MAP REFERENCE 1.
5. SURVEY WAS PERFORMED UNDER ICE AND SNOW CONDITIONS, OTHER SITE FEATURES MAY EXIST.

MAP REFERENCES

MAP ENTITLED "REMEDIAL ACTION NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION SARANAC LAKE GAS CO., INC., SITE NO. 516008 OU02: BRANDY BROOK AND OU03 PONTIAC BAY ON LAKE FLOWER", DATED NOVEMBER 29, 2017 AND PREPARED BY MACTEC ENGINEERING AND CONSULTING, P.C..

NMB LAND SURVEYING PLLC
20 TROY AVE, WYNANTSKILL NY, 12198
518-376-4630

REVISIONS			
NO.	DATE	DESCRIPTION	BY

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NATHAN M. HURROWS L.S.
NEW YORK LIC. No. 50,724

BATHYMETRIC BACKFILL SURVEY

REMEDIAL ACTION NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
SARANAC LAKE GAS CO., INC., SITE 516008
OU02: BRANDY BROOK AND OU03 PONTIAC BAY ON LAKE FLOWER

VILLAGE OF SARANAC LAKE
COUNTY OF ESSEX — STATE OF NEW YORK

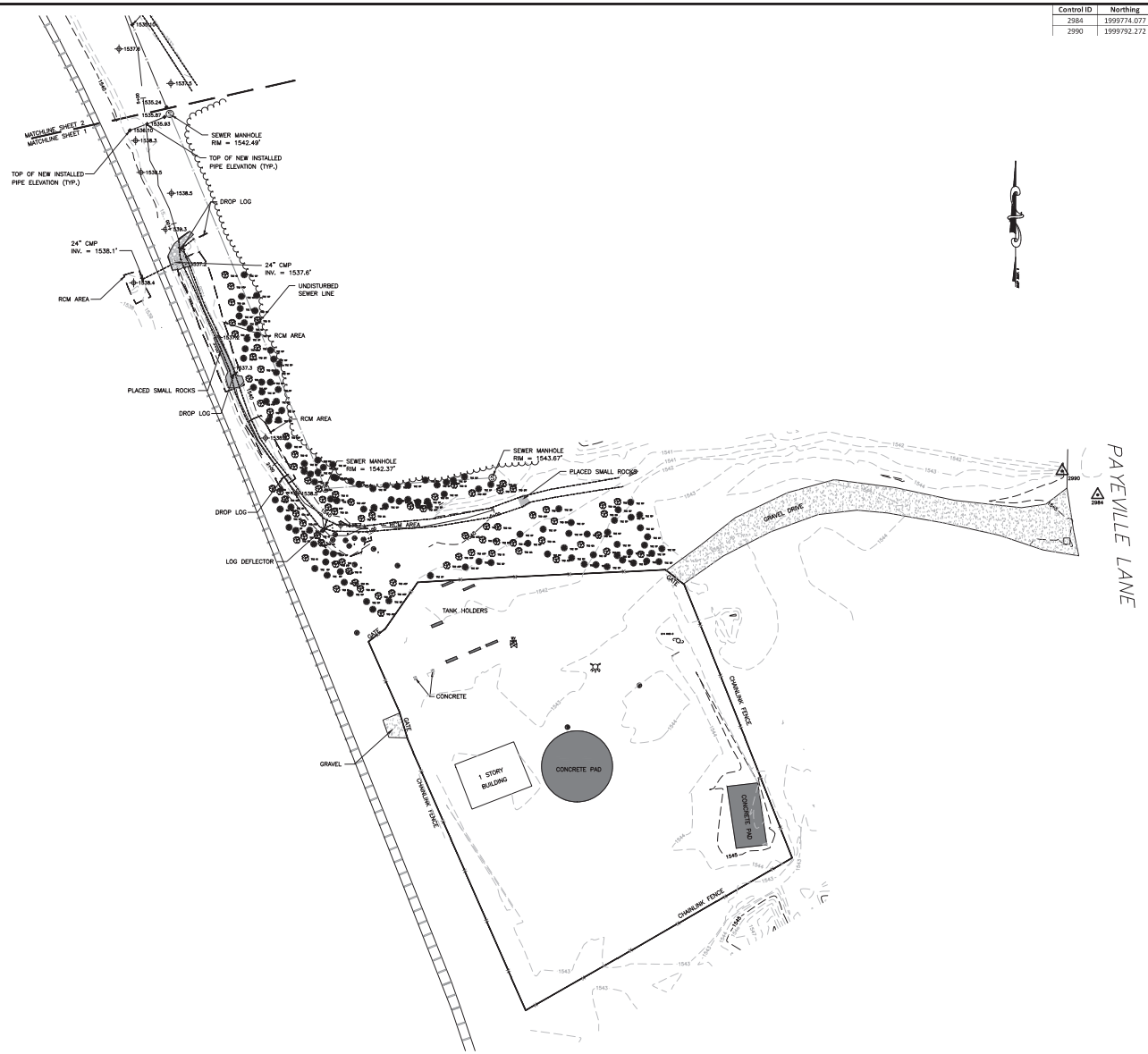
SURVEYED BY: AJK/CRT — CHECKED BY: NMB — DATE: 8-11-2019
DRAWN BY: AJK — JOB No. 6530 — DWG No. 6SCP01

SCALE: 1"=30' — SHEET 1 OF 1

Control ID	Northing	Easting	Elevation	Description
2984	1999774.077	592685.332	1545.690	CBP
2990	1999792.272	592658.264	1548.420	BM X CUT HEADWALL



SITE LOCATION MAP
N.T.S.



LEGEND:

- UTILITY POLE
- TREE LINE
- WATER VALVE
- FIRE HYDRANT
- MONITORING WELL
- BOLLARD
- SIGN (1 POST)
- SIGN (2 POST)
- CHAINLINK FENCE
- LIGHT POST
- 1531 MINOR CONTOUR
- 1530 MAJOR CONTOUR
- 1538.7 GROUND SPOT ELEVATIONS
- 1538.4 TOP OF PIPE ELEVATION
- W WATER LINE
- G GAS LINE
- E UNDERGROUND ELECTRIC LINE
- S SEWER LINE
- S SEWER MANHOLE
- D DRAINAGE MANHOLE
- OH OVERHEAD UTILITY LINE
- GAS VALVE
- ASPHALT
- GRAVEL AREA
- CONCRETE
- REACTIVE CORE MATTING AREA
- BASELINE CONTROL POINT
- DROP LOG STRUCTURES
- EDGE OF STREAM
- TRD MA PLACED MAPLE
- TRD ASP PLACED ASPEN
- TRD CH PLACED CHERRY
- TRD DW PLACED DOGWOOD
- TRD POP PLACED POPLAR
- TRD BI PLACED BIRCH
- TRE SP PLACED SPRUCE
- TRE WP PLACED WHITE PINE

0 40 80 Feet

NOTES:

1. SURVEY SHOWN WAS PREPARED FROM A JUNE 2019 FIELD SURVEY.
2. SURVEY SUBJECT TO ANY SUBSURFACE CONDITIONS THAT MAY EXIST, IF ANY.
3. NO UNDERGROUND UTILITY INVESTIGATION WAS PERFORMED.
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MAP REFERENCES

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Well #	Northing	Easting	top of casing elev.	bottom of casing elev.
1	1999744	592103.9	1540.877	1535.585
2	1999740	592102.1	1540.261	1534.969
3	1999739	592111.8	1540.339	1535.047
4	1999735	592114.6	1541.011	1535.719
5	1999741	592118.7	1540.365	1535.073
6	1999740	592125.5	1540.461	1535.169
7	1999733	592133.2	1540.969	1534.219
8	1999721	592118.8	1542.337	1534.004

NO.	DATE	REVISIONS DESCRIPTION	BY

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NATHAN M. HURSHOWS L.S.
NEW YORK LIC. No. 50,724

NMB LAND SURVEYING PLLC
20 TROY AVE. WYNANTSKILL NY, 12198
518-376-4630

POST CONSTRUCTION TOPOGRAPHIC SURVEY
REMEDIAL ACTION NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
SARANAC LAKE GAS CO., INC., SITE 516008
OU02: BRANDY BROOK AND OU03 PONTIAC BAY ON LAKE FLOWER
VILLAGE OF SARANAC LAKE
COUNTY OF ESSEX STATE OF NEW YORK

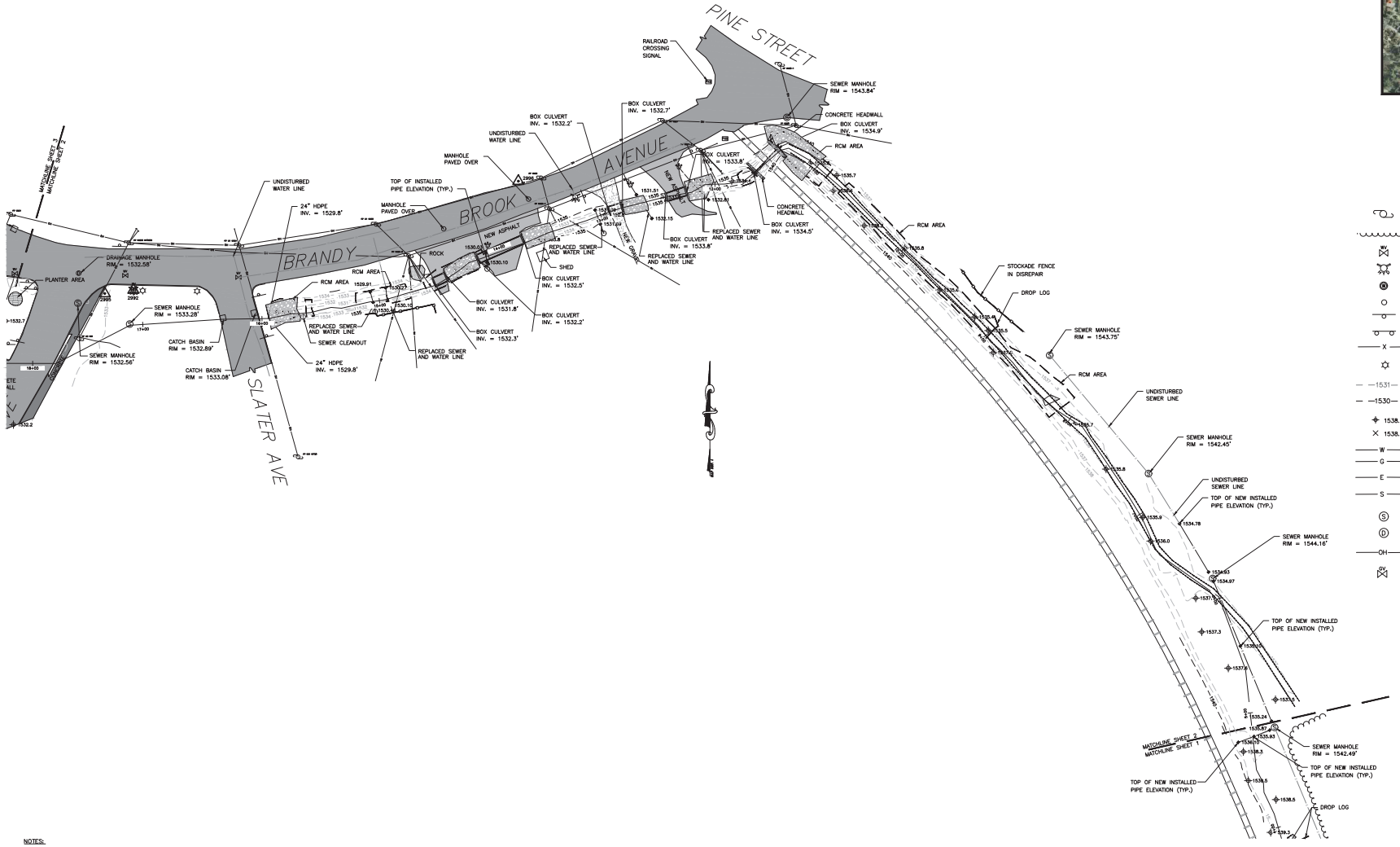
SURVEYED BY: AJK/CRT | CHECKED BY: NMB | DATE: 11-8-2019
DRAWN BY: AJK | JOB No. 6530 | DWG. No. POST CONSTRUCTION

SCALE: 1"=40' SHEET 1 OF 3

Control ID	Northing	Easting	Elevation	Description
2992	2000430.759	591021.880	1535.420	BM X FLANGE BOLT
2995	2000427.836	590997.877	1533.349	CBP
2996	2000521.899	591344.323	1536.652	CBP



SITE LOCATION MAP
N.T.S.



LEGEND:

- UTILITY POLE
- TREE LINE
- WATER VALVE
- FIRE HYDRANT
- MONITORING WELL
- BOLLARD
- SIGN (1 POST)
- SIGN (2 POST)
- CHAINLINK FENCE
- LIGHT POST
- 1531 MINOR CONTOUR
- 1530 MAJOR CONTOUR
- 1538.7 GROUND SPOT ELEVATIONS
- 1538.4 TOP OF PIPE ELEVATION
- W WATER LINE
- G GAS LINE
- E UNDERGROUND ELECTRIC LINE
- S SEWER LINE
- SEWER MANHOLE
- DRAINAGE MANHOLE
- OH OVERHEAD UTILITY LINE
- GAS VALVE
- ASPHALT
- GRAVEL AREA
- CONCRETE
- REACTIVE CORE MATTING AREA
- BASELINE CONTROL POINT
- DROP LOG STRUCTURES
- EDGE OF STREAM
- TRD MA PLACED MAPLE
- TRD ASP PLACED ASPEN
- TRD CH PLACED CHERRY
- TRD DW PLACED DOGWOOD
- TRD POP PLACED POPLAR
- TRD BI PLACED BIRCH
- TRE SP PLACED SPRUCE
- TRE WP PLACED WHITE PINE

0 40 80 Feet

NOTES:

1. SURVEY SHOWN WAS PREPARED FROM A JUNE 2019 FIELD SURVEY.
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NMB LAND SURVEYING PLLC
20 TROY AVE, WYNANTSKILL NY, 12198
518-376-4630

REVISIONS			
NO.	DATE	DESCRIPTION	BY

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NATHAN M. HURROWS L.S.
NEW YORK LIC. No. 50,724

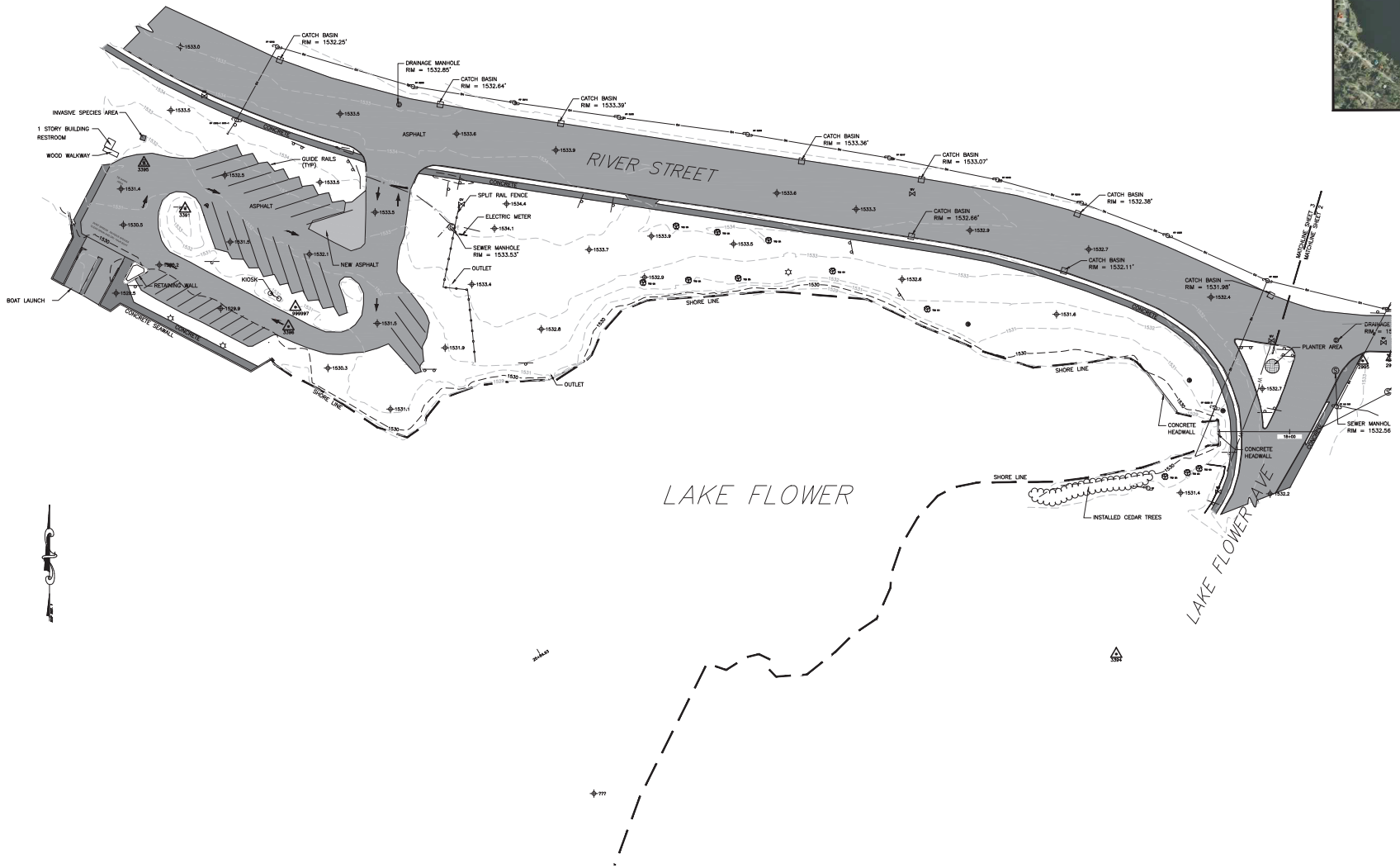
POST CONSTRUCTION TOPOGRAPHIC SURVEY
REMEDIAL ACTION NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
SARANAC LAKE GAS CO., INC., SITE 516008
OU02: BRANDY BROOK AND OU03 PONTIAC BAY ON LAKE FLOWER
VILLAGE OF SARANAC LAKE
COUNTY OF ESSEX STATE OF NEW YORK

SURVEYED BY: AJK,CRT	CHECKED BY: NMB	DATE: 11-6-2019
DRAWN BY: AJK	JOB No. 6530	DWG No. POST CONSTRUCTION

SCALE: 1"=40' SHEET 2 OF 3

Control ID	Northing	Easting	Elevation	Description
2995	2000427.836	590997.877	1533.149	CBP
3391	2000553.347	590025.228	1533.671	CBP
3394	2000185.758	590794.364	1532.487	CBP
3395	2000591.134	589991.283	1531.622	USMH
3396	2000456.145	590110.605	1530.588	BLSO MAG
999997	2000472.213	590116.367	1531.863	BASE CIR





SITE LOCATION MAP

N.T.S.

LEGEND:

- UTILITY POLE
- TREE LINE
- WATER VALVE
- FIRE HYDRANT
- MONITORING WELL
- BOLLARD
- SIGN (1 POST)
- SIGN (2 POST)
- SPLIT RAIL FENCE
- LIGHT POST
- 1531 — MINOR CONTOUR
- 1530 — MAJOR CONTOUR
- 1538.7 GROUND SPOT ELEVATIONS
- 1538.4 TOP OF PIPE ELEVATION
- W — WATER LINE
- G — GAS LINE
- E — UNDERGROUND ELECTRIC LINE
- S — SEWER LINE (REPLACED)
- (S) SEWER MANHOLE
- (D) DRAINAGE MANHOLE
- OH — OVERHEAD UTILITY LINE
- GAS VALVE
- WATER SERVICE SHUTOFF
- ASPHALT
- GRAVEL AREA
- CONCRETE
- REACTIVE CORE MATTING AREA
- BASELINE CONTROL POINT

0 40 80 Feet

NOTES:

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NMB LAND SURVEYING PLLC
20 TROY AVE, WYNANTSKILL NY, 12198
518-376-4630

REVISIONS			
NO.	DATE	DESCRIPTION	BY

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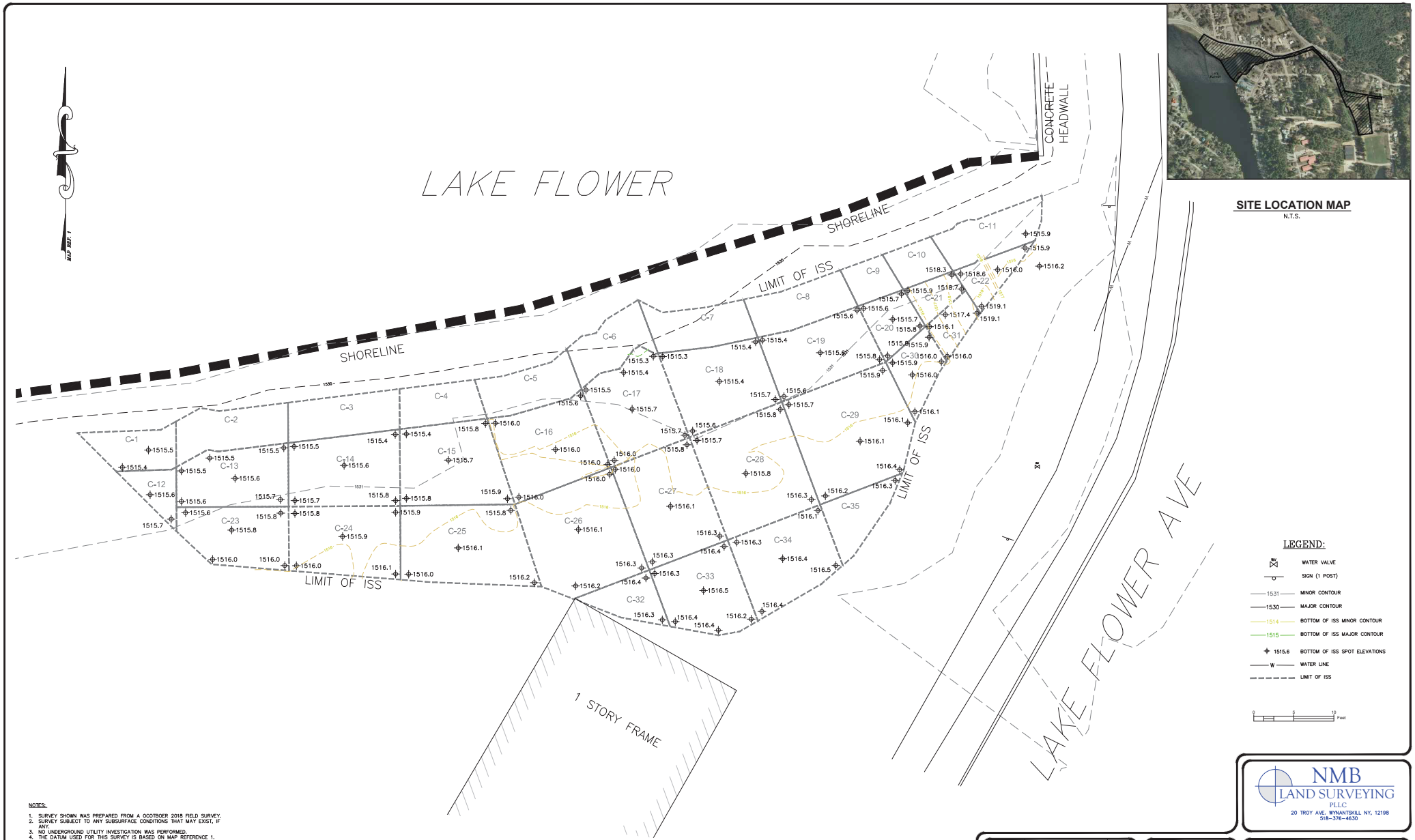
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REMEDIAL ACTION NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
SARANAC LAKE GAS CO., INC., SITE 516008
OU02: BRANDY BROOK AND OU03 PONTIAC BAY ON LAKE FLOWER

VILLAGE OF SARANAC LAKE
COUNTY OF ESSEX — STATE OF NEW YORK

SURVEYED BY: AJK/CRT | CHECKED BY: NMB | DATE: 11-8-2019
DRAWN BY: AJK | JOB No.: 6530 | DWG. No.: POST CONSTRUCTION

SCALE: 1"=40' | SHEET 3 OF 3



SITE LOCATION MAP

N.T.S.

LEGEND:

- WATER VALVE
- SIGN (1 POST)
- 1531 — MINOR CONTOUR
- 1530 — MAJOR CONTOUR
- 1514 — BOTTOM OF ISS MINOR CONTOUR
- 1515 — BOTTOM OF ISS MAJOR CONTOUR
- 1515.6 — BOTTOM OF ISS SPOT ELEVATIONS
- W — WATER LINE
- LIMIT OF ISS

0 5 10 Feet

NOTES:

1. SURVEY SHOWN WAS PREPARED FROM A OCOTBOER 2018 FIELD SURVEY.
2. SURVEY SUBJECT TO ANY SUBSURFACE CONDITIONS THAT MAY EXIST, IF ANY.
3. NO UNDERGROUND UTILITY INVESTIGATION WAS PERFORMED.
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518-376-4630

REVISIONS			
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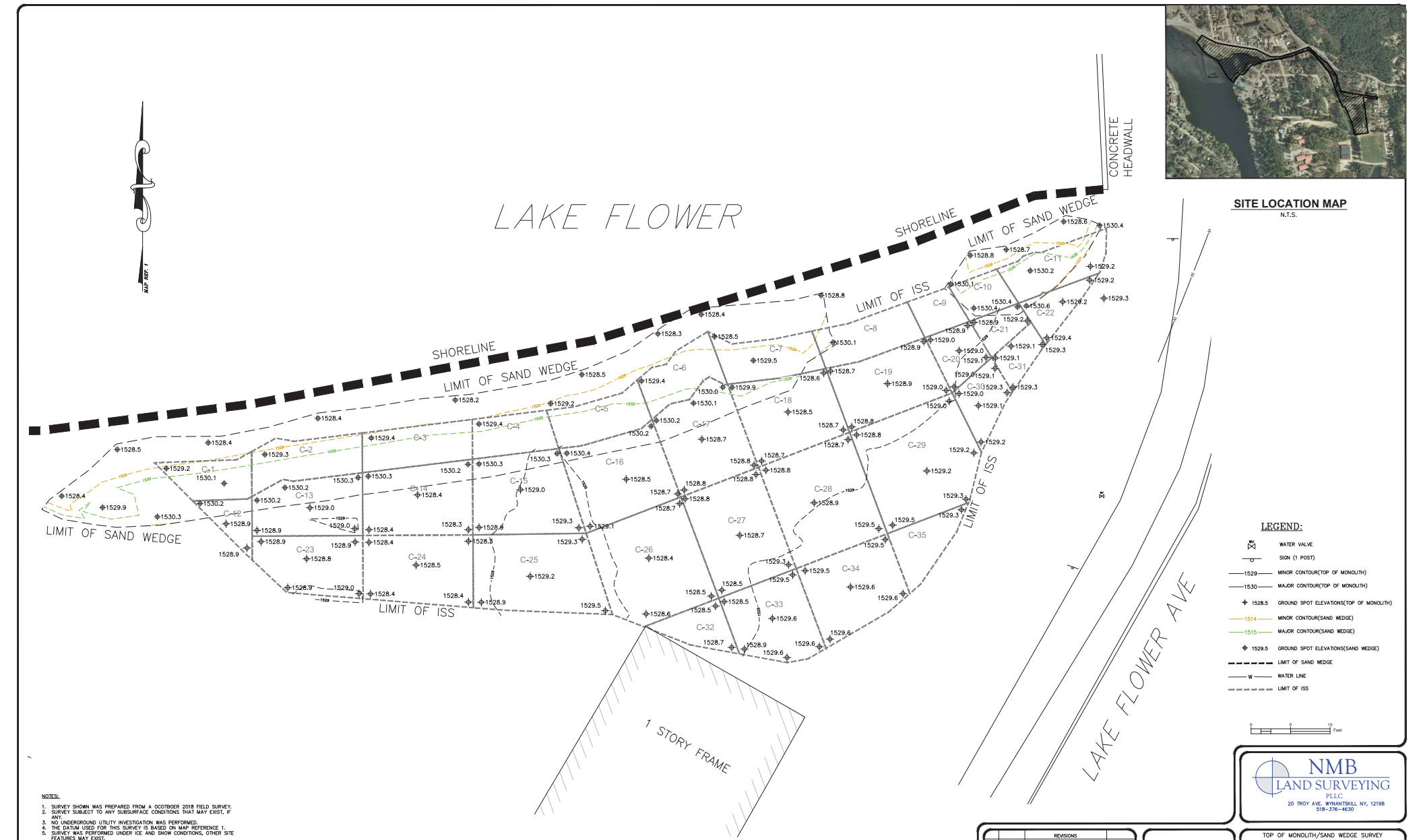
BOTTOM OF ISS SURVEY

REMEDIAL ACTION NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
SARANAC LAKE GAS CO., INC., SITE 516008
OU3 – ISS AREA

VILLAGE OF SARANAC LAKE
COUNTY OF ESSEX STATE OF NEW YORK

SURVEYED BY: LR | CHECKED BY: NMB | DATE: 5-29-2019
DRAWN BY: AJK | JOB No. 6530 | DWG No. ISS

SCALE: 1"=5' SHEET 1 OF 1



SITE LOCATION MAP

N.T.S.

LEGEND:

- WATER VALVE
- SIGN (1 POST)
- 1529 MINOR CONTOUR(TOP OF MONOLITH)
- 1530 MAJOR CONTOUR(TOP OF MONOLITH)
- 1528.5 GROUND SPOT ELEVATIONS(TOP OF MONOLITH)
- 1514 MINOR CONTOUR(SAND WEDGE)
- 1515 MAJOR CONTOUR(SAND WEDGE)
- 1529.5 GROUND SPOT ELEVATIONS(SAND WEDGE)
- LIMIT OF SAND WEDGE
- W WATER LINE
- LIMIT OF ISS

0 5 10 Feet

NOTES:

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NATHAN M. HURSHOWS L.S.
NEW YORK LIC. No. 50,724

TOP OF MONOLITH/SAND WEDGE SURVEY

REMEDIAL ACTION NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
SARANAC LAKE GAS CO., INC., SITE 516008
OU3 – ISS AREA

VILLAGE OF SARANAC LAKE
COUNTY OF ESSEX STATE OF NEW YORK

SURVEYED BY: LR	CHECKED BY: NMB	DATE: 8-3-2019
DRAWN BY: AJK	JOB No. 6530	DWG No. MONOLITH

SCALE: 1"=5' SHEET 1 OF 1



SITE LOCATION MAP

N.T.S.

LAKE FLOWER

SHORELINE

LIMIT OF ISS

CONCRETE HEADWALL

1 STORY FRAME

LAKE FLOWER AVE

MAP REF. 1

LEGEND:

- WV — WATER VALVE
- SIGN (1 POST)
- 1531 — MINOR CONTOUR
- 1530 — MAJOR CONTOUR
- 1531.1 — BOTTOM OF ISS SPOT ELEVATIONS
- W — WATER LINE
- LIMIT OF ISS

0 5 10 Feet

NOTES:

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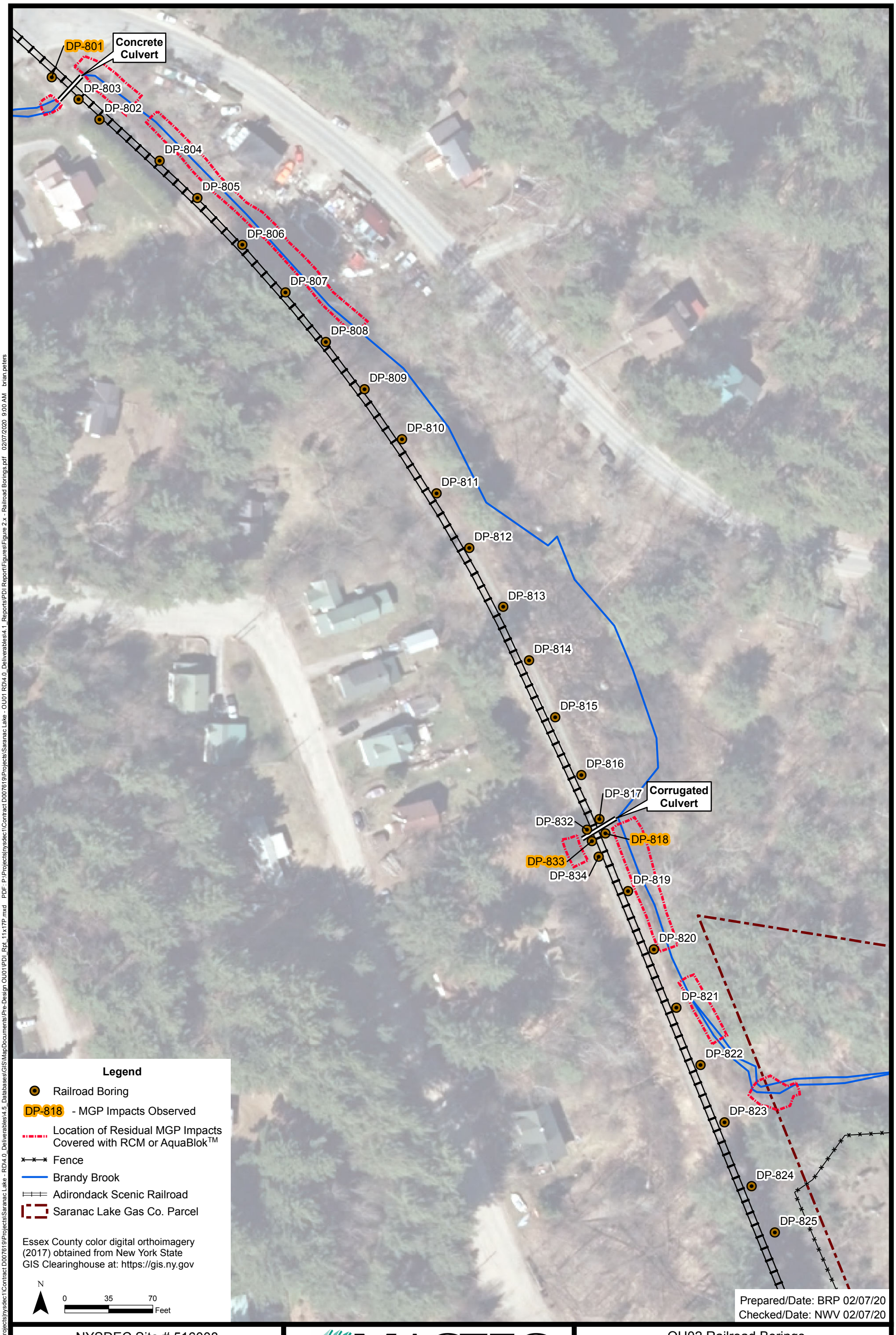
POST CONSTRUCTION SURVEY

REMEDIAL ACTION NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
SARANAC LAKE GAS CO., INC., SITE 516008
OU3 – ISS AREA

VILLAGE OF SARANAC LAKE
COUNTY OF ESSEX — STATE OF NEW YORK

SURVEYED BY: LR — CHECKED BY: NMB — DATE: 8-3-2019
DRAWN BY: AJK — JOB No. 8530 — DWG No. POST CONSTRUCTION

SCALE: 1"=5' — SHEET 1 OF 1



NYSDEC Site # 516008
Saranac Lake Gas Co., Inc.
Saranac Lake, New York

MACTEC

OU02 Railroad Borings

Project 3611191237 Figure 2.2

Document: P:\Projects\nysdec1\Contract D007619\Projects\Saranac Lake - RD\4.0_Deliverables\4.5_Databases\GIS\MapDocuments\Pre-Design OU01\PDI_Rpt_11x17P.mxd PDF: P:\Projects\nysdec1\Contract D007619\Projects\Saranac Lake - OU01 RD\4.0_Deliverables\4.1_Reports\PDI Report\Figures\Figure 2.x - Railroad Borings.pdf 02/07/2020 9:00 AM brian.peters

Table 3.3: Railroad Borings Summary of Findings

Sample Location ID	Northing	Easting	Top Depth (ft bgs)	Bottom Depth (ft bgs)	Visual MGP Description Type	Analytical Results			
						Sample Depth (ft bgs)	Total PAH (mg/kg)	Naphthalene (mg/kg)	Total BTEX (mg/kg)
DP-801	2000547.78	591537.28	0	13	NOI				
			13	13.5	Coated				
			13.5	15	sheen/odor				
			15	25	NOI	15	1.585	ND	ND
DP-802	2000529.90	591558.63	0	25	NOI				
DP-803	2000513.97	591575.14	0	25	NOI	8	ND	ND	ND
DP-804	2000481.28	591623.06	0	23	NOI	12	ND	ND	ND
DP-805	2000451.61	591652.98	0	20	NOI				
DP-806	2000414.37	591688.66	0	20	NOI	8	ND	ND	ND
DP-807	2000376.70	591722.97	0	25	NOI				
DP-808	2000337.25	591755.09	0	25	NOI	8	ND	ND	ND
DP-809	2000299.79	591785.85	0	25	NOI				
DP-810	2000260.12	591815.63	0	18	NOI	8	ND	ND	ND
DP-811	2000216.85	591843.00	0	20	NOI				
DP-812	2000173.60	591869.08	0	20	NOI	9	ND	ND	ND
DP-813	2000126.73	591895.96	0	20	NOI				
DP-814	2000084.28	591916.54	0	20	NOI	8	ND	ND	ND
DP-815	2000039.09	591937.38	0	20	NOI				
DP-816	1999993.15	591958.21	0	20	NOI				
DP-817	1999958.02	591972.59	0	25	NOI	8	6.61	6.2	ND
DP-818	1999946.53	591977.16	0	10	NOI				
			10	12	sheen/odor	12	2.515	ND	ND
			12	25	NOI				
DP-819	1999900.73	591995.31	0	25	NOI				
DP-820	1999854.62	592015.83	0	20	NOI				
DP-821	1999808.15	592033.67	0	20	NOI	9	ND	ND	ND
DP-822	1999762.61	592052.81	0	20	NOI				
DP-823	1999717.01	592071.97	0	20	NOI	8	0.43	ND	ND

Table 3.3: Railroad Borings Summary of Findings

Sample Location ID	Northing	Easting	Top Depth (ft bgs)	Bottom Depth (ft bgs)	Visual MGP Description Type	Analytical Results			
						Sample Depth (ft bgs)	Total PAH (mg/kg)	Naphthalene (mg/kg)	Total BTEX (mg/kg)
DP-824	1999666.27	592093.36	0	25	NOI				
DP-825	1999629.58	592111.95	0	25	NOI	12	ND	ND	ND
DP-826	1999567.13	592136.01	0	25	NOI				
DP-827	1999519.57	592155.41	0	25	NOI	12	ND	ND	ND
DP-828	1999485.85	592172.87	0	25	NOI				
DP-829	1999436.39	592185.77	0	20	NOI	12	ND	ND	ND
DP-830	1999385.61	592207.48	0	20	NOI				
DP-831	1999337.88	592220.01	0	20	NOI	7	ND	ND	ND
DP-832	1999949.55	591962.59	0	25	NOI	18	ND	ND	ND
DP-833	1999940.67	591966.64	0	10	NOI				
			10	10.5	Coated				
			10.5	25	NOI	12	ND	ND	0.023
DP-834	1999928.13	591971.82	0	25	NOI	12			

Notes:
See Table 3.1 for general table notes

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Appendix D

Excavation Work Plan

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APPENDIX D – EXCAVATION WORK PLAN

D-1 NOTIFICATION

At least 15 days prior to the start of any activity that is anticipated to encounter remaining contamination or breach or alter the site's cover system, the site owner or their representative will notify the New York State Department of Environmental Conservation (NYSDEC) contacts listed below. Notifications will be made to:

Jasmine Stefansky, Project Manager
NYSDEC
625 Broadway
Albany, New York 12233-5060
518-402-9575

This notification will include:

- A detailed description of the work to be performed, including the location and areal extent of excavation, plans/drawings for site re-grading, intrusive elements or utilities to be installed below the soil cover, estimated volumes of contaminated soil to be excavated, any modifications of truck routes, and any work that may impact an engineering control
- A summary of environmental conditions anticipated to be encountered in the work areas, including the nature and concentration levels of contaminants of concern, potential presence of grossly contaminated media, and plans for any pre-construction sampling
- A schedule for the work, detailing the start and completion of all intrusive work, and submittals (e.g., reports) to the NYSDEC documenting the completed intrusive work
- A summary of the applicable components of this Excavation Work Plan (EWP)
- A statement that the work will be performed in compliance with this EWP, 29 Code of Federal Regulations (CFR) 1910.120 and 29 CFR 1926 Subpart P
- A copy of the contractor's Health and Safety Plan (HASP), in electronic format
- Identification of disposal facilities for potential waste streams
- Identification of sources of any anticipated backfill, along with the required request to import form and all supporting documentation including, but not limited to, chemical testing results.

The NYSDEC Project Manager will review the notification and may impose additional requirements for the excavation that are not listed in this EWP. The alteration, restoration and modification of engineering controls must conform with Article 145 Section 7209 of the Education Law regarding the application professional seals and alterations.

D-2 SOIL SCREENING METHODS

Visual, olfactory and instrument-based (e.g. photoionization detector) soil screening will be performed during all excavations into known or potentially contaminated material (remaining contamination) or a breach of the cover system. A qualified environmental professional as defined in 6 New York Code of Rules and Regulations (NYCRR) Part 375, a Professional Engineer (P.E.) who is licensed and registered in New York State, or a qualified person who directly reports to a P.E. who is licensed and registered in New York State will perform the screening. Soil screening will be performed when invasive work is done and will include all excavation and invasive work performed during development, such as excavations for foundations and utility work, after issuance of the contaminant of concern.

Soils will be segregated based on previous environmental data and screening results into material that requires off-site disposal and material that requires testing to determine if the material can be reused on-site as soil beneath a cover or if the material can be used as cover soil. Further discussion of off-site disposal of materials and on-site reuse is provided in Section D-6 of this Appendix.

D-3 SOIL STAGING METHODS

Soil stockpiles will be continuously encircled with a berm and/or silt fence. Hay bales will be used as needed near catch basins, surface waters and other discharge points.

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

Stockpiles will be inspected at a minimum once each week and after every storm event. Results of inspections will be recorded in a logbook and maintained at the site and available for inspection by the NYSDEC.

D-4 MATERIALS EXCAVATION AND LOAD-OUT

A qualified environmental professional as defined in 6 NYCRR Part 375, a P.E. who is licensed and registered in New York State, or a qualified person who directly reports to a P.E. who is licensed and registered in New York State will oversee all invasive work and the excavation and load-out of all excavated material.

The owner of the property and remedial party (if applicable) and its contractors are responsible for safe execution of all invasive and other work performed under this Plan.

The presence of utilities and easements on the site will be investigated by the qualified environmental professional. It will be determined whether a risk or impediment to the planned work under the Site Management Plan (SMP) is posed by utilities or easements on the site. A site utility stakeout will be completed for all utilities prior to any ground intrusive activities at the site.

Loaded vehicles leaving the site will be appropriately lined, tarped, securely covered, manifested, and placarded in accordance with appropriate Federal, State, local, and New York State Department of Transportation requirements (and all other applicable transportation requirements). Trucks transporting contaminated soil must have either tight-fitting opaque covers that are secured on the sides and/or back, or opaque covers that are locked on all sides.

A truck wash will be operated on-site, as appropriate. The qualified environmental professional will be responsible for ensuring that all outbound trucks will be washed at the truck wash before leaving the site until the activities performed under this section are complete. Truck wash waters will be collected and disposed of off-site in an appropriate manner.

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

The qualified environmental professional will be responsible for ensuring that all egress points for truck and equipment transport from the site are clean of dirt and other materials derived from the site during intrusive excavation activities. Cleaning of the adjacent streets will be performed as needed to maintain a clean condition with respect to site-derived materials. Material accumulated from the street cleaning and egress cleaning activities will be disposed off-site at a permitted landfill facility in accordance with all applicable local, State, and Federal regulations.

D-5 MATERIALS TRANSPORT OFF-SITE

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

Material transported by trucks exiting the site will be secured with either tight-fitting opaque covers that are secured on the sides and/or back, or opaque covers that are locked on all sides. Loose-fitting canvas-type truck covers will be prohibited. If loads contain wet material capable of producing free liquid, truck liners will be used.

Truck transport routes are to be determined by the contractor as appropriate and submitted with the EWP and are to include both primary and secondary routes and maps. All trucks loaded with site materials will exit the vicinity of the site using only these approved truck routes. This is the most appropriate route and takes into account: (a) limiting transport through residential areas and past sensitive sites; (b) use of city mapped truck routes; (c) prohibiting off-site queuing of trucks entering the facility; (d) limiting total distance to major highways; (e) promoting safety in access to highways; and (f) overall safety in transport; (g) community input where necessary. A figure showing the trucking routes will be included with activity specific work plans submitted to the NYSDEC.

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

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

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

D-6 MATERIALS DISPOSAL OFF-SITE

All material excavated and removed from the site will be treated as contaminated and regulated material and will be transported and disposed off-site in a permitted facility in accordance with all local, State and Federal regulations. If disposal of material from this site is proposed for unregulated off-site disposal (i.e. clean soil removed for development purposes), a formal request with an associated plan will be made to the NYSDEC Project Manager. Unregulated off-site management of materials from this site will not occur without formal NYSDEC Project Manager approval.

Off-site disposal locations for excavated soils will be identified in the pre-excavation notification. This will include estimated quantities and a breakdown by class of disposal facility if appropriate, (e.g. hazardous waste disposal facility, solid waste landfill, petroleum treatment facility, construction and demolition debris recovery facility). Actual disposal quantities and associated documentation will be reported to the NYSDEC in the Periodic Review Report. This documentation will include, but will not be limited to: waste profiles, test results, facility acceptance letters, manifests, bills of lading and facility receipts.

Non-hazardous historic fill and contaminated soils taken off-site will be handled consistent with 6 NYCRR Parts 360, 361, 362, 363, 364 and 365. Material that does not meet Unrestricted soil cleanup objectives is prohibited from being taken to a New York State construction and demolition debris recovery facility (6 NYCRR Subpart 360-15 registered or permitted facility).

D-7 MATERIALS REUSE ON-SITE

The qualified environmental professional, as defined in 6 NYCRR Part 375, will ensure that procedures defined for materials reuse in the SMP are followed and that unacceptable material (i.e. contaminated) does not remain on-site. Contaminated on-site material, including historic fill and contaminated soil, that is acceptable for reuse on-site will be placed below the demarcation layer or impervious surface, and will not be reused within the cover system or within landscaping berms. Contaminated on-site material may only be used beneath the site cover as backfill for subsurface utility lines with prior approval from the NYSDEC Project Manager.

D-8 FLUIDS MANAGEMENT

All liquids to be removed from the site, including but not limited to, excavation dewatering, decontamination waters and groundwater monitoring well purge and development waters, will be handled, transported and disposed off-site at a permitted facility in accordance with applicable local, State, and Federal regulations. Dewatering, purge and development fluids will not be recharged back to the land surface or subsurface of the site, and will be managed off-site, unless prior approval is obtained from NYSDEC.

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

D-9 COVER/ DECMARCATION BARRIER SYSTEM RESTORATION

After the completion of soil removal and any other invasive activities the cover system will be restored in a manner that complies with the Remedial Action Work Plan. The existing cover reactive core mat (RCM) along sections of Brandy Brook, and Aquablok® in a section of Pontiac Pay.

The RCM layer along identified locations of operable unit (OU)02 as shown on Figure 2-4 of the SMP, is generally covered with a minimum of 12 inches of clean fill. If impacted, the compromised section of RCM shall be replaced and should overlap existing RCM by at least 2 feet on all sides and covered with 12 inches of clean fill.

The Aquablok® layer along a section of OU03 as shown on Figure 2-5 of the SMP, generally runs from the bottom of the bay up the side slope to the shoreline. The Aquablok® is approximately 3-4 inches thick and portions of it are covered with either clean soil or riprap. If impacted the compromised section of Aquablok® shall be replaced with 3-4 inches of Aquablok®.

D-10 BACKFILL FROM OFF-SITE SOURCES

All materials proposed for import onto the site will be approved by the qualified environmental professional, as defined in 6 NYCRR Part 375, and will be in compliance with provisions in this SMP prior to receipt at the site. A Request to Import/Reuse Fill or Soil form, which can be found at http://www.dec.ny.gov/regulations/67386.html, will be prepared and submitted to the NYSDEC Project Manager allowing a minimum of 5 business days for review.

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

All imported soils will meet the backfill and cover soil quality standards established in 6 NYCRR 375-6.7(d) and DER-10 Appendix 5 for recreational use. Soils that meet ‘general’ fill requirements under 6 NYCRR Part 360.13, but do not meet backfill or cover soil objectives for this site, will not be imported onto the site without prior approval by NYSDEC Project Manager. Soil material will be sampled for the full suite of analytical parameters, including per- and polyfluoroalkyl substances and 1, 4-dioxane. Solid waste will not be imported onto the site.

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

D-11 STORMWATER POLLUTION PREVENTION

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

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

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

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

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

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

D-12 EXCAVATION CONTINGENCY PLAN

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

Sampling will be performed on product, sediment and surrounding soils, etc. as necessary to determine the nature of the material and proper disposal method. Chemical analysis will be performed for a full list of analytes (Target Analyte List metals, Target Compound List [TCL] volatiles and semivolatiles [including 1,4-dioxane], TCL pesticides and polychlorinated biphenyls, and per- and polyfluoroalkyl substances), unless the site history and previous sampling results provide sufficient justification to limit the list of analytes. In this case, a reduced list of analytes will be proposed to the NYSDEC Project Manager for approval prior to sampling. Any tanks will be closed as per NYSDEC regulations and guidance.

Identification of unknown or unexpected contaminated media identified by screening during invasive site work will be promptly communicated by phone within two hours to NYSDEC’s Project Manager. Reportable quantities of petroleum product will also be reported to the NYSDEC spills hotline. These findings will be also included in the Periodic Review Report.

D-13 COMMUNITY AIR MONITORING PLAN

A map showing the location of air sampling stations based on generally prevailing wind conditions shall be prepared and submitted to NYSDEC for approval. These locations will be adjusted on a daily or more frequent basis based on actual wind directions to provide an upwind and at least two downwind monitoring stations. Exceedances of action levels listed in the Community Air Monitoring Plan will be reported to NYSDEC and NYSDOH Project Managers.

D-14 ODOR CONTROL PLAN

This odor control plan is capable of controlling emissions of nuisance odors off-site. If nuisance odors are identified at the site boundary, or if odor complaints are received, work will be halted, and the source of odors will be identified and corrected. Work will not resume until nuisance odors have been abated.

D-15 DUST CONTROL PLAN

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

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

- Clearing and grubbing of large areas will be done in stages to limit the area of exposed, unvegetated soils vulnerable to dust production.

- Gravel will be used on roadways to provide a clean and dust-free road surface. On-site roads will be limited in total area to minimize the area required for water truck sprinkling.

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Appendix E

Health and Safety Plan

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OU01, OU02, and OU03
Saranac Lake Gas Company, Inc.
Saranac Lake, New York

Site-Specific Health and Safety Plan

NYSDEC Site No. 516008

Prepared for

New York State Department of Environmental Conservation
Division of Environmental Remediation
625 Broadway
Albany, New York 12207

Prepared by

EA Engineering and Geology, P.C.
333 W. Washington Street
Syracuse, New York 1302
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April 2025

Revision History

Revision Number	Date Submitted	Summary of Revision	New York State Department of Environmental Conservation Approval Date

TABLE OF CONTENTS

Page

LIST OF ACRONYMS AND ABBREVIATIONS v

1. INTRODUCTION 1

1.1 OBJECTIVE 1
1.2 SITE AND FACILITY DESCRIPTION 1
1.3 POLICY STATEMENT 2
1.4 REFERENCES 2
1.5 DEFINITIONS 3

2. ROLES AND RESPONSIBILITIES 5

2.1 PERSONNEL 5

2.1.1 Responsibilities 5

2.2 SITE HEALTH AND SAFETY OFFICER 6
2.3 PROJECT MANAGER 7
2.4 SITE MANAGER 7

2.4.1 SUBCONTRACTORS 7

2.5 VISITORS 8

3. RISK ANALYSIS 9

3.1 PROJECT SCOPE OF WORK 9
3.2 HAZARD COMMUNICATION 10

3.2.1 Hazard Communication Labeling 10
3.2.2 Hazard Communication Training 10

3.3 CHEMICAL HAZARDS 11

3.3.1 Chemicals for Equipment Calibrations and Operations 11

3.4 PHYSICAL HAZARDS 11

3.4.1 Fire/Explosion Hazards 12
3.4.2 Heat Stress and Heat-Related Illness 12

3.4.2.1 Prevention of Heat Stress 13

3.4.3 Cold-Related Illness 14

3.4.3.1 Prevention of Cold-Related Illness 14

3.4.4 Heavy Equipment Hazards 14
3.4.5 Vehicle and Pedestrian Hazards 15
3.4.6 Noise Hazards 15
3.4.7 Electrical Hazards 15

3.4.7.1 High Voltage Hazards 16

3.4.8 Utilities 17
3.4.9 Weather Hazards 17

3.5 BIOLOGICAL HAZARDS 18

3.5.1 Bloodborne Pathogens 18
3.5.2 West Nile Virus 18
3.5.3 Lyme Disease 19
3.5.4 Pandemic Response 20

3.6 CONFINED SPACE 20

4. GENERAL SAFETY PRACTICES 23

4.1 SAFETY PROCEDURES 23
4.2 BUDDY SYSTEM 24
4.3 EMERGENCY EQUIPMENT 25
4.4 PERSONAL HYGIENE AND SANITATION 25

4.4.1 Break Area 25
4.4.2 Potable Water 25
4.4.3 Sanitary Facilities 25
4.4.4 Lavatory 26
4.4.5 Trash Collection 26

4.5 SPILL CONTROL PLAN 26
4.6 LOCKOUT/TAGOUT PROCEDURES 26

5. PERSONAL PROTECTIVE EQUIPMENT 27

5.1 LEVELS OF PROTECTION 27

5.1.1 Level D Personal Protective Equipment 27

5.2 HEARING PROTECTION 27

6. EMPLOYEE TRAINING 29

6.1 SITE WORKERS 29
6.1.1 Subcontractor Training 29
6.2 SITE-SPECIFIC TRAINING 29
7. MEDICAL SURVEILLANCE 31
7.1 MEDICAL EXAMINATIONS 31
7.2 RECORDS 31
7.3 FIRST AID AND MEDICAL TREATMENT 32
8. ACCIDENT PREVENTION AND CONTINGENCY PLAN 33
8.1 ACCIDENT PREVENTION 33
8.1.1 Vehicles and Heavy Equipment 33
8.2 CONTINGENCY PLAN 34
8.2.1 Emergency Recognition 34
8.2.2 Emergency Procedures 35
8.2.3 Chemical Exposure 36
8.2.4 Personal Injury 37
8.2.5 Operations Shutdown 38
8.2.6 Evacuation Procedures 38
8.2.7 Procedures Implemented in the Event of a Major Fire, Explosion, or On-site Health Emergency Crisis 39
8.2.8 Emergency Telephone Numbers 39
8.3 SPILL CONTAINMENT PROCEDURES 39

LIST OF ATTACHMENTS

Attachment A. Health and Safety Plan Review Record

Attachment B. Safety Data Sheets

Attachment C. Personal Protective Equipment Activity Record

Attachment D. Site and Entry Log

Attachment E. Emergency Telephone Number and Hospital Directions

Attachment F. Accident/Loss Report

LIST OF ACRONYMS AND ABBREVIATIONS

°C	Degrees Celsius
°F	Degrees Fahrenheit
CFR	Code of Federal Regulation
COVID-19	Coronavirus Disease 2019
CPR	Cardiopulmonary resuscitation
dBA	A-weighted decibel
DEET	Diethyltoluamide
DER	Division of Environmental Remediation
EA	EA Engineering and Geology, P.C.
EPA	U.S. Environmental Protection Agency
ft	Foot (feet)
HASP	Health and Safety Plan
kV	Kilovolt(s)
L	Liter
NIOSH	National Institute for Occupational Health and Safety
NYSDEC	New York State Department of Environmental Conservation
OSHA	Occupational Safety and Health Administration
O U	O p e r a b l e U n i t
oz	Fluid ounce
PCE	Tetrachloroethylene
PPE	Personal protective equipment
SDS	Safety data sheet
SHSO	Site Health and Safety Officer
VOC	Volatile organic compound

1. INTRODUCTION

1.1 OBJECTIVE

The objective of this Site-Specific Health and Safety Plan (HASP) is to provide personnel with protection standards and mandatory safety practices, procedures, and contingencies to be followed while performing field activities for the Saranac Lake Site. The typical work activities addressed within this HASP include the following on-site field activities:

- Groundwater gauging and sampling
- Surface water sampling
- Sediment sampling
- Site Inspections.

The safety organization, procedures, and protective equipment for this HASP have been established based on an analysis of potential physical, chemical, and biological hazards. Specific hazard control methodologies have been evaluated and selected to minimize the potential for accident or injury. One copy of this HASP will be maintained for use during scheduled field activities. The copy will be made available for site use/employee review.

The HASP describes the procedures that must be followed during referenced site activities. Operational changes that could affect the health and safety of personnel, the community, or the environment will not be made without the prior approval of the Project Manager and the Program Health and Safety Officer. This document will be periodically reviewed to ensure that it is current and technically correct. Changes in site conditions and/or the scope of work will involve a review and modification to the HASP. Such changes will be completed in the form of a numbered revision.

The provisions of this HASP are mandatory for the personnel and subcontractors assigned to the New York State Department of Environmental Conservation (NYSDEC) work assignments. Visitors to a work site must abide by the requirements of the HASP. It should be acknowledged that the employees of other consulting and/or contracted companies might work in accordance with their own independent HASP. A Subcontractor's HASP must meet the requirements of this HASP.

1.2 SITE AND FACILITY DESCRIPTION

The Site is located at 24 Payeville Road Village of Saranac Lake NY, 12025in the Village Saranac Lake, Essex County, New York at coordinates 44.320733705, -74.117142089. The Site is approximately 4.5 acres within a residential setting. Bounded by residential properties in the north and east, and a college recreational facility and playing field to the south. The Remsen Lake Placid Travel Corridor (former railway) is adjacent to the site to the west. The site is a vacant property with a gravel parking area that is slightly elevated compared to surrounding features. The property contains a fenced area. The former manufactured gas plant was predominantly located within the fenced area. Other site features include Brandy Brook, a wooded area, and an access road on the northern portions of the property and woods and equipment storage on the southern portions. There are three Operable Units associated with this site. Operable Unit 1 (OU1) is the

former gasification plant property and on-site source area. OU2 consists of Brandy Brook from the site to Pontiac Bay of Lake Flower. OU3 includes Pontiac Bay of Lake Flower. OU2 and OU3 are considered off-site areas.

1.3 POLICY STATEMENT

The site management field crew will be familiar with the HASP for site management activities that they are involved in. Prior to entering a Site, this HASP will be reviewed, and the agreement to comply with the requirements will be signed by field crew, subcontractors, and visitors and be maintained in the HASP Review Record (**Attachment A**).

Operational changes that could affect the health and safety of personnel, the community, or the environment will not be made without the prior approval from NYSDEC, the Project Manager, and the Health and Safety Representative. This document will be periodically reviewed to ensure that it is current and technically correct. Changes in site conditions and/or the scope of work will require a review and modification to the HASP. Such changes will be completed in the form of a revision of the HASP Addendum.

By signing a HASP Review Record, the subcontractors and visitors acknowledge their responsibility to comply with the occupational health and safety requirements defined in this HASP. Site management field crew and subcontractor personnel on-site will be informed of site emergency response procedures and potential safety, or health hazards associated with the operations conducted in support of work assignments.

1.4 REFERENCES

This HASP addresses the following regulations and guidance documents:

- Quick Selection Guide to Chemical Protective Clothing, K. Forsberg and S.Z. Mansdorf, 3rd Ed. (1997)

- Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities, National Institute (NOISH) for Occupational Safety and Health, Occupational Safety and Health Administration (OSHA), U.S. Coast Guard, U.S. Environmental Protection Agency (EPA) (86-116, October 1985)

- Occupational Safety and Health Administration Standards for General Industry, 29 Code of Federal Regulations (CFR) 1910

- OSHA Standards for Hazard Communication, 29 CFR 1910.1200/1926.59

- OSHA Standard for Respiratory Protection, 29 CFR 1910.134

- OSHA Standards for Construction Industry, 29 CFR 1926

- NIOSH for Pocket Guide to Chemical Hazards, Department of Health and Human Services, PHS, Center for Disease Control, NIOSH (2005)

- Threshold Limit Values, American Conference of Government Industrial Hygienists (2011).

1.5 DEFINITIONS

The following definitions are applicable to this HASP:

- ***Site—***The area where field activities are to be performed.

- ***Project—***On-site work performed under the scope of site management for the Franklin Cleaners Site.

- ***Project Manager—***The individual(s) who will have overall responsibility for site management. The Project Manager will provide services associated with the implementation of the Site Management Plan.

- ***Subcontractor—***Includes third-party personnel hired for on-site services.

- ***On-site Personnel—***All personnel involved with a work assignment.

- ***Visitor—***Personnel, except the on-site personnel. Visitors must receive approval to enter the Site.

- ***Exclusion Zone—***Portion of the Site where hazardous substances are, or are reasonably suspected to be, present in the air, water, or soil.

- ***Contamination Reduction Zone—***Area between the Exclusion Zone and Clean Zone that provides a transition between contaminated and clean areas. Decontamination stations are in this zone.

- ***Clean/Support Zone—***The rest of the Site. Support equipment is in this zone.

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2. ROLES AND RESPONSIBILITIES

2.1 PERSONNEL

Field crew and subcontractor employees are responsible for reading, understanding, and meeting the health and safety requirements contained in this HASP. A HASP Review Record sign-off sheet is provided as **Attachment A**. Employees are required to implement these procedures when carrying out daily operations and site-specific field activities. This will include receiving appropriate training and medical monitoring and using health and safety equipment (to include personal protective equipment [PPE]) to safely conduct site operations. This may include maintaining appropriate grooming standards (removal or proper trimming of beards, mustaches, and sideburns) to ensure the proper fit of respiratory protection. Employees will review each field activity prior to commencement to consider the potential health and safety hazards and the measures to be taken in the event of an emergency. Employees will know where safety data sheets (SDS) **(Attachment B**), first aid supplies, and emergency equipment are maintained. The Site Manager or Program Health and Safety Officer will be notified of potential health and safety hazards, near-miss conditions, or incidents present on the job site or unusual effects believed to be related to hazardous chemical exposures. Failure to follow established health and safety procedures could result in immediate dismissal from the Site, and if repeated, a potential loss of employment.

2.1.1 Responsibilities

Clear lines of authority will be established for enforcing compliance with the safety, health, and contingency procedures consistent with industry policies and procedures. Designated personnel will be responsible for implementation of the HASP during field activities. This includes field supervision; implementing and directing emergency operations; coordinating with on-site and off-site emergency responders; enforcing safe work practices and decontamination procedures (if needed); ensuring proper use of PPE; communicating site safety program modifications and requirements to site personnel; proper reporting of injuries, illnesses, and incidents to the appropriate internal and external organizations; and containing and controlling the loss of potentially hazardous materials to soil, air, and surface/groundwater during field operations.

In the event of an on-site injury, occupational illness, near-miss, or environmental contamination incident, the following organizations/individuals will be notified as appropriate:

- Site Manager
- Site Health and Safety Officer (SHSO)
- Project Manager
- Program Health and Safety Officer
- Corporate Health and Safety Officer
- NYSDEC representatives
- Other organizations or persons as appropriate.

2.2 SITE HEALTH AND SAFETY OFFICER

The SHSO is responsible for coordination of on-site contingency operations and the Site Health and Safety Program. The SHSO will be on-site during work assignment field activities and will be responsible for daily compliance with site health and safety requirements. The SHSO's responsibilities include:

- Conducting visual inspections of the work site
- Stopping work when imminent safety or health risks exist or as outlined in this HASP
- Authorizing for personnel to perform field activities on-site (i.e., relative to medical examinations and training)
- Implementing the use of forms
- Implementing the guidance within this HASP
- Providing an initial health and safety briefing to site workers and visitors
- Evaluating reported hazardous conditions and recommending corrective actions
- Conducting necessary health and safety monitoring
- Identifying, investigating, and preparing incident reports as necessary
- Consulting with the Program Health and Safety Officer or Project Manager for guidance on occupational health and safety and contingency issues affecting a specific work assignment
- Providing technical support and guidance in the modification of HASP requirements
- Evaluating on-site environmental monitoring results and providing reporting requirements to the Project Manager.

During an emergency, the Site Manager (or the Alternate in the absence of the Site Manager) will be responsible for initiating and coordinating emergency responses/contingency operations.

The SHSO will have the authority to make on-the-spot corrections dealing with safety, health, and environmental pollution infractions. If it is determined that the infraction cannot be remedied immediately and is of such a nature that continuance of the field activity could result in significant illness, injury, environmental contamination, and violations, the SHSO will have the authority to order a cessation of the activity until such time as the problem can be remedied.

2.3 PROJECT MANAGER

The Project Manager will have overall responsibility for site field activities and will be the primary contact during the work assignment field activities. The primary responsibilities of the Project Manager include:

- Assuring compliance with this HASP
- Coordinating field activities with the Site Manager
- Approving HASP Addendums and revisions
- Reviewing individual training and medical records prior to work start
- Providing overall supervisory control for health and safety protocols in effect for a work assignment
- Assigning the Site Manager and SHSO
- Assuring adequate resources are available for carrying out this HASP
- Preparing and submitting project reports.

2.4 SITE MANAGER

The Site Manager's responsibilities include but are not limited to:

- Providing technical support to the SHSO
- Evaluating on-site environmental monitoring results and reporting to the Project Manager and Program Health and Safety Officer
- Being responsible for initiating the evacuation of the work site when needed, communicating with off-site emergency responders, and coordinating activities of on-site and off-site emergency responders
- Determining if the abatement of hazardous conditions is sufficient prior to allowing resumption of field activities after an emergency.

2.4.1 SUBCONTRACTORS

Responsibilities of field crew and subcontractor personnel include:

- Following this HASP, applicable health and safety rules, regulations, and procedures

- Understanding and complying with 29 CFR 1910 and 29 CFR 1926 rules and regulations applicable to the operations they are conducting to ensure the health and safety of their personnel

- Using required controls, procedures, and safety devices, including PPE **(Attachment C**)

- Notifying his/her supervisor of identified or suspected emergencies and safety or health hazards

- Complying with training and medical requirements.

2.5 VISITORS

Visitors entering the on-site work areas will be required to sign the Entry/Exit Log (**Attachment D**) and to read and verify their understanding and willingness to comply with this HASP. Visitors will remain in an observation area and will not be allowed in the Exclusion Zone or Support Zone unless they have met the appropriate OSHA training and medical requirements and have received clearance by the Project Manager and the SHSO.

3. RISK ANALYSIS

3.1 PROJECT SCOPE OF WORK

Based on the field activities detailed in the Site Management Plan, the following potential hazard conditions may be anticipated:

- Personnel may be injured during physical lifting and handling of heavy equipment, construction materials, or containers. Additionally, personnel may encounter slip, trip, and fall hazards associated with sampling within the structures. Precautionary measures should be taken in accordance with this HASP.

- The use of mechanical equipment such as drill rigs, front loaders, dump trucks, backhoes, and bobcats can create a potential for crushing and pinching hazards due to movement and positioning of the equipment. In addition, the ambient noise levels around heavy equipment can cause for disorientation and reduced awareness levels. Hard hats are required when working around this type of equipment.

- Field operations conducted during the winter months can impose excessive heat loss to personnel conducting strenuous activities during cold weather days and can impose cold-related illness symptoms during cold weather days or when the wind chill is high. In addition, heavy rains, electrical storms, and high winds may create extremely dangerous situations for employees.

- Field activities conducted during the hot summer months can impose excessive heat loading to personnel conducting strenuous activities or activities requiring the additional heat burden created due to the use of PPE.

- Entry into a confined space in support of this project is forbidden. However, it is not anticipated that confined space entry will be required during the completion of the field activities.

- Site management activities intended to monitor remaining contamination often require employees to be in direct proximity or contact with hazardous substances. Groundwater sampling presents low risk and can be minimized through the use of PPE.

- Site inspections that can occur frequently or on a recurring basis often require employees to walk and focus on details about the site. Distractions can cause loss of awareness of surroundings which leaves workers susceptible to tripping hazards. Maintaining proper footwear and awareness to surroundings will minimize these hazards.

The potential chemicals of concern that may be present at the Site include, but are not limited to, Volatile Organic Compounds (VOCs) including tetrachloroethylene (PCE) and potentially per-and polyfluoroalkyl substances (PFAS). Safety data sheets for these chemicals are provided in **Attachment B**.

3.2 HAZARD COMMUNICATION

A written OSHA Hazard Communication Program for Construction (required by 29 CFR 1910.1200/1926.59) will be maintained on-site during field activities. Employees will be informed of the Hazard Communication Program's existence, contents, and location. This Program will be kept with the SDSs and contain a list of site-specific chemicals present. The list will be cross-referenced with the applicable SDS for ease in SDS accessibility.

An SDS for each chemical brought on-site during field activities will be maintained on-site by the SHSO. Subcontractors must inform the Site Manager and SHSO of hazardous substances brought on-site and provide appropriate SDS to the SHSO. Site workers and visitors will be informed of the Hazard Communication Program, their legal rights under the Program, the location of the chemical inventory, and the location of the SDS. Subcontractors will provide a list of the hazardous materials that will be used on-site in support of their operations. This information will be shared jointly with site employees and visitors to the Site.

Employee awareness of chemical identities, health and physical hazards, and characteristics is essential to safely handle chemicals and minimize potential hazards. The Hazard Communication Program must follow the OSHA requirements listed in 29 CFR 1910.1200/1926.59.

3.2.1 Hazard Communication Labeling

In-house containers will be properly labeled so that workers understand the contents of containers. Container labels will contain at least information on the name of the product or container, chemical(s) in the product, manufacturer's name and address, protective equipment required for the safe handling of the product, and first aid procedures in case of overexposure to product contents.

3.2.2 Hazard Communication Training

Site employees and visitors must be informed of the Hazard Communication Program, their legal rights under the program, and location of chemical inventory and SDS files. The employee's supervisor must describe hazardous substances used and provide information concerning:

- Nature of potential hazards
- Appropriate work practices
- Appropriate control programs
- Appropriate protective measures
- Methods to detect presence or release of hazardous substances
- Emergency procedures.

3.3 CHEMICAL HAZARDS

Field operation precautions and preventive measures for site management activities are described in the following paragraphs:

- ***Groundwater Sampling***—VOCs including PCE may be encountered. Potential routes of worker exposure are through dermal contact and ingestion; wear PPE when in contact with groundwater (**Section 5** for specific PPE).

- ***Sediment***—VOCs including PCE may be encountered. Potential routes of worker exposure are through dermal contact and ingestion; wear PPE when in contact with groundwater (**Section 5** for specific PPE)

- ***Surface Water***—VOCs including (PCE) may be encountered. PPE is required (**Section 5** for specific PPE).

Dermal contact is a potential concern during the above tasks due to the possible presence of skin irritants such as VOCs and PCE that may be absorbed through the skin. This information is based upon a worst-case scenario. Dermal protection listed in **Section 5** must be worn during field activities involving contact with soil and groundwater.

A description of the requirements for the different levels of PPE, as well as upgrade/downgrade requirements, is provided in **Section 5**. Although ingestion of contaminants is also a primary source of exposure, vigilance by site health and safety personnel will ensure proper use of PPE and personal hygiene to practically eliminate this route of exposure.

3.3.1 Chemicals for Equipment Calibrations and Operations

In addition to the potential compounds detected at a Site, the following chemicals are typically used during investigative, remedial, and monitoring field activities:

- Isopropyl alcohol
- Alconox
- Nitric acid.

These chemicals will be used for decontamination of equipment. The anticipated occupational exposures from these operations are considered negligible.

3.4 PHYSICAL HAZARDS

Physical hazards can potentially be present during field activities. These physical hazards may include, but not be limited to:

- Fire/explosion hazards

- Heat stress
- Equipment hazards
- Vehicle and pedestrian hazards
- Noise hazards
- Electrical hazards
- Utilities
- Weather hazards.

Physical hazards are listed below for each field activity:

- ***Groundwater Sampling***—General physical hazards, cold/heat stress, and noise hazards.
- ***Sediment—***General physical hazards, cold/heat stress, and noise hazards.
- ***Surface Water Sampling—*** General physical hazards, cold/heat stress, and noise hazards
- ***Site Inspections—***General physical hazards, cold/heat stress, and noise hazards.

The Site will be visually inspected for the presence of general safety hazards (e.g., trip/slip hazards, unstable surfaces or steep grades, sharp objects) prior to beginning work. If hazards are present, these hazards will be recorded, and precautionary measures taken to prevent injury.

3.4.1 Fire/Explosion Hazards

The potential for fire and/or explosion emergencies is always present on a Site. Substances capable of creating fire and explosion at a site include methane gas, petroleum-contaminated soil, and other flammable vapors. Workers must continuously monitor the work area for combustible or explosive gases when operations have the potential to generate sparks. Employees should always be alert for unexpected events, such as ignition of chemicals or sudden release of materials under pressure and be prepared to act in these emergencies.

Field vehicles will be equipped with a fire extinguisher. Employees must be trained in the proper use of fire suppression equipment. However, large fires that cannot be controlled with a fire extinguisher should be handled by professionals. The proper authorities should be notified in these instances.

3.4.2 Heat Stress and Heat-Related Illness

The use of protective equipment, if required, may create heat stress. Monitoring of personnel wearing impermeable personal protective clothing should commence when the ambient temperature is 70 degrees Fahrenheit (°F) or above. Monitoring frequency should increase as ambient temperature increases, or as slow recovery rates are observed. Heat stress monitoring will be performed by a person with a current first-aid certification who is trained to recognize heat stress symptoms. For monitoring the body’s recuperative abilities to excess heat, one or more of the following techniques will be used. Other methods for determining heat stress monitoring, such as the wet bulb globe temperature index from the American Conference of Governmental Industrial Hygienist Threshold Limit Value Booklet (2011), can be used.

To monitor the worker:

- Measure heart rate by counting the radial pulse during a 30-second period as early as possible in the rest period.
- If the heart rate exceeds 110 beats per minute at the beginning of the rest period, shorten the next work cycle by one-third and keep the rest period the same.
- If the heart rate still exceeds 110 beats per minute at the next rest period, shorten the following work cycle by one-third.
- Measure oral temperature using a clinical thermometer (3 minutes under the tongue) or similar device to measure the oral temperature at the end of the work period (before drinking).
- If oral temperature exceeds 99.6°F (37.6 Degrees Celsius [°C]), shorten the next work cycle by one-third without changing the rest period.
- If oral temperature still exceeds 99.6°F (37.6°C) at the beginning of the next rest period, shorten the following work cycle by one-third.
- Do not permit a worker to wear a semi-permeable or impermeable garment when oral temperature exceeds 100.6°F (38.1°C).

3.4.2.1 Prevention of Heat Stress

Proper training and preventive measures will aid in averting loss of worker productivity and serious illness. Heat stress prevention is particularly important because once a person suffers from heat stroke or heat exhaustion, that person may be predisposed to additional heat-related illness.

To avoid heat stress, the following steps should be taken:

- Adjust work schedules
- Modify work/rest schedules according to monitoring requirements
- Mandate work slow-downs, as needed
- Perform work during cooler hours of the day if possible or at night if adequate lighting can be provided
- Provide shelter (air conditioned, if possible) or shaded areas to protect personnel during rest periods

- Maintain worker's body fluids at normal levels. This is necessary to ensure that the cardiovascular system functions adequately. Daily fluid intake must approximately equal the amount of water lost in sweat, i.e., 8 fluid ounces (oz) (0.23 liter [L]) of water must be ingested for approximately every 8 oz (0.23 kilogram) of weight loss. The normal thirst mechanism is not sensitive enough to ensure that enough water will be consumed to replace lost sweat. When heavy sweating occurs, encourage the worker to drink more. The following strategies may be useful:

  — Maintain water temperature 50 to 60°F

  — Provide small disposable cups that hold about 4 oz (0.1 L)

  — Have workers drink 16 oz (0.5 L) of fluid (preferably water or dilute drinks) before beginning work

  — Urge workers to drink a cup or two every 15 to 20 minutes, or at least each monitoring break. A total of 1 to 1.6 gallons (4 to 6 L) of fluid per day are recommended, but more may be necessary to maintain body weight

  — Train workers to recognize the symptoms of heat-related illness.

3.4.3 Cold-Related Illness

If work takes place in the winter months, effects of cold exposure are possible during the performance of field activities. Injury from cold exposure may occur in persons working outdoors during a period when temperatures average below freezing. The extremities, such as fingers, toes, and ears, are the most susceptible to frostbite.

3.4.3.1 Prevention of Cold-Related Illness

To avoid cold-related illness, the following steps should be taken:

- Educate workers to recognize the symptoms of frostbite and hypothermia
- Identify and limit known risk factors
- Assure the availability of an enclosed, heated environment on or adjacent to the Site
- Assure the availability of dry changes of clothing
- Develop the capability for temperature recording at the Site
- Assure the availability of warm drinks.

3.4.4 Heavy Equipment Hazards

The use of heavy equipment is not anticipated for this site. However, the use of heavy equipment (e.g., drill rigs, generators, compressors, etc.) may pose safety hazards to site workers. Heavy equipment work must be conducted only by trained, experienced personnel. If possible, personnel must remain outside the turning radius of large, moving equipment. At a minimum, personnel must

maintain visual contact with the equipment operator. No guards, safety appliances, or other devices may be removed or made ineffective unless repairs or maintenance are required, and then only after power has been shut-off and locked out. Safety devices must be replaced once repair or maintenance is complete. Exhaust from equipment must be directed so that it does not endanger workers or obstruct the view of the operator. When not operational, equipment must be set and locked so that it cannot be activated, released, dropped, etc.

3.4.5 Vehicle and Pedestrian Hazards

Vehicle traffic or pedestrians, particularly in busy areas, may be susceptible to site hazards or may present a hazard to site workers. Equipment must be located in an area that does not present a hazard to bystanders. Barriers must be used to separate the work areas from both vehicular and pedestrian traffic areas and to prevent inadvertent entry into the work area. When possible, work in high traffic areas will be performed when traffic is minimal. Safety cones (with a minimum height of 28 inches) will be placed around the work area to create a buffer zone. Workers should wear safety vests or reflective material to enhance visibility in these areas. The buffer zone will be maintained even when work is not being performed in the area to prevent unauthorized access and to make the work site visible.

3.4.6 Noise Hazards

Work around large equipment often creates excessive noise. Noise can cause workers to be startled, annoyed, or distracted; can cause physical damage to the ear, pain, and temporary and/or permanent hearing loss; and can interfere with communication. If workers are subjected to noise exceeding an 8-hour time-weighted average sound level of 85 A-weighted decibels (dBA), hearing protection will be selected with an appropriate noise reduction rating to comply with 29 CFR 1910.95 and to reduce noise levels below levels of concern.

3.4.7 Electrical Hazards

Overhead power lines, electrical wiring, electrical equipment, and buried cables pose risks to workers of electric shock, burns, heart fibrillation, and other physical injuries, as well as fire and explosion hazards. Workers will take appropriate protective measures when working near live electrical parts, including inspection of work areas to identify potential spark/ignition sources, maintenance of a safe distance, proper illumination of work areas, provision of barriers to prevent inadvertent contact, and use of non-conductive equipment. If wiring or other electrical work is needed, it must be performed by a qualified electrician.

General electrical safety requirements include:

- Electrical wiring and equipment must be a type listed by UL, Factory Mutual Engineering Corporation, or other recognized testing or listing agency.

- Installations must comply with the National Electrical Safety Code or the National Electrical Code regulations.

- Portable and semi-portable tools and equipment must be grounded by a multi-conductor cord having an identified grounding conductor and a multi-contact polarized plug-in receptacle.

- Tools protected by an approved system of double insulation, or its equivalent, need not be grounded. Double insulated tools must be distinctly marked and listed by UL or FM.

- Live parts or wiring or equipment must be guarded to prevent persons or objects from touching them.

- Electric wire or flexible cord passing through work areas must be covered or elevated to protect it from damage by foot traffic, vehicles, sharp corners, projections, or pinching.

- Circuits must be protected from overload.

- Temporary power lines, switch boxes, receptacle boxes, metal cabinets, and enclosures around equipment must be marked to indicate the maximum operating voltage.

- Plugs and receptacles must be kept out of water unless equipped with approved submersible construction.

- Extension outlets must be equipped with ground fault circuit interrupters.

- Attachment plugs or other connectors must be equipped with a cord grip and be constructed to endure rough treatment.

- Extension cords or cables must be inspected prior to each use and replaced if worn or damaged. Cords and cables must not be fastened with staples, hung from nails, or suspended by bare wire.

- Flexible cords must be used only in continuous lengths without splice, except for molded or vulcanized splices made by a qualified electrician.

3.4.7.1 High Voltage Hazards

Employees may be required to work around sources of high voltage at the Site. Caution should be exercised to minimize contact with high voltage equipment, including contact between sampling

equipment and potentially charged items. The minimum working distances from power transmission and distribution lines and equipment that will be allowed at the Site are presented in the following table.

High Voltage Clearances

Nominal System Voltage	Minimum Required Clearance
0-50 kV	10 ft
51-100 kV	12 ft
101-200 kV	15 ft
201-300 kV	20 ft
301-500 kV	25 ft
501-750 kV	35 ft
751-1,000 kV	45 ft
Notes: ft =Feet kV = Kilovolt(s)	

To minimize the dangers presented by underground high voltage electric lines, the Project Manager will review existing underground utility maps to determine if underground utilities are present at the proposed test pit, soil boring, and monitoring well locations prior to intrusive activities. Subcontractor personnel performing ground intrusive activities will provide grounding cables that will be attached to equipment and a grounding source (i.e., ground grid cable) during subsurface excavation and drilling. Use of the grounding cables will reduce the potential for worker injury in the event that underground utilities are encountered during intrusive activities.

To minimize the dangers presented by backhoe or drill rig contact with aboveground high voltage electric lines, personnel will locate test pits and monitoring wells to maintain an adequate working distance from power transmission and distribution lines.

3.4.8 Utilities

Underground utilities pose hazards to workers involved in drilling and other invasive operations. These hazards include electrical hazards, explosion, and asphyxiation, as well as costly and annoying hazards associated with damaging communication, sewer, and water lines. Prior to commencement of invasive operations, Dig Safely New York, will be contacted to inspect and flag the area of investigation. Personnel should be aware that although an area may be cleared, it does not mean that unanticipated hazards will not appear. Workers should always be alert for unanticipated events such as snapping cables, drilling into unmarked underground utilities, drilling into a heavily contaminated zone, etc. Such occurrences should prompt involved individuals to halt work immediately and take appropriate corrective measures to gain control of the situation.

3.4.9 Weather Hazards

Weather conditions should always be taken into consideration. Heavy rains, electrical storms, high winds, and extreme temperatures, for example, may create extremely dangerous situations for employees. Equipment performance may also be impaired because of inclement weather. Whenever unfavorable conditions arise, the Site Manager and SHSO will evaluate both the safety

hazards and ability of the employees to effectively perform given tasks under such conditions. Activities will be halted at their discretion.

Wind direction should be accounted for when positioning equipment at sampling locations. If exposure to organic vapors is anticipated, workers should locate upwind of the sampling point. Wind direction often changes abruptly and without warning, so personnel should always be prepared to reposition, if necessary.

3.5 BIOLOGICAL HAZARDS

Potential hazards may be present at the Site due to bites from stray domestic and wild animals (to include rodents), spiders, bees, and other venomous arthropods, ticks may be encountered during field operations potentially resulting in Lyme disease, rabies, or punctures from sharp objects presenting a possible hazard from tetanus. In the case of an animal or insect bite that can be serious or fatal, workers must seek immediate medical attention and report the incident to the SHSO prior to leaving the Site. An employee known to be allergic or sensitive to poisonous insects should alert the Site Manager and SHSO. Prompt medical attention procedures, as outlined in **Section 8.2** of this HASP will be followed in the event of animal bites (since many animals carry rabies or other diseases/viruses).

3.5.1 Bloodborne Pathogens

During the conduct of site operations, field crew may be exposed to blood and body secretions in support of emergency response operations where site personnel have been injured and require first aid and/or cardiopulmonary resuscitation (CPR). Due to the potential that blood and body secretions may contain disease causing organisms such as Hepatitis B virus and Human Immunodeficiency virus, in an emergency response situation, employees electing to provide first aid and CPR support, until the arrival of a competent on-site medical responder, should take appropriate measures to reduce or eliminate their potential for contact and exposure. The concept of "Universal Precautions" will be followed, which refers to the practice of assuming a potential hazard is present in a patient's bodily fluids. Employees providing first aid support should wear the appropriate PPE to prevent or reduce their potential for contact and exposure. This will typically be accomplished through the use of rubber gloves, splash-proof eye protection, and the use of mouth-to-mouth guards and proper cleanup (good sanitation and hygiene) following an incident. Hands and face should be thoroughly washed with water and an antiseptic soap or cleanser following an incident, or antiseptic containing disposable towelettes used in the absence of appropriate field washing facilities. The Program Health and Safety Officer should be notified of potential employee exposures to blood and body fluids while conducting work in support of this project.

3.5.2 West Nile Virus

West Nile virus is a member of the Japanese encephalitis complex of flaviviruses, transmissible by mosquitoes, and can cause febrile, sometimes fatal human illness. Until 1999, this virus had never been reported in the Western Hemisphere. Mosquitoes, primarily bird-feeding species, are the primary vectors of West Nile virus, although the virus has been isolated from other bird-feeding

arthropods, including some tick species. The natural transmission cycle of the virus involves a bird-mosquito cycle but may include a tick-bird cycle where soft ticks (Argasidaes) or hard ticks (Ixodidaes) are found feeding on reservoir birds. The urban cycle of the disease requires species of mosquitoes that will feed on free-ranging or domestic birds and people. The unprecedented introduction of West Nile virus into the metropolitan area of New York City in the late-Summer of 1999 has resulted in a large-scale review of existing programs and required resources to address this threat. Representatives of several local health units and state and federal agencies met to address each of the significant surveillance and response issues associated with this mosquito-borne disease. As a result of these discussions and consultation with community groups, the New York State Department of Health has developed a set of complementary action plans to prevent a further episode of West Nile virus infections.

According to New York State Department of Health, outdoor workers should take the following precautions to minimize potential exposure to the West Nile virus from adult mosquito bites:

- It is not necessary to change standard work health and safety practices outdoors unless there is evidence of the mosquito-borne disease.

- If the West Nile virus is identified in an area, workers should be advised of the precautions that they may choose to take to try to reduce the risk of mosquito bites:

  — Wear shoes, socks, long pants, and a long-sleeved shirt when outdoors for long periods of time or when mosquitoes are most active (between dusk and dawn). Maintain body fluids to avoid heat stress.

  — Consider the use of mosquito repellent, according to directions, when it is necessary to be outdoors for long periods or at times when mosquitoes are most active.

3.5.3 Lyme Disease

Lyme disease commonly occurs in summer and is transmitted by the bite of infected ticks. “Hot spots” in the United States include New York, New Jersey, Pennsylvania, Massachusetts, Connecticut, Rhode Island, Minnesota, and Wisconsin. Few cases have been identified in other states. Symptoms of Lyme disease include a rash or a peculiar red spot, like a bull’s eye, which expands outward in a circular manner. The victim may have a headache, weakness, fever, a stiff neck, swilling and pain in the joints, and eventually, arthritis.

Tick repellant containing diethyltoluamide (DEET) should be used when working in tick-infested areas, and pants legs should be tucked into boots. In addition, workers should search the entire body every 3 or 4 hours for attached ticks. Ticks should be removed promptly and carefully without crushing, since crushing can squeeze the disease-causing organism into the skin. A gently and steady pulling action should be used to avoid leaving the head or mouth parts in the skin. Hands should be protected with surgical gloves when removing ticks.

3.5.4 Pandemic Response

During a pandemic, field crew must take precautionary steps to avoid the spread of communicable diseases. Some precautionary steps in each project task listed below may include the following:

- No carpooling where possible to maintain social distancing and reduce transmission between coworkers.
- Minimize employees in small spaces to avoid crowding and maintain 6 ft between workers.
- When a 6-ft distance cannot be maintained between field crew, face coverings will be worn (e.g., a scarf, bandana, or face mask).
- Maintain diligent use of PPE including nitrile gloves and safety glasses to limit contact with eyes.
- Field crew shall frequently clean hands with soap and water for at least 20 seconds especially if in a public place, or after blowing nose, coughing, or sneezing.
    - — If soap and water are not readily available, field crew shall use a hand sanitizer that contains at least 60 percent alcohol.
    - — Field crew shall avoid touching eyes, nose, and mouth with unwashed hands or with gloved hands.
- Field crew should discuss work roles prior to the start of work to reduce passing tools, logbooks, iPads, and other equipment between individuals.
- Any field crew or potential site visitors should be excused from jobsite if the following pertains to them:
    - — Currently experiencing fever, chills, a cough, sore throat, or shortness of breath.
    - — Has been in contact with someone who has been medically diagnosed with Coronavirus Disease 2019 (COVID-19).
    - — Has traveled within the last 14 days.
    - — Has been in contact with anyone, including family members, who have traveled within the last 14 days.

3.6 CONFINED SPACE

A confined space is a space, which is large enough and so configured that an employee can bodily enter and perform work, has limited or restricted means for entry or exit, is not designed for

continuous employee occupancy, and requires a permit if it has one or more of the following characteristics:

- Contains a potentially hazardous atmosphere due to accumulation of toxic or flammable contaminants or has an oxygen deficient atmosphere
- Contains a material with the potential for suffocation of an entrant
- Has an internal configuration such that an entrant could be trapped or asphyxiated by inwardly converging walls, or a floor that slopes downward and tapers to a smaller cross-section
- Contains other recognized safety or health hazard.

Confined spaces include, but are not limited to, storage tanks, process vessels, bins, boilers, ventilation or exhaust ducts, sewers, underground utility vaults, tunnels, pipelines, and open top spaces more than 4 ft in depth such as pits, tubs, vaults, and vessels.

Based on the definition of a confined space, it is not anticipated that confined space entry will be required during field site visits, investigations, remediation or monitoring at the site. Although test pit excavations may be required at certain sites, no personnel will be allowed to enter a test pit where excavation exceeds 4 ft in depth. Entry into a confined space is forbidden until the potential confined space is thoroughly assessed by the Program Health and Safety Officer. Only those personnel properly trained and certified will be allowed to conduct confined space entries.

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4. GENERAL SAFETY PRACTICES

4.1 SAFETY PROCEDURES

Safe work practices, which must be followed by site workers, include:

- At least one copy of this HASP must be at the project site, in a location readily available to personnel, and reviewed by project personnel prior to starting work.
- Site personnel must use the buddy system.
- Potentially contaminated PPE must not be removed from the work area before being cleaned or properly packaged and labeled.
- Potentially contaminated waste, debris, and clothing must be properly contained, and legible and understandable precautionary labels affixed to each container to define its content.
- Removing potentially contaminated soil or debris from protective clothing or equipment with compressed air, shaking, or any other means that may re-suspend contaminants into the air is prohibited.
- Eat, drink, and smoke only in those areas designated by the Site Manager/SHSO. These activities will not take place within any work zone.
- Large bulk containers, such as 55-gallon drums, must only be moved with the proper equipment, and must be secured to prevent dropping or loss of control during transport.
- Emergency equipment such as eyewash, fire extinguishers, portable shower, etc. must be staged in readily-accessible locations.
- Employees must be aware, and inform their partners or fellow team members, of the potential non-visible effects of exposure to toxic materials. The symptoms of such exposures may include:

  — Headaches
  — Dizziness
  — Nausea
  — Blurred vision
  — Cramps
  — Irritation of eyes, skin, or respiratory tract.

- Visitors to the Site must adhere to the following:

  — Visitors must be instructed to stay outside the Exclusion Zone and Contaminant Reduction Zone and remain within the Support Zone during the extent of their stay. Visitors must be cautioned to avoid skin contact with surfaces that are contaminated or suspected to be contaminated.

  — Visitors requesting to observe work in the Exclusion Zone must don appropriate PPE prior to entry into that zone and must be cleared for hazardous site work as evidenced by a complete physical examination; must also have 40 hours of Hazardous Waste Operations and Emergency Response training and 8 hours refresher training within the past 12 months. If respiratory protective devices are necessary, visitors who wish to enter the Contaminant Reduction Zone, must be respirator-trained and fit tested for a respirator within the past 12 months.

  — Visitor inspection or access of the Exclusion Zone will be made at the discretion of the Field Manager. Only those personnel fully qualified may access the Exclusion Zone as defined by 29 CFR 1926.65.

Each employee required to take prescription drugs will notify the SHSO prior to the start of work, and upon approval, may take prescription drugs in the Support Zone only. Controlled or unauthorized drugs will **not** be permitted on-site at any time.

4.2 BUDDY SYSTEM

On-site personnel must use the buddy system. Visual contact must be maintained between crew members, and crew members must observe each other for signs of chemical exposure, and heat or cold stress. Indications of adverse effects include, but are not limited to:

- Changes in complexion and skin coloration
- Changes in coordination
- Changes in demeanor
- Excessive salivation and pupillary response
- Changes in speech pattern.

Team members must also be aware of potential exposure to possible safety hazards, unsafe acts, or non-compliance with safety procedures.

If protective equipment or noise levels impair communications, pre-arranged hand signals must be used for communication. Personnel must stay within line of sight of another team member.

4.3 EMERGENCY EQUIPMENT

Adequate emergency equipment for the activities conducted on-site and as required by applicable sections of 29 CFR 1910 and 29 CFR 1926 must be maintained on-site. Personnel will be provided with access to emergency equipment including, but not limited to, the following:

- Emergency eyewash unit(s) and showers meeting American Nation Standards Institute Z358.1-1990
- Fire extinguishers of adequate size, class, number, and location (one in each EA vehicle) as required by applicable sections of 29 CFR 1910 and 29 CFR 1926.
- First aid kit of adequate size for the number of personnel on-site.

4.4 PERSONAL HYGIENE AND SANITATION

4.4.1 Break Area

Breaks will be taken in the Support Zone, away from the active work area after site personnel complete decontamination procedures. There will be no smoking, eating, drinking, or chewing gum or tobacco in the area other than the Support Zone.

4.4.2 Potable Water

The following rules apply for project field operations:

- An adequate supply of potable water will be provided at the work site. Potable water must be kept away from hazardous materials, contaminated clothing, and contaminated equipment.
- Portable containers used to dispense drinking water must be capable of being tightly closed and must be equipped with a tap dispenser. Water must not be consumed directly from the container, nor dipped from the container.
- Containers used for drinking water must be clearly marked and not used for any other purpose.
- Disposable cups will be supplied; both a sanitary container for unused cups and a receptacle for disposing of used cups must be provided.

4.4.3 Sanitary Facilities

Access to facilities for washing before eating, drinking, or smoking will be provided. Personnel are required to wash off exposed skin surfaces prior to eating, smoking, or drinking following site operations and work activities.

4.4.4 Lavatory

If permanent toilet facilities are not available, an appropriate number of portable chemical toilets will be provided.

4.4.5 Trash Collection

Trash from the Contaminant Reduction Zone will be inspected, and if considered a hazardous waste, disposed of as a hazardous waste. Trash collected in the Support Zone and break areas disposed of as non-hazardous waste. Labeled trash receptacles will be set up in the Contaminant Reduction Zone and the Support Zone.

4.5 SPILL CONTROL PLAN

Personnel must take every necessary precaution to minimize the potential for spills during site operations. On-site personnel are obligated to report immediately any discharge, no matter how small, to the Project Manager. In the event of a significant spill, containment, control, and cleanup procedures will adhere to NYSDEC Technical Procedural Guidance document for personnel health and safety protection.

Spill control apparatus will be located on-site at locations that the Site Manager foresees with the potential for discharge to the ground. Sorbent materials used for the cleanup will be containerized and labeled separately from other wastes. In the event of a spill, the Project Manager will follow the provisions outlined in the Site-Specific HASP for each site to contain and control released materials and to prevent the spread to off-site areas.

4.6 LOCKOUT/TAGOUT PROCEDURES

Maintenance procedures will only be performed by fully qualified and trained individuals. Before maintenance begins, lockout/tagout procedures per OSHA 29 CFR 1910.147 will be followed.

Lockout is the placement of a device that uses a positive means such as a lock to hold an energy or material isolating device or system ensuring that the equipment cannot be operated until the lockout device is removed. If a device cannot be locked out, a tagout system will be used. Tagout is the placement of a warning tag on an energy or material isolating device indicating that the equipment controlled may not be operated until the tag is removed. Only personnel properly trained in lockout/tagout procedures, and having knowledge of the system requiring maintenance, will conduct these activities. Lockout/tagout procedures will be reviewed and assessed by the SHSO prior to maintenance being conducted on the system.

5. PERSONAL PROTECTIVE EQUIPMENT

5.1 LEVELS OF PROTECTION

Based upon currently available information, the Site is considered non-hazardous and will require Level D protection for currently anticipated conditions and activities. Site monitoring does not include intrusive activities, so unknown chemical hazards will not be encountered. Level D protection is sufficient for the monitoring activities covered by this HASP.

5.1.1 Level D Personal Protective Equipment

Level D will be worn for initial entry on-site and initially for all activities and will consist of the following:

- Coveralls or appropriate work clothing
- Steel-toe, steel-shank safety boots/shoes
- Hard hats (when overhead hazards are present or as required by the SHSO)
- Chemical resistant gloves (nitrile/neoprene) when contact with potentially contaminated soil or water is expected
- Safety glasses with side shields
- Hearing protectors (during drilling or other operations producing excessive noise)
- Boot covers (optional unless in contact with potentially contaminated soil or water)
- Poly coated coveralls (when contact with contaminated soil and water is anticipated, e.g., when surging/pumping wells and pressure-washing equipment).

Insulated clothing, hats, etc. must be worn when temperatures or wind chill fall below 40°F.

5.2 HEARING PROTECTION

Hearing protection must be available and properly worn whenever noise levels exceed 85 dBA (noise level at which a normal conversation cannot be carried on at a 3-ft distance). When the SHSO determines that a potential excessive noise exposure exists, a sound level meter will be used for measurements. Two types of hearing protection will be available on-site: foam earplugs and earmuffs. The hearing protectors will have a Noise Reduction Rating sufficient to reduce the sound level to below 85 dBA.

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6. EMPLOYEE TRAINING

6.1 SITE WORKERS

Personnel who will be performing non-hazardous on-site tasks are not required to have been trained according to United States Department of Labor OSHA Standard, 29 CFR 1910.120/29 CFR 1926.65 *Hazardous Waste Operations and Emergency Response*. These workers will have appropriate health and safety training based upon their specific job tasks and activities.

The Site Manager, SHSO, and personnel conducting the site monitoring activities (e.g., groundwater monitoring) will be trained as required to meet the United States Department of Labor OSHA Standard, 29 CFR 1910.120/29 CFR 1926.65, *Hazardous Waste Operations and Emergency Response* to qualify as a hazardous waste site worker and supervisor. Training will include:

- A minimum of 40 hours of initial off-site instruction
- A minimum of 3 days of actual field experience under the direct supervision of a trained, experienced supervisor
- An 8-hour refresher training period annually
- Additional training that addresses unique or special hazards/operational requirements
- First aid and CPR.

On-site management and supervisors who are directly responsible for or who supervise employees will receive at least 8 additional hours of specialized management training. Copies of training certificates and dates of attendance will be available through the SHSO upon request.

6.1.1 Subcontractor Training

Prior to start of work operations, the Project Manager will obtain a written list of subcontractor personnel to be on-site, and written certification from subcontractor management that these workers meet the training requirements for their assigned tasks.

6.2 SITE-SPECIFIC TRAINING

The SHSO will be responsible for developing a site-specific occupational hazard training program and providing training to personnel who are to work at the Site. At a minimum, this training will consist of the following topics:

- Names of personnel responsible for site health and safety
- Safety, health, and other hazards at the Site
- Proper use of PPE
- Work practices by which the employee can minimize risk from hazards

- Safe use of engineering controls and equipment on the Site
- Acute effects of compounds at the Site
- Decontamination procedures.

7. MEDICAL SURVEILLANCE

7.1 MEDICAL EXAMINATIONS

Site workers potentially involved with the field sampling operations must have satisfactorily completed a comprehensive medical examination by a licensed occupational physician within 12 months (or 24 months with the approval of the consulting physician) prior to the start of site operations. The date of medical examination of each qualified person will be maintained on-site with the project field team. Medical surveillance protocols must comply with 29 CFR 1910.120/29 CFR 1926.65.

Medical examinations and consultations must be provided for employees covered by this program on the following schedule:

- Prior to assignment
- At least annually for employees covered by the program
- At termination of employment or reassignment to an area where the employee would not be covered if the employee has not been examined within the past 6 months
- As soon as possible upon the development of signs or symptoms that may indicate an overexposure to hazardous substances or health hazards
- More frequently if the physician deems such examination necessary to maintain employee health.

7.2 RECORDS

An accurate record of the medical surveillance and exposure will be maintained for each employee for a period of no less than 30 years after the termination of employment, as per 29 CFR 1910.1020. Records must include at least the following information about the employee:

- Name and social security number
- Physician’s written opinions, recommendations, limitations, and test results
- Employee medical complaints related to hazardous waste operations
- Information provided to the physician by the employee concerning possible exposures, accidents, etc.

Subcontractors must provide medical surveillance information in writing to the Project Manager for their workers prior to mobilization on-site.

7.3 FIRST AID AND MEDICAL TREATMENT

Persons on-site must report a near-miss incident, accident, injury, or illness to their immediate supervisor or the Site Manager. First aid will be provided by the designated site first aider. Injuries and illnesses requiring medical treatment must be documented. The Site Manager must conduct an accident investigation as soon as emergency conditions no longer exist, and first aid and/or medical treatment has been ensured. The accident/incident report must be completed and submitted to the Corporate Health and Safety Officer within 24 hours after the incident.

If first aid treatment is required, first aid kits are kept at the Contaminant Reduction Zone. If treatment beyond first aid is required, the injured individual(s) should be transported to the medical facility. If the injured is not ambulatory or shows signs of not being in a comfortable or stable condition for transport, then an ambulance/paramedics should be summoned. If there is a doubt as to the injured worker's condition, it is best to let the local paramedic or ambulance service examine and transport the worker.

8. ACCIDENT PREVENTION AND CONTINGENCY PLAN

8.1 ACCIDENT PREVENTION

Field personnel will receive health and safety training prior to the initiation of site activities. On a day-to-day basis, individual personnel should be constantly alert for indicators of potentially hazardous situations and for signs and symptoms in themselves and others that warn of hazardous conditions and exposures. Rapid recognition of dangerous situations can avert an emergency. Before daily work assignments, regular meetings should be held.

Discussion should include:

- Tasks to be performed
- Time constraints (e.g., rest periods, cartridge changes)
- Hazards that may be encountered, including their effects, how to recognize symptoms and monitor them, concentration limits, or other danger signals
- Emergency procedures.

8.1.1 Vehicles and Heavy Equipment

Working with large motor vehicles and heavy equipment could be a major hazard at a Site. Injuries can result from equipment hitting or running over personnel, impacts from flying objects, or overturning of vehicles. Vehicle and heavy equipment are not anticipated for use at this site; however, vehicle and heavy equipment design and operation will be in accordance with 29 CFR, Subpart O, 1926.600 through 1926.602, if in use. In particular, the following precautions will be utilized to help prevent injuries/accidents:

- Brakes, hydraulic lines, light signals, fire extinguishers, fluid levels, steering, tires, horn, and other safety devices will be checked at the beginning of each shift by the equipment operator.
- Large construction motor vehicles will not be backed up unless the vehicle has a reverse signal alarm audible above the surrounding noise level, or the vehicle is backed up only when an observer signals that it is safe to do so.
- Heavy equipment or motor vehicle cabs will be kept free of all non-essential items, and loose items will be secured.
- Large construction motor vehicles and heavy equipment will be provided with necessary safety equipment (seat belts, rollover protection, emergency shut-off in case of rollover, backup warning lights, and audible alarms).

- Blades and buckets will be lowered to the ground and parking brakes will be set before shutting off heavy equipment or vehicles.

8.2 CONTINGENCY PLAN

8.2.1 Emergency Recognition

Prior to work startup, personnel must be familiar with emergency condition identification, notification, and response procedures. **The emergency telephone numbers for local emergency response and reporting organizations and directions and map to the nearest hospital are included in Attachment E. NOTE: The HASP will be left open to the emergency contacts page at all times during site activities.** The Site Manager and SHSO will rehearse/review emergency procedures and/or applicable site contingencies initially during site orientation and as part of the ongoing site safety program. On-site emergencies will ultimately be handled by off-site emergency personnel. Initial response and first-aid treatment; however, will be provided on-site.

Person(s) identifying an accident, injury, emergency condition, or a scenario requiring implementation of a response in support of this Plan will immediately take actions to report the situation to the Site Manager. Notification may take place by runner, hand-held radio, or telephone. The Site Manager/SHSO will initiate the required response based upon the type of incident, following the procedures contained in this HASP. A chain-of-command and sign-in sheets for personnel on the Site will be established at the beginning of each workday to ensure personnel are accounted for and who will take control should the Site Manager or SHSO become injured. The following items constitute those site conditions requiring an emergency response or contingency action in accordance with this HASP:

- Fire/Explosion:
  - The potential for human injury exists
  - Toxic fumes or vapors are released
  - The fire could spread on-site or off-site, and possibly ignite other flammable materials or cause heat-induced explosions
  - The use of water and/or chemical fire suppressants could result in contaminated runoff
  - An imminent danger of explosion exists.
- Heavy Equipment Accident:
  - On-site traffic accident where personal injury has occurred.
- Natural Disaster:

- A rainstorm exceeds the flash flood level
- The site is in a projected tornado/hurricane path, or a tornado/hurricane has damaged facility property
- Severe wind gusts are forecasted or have occurred and have caused damage to the facility.

- Medical Emergency:
  - Overexposure to hazardous materials
  - Trauma injuries (broken bones, severe lacerations/bleeding, burns, animal bites)
  - Eye or significant skin contact with hazardous materials
  - Loss of consciousness
  - Heat stress (heat stroke)
  - Heart attack
  - Respiratory failure
  - Allergic reaction.

- Discovery of Unanticipated Hazards (e.g., unmarked utility lines, heavily contaminated material).

Follow-up operations to evaluate and control the source of fire, explosions, and hazardous materials incidents will occur only after discussion with the Project Manager and Site Manager. The Site Manager will act as the Emergency Coordinator at the Site to coordinate on-site activities and contingencies until the arrival of outside response organizations. If the Site Manager is unable to act as the Emergency Coordinator, then the authority to take action will be transferred to the SHSO, or other designee, as indicated in the daily updated chain-of-command.

8.2.2 Emergency Procedures

In the event of an emergency, the information available at that time must be properly evaluated and the appropriate steps taken to implement the Emergency Response Plan. The Site Manager (or SHSO if the Site Manager is part of the emergency) will assume command of the situation. He/she will alert the emergency management system and evacuate personnel to the pre-designated evacuation location. In a site emergency, the Site Manager (or the SHSO if the Site Manager is not available) must sound an emergency alarm (designated as an air horn or car horn) repeatedly several times, upon hearing work must stop, and personnel must move to the pre-designated evacuation location. If the emergency situation cannot be conveyed by word of mouth, a whistle or other horn will be sounded. Three short blasts, separated by a 2-second silence, will be used as the emergency signal. First aid will be administered only to limit further injury and stabilize the victim. The local Emergency Medical Services must be notified immediately, if needed. The routes to the nearest hospital are shown in **Attachment E**. The Site Manager/SHSO will make required notifications to include, but not be limited to, the NYSDEC representative and Project Manager, as defined in **Section 2** and the appropriate federal and state agencies.

Site personnel will have the capability of notifying emergency responders directly from the Site using the phone in the company vehicle or in the site support office. In the event of an accident/incident, the Project Manager should be immediately notified of a reportable accident/incident or contingency.

The following information will be provided when reporting an emergency:

1. Name and location of person reporting
2. Location of accident/incident
3. Name and affiliation of injured party
4. Description of injuries, fire, spill, or explosion
5. Status of medical aid and/or other emergency control efforts
6. Details of chemicals involved
7. Summary of accident, including suspected cause and time it occurred
8. Temporary control measures taken to minimize further risk.

This information is not to be released to parties other than those listed in this section and Emergency Response Team members. Once emergency response agencies have been notified, the Project Manager will be notified immediately.

8.2.3 Chemical Exposure

If a member of the field crew demonstrates symptoms of chemical exposure, the procedures outlined below should be followed:

- Another team member (buddy) should remove the individual from the immediate area of contamination. The buddy should communicate to the Site Manager (via voice and hand signals) of the chemical exposure. The Site Manager should contact the appropriate emergency response agency.

- Precautions should be taken to avoid exposure of other individuals to the chemical.

- If the chemical is on the individual's clothing, the chemical should be neutralized or removed if it is safe to do so, or the clothing should be removed and bagged.

- If the chemical has contacted the skin, the skin should be washed with copious amounts of water.

- In case of eye contact, an emergency eye wash should be used. Eyes should be washed for at least 15 minutes.

Chemical exposure incidents must be reported in writing to the Program Health and Safety Officer. The SHSO or Site Manager is responsible for completing the accident report provided in **Attachment F**.

8.2.4 Personal Injury

Personnel should always be alert for signs and symptoms of illnesses related to chemical, physical, and on-site health hazards. Severe injuries resulting from accidents must be recognized as emergencies and treated as such. If feasible, in the field, at least two people currently trained in first aid/CPR must be present on-site. This will normally be the Field Manager and SHSO.

In a medical emergency, the Site Manager (or the SHSO if the Field Manager is not available) must sound the emergency air horn or car horn several times, upon which work must stop and personnel must move to the pre-designated evacuation location. If the emergency situation cannot be conveyed by word of mouth, a whistle or other horn will be sounded. Three short blasts, separated by a 2-second silence, will be used as the emergency signal. Personnel currently trained in first aid will evaluate the nature of the injury, decontaminate the victim (if necessary), and initiate first aid assistance immediately and transport if appropriate. First aid will be administered only to limit further injury and stabilize the victim. The local Emergency Medical Services must be notified immediately, if needed. The routes to the nearest hospital are shown in **Attachment E**. Although not anticipated, victims who are heavily contaminated with toxic or dangerous materials must be decontaminated before being transported from the Site. Decontamination will consist of removal of contaminated coveralls/clothing and wrapping the victim in a sheet or other cloth like material. No persons will re-enter the site of injury/illness until the cause of the injury or symptoms has been determined and controlled. At no time will personnel transport victims to emergency medical facilities unless the injury does not pose an immediate threat to life and transport to the emergency medical facility can be accomplished without the risk of further injury. Emergency Medical Services will be used to transport serious injuries off-site unless deemed otherwise by the Site Manager/SHSO.

The Site Manager must complete an Accident/Loss and Incident Report provided in **Attachment F** and submit it to the Project Manager within 24 hours of the following types of incidents:

- Job-related injuries and illnesses
- Accidents resulting in loss or damage to property
- Accidents involving vehicles and/or vessels, whether or not they result in damage to property or personnel
- Accidents in which there may have been no injury or property damage, but which have a high probability of recurring with at least a moderate risk to personnel or property
- Near-miss incidents, which could have resulted in any of the conditions defined above.

An accident that results in a fatality or the hospitalization of three or more employees must be reported within 8 hours to the United States Department of Labor through the Project Manager. Subcontractors are responsible for their reporting requirements.

In order to support on-site medical emergencies, first aid/emergency medical equipment will be available at the following locations:

- First-aid kit; work vehicle
- Eye wash; work vehicle
- Emergency alarm; horn on the work vehicle
- Copy of the HASP, work vehicle
- Telephone; work vehicle.

The eye wash kit must be portable and capable of supplying at least a 15-minute supply of potable water to the eyes.

8.2.5 Operations Shutdown

The Site Manager, SHSO, the Project Manager or field crew may mandate operations shutdown. Conditions warranting work stoppage will include (but are not limited to):

- Uncontrolled fire
- Explosion
- Uncovering potentially dangerous buried hazardous materials
- Condition immediately dangerous to life and health or the environment
- Potential for electrical storms
- Treacherous weather-related conditions
- Limited visibility.

8.2.6 Evacuation Procedures

In the event the Site must be evacuated, the following procedures should be followed:

- The Site Manager will initiate evacuation procedures by signaling to leave the Site.

- Personnel in the work area should evacuate the area and meet in the common designated area.

- Personnel suspected to be in or near the work area should be accounted for and the whereabouts of missing persons determined immediately.

Further instruction will then be given by the Site Manager.

8.2.7 Procedures Implemented in the Event of a Major Fire, Explosion, or On-site Health Emergency Crisis

Fire and explosion must be immediately recognized as an emergency. The SHSO (or Site Manager if SHSO is not available) must sound an emergency signal, and personnel must be decontaminated (if necessary) and evacuated to the pre-designated evacuation location.

Only persons properly trained in fire suppression and other emergency response procedures will support control activities. Control activities will consist of the use of on-site portable fire extinguishers for limited fire suppression and employee evacuation. Upon sounding the emergency alarm, personnel will evacuate the hazard location and assemble at the designated site meeting area.

Only those site personnel trained in the use of portable fire extinguisher use will attempt to suppress a site fire. Small multipurpose dry chemical extinguishers will be maintained in each vehicle on-site. Fires not able to be extinguished using on-site extinguishers will require the support of the local fire department.

The Site Manager should take measures to reduce injury and illness by evacuating personnel from the hazard location as quickly as possible. The Site Manager must then notify the local fire department. The Site Manager will determine proper follow-up actions. Site personnel will not resume work during or after a fire/explosion incident until the emergency coordinator has directed that the incident is over, and work may resume. During the incident, site personnel will remain outside the incident area and obey the instructions of the Emergency Coordinator.

8.2.8 Emergency Telephone Numbers

Attachment E provides a listing of emergency telephone numbers.

8.3 SPILL CONTAINMENT PROCEDURES

Small incidental spills, (i.e., those which cause no injury to personnel or the public), may be cleaned up quickly and easily. For large spills, (i.e., those that contaminate personnel or the environment), attend to first aid measures first, stop the source of the spill if possible, and then notify appropriate emergency response services. Safety of workers will be managed by adhering to policies and procedures outlined in the NYSDEC Technical Procedural Manual for Personal Health and Safety Protection.

Spills of hazardous materials or wastes which are listed by EPA as having a reportable quantity value must be reported to appropriate federal, state, and local agencies if a reportable quantity or greater is released. The Site Manager is responsible for determining the appropriate agencies prior to work startup.

Attachment A

Health and Safety Plan Review Record

Health and Safety Plan Review Record

I have read the Health and Safety Plan for this site and have been briefed on the nature, level, and degree of exposure likely as a result of participation in this project. I agree to conform to all the requirements of this Plan.

Site: Saranac Lake Gas Company, Saranac Lake, New York			
Name	**Signature**	**Affiliation**	**Date**

Attachment B

Safety Data Sheets

SAFETY DATA SHEET
BENTONITE

1 IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND COMPANY/UNDERTAKING

PRODUCT NAME	BENTONITE
APPLICATION	Viscosifier.
SUPPLIER	M-I Drilling Fluids UK Ltd, Pocra Quay, Footdee, Aberdeen. AB11 5DQ T -44 (0)1224-584336 F -44 (0)1224-576119
EMERGENCY TELEPHONE	+44(0)208 762 8322

2 COMPOSITION/INFORMATION ON INGREDIENTS

Name	EC No.	CAS-No.	Content	Classification
BENTONITE	215-108-5	1302-78-9	80 - 95%	-
QUARTZ, CRYSTALLINE SILICA	238-878-4	14808-60-7	2 -15%	Xn;R20.

The Full Text for all R-Phrases are Displayed in Section 16

COMPOSITION COMMENTS

This material is a naturally occurring mineral. The Data Shown is in accordance with the latest EC Directives. This product contains a small quantity of quartz, crystalline silica. Prolonged and repeated exposure to concentrations of crystalline silica exceeding the maximum exposure limit may lead to chronic lung disease such as silicosis.

3 HAZARDS IDENTIFICATION

Not regarded as a health or environmental hazard under current legislation.

HUMAN HEALTH

This product contains a small quantity of quartz. IARC Monographs, Vol.68, 1997, concludes that there is sufficient evidence that inhaled crystalline silica in the form of quartz or crystobalite from occupational sources causes cancer in humans. IARC classification Group 1.

4 FIRST-AID MEASURES

INHALATION

Move the exposed person to fresh air at once. Get medical attention if any discomfort continues.

INGESTION

First aid is not normally required. Rinse mouth thoroughly. Drink plenty of water.

SKIN CONTACT

Wash skin thoroughly with soap and water. Remove contaminated clothing. Get medical attention if any discomfort continues.

EYE CONTACT

Promptly wash eyes with plenty of water while lifting the eye lids. Continue to rinse for at least 15 minutes. Get medical attention if any discomfort continues.

5 FIRE-FIGHTING MEASURES

EXTINGUISHING MEDIA

The product is non-combustible. Use fire-extinguishing media appropriate for surrounding materials.

UNUSUAL FIRE & EXPLOSION HAZARDS

No unusual fire or explosion hazards noted.

PROTECTIVE MEASURES IN FIRE

Self contained breathing apparatus and full protective clothing must be worn in case of fire.

6 ACCIDENTAL RELEASE MEASURES

PERSONAL PRECAUTIONS

Wear protective clothing as described in Section 8 of this safety data sheet.

ENVIRONMENTAL PRECAUTIONS

Do not allow to enter drains, sewers or watercourses.

SPILL CLEAN UP METHODS

Shovel into dry containers. Cover and move the containers. Flush the area with water. May be slippery when wet.

7 HANDLING AND STORAGE

USAGE PRECAUTIONS

Avoid handling which leads to dust formation. Provide good ventilation. Mechanical ventilation or local exhaust ventilation may be required .

STORAGE PRECAUTIONS

Store at moderate temperatures in dry, well ventilated area.

8 EXPOSURE CONTROLS/PERSONAL PROTECTION

Name	Std	LT - ppm	LT - mg/m3	ST - ppm	ST - mg/m3
QUARTZ, CRYSTALLINE SILICA	WEL		0.3 mg/m3 resp. dust		
BENTONITE			4 mg/m3 resp. dust		

INGREDIENT COMMENTS

WEL = Workplace Exposure Limits * OSHA PELs for Mineral Dusts containing crystalline silica are 10 mg/m3 / (%SiO2+2) for quartz and 1/2 the calculated quartz value for cristobalite and tridymite. NUI = Nuisance Dust. WEL TWA 4mg/m3 respirable dust, 10mg/m3 total dust.

PROTECTIVE EQUIPMENT



ENGINEERING MEASURES

Provide adequate general and local exhaust ventilation.

RESPIRATORY EQUIPMENT

Respiratory protection must be used if air contamination exceeds acceptable level. Dust filter P3 (for especially fine dust/powder).

HAND PROTECTION

No specific hand protection noted, but gloves may still be advisable. For prolonged or repeated skin contact use suitable protective gloves . Rubber or plastic.

EYE PROTECTION

Wear dust resistant safety goggles where there is danger of eye contact.

OTHER PROTECTION

Wear appropriate clothing to prevent repeated or prolonged skin contact. Provide eyewash station.

9 PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE	Powder, dust		
COLOUR	Cream to Grey		
ODOUR	Odourless		
SOLUBILITY	Insoluble in water		
RELATIVE DENSITY	2.3 - 2.6 20	BULK DENSITY	769 - 833 kg/m3
pH-VALUE, CONC. SOLUTION	9 - 10		

10 STABILITY AND REACTIVITY

STABILITY

Stable under normal temperature conditions.

CONDITIONS TO AVOID

Avoid wet and humid conditions.

MATERIALS TO AVOID

No incompatible materials noted.

HAZARDOUS DECOMPOSITION PRODUCTS

No specific hazardous decomposition products noted.

11 TOXICOLOGICAL INFORMATION

INHALATION

Dust may irritate respiratory system or lungs. Harmful: danger of serious damage to health by prolonged exposure through inhalation.

INGESTION

May cause discomfort if swallowed.

SKIN CONTACT

Powder may irritate skin.

EYE CONTACT

Particles in the eyes may cause irritation and smarting.

HEALTH WARNINGS

This product contains small quantities of quartz. Prolonged inhalation of high concentrations may damage respiratory system. Because of quantity and composition, the health hazard is small.

12 ECOLOGICAL INFORMATION

ECOTOXICITY

Not regarded as dangerous for the environment. Contact M-I Swaco's QHSE Department for ecological information.

13 DISPOSAL CONSIDERATIONS

DISPOSAL METHODS

Recover and reclaim or recycle, if practical. Dispose of waste and residues in accordance with local authority requirements.

14 TRANSPORT INFORMATION

GENERAL	The product is not covered by international regulation on the transport of dangerous goods (IMDG, IATA, ADR/RID).

15 REGULATORY INFORMATION

RISK PHRASES

NC	Not classified.

SAFETY PHRASES

NC	Not classified.

UK REGULATORY REFERENCES

The Control of Substances Hazardous to Health Regulations 1988. Chemicals (Hazard Information & Packaging) Regulations. IARC Monographs, Vol.68, 1997.

EU DIRECTIVES

Dangerous Substance Directive 67/548/EEC. Dangerous Preparations Directive 1999/45/EEC.

GUIDANCE NOTES

Workplace Exposure Limits EH40.

16 OTHER INFORMATION

GENERAL INFORMATION

HMIS Health - 1 HMIS Flammability - 1 HMIS Physical Hazard - 0 E - Safety glasses, Gloves, Dust Respirator

INFORMATION SOURCES

Material Safety Data Sheet, Misc. manufacturers. Transport of Dangerous Goods, Model Regulations, Tenth Revised Edition, United Nations.

REVISION COMMENTS

The following sections have been revised: 5, 6, 7, 8, 13, 14, 15 and 16. Revised by Bill Cameron

ISSUED BY

Sam Hoskin

REVISION DATE	23-09-05
REV. NO./REPL. SDS GENERATED	2
SDS NO.	10609

RISK PHRASES IN FULL

R20	Harmful by inhalation.

DISCLAIMER

MSDS furnished independent of product sale. While every effort has been made to accurately describe this product, some of the data are obtained from sources beyond our direct supervision. We cannot make any assertions as to its reliability or completeness; therefore, user may rely only at user's risk. We have made no effort to censor or conceal deleterious aspects of this product. Since we cannot anticipate or control the conditions under which this information and product may be used, we make no guarantee that the precautions we have suggested will be adequate for all individuals and/or situations. It is the obligation of each user of this product to comply with the requirements of all apprlicable laws regarding use and disposal of this product. Additional information will be furnished upon request to assist the user; however, no warranty, either expressed or implied, nor liability of any nature with respect to this product or to the data herein is made or incurred hereunder.

SAFETY DATA SHEET

SDS ID NO.: 0130MAR019
Revision Date: 05/14/2015

1. IDENTIFICATION

Product Name: Marathon Petroleum Regular Unleaded Gasoline With Ethanol

Synonym: Regular Unleaded Gasoline With Alcohol
Chemical Family: Complex Hydrocarbon Substance

Recommended Use: Fuel.
Use Restrictions: All others.

Supplier Name and Address:

MARATHON PETROLEUM COMPANY LP
539 South Main Street
Findlay, OH 45840

SDS information: 1-419-421-3070

Emergency Telephone: 1-877-627-5463

2. HAZARD IDENTIFICATION

Classification

OSHA Regulatory Status
This chemical is considered hazardous according to the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Flammable liquids	Category 1
Skin corrosion/irritation	Category 2
Germ cell mutagenicity	Category 1B
Carcinogenicity	Category 1B
Reproductive toxicity	Category 2
Specific target organ toxicity (single exposure)	Category 3
Aspiration toxicity	Category 1
Acute aquatic toxicity	Category 2
Chronic aquatic toxicity	Category 2

Hazards Not Otherwise Classified (HNOC)
Static accumulating flammable liquid

Label elements

EMERGENCY OVERVIEW

Danger

EXTREMELY FLAMMABLE LIQUID AND VAPOR
May accumulate electrostatic charge and ignite or explode

May be fatal if swallowed and enters airways
Causes skin irritation
May cause respiratory irritation
May cause drowsiness or dizziness
May cause genetic defects
May cause cancer
Suspected of damaging fertility or the unborn child
Toxic to aquatic life with long lasting effects



Appearance Clear or Colored Liquid **Physical State** Liquid **Odor** Strong Hydrocarbon

Precautionary Statements - Prevention
Keep away from heat/sparks/open flames/hot surfaces. — No smoking
Keep container tightly closed
Ground/bond container and receiving equipment
Use explosion-proof electrical/ventilating/lighting/equipment
Use only non-sparking tools
Take precautionary measures against static discharge
Obtain special instructions before use
Do not handle until all safety precautions have been read and understood
Wear protective gloves/protective clothing/eye protection/face protection
Do not eat, drink or smoke when using this product
Do not breathe mist/vapors/spray
Use only outdoors or in a well-ventilated area
Wash hands thoroughly after handling
Avoid release to the environment

Precautionary Statements - Response
IF exposed or concerned: Get medical attention
IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower
If skin irritation occurs: Get medical attention
Wash contaminated clothing before reuse
IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing
Call a POISON CENTER or doctor if you feel unwell
IF SWALLOWED: Immediately call a POISON CENTER or doctor
Do NOT induce vomiting
In case of fire: Use water spray, fog or regular foam for extinction
Collect spillage

Precautionary Statements - Storage
Store in a well-ventilated place. Keep container tightly closed
Keep cool
Store locked up

Precautionary Statements - Disposal
Dispose of contents/container at an approved waste disposal plant

3. COMPOSITION/INFORMATION ON INGREDIENTS

Gasoline is a complex combination of hydrocarbons consisting of paraffins, cycloparaffins, aromatic and olefinic hydrocarbons having molecular chains ranging in length from four to ten carbons. May contain small amounts of dye and other additives (>0.02%) which are not considered hazardous at the concentrations used.

Composition Information:

Name	CAS Number	Weight %
Gasoline	86290-81-5	100
Toluene	108-88-3	0.9-13.5
Ethyl Alcohol	64-17-5	5.7-10
Xylene (mixed isomers)	1330-20-7	1.8-9
1,2,4 Trimethylbenzene	95-63-6	0.9-4.5
Benzene	71-43-2	0.45-3.2
n-Hexane	110-54-3	0-2.7
Ethylbenzene	100-41-4	0.45-1.8
Naphthalene	91-20-3	0.1-0.5

4. FIRST AID MEASURES

First Aid Measures

General advice In case of accident or if you feel unwell, seek medical advice immediately (show directions for use or safety data sheet if possible).

Inhalation: Remove to fresh air. If not breathing, institute rescue breathing. If breathing is difficult, ensure airway is clear, give oxygen and continue to monitor. If heart has stopped, immediately begin cardiopulmonary resuscitation (CPR). Keep affected person warm and at rest. GET IMMEDIATE MEDICAL ATTENTION.

Skin Contact: Immediately wash exposed skin with plenty of soap and water while removing contaminated clothing and shoes. May be absorbed through the skin in harmful amounts. Get medical attention if irritation persists. Any injection injury from high pressure equipment should be evaluated immediately by a physician as potentially serious (See NOTES TO PHYSICIAN).

Place contaminated clothing in closed container until cleaned or discarded. If clothing is to be laundered, inform the person performing the operation of contaminant's hazardous properties. Destroy contaminated, non-chemical resistant footwear.

Eye Contact: Flush immediately with large amounts of water for at least 15 minutes. Eyelids should be held away from the eyeball to ensure thorough rinsing. Gently remove contacts while flushing. Get medical attention if irritation persists.

Ingestion: Do not induce vomiting because of danger of aspirating liquid into lungs, causing serious damage and chemical pneumonitis. If spontaneous vomiting occurs, keep head below hips, or if patient is lying down, turn body and head to side to prevent aspiration and monitor for breathing difficulty. Never give anything by mouth to an unconscious person. Keep affected person warm and at rest. GET IMMEDIATE MEDICAL ATTENTION.

Most important signs and symptoms, both short-term and delayed with overexposure

Adverse Effects: Acute: Headache, drowsiness, dizziness, loss of coordination, disorientation and fatigue.
Delayed: Dry skin and possible irritation with repeated or prolonged exposure.

Indication of any immediate medical attention and special treatment needed

NOTES TO PHYSICIAN:

INHALATION: This material (or a component) sensitizes the myocardium to the effects of sympathomimetic amines. Epinephrine and other sympathomimetic drugs may initiate cardiac arrhythmias in individuals exposed to this material. Administration of sympathomimetic drugs should be avoided.

SKIN: Leaks or accidents involving high-pressure equipment may inject a stream of material through the skin and initially produce an injury that may not appear serious. Only a small puncture wound may appear on the skin surface but, without proper treatment and depending on the nature, original pressure, volume, and location of the injected material, can compromise blood supply to an affected body part. Prompt surgical debridement of the wound may be necessary to prevent irreversible loss of function and/or the affected body part. High pressure injection injuries may be SERIOUS SURGICAL EMERGENCIES.

INGESTION: This material represents a significant aspiration and chemical pneumonitis hazard. Induction of emesis is not recommended.

5. FIRE-FIGHTING MEASURES

Suitable extinguishing media
For small fires, Class B fire extinguishing media such as CO2, dry chemical, foam (AFFF/ATC) or water spray can be used. For large fires, water spray, fog or foam (AFFF/ATC) can be used. Firefighting should be attempted only by those who are adequately trained and equipped with proper protective equipment.

Unsuitable extinguishing media
Do not use straight water streams to avoid spreading fire.

Specific hazards arising from the chemical
This product has been determined to be an extremely flammable liquid per the OSHA Hazard Communication Standard and should be handled accordingly. May accumulate electrostatic charge and ignite or explode. Vapors may travel along the ground or be moved by ventilation and ignited by many sources such as pilot lights, sparks, electric motors, static discharge, or other ignition sources at locations distant from material handling. Flashback can occur along vapor trail. For additional fire related information, see NFPA 30 or the North American Emergency Response Guide 128.

Hazardous combustion products
Smoke, carbon monoxide, and other products of incomplete combustion.

Explosion data
Sensitivity to Mechanical Impact No.
Sensitivity to Static Discharge Yes.

Special protective equipment and precautions for firefighters
Firefighters should wear full protective clothing and positive-pressure self-contained breathing apparatus (SCBA) with a full face-piece, as appropriate. Avoid using straight water streams. Water may be ineffective in extinguishing low flash point fires, but can be used to cool exposed surfaces. Avoid excessive water spray application. Water spray and foam (AFFF/ATC) must be applied carefully to avoid frothing and from as far a distance as possible. Keep run-off water out of sewers and water sources.

NFPA: Health 1 Flammability 3 Instability 0 Special Hazards -

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions: Keep public away. Isolate and evacuate area. Shut off source if safe to do so. Eliminate all ignition sources.

Protective Equipment: Use personal protection measures as recommended in Section 8.

Emergency Procedures: Advise authorities and National Response Center (800-424-8802) if the product has entered a water course or sewer. Notify local health and pollution control agencies, if appropriate.

Environmental precautions:	Ethanol in gasoline phase seperates in contact with water. Monitor downstream for dissolved ethanol or other appropriate indicators. Avoid release to the environment. Avoid subsoil penetration.
Methods and materials for containment:	Contain liquid with sand or soil.
Methods and materials for cleaning up:	Use suitable absorbent materials such as vermiculite, sand, or clay to clean up residual liquids. Recover and return free product to proper containers. When recovering free liquids ensure all equipment is grounded and bonded. Use only non-sparking tools.

7. HANDLING AND STORAGE

Safe Handling Precautions:

NEVER SIPHON THIS PRODUCT BY MOUTH. Use appropriate grounding and bonding practices. Static accumulating flammable liquid. Bonding and grounding may be insufficient to eliminate the hazard from static electricity. Do not expose to heat, open flames, strong oxidizers or other sources of ignition. No smoking. Avoid repeated and prolonged skin contact. Use personal protection measures as recommended in Section 8. Use only non-sparking tools. Do not cut, drill, grind or weld on empty containers since explosive residues may remain. Refer to applicable EPA, OSHA, NFPA and consistent state and local requirements.

Hydrocarbons are basically non-conductors of electricity and can become electrostatically charged during mixing, filtering, pumping at high flow rates or loading and transfer operations. If this charge reaches a sufficiently high level, sparks can form that may ignite the vapors of flammable liquids. Sudden release of hot organic chemical vapors or mists from process equipment operating under elevated temperature and pressure, or sudden ingress of air into vacuum equipment may result in ignition of vapors or mists without the presence of obvious ignition sources. Nozzle spouts must be kept in contact with the containers or tank during the entire filling operation.

Portable containers should never be filled while in or on a motor vehicle or marine craft. Containers should be placed on the ground. Static electric discharge can ignite fuel vapors when filling non-grounded containers or vehicles on trailers. The nozzle spout must be kept in contact with the container before and during the entire filling operation. Use only approved containers.

A buildup of static electricity can occur upon re-entry into a vehicle during fueling especially in cold or dry climate conditions. The charge is generated by the action of dissimilar fabrics (i.e., clothing and upholstery) rubbing across each other as a person enters/exits the vehicle. A flash fire can result from this discharge if sufficient flammable vapors are present. Therefore, do not get back in your vehicle while refueling.

Cellular phones and other electronic devices may have the potential to emit electrical charges (sparks). Sparks in potentially explosive atmospheres (including fueling areas such as gas stations) could cause an explosion if sufficient flammable vapors are present. Therefore, turn off cellular phones and other electronic devices when working in potentially explosive atmospheres or keep devices inside your vehicle during refueling.

High-pressure injection of any material through the skin is a serious medical emergency even though the small entrance wound at the injection site may not initially appear serious. These injection injuries can occur from high-pressure equipment such as paint spray or grease or guns, fuel injectors, or pinhole leaks in hoses or hydraulic lines and should all be considered serious. High pressure injection injuries may be SERIOUS SURGICAL EMERGENCIES (See First Aid Section 4).

Storage Conditions:	Store in properly closed containers that are appropriately labeled and in a cool, well-ventilated area.
Incompatible materials	Strong oxidizing agents.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Name	ACGIH TLV	OSHA PELS:	OSHA - Vacated PELs	NIOSH IDLH
Gasoline 86290-81-5	300 ppm TWA 500 ppm STEL	-	300 ppm TWA 900 mg/m³ TWA 500 ppm STEL 1500 mg/m³ STEL	-
Toluene 108-88-3	20 ppm TWA	TWA: 200 ppm Ceiling: 300 ppm	100 ppm TWA 375 mg/m³ TWA 150 ppm STEL 560 mg/m³ STEL	500 ppm
Ethyl Alcohol 64-17-5	1000 ppm STEL	TWA: 1000 ppm TWA: 1900 mg/m³	1000 ppm TWA 1900 mg/m³ TWA	3300 ppm
Xylene (mixed isomers) 1330-20-7	100 ppm TWA 150 ppm STEL	TWA: 100 ppm TWA: 435 mg/m³	100 ppm TWA 435 mg/m³ TWA 150 ppm STEL 655 mg/m³ STEL	900 ppm
1,2,4 Trimethylbenzene 95-63-6	25 ppm TWA	-	25 ppm TWA 125 mg/m³ TWA	-
Benzene 71-43-2	0.5 ppm TWA 2.5 ppm STEL Skin - potential significant contribution to overall exposure by the cutaneous route	TWA: 10 ppm (applies to industry segments exempt from the benzene standard at 29 CFR 1910.1028) TWA: 1 ppm STEL: 5 ppm (see 29 CFR 1910.1028)	25 ppm Ceiling 1 ppm TWA 5 ppm STEL	500 ppm
n-Hexane 110-54-3	50 ppm TWA Skin - potential significant contribution to overall exposure by the cutaneous route	TWA: 500 ppm TWA: 1800 mg/m³	50 ppm TWA 180 mg/m³ TWA	1100 ppm
Ethylbenzene 100-41-4	20 ppm TWA	TWA: 100 ppm TWA: 435 mg/m³	100 ppm TWA 435 mg/m³ TWA 125 ppm STEL 545 mg/m³ STEL	800 ppm
Naphthalene 91-20-3	10 ppm TWA Skin - potential significant contribution to overall exposure by the cutaneous route	TWA: 10 ppm TWA: 50 mg/m³	10 ppm TWA 50 mg/m³ TWA 15 ppm STEL 75 mg/m³ STEL	250 ppm

Notes: The manufacturer has voluntarily elected to provide exposure limits contained in OSHA's 1989 air contaminants standard in its SDSs, even though certain of those exposure limits were vacated in 1992.

Engineering measures: Local or general exhaust required in an enclosed area or when there is inadequate ventilation. Use mechanical ventilation equipment that is explosion-proof.

Personal protective equipment

Eye protection: Use goggles or face-shield if the potential for splashing exists.

Skin and body protection: Use nitrile rubber, viton or PVA gloves for repeated or prolonged skin exposure. Glove suitability is based on workplace conditions and usage. Contact the glove manufacturer for specific advice on glove selection and breakthrough times.

Respiratory protection: Approved organic vapor chemical cartridge or supplied air respirators should be worn for exposures to any components exceeding the established exposure limits. Observe respirator assigned protection factors (APFs) criteria cited in federal OSHA 29 CFR 1910.134. Self-contained breathing apparatus should be used for fire fighting.

Hygiene measures: Handle in accordance with good industrial hygiene and safety practice. Avoid contact with skin, eyes and clothing.

9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Physical State	Liquid
Appearance	Clear or Colored Liquid
Color	Clear or Colored
Odor	Strong Hydrocarbon
Odor Threshold	No available data.

Property	**Values (Method)**
Melting Point / Freezing Point	No available data.
Initial Boiling Point / Boiling Range	32-225 °C / 90-437 °F
Flash Point	-45.5 °C / -50 °F
Evaporation Rate	No available data.
Flammability (solid, gas)	Not applicable.
Flammability Limit in Air (%)	
Upper Flammability Limit:	7.6
Lower Flammability Limit:	1.4
Vapor Pressure	403-776 mm Hg@ 100°F
Vapor Density	3-4
Specific Gravity / Relative Density	0.70-0.77
Water Solubility	Negligible
Solubility in other solvents	No available data.
Partition Coefficient	2.13-4.5
Decomposition temperature:	No available data.
pH:	Not applicable
Autoignition Temperature	C.A. 257 °C / 495 °F
Kinematic Viscosity	No available data.
Dynamic Viscosity	No available data.
Explosive Properties	No available data.
Softening Point	No available data.
VOC Content (%)	100%
Density	5.9-6.3 lbs/gal
Bulk Density	Not applicable.

10. STABILITY AND REACTIVITY

Reactivity	The product is non-reactive under normal conditions.
Chemical stability	The material is stable at 70°F, 760 mmHg pressure.
Possibility of hazardous reactions	None under normal processing.
Hazardous polymerization	Will not occur.
Conditions to avoid	Excessive heat, sources of ignition, open flame.
Incompatible materials	Strong oxidizing agents.
Hazardous decomposition products	None known under normal conditions of use.

11. TOXICOLOGICAL INFORMATION

Potential short-term adverse effects from overexposures

Inhalation Irritating to the respiratory system. May cause drowsiness or dizziness. Breathing high concentrations of this material in a confined space or by intentional abuse can cause irregular heartbeats which can cause death.

Eye contact Causes mild eye irritation.

Skin contact Causes skin irritation. Effects may become more serious with repeated or prolonged contact. May be absorbed through the skin in harmful amounts.

Ingestion May be fatal if swallowed or vomited and enters airways. May cause irritation of the mouth, throat and gastrointestinal tract.

Acute Toxicological data

Name	Oral LD50	Dermal LD50	Inhalation LC50
Gasoline 86290-81-5	14000 mg/kg (Rat)	> 2000 mg/kg (Rabbit)	> 5.2 mg/L (Rat) 4 h
Toluene 108-88-3	> 2000 mg/kg (Rat)	8390 mg/kg (Rabbit)	12.5 mg/L (Rat) 4 h
Ethyl Alcohol 64-17-5	> 5000 mg/kg (Rat)	-	124.7 mg/L (Rat) 4 h
Xylene (mixed isomers) 1330-20-7	> 2000 mg/kg (Rat)	> 2000 mg/kg (Rabbit)	> 5.04 mg/L (Rat) 4 h
1,2,4 Trimethylbenzene 95-63-6	3280 mg/kg (Rat)	> 3160 mg/kg (Rabbit)	18,000 mg/m^3 (Rat) 4 h
Benzene 71-43-2	> 2000 mg/kg (Rat)	> 5000 mg/kg (Rabbit)	> 20 mg/l (Rat) 4 h
n-Hexane 110-54-3	15000 mg/kg (Rat)	3000 mg/kg (Rabbit)	48000 ppm (Rat) 4 h
Ethylbenzene 100-41-4	> 2000 mg/kg (Rat)	> 2000 mg/kg (Rabbit)	17.2 mg/L (Rat) 4 h
Naphthalene 91-20-3	490 mg/kg (Rat)	> 2000 mg/kg (Rabbit)	> 340 mg/m^3 (Rat) 1 h

Delayed and immediate effects as well as chronic effects from short and long-term exposure

BENZENE: Studies of workers exposed to benzene show clear evidence that overexposure can cause cancer and other diseases of the blood forming organs including Acute Myelogenous Leukemia (AML), and Aplastic Anemia (AA), an often fatal disease. Some studies suggest overexposure to benzene may also be associated with Myelodysplastic Syndrome (MDS). Findings from a case control study of workers exposed to benzene was reported during the 2009 Benzene Symposium in Munich included an increase in Acute Myeloid Leukemias and Non-Hodgkins Lymphoid Neoplasms (NHLN) of the subtype follicular lymphoma (FL) in some occupational categories. Some studies of workers exposed to benzene have shown an association with increased rates of chromosome aberrations in circulating lymphocytes. One study of women workers exposed to benzene suggested a weak association with irregular menstruation. However, other studies of workers exposed to benzene have not demonstrated clear evidence of an effect on fertility or reproductive outcome in humans. Benzene can cross the placenta and affect the developing fetus. Cases of AA have been reported in the offspring of persons severely overexposed to benzene. Studies in laboratory animals indicate that prolonged, repeated exposure to high levels of benzene vapor can cause bone marrow suppression and cancer in multiple organ systems. Studies in laboratory animals show evidence of adverse effects on male reproductive organs following high levels of exposure but no significant effects on reproduction have been observed. Embryotoxicity has been reported in studies of laboratory animals but effects were limited to reduced fetal weight and minor skeletal variations. Benzene has been classified as a proven human carcinogen by OSHA and a Group 1 (Carcinogenic to Humans) material by IARC. The current proposed IARC classification for benzene is summarized as follows: Sufficient evidence for Acute Myeloid Leukemia; limited evidence for Acute Lymphatic Leukemia, Chronic Lymphatic Leukemia, Non-Hodgkin Lymphoma, and Multiple Myeloma.

NAPHTHAS: In a large epidemiological study on over 15,000 employees at several petroleum refineries and amongst residents located near these refineries, no increased risk of kidney cancer was observed in association with gasoline exposures (a similar material). In a similar study, no increased risk of kidney cancer was observed among petroleum refinery workers, but there was a slight trend in the incidence of kidney cancers among service station employees, especially after a 30-year latency period. Altered mental state, drowsiness, peripheral motor neuropathy, irreversible brain damage (so-called Petrol Sniffer's Encephalopathy), delirium, seizures, and sudden death have been reported from repeated overexposure to some hydrocarbon solvents, naphthas, and gasoline.

ISOPARAFFINS: Studies in laboratory animals have shown that long-term exposure to similar materials (isoparaffins) can cause kidney damage and kidney cancer in male laboratory rats. However, in-depth research indicates that these findings are unique to the male rat, and that these effects are not relevant to humans.

TOLUENE: Case studies of persons abusing toluene suggest isolated incidences of adverse effects on the fetus including birth defects. Abuse of toluene at high concentrations (e.g., glue sniffing and solvent abuse) has been associated with adverse effects on the liver, kidney and nervous system, and can cause CNS depression, cardiac arrhythmias, and death. Studies of workers indicate longterm exposure may be related to impaired color vision and hearing. Some studies of workers suggest longterm exposure may be related to neurobehavioral and cognitive changes. Some of these effects have been observed in laboratory animals following repeated exposure to high levels of toluene. Several studies of workers suggest longterm exposure may be related to small increases in spontaneous abortions and changes in some gonadotropic hormones. However, the weight of evidence does not indicate toluene is a reproductive hazard to humans. Studies in laboratory animals indicate some changes in reproductive organs following high levels of exposure, but no significant effects on mating performance or reproduction were observed. Case studies of persons abusing toluene suggest isolated incidences of adverse effects on the fetus including birth defects. Findings in laboratory animals have been largely negative. Positive findings include small increases in minor skeletal and visceral malformations and developmental delays following very high levels of maternal exposure. Studies of workers indicate long-term exposure may be related to effects on the liver, kidney and blood, but these appear to be limited to changes in serum enzymes and decreased leukocyte counts. Adverse effects on the liver, kidney, thymus and nervous system were observed in animal

studies following very high levels of exposure. The relevance of these findings to humans is not clear at this time.

ETHYLBENZENE: Findings from a 2-year inhalation study in rodents conducted by NTP were as follows: Effects were observed only at the highest exposure level (750 ppm). At this level the incidence of renal tumors was elevated in male rats (tubular carcinomas) and female rats (tubular adenomas). The incidence of tumors was also elevated in male mice (alveolar and bronchiolar carcinomas) and female mice (hepatocellular carcinomas). IARC has classified ethyl benzene as "possibly carcinogenic to humans" (Group 2B). Studies in laboratory animals indicate some evidence of post-implantation deaths following high levels of maternal exposure. The relevance of these findings to humans is not clear at this time. Studies in laboratory animals indicate limited evidence of renal malformations, resorptions, and developmental delays following high levels of maternal exposure with evidence of maternal toxicity. The relevance of these findings to humans is not clear at this time. Studies in laboratory animals have demonstrated evidence of ototoxicity (hearing loss) following exposure levels as low as 300 ppm for 5 days. Studies in laboratory animals indicate some evidence of adverse effects on the liver, kidney, thyroid, and pituitary gland.

XYLENES, ALL ISOMERS: Overexposure to xylene may cause upper respiratory tract irritation, headache, cyanosis, blood serum changes, nervous system damage and narcosis. Effects may be increased by the use of alcoholic beverages. Evidence of liver and kidney impairment were reported in workers recovering from a gross overexposure. Effects from Prolonged or Repeated Exposure: Impaired neurological function was reported in workers exposed to solvents including xylene. Studies in laboratory animals have shown evidence of impaired hearing following high levels of exposure. Studies in laboratory animals suggest some changes in reproductive organs following high levels of exposure but no significant effects on reproduction were observed. Studies in laboratory animals indicate skeletal and visceral malformations, developmental delays, and increased fetal resorptions following extremely high levels of maternal exposure with evidence of maternal toxicity. The relevance of these observations to humans is not clear at this time. Adverse effects on the liver, kidney, bone marrow (changes in blood cell parameters) were observed in laboratory animals following high levels of exposure. The relevance of these observations to humans is not clear at this time.

C9 AROMATIC HYDROCARBONS: A developmental inhalation study was conducted in laboratory mice. Increased implantation losses, reduced fetal weights, delayed ossification and an increased incidence of cleft palate were observed at the highest exposure level (1,500 ppm). This exposure level was extremely toxic to pregnant female mice (44% mortality). Reduced fetal body weights were also observed at 500 ppm. A multi-generation reproduction inhalation study was conducted in laboratory rats. Reductions in pup weights, pup weight gain, litter size, and pup survival were observed at 1,500 ppm, an exposure level at which significant maternal toxicity was observed. Reduced pup weight gain was also observed at 500 ppm.

NAPHTHALENE: Severe jaundice, neurotoxicity (kernicterus) and fatalities have been reported in young children and infants as a result of hemolytic anemia from overexposure to naphthalene. Persons with glucose 6-phosphate dehydrogenase (G6PD) deficiency are more prone to the hemolytic effects of naphthalene. Adverse effects on the kidney have been reported in persons overexposed to naphthalene but these effects are believed to be a consequence of hemolytic anemia, and not a direct effect. Hemolytic anemia has been observed in laboratory animals exposed to naphthalene. Laboratory rodents exposed to naphthalene vapor for 2 years (lifetime studies) developed non-neoplastic and neoplastic tumors and inflammatory lesions of the nasal and respiratory tract. Cataracts and other adverse effects on the eye have been observed in laboratory animals exposed to high levels of naphthalene. Findings from a large number of bacterial and mammalian cell mutation assays have been negative. A few studies have shown chromosomal effects (elevated levels of Sister Chromatid Exchange or chromosomal aberrations) in vitro. Naphthalene has been classified as Possibly Carcinogenic to Humans (2B) by IARC, based on findings from studies in laboratory animals.

N-HEXANE: Long-term or repeated exposure to n-hexane can cause peripheral nerve

damage. Initial symptoms are numbness of the fingers and toes. Also, motor weakness can occur in the digits, but may also involve muscles of the arms, thighs and forearms. The onset of these symptoms may be delayed for several months to a year after the beginning of exposure. Testicular atrophy and partial to full loss of the germ cell line were observed in sub-chronic high-dose inhalation studies of laboratory rodents. These effects appeared irreversible. Rodent reproduction studies have shown evidence of reduced fetal weight but no frank malformations.

PENTANES: Studies of pentane isomers in laboratory animals indicate exposure to extremely high levels (roughly 10 vol.%) may induce cardiac arrhythmias (irregular heartbeats) which may be serious or fatal.

ETHANOL: Repeated ingestion of ethanol can result in alcohol abuse, causing behavioral changes, memory loss, impaired judgement, decreased appetite, irregular heartbeats, and decreased fertility. Prolonged and repeated ingestion of ethanol has also been associated with cancers of the mouth, pharynx, esophagus and liver. Ethanol ingestion by pregnant women can cause miscarriage, low birth weight, premature birth and fetal alcohol syndrome. In males, acute and chronic alcohol ingestion may affect gonadal hormone levels. It may also affect the liver, kidney, brain, blood and cardiovascular system.

CARBON MONOXIDE: is a chemical asphyxiant with no warning properties (such as odor). At 400-500 ppm for 1 hour headache and dyspnea may occur. If activity is increased, symptoms of overexposure may include nausea, irritability, increased respiration, tinnitus, sweating, chest pain, confusion, impaired judgement, dizziness, weakness, drowsiness, ataxia, irregular heart beat, cyanosis and pallor. Levels in excess of 1000 ppm can result in collapse, loss of conciousness, respiratory failure and death. Extremely high concentrations (12,800 ppm) can cause immediate unconsciousness and death in 1-3 minutes. Repeated anoxia can lead to central nervous system damage and peripheral neuropathy, with loss of sensation in the fingers, amnesia, and mental deterioration and possible congestive heart failure. Damage may also occur to the fetus, lung, liver, kidney, spleen, cardiovascular system and other organs.

COMBUSTION ENGINE EXHAUST: Chronic inhalation studies of gasoline engine exhaust in mice, rats and hamsters did not produce any carcinogenic effects. Condensates/extracts of gasoline engine exhaust produced an increase in tumors compared to controls when testing by skin painting, subcutaneous injection, intratracheal instillation or implantation into the lungs.

Adverse effects related to the physical, chemical and toxicological characteristics

Signs & Symptoms Nausea, vomiting, signs of nervous system depression: headache, drowsiness, dizziness, loss of coordination, disorientation and fatigue.

Sensitization Not expected to be a skin or respiratory sensitizer.

Mutagenic effects May cause genetic defects.

Carcinogenicity Cancer designations are listed in the table below.

Name	ACGIH (Class)	IARC (Class)	NTP	OSHA
Gasoline 86290-81-5	Confirmed animal carcinogen (A3)	Possibly Carcinogenic (2B)	Not Listed	Not Listed
Toluene 108-88-3	Not Classifiable (A4)	Not Classifiable (3)	Not Listed	Not Listed
Ethyl Alcohol 64-17-5	Confirmed animal carcinogen (A3)	Carcinogenic (1) Alcoholic Beverages	Known to be human carcinogen - Alcoholic Beverage Consumption	Not Listed
Xylene (mixed isomers) 1330-20-7	Not Classifiable (A4)	Not Classifiable (3)	Not Listed	Not Listed
1,2,4 Trimethylbenzene 95-63-6	Not Listed	Not Listed	Not Listed	Not Listed

Benzene 71-43-2	Confirmed human carcinogen (A1)	Carcinogenic to humans (1)	Known to be human carcinogen	Known carcinogen
n-Hexane 110-54-3	Not Listed	Not Listed	Not Listed	Not Listed
Ethylbenzene 100-41-4	Confirmed animal carcinogen (A3)	Possible human carcinogen (2B)	Not Listed	Not Listed
Naphthalene 91-20-3	Confirmed animal carcinogen (A3)	Possible human carcinogen (2B)	Reasonably anticipated to be a human carcinogen	Not Listed

Reproductive toxicity Suspected of damaging fertility or the unborn child.

Specific Target Organ Toxicity (STOT) - single exposure Respiratory system. Central nervous system.

Specific Target Organ Toxicity (STOT) - repeated exposure Not classified.

Aspiration hazard May be fatal if swallowed or vomited and enters airways.

12. ECOLOGICAL INFORMATION

Ecotoxicity This product should be considered toxic to aquatic organisms, with the potential to cause long lasting adverse effects in the aquatic environment.

Name	Algae/aquatic plants	Fish	Toxicity to Microorganisms	Crustacea
Gasoline 86290-81-5	72-hr EC50 = 56 mg/l Algae	96-hr LC50 = 11 mg/l Rainbow trout (static)	-	48-hr LC50 = 7.6 mg/l Daphnia magna
Toluene 108-88-3	72-hr EC50 = 12.5 mg/l Algae	96-hr LC50 <= 10 mg/l Rainbow trout	-	48-hr EC50 = 5.46-9.83 mg/l Daphnia magna 48-hr EC50 = 11.5 mg/l Daphnia magna (Static)
Ethyl Alcohol 64-17-5	-	96-hr LC50 >1,000 mg/l Rainbow Trout (static) 96-hr LC50 >100 mg/l Fathead minnow (static)	-	48-hr LC50 >1,000 mg/l Daphnia magna
Xylene (mixed isomers) 1330-20-7	72-hr EC50 = 11 mg/l Algae	96-hr LC50 = 8 mg/l Rainbow trout	-	48-hr LC50 = 3.82 mg/l Daphnia magna
1,2,4 Trimethylbenzene 95-63-6	-	96-hr LC50 = 7.19-8.28 mg/l Fathead minnow (flow-through)	-	48-hr EC50 = 6.14 mg/L Daphnia magna
Benzene 71-43-2	72-hr EC50 = 29 mg/l Algae	96-hr LC50 = 5.3 mg/l Rainbow trout (flow-through)	-	48-hr EC50 = 8.76-15.6 mg/l Daphnia magna (Static)
n-Hexane 110-54-3	-	96-hr LC50 = 2.5 mg/l Fathead minnow	-	-
Ethylbenzene 100-41-4	72-hr EC50 = 1.7-7.6 mg/l Algae	96-hr LC50 = 4 mg/L Rainbow trout	-	48-hr EC50 = 1-4 mg/L Daphnia magna
Naphthalene 91-20-3	-	96-hr LC50 = 0.91-2.82 mg/l Rainbow trout (static) 96-hr LC50 = 1.99 mg/l Fathead minnow (static)	-	48-hr LC50 = 1.6 mg/l Daphnia magna

Persistence and degradability Expected to be inherently biodegradable. The presence of ethanol in this product may impede the biodegradation of benzene, toluene, ethylbenzene and xylene in groundwater, resulting in elongated plumes of these constituents.

Bioaccummulation Has the potential to bioaccumulate.

Mobility in soil May partition into air, soil and water.

Other adverse effects No information available.

13. DISPOSAL CONSIDERATIONS

Description of Waste Residues
This material may be a flammable liquid waste.

Safe Handling of Wastes
Handle in accordance with applicable local, state, and federal regulations. Use personal protection measures as required. Use appropriate grounding and bonding practices. Use only non-sparking tools. Do not expose to heat, open flames, strong oxidizers or other sources of ignition. No smoking.

Disposal of Wastes / Methods of Disposal
The user is responsible for determining if any discarded material is a hazardous waste (40 CFR 262.11). Dispose of in accordance with federal, state and local regulations.

Methods of Contaminated Packaging Disposal
Empty containers should be completely drained and then discarded or recycled, if possible. Do not cut, drill, grind or weld on empty containers since explosive residues may be present. Dispose of in accordance with federal, state and local regulations.

14. TRANSPORT INFORMATION

DOT (49 CFR 172.101):

UN Proper shipping name:	Gasoline
UN/Identification No:	UN 1203
Transport Hazard Class(es):	3
Packing group:	II

TDG (Canada):

UN Proper shipping name:	Gasoline
UN/Identification No:	UN 1203
Transport Hazard Class(es):	3
Packing group:	II

15. REGULATORY INFORMATION

US Federal Regulatory Information:

US TSCA Chemical Inventory Section 8(b): This product and/or its components are listed on the TSCA Chemical Inventory.

EPA Superfund Amendment & Reauthorization Act (SARA):

SARA Section 302: This product does not contain any component(s) included on EPA's Extremely Hazardous Substance (EHS) List.

Name	CERCLA/SARA - Section 302 Extremely Hazardous Substances and TPQs
Gasoline	NA
Toluene	NA
Ethyl Alcohol	NA
Xylene (mixed isomers)	NA
1,2,4 Trimethylbenzene	NA
Benzene	NA
n-Hexane	NA
Ethylbenzene	NA
Naphthalene	NA

SARA Section 304: This product may contain component(s) identified either as an EHS or a CERCLA Hazardous substance which in case of a spill or release may be subject to SARA reporting requirements:

Name	CERCLA/SARA - Hazardous Substances and their Reportable Quantities
Gasoline	NA
Toluene	1000 lb final RQ 454 kg final RQ
Ethyl Alcohol	NA
Xylene (mixed isomers)	100 lb final RQ 45.4 kg final RQ
1,2,4 Trimethylbenzene	NA
Benzene	10 lb final RQ 4.54 kg final RQ
n-Hexane	5000 lb final RQ 2270 kg final RQ
Ethylbenzene	1000 lb final RQ 454 kg final RQ
Naphthalene	100 lb final RQ 45.4 kg final RQ

SARA: The following EPA hazard categories apply to this product:

Acute Health Hazard
Chronic Health Hazard
Fire Hazard

SARA Section 313: This product may contain component(s), which if in exceedance of the de minimus threshold, may be subject to the reporting requirements of SARA Title III Section 313 Toxic Release Reporting (Form R).

Name	CERCLA/SARA 313 Emission reporting:
Gasoline	None
Toluene	1.0 % de minimis concentration
Ethyl Alcohol	None
Xylene (mixed isomers)	1.0 % de minimis concentration
1,2,4 Trimethylbenzene	None
Benzene	0.1 % de minimis concentration
n-Hexane	1.0 % de minimis concentration
Ethylbenzene	0.1 % de minimis concentration
Naphthalene	0.1 % de minimis concentration

State and Community Right-To-Know Regulations:
The following component(s) of this material are identified on the regulatory lists below:

Gasoline

Louisiana Right-To-Know:	Not Listed.
California Proposition 65:	Not Listed.
New Jersey Right-To-Know:	SN 0957
Pennsylvania Right-To-Know:	Present
Massachusetts Right-To Know:	Present
Florida Substance List:	Not Listed.
Rhode Island Right-To-Know:	Not Listed.
Michigan Critical Materials Register List:	Not Listed.
Massachusetts Extraordinarily Hazardous Substances:	Not Listed.
California - Regulated Carcinogens:	Not Listed.
Pennsylvania RTK - Special Hazardous Substances:	Not Listed.
New Jersey - Special Hazardous Substances:	Carcinogen; Flammable - third degree
New Jersey - Environmental Hazardous Substances List:	SN 0957 TPQ: 10000 lb (Under N.J.A.C. 7:1G, environmental hazardous substances in mixtures such as gasoline or new and used petroleum oil may be reported under these categories)
Illinois - Toxic Air Contaminants	Present

New York - Reporting of Releases Part 597 - List of Hazardous Substances:	Not Listed.

Toluene

Louisiana Right-To-Know:	Not Listed.
California Proposition 65:	Developmental toxicity, initial date 1/1/91 Female reproductive toxicity, initial date 8/7/09
New Jersey Right-To-Know:	SN 1866
Pennsylvania Right-To-Know:	Environmental hazard
Massachusetts Right-To Know:	Present
Florida Substance List:	Not Listed.
Rhode Island Right-To-Know:	Toxic (skin); Flammable (skin)
Michigan Critical Materials Register List:	100 lb Annual usage threshold
Massachusetts Extraordinarily Hazardous Substances:	Not Listed.
California - Regulated Carcinogens:	Not Listed.
Pennsylvania RTK - Special Hazardous Substances:	Not Listed.
New Jersey - Special Hazardous Substances:	Flammable - third degree; Teratogen
New Jersey - Environmental Hazardous Substances List:	SN 1866 TPQ: 500 lb
Illinois - Toxic Air Contaminants	Present
New York - Reporting of Releases Part 597 - List of Hazardous Substances:	1000 lb RQ (air); 1 lb RQ (land/water)

Ethyl Alcohol

Louisiana Right-To-Know:	Not Listed.
California Proposition 65:	Carcinogen, initial date 4/29/11 (in alcoholic beverages) Carcinogen, initial date 7/1/88 (when associated with alcohol abuse) Developmental toxicity, initial date 10/1/87 (in alcoholic beverages)
New Jersey Right-To-Know:	SN 0844
Pennsylvania Right-To-Know:	Present
Massachusetts Right-To Know:	Teratogen
Florida Substance List:	Not Listed.
Rhode Island Right-To-Know:	Toxic; Flammable
Michigan Critical Materials Register List:	Not Listed.
Massachusetts Extraordinarily Hazardous Substances:	Not Listed.
California - Regulated Carcinogens:	Not Listed.
Pennsylvania RTK - Special Hazardous Substances:	Not Listed.
New Jersey - Special Hazardous Substances:	Carcinogen; Flammable - third degree; Mutagen; Teratogen
New Jersey - Environmental Hazardous Substances List:	Not Listed.
Illinois - Toxic Air Contaminants	Present
New York - Reporting of Releases Part 597 - List of Hazardous Substances:	Not Listed.

Xylene (mixed isomers)

Louisiana Right-To-Know:	Not Listed.
California Proposition 65:	Not Listed.
New Jersey Right-To-Know:	SN 2014
Pennsylvania Right-To-Know:	Environmental hazard
Massachusetts Right-To Know:	Present
Florida Substance List:	Not Listed.
Rhode Island Right-To-Know:	Toxic (skin); Flammable (skin)
Michigan Critical Materials Register List:	100 lb Annual usage threshold all isomers
Massachusetts Extraordinarily Hazardous Substances:	Not Listed.
California - Regulated Carcinogens:	Not Listed.
Pennsylvania RTK - Special Hazardous Substances:	Not Listed.
New Jersey - Special Hazardous Substances:	Flammable - third degree
New Jersey - Environmental Hazardous Substances List:	SN 2014 TPQ: 500 lb

Illinois - Toxic Air Contaminants	Present
New York - Reporting of Releases Part 597 - List of Hazardous Substances:	1000 lb RQ (air); 1 lb RQ (land/water)

1,2,4 Trimethylbenzene

Louisiana Right-To-Know:	Not Listed.
California Proposition 65:	Not Listed.
New Jersey Right-To-Know:	SN 1929
Pennsylvania Right-To-Know:	Present
Massachusetts Right-To Know:	Present
Florida Substance List:	Not Listed.
Rhode Island Right-To-Know:	Toxic
Michigan Critical Materials Register List:	Not Listed.
Massachusetts Extraordinarily Hazardous Substances:	Not Listed.
California - Regulated Carcinogens:	Not Listed.
Pennsylvania RTK - Special Hazardous Substances:	Not Listed.
New Jersey - Special Hazardous Substances:	Not Listed.
New Jersey - Environmental Hazardous Substances List:	Not Listed.
Illinois - Toxic Air Contaminants	Present
New York - Reporting of Releases Part 597 - List of Hazardous Substances:	Not Listed.

Benzene

Louisiana Right-To-Know:	Not Listed.
California Proposition 65:	Carcinogen, initial date 2/27/87 Developmental toxicity, initial date 12/26/97 Male reproductive toxicity, initial date 12/26/97
New Jersey Right-To-Know:	SN 0197
Pennsylvania Right-To-Know:	Environmental hazard; Special hazardous substance
Massachusetts Right-To Know:	Carcinogen; Extraordinarily hazardous
Florida Substance List:	Not Listed.
Rhode Island Right-To-Know:	Toxic (skin); Flammable (skin); Carcinogen (skin)
Michigan Critical Materials Register List:	100 lb Annual usage threshold
Massachusetts Extraordinarily Hazardous Substances:	Carcinogen; Extraordinarily hazardous
California - Regulated Carcinogens:	Not Listed.
Pennsylvania RTK - Special Hazardous Substances:	Present
New Jersey - Special Hazardous Substances:	Carcinogen; Flammable - third degree; Mutagen
New Jersey - Environmental Hazardous Substances List:	SN 0197 TPQ: 500 lb
Illinois - Toxic Air Contaminants	Present
New York - Reporting of Releases Part 597 - List of Hazardous Substances:	10 lb RQ (air); 1 lb RQ (land/water)

n-Hexane

Louisiana Right-To-Know:	Not Listed.
California Proposition 65:	Not Listed.
New Jersey Right-To-Know:	SN 1340
Pennsylvania Right-To-Know:	Present
Massachusetts Right-To Know:	Present
Florida Substance List:	Not Listed.
Rhode Island Right-To-Know:	Toxic; Flammable
Michigan Critical Materials Register List:	Not Listed.
Massachusetts Extraordinarily Hazardous Substances:	Not Listed.
California - Regulated Carcinogens:	Not Listed.
Pennsylvania RTK - Special Hazardous Substances:	Not Listed.
New Jersey - Special Hazardous Substances:	Flammable - third degree
New Jersey - Environmental Hazardous Substances List:	SN 1340 TPQ: 500 lb
Illinois - Toxic Air Contaminants	Present

New York - Reporting of Releases Part 597 - List of Hazardous Substances:	1 lb RQ (air); 1 lb RQ (land/water)

Ethylbenzene

Louisiana Right-To-Know:	Not Listed.
California Proposition 65:	Carcinogen, initial date 6/11/04
New Jersey Right-To-Know:	SN 0851
Pennsylvania Right-To-Know:	Environmental hazard
Massachusetts Right-To Know:	Present
Florida Substance List:	Not Listed.
Rhode Island Right-To-Know:	Toxic; Flammable
Michigan Critical Materials Register List:	Not Listed.
Massachusetts Extraordinarily Hazardous Substances:	Not Listed.
California - Regulated Carcinogens:	Not Listed.
Pennsylvania RTK - Special Hazardous Substances:	Not Listed.
New Jersey - Special Hazardous Substances:	Carcinogen; flammable - Third degree
New Jersey - Environmental Hazardous Substances List:	SN 0851 TPQ: 500 lb
Illinois - Toxic Air Contaminants	Present
New York - Reporting of Releases Part 597 - List of Hazardous Substances:	1000 lb RQ (air); 1 lb RQ (land/water)

Naphthalene

Louisiana Right-To-Know:	Not Listed.
California Proposition 65:	Carcinogen, initial date 4/19/02
New Jersey Right-To-Know:	SN 1322 SN 3758
Pennsylvania Right-To-Know:	Environmental hazard Present (particulate)
Massachusetts Right-To Know:	Present
Florida Substance List:	Not Listed.
Rhode Island Right-To-Know:	Toxic; Flammable
Michigan Critical Materials Register List:	Not Listed.
Massachusetts Extraordinarily Hazardous Substances:	Not Listed.
California - Regulated Carcinogens:	Not Listed.
Pennsylvania RTK - Special Hazardous Substances:	Not Listed.
New Jersey - Special Hazardous Substances:	Carcinogen
New Jersey - Environmental Hazardous Substances List:	SN 1322 TPQ: 500 lb (Reportable at the de minimis quantity of >0.1%)
Illinois - Toxic Air Contaminants	Present
New York - Reporting of Releases Part 597 - List of Hazardous Substances:	100 lb RQ (air); 1 lb RQ (land/water)

Canada DSL/NDSL Inventory: This product and/or its components are listed either on the Domestic Substances List (DSL) or are exempt.

Canadian Regulatory Information: "This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the (M)SDS contains all the information required by the Controlled Products Regulations."

Name	Canada - WHMIS: Classifications of Substances:	Canada - WHMIS: Ingredient Disclosure:
Gasoline	B2,D2A,D2B	0.1%
Toluene	B2,D2A,D2B	0.1%
Ethyl Alcohol	B2,D2B	0.1%
Xylene (mixed isomers)	B2,D2A,D2B	m-, o-isomers 1.0%; p-isomer 0.1%
1,2,4 Trimethylbenzene	B3	1
Benzene	B2,D2A,D2B	0.1%
n-Hexane	B2,D2A,D2B	1%
Ethylbenzene	B2,D2A,D2B	0.1%
Naphthalene	B4,D2A	0.1%



NOTE: Not Applicable.

16. OTHER INFORMATION

Prepared By Toxicology and Product Safety
Revision Date: 05/14/2015

Revision Note:

Disclaimer

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information is intended as guidance for safe handling, use, processing, storage, transportation, accidental release, clean-up and disposal and is not considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

SAFETY DATA SHEET

Isopropyl Alcohol (Isopropanol)

Section 1. Identification

GHS product identifier : Isopropyl Alcohol (Isopropanol)

Chemical name : Isopropyl alcohol

Other means of identification : propan-2-ol; 2-Propanol; isopropanol; isopropyl alcohol

Product use : Synthetic/Analytical chemistry.

Synonym : propan-2-ol; 2-Propanol; isopropanol; isopropyl alcohol

SDS # : 001105

Supplier's details : Airgas USA, LLC and its affiliates
259 North Radnor-Chester Road
Suite 100
Radnor, PA 19087-5283
1-610-687-5253

Emergency telephone number (with hours of operation) : 1-866-734-3438

Section 2. Hazards identification

OSHA/HCS status : This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Classification of the substance or mixture : FLAMMABLE LIQUIDS - Category 2
SERIOUS EYE DAMAGE/ EYE IRRITATION - Category 2
SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Narcotic effects) - Category 3

GHS label elements

Hazard pictograms :



Signal word : Danger

Hazard statements : Highly flammable liquid and vapor.
May form explosive mixtures with air.
Causes serious eye irritation.
May cause drowsiness and dizziness.

Precautionary statements

General : Read label before use. Keep out of reach of children. If medical advice is needed, have product container or label at hand.

Prevention : Wear protective gloves. Wear eye or face protection. Keep away from heat, sparks, open flames and hot surfaces. - No smoking. Use explosion-proof electrical, ventilating, lighting and all material-handling equipment. Use only non-sparking tools. Take precautionary measures against static discharge. Keep container tightly closed. Use only outdoors or in a well-ventilated area. Avoid breathing vapor. Wash hands thoroughly after handling. Use and store only outdoors or in a well ventilated place.

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Section 2. Hazards identification

Response : IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTER or physician if you feel unwell. IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical attention.

Storage : Store locked up. Store in a well-ventilated place. Keep cool.

Disposal : Dispose of contents and container in accordance with all local, regional, national and international regulations.

Hazards not otherwise classified : None known.

Section 3. Composition/information on ingredients

Substance/mixture : Substance

Chemical name : Isopropyl alcohol

Other means of identification : propan-2-ol; 2-Propanol; isopropanol; isopropyl alcohol

CAS number/other identifiers

CAS number : 67-63-0

Product code : 001105

Ingredient name	%	CAS number
propan-2-ol	100	67-63-0

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

Occupational exposure limits, if available, are listed in Section 8.

Section 4. First aid measures

Description of necessary first aid measures

Eye contact : Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. Get medical attention.

Inhalation : Remove victim to fresh air and keep at rest in a position comfortable for breathing. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention. If necessary, call a poison center or physician. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Skin contact : Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur. Wash clothing before reuse. Clean shoes thoroughly before reuse.

Ingestion : Wash out mouth with water. Remove dentures if any. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Get medical attention. If necessary, call a poison center or physician. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention

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Section 4. First aid measures

immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Most important symptoms/effects, acute and delayed

Potential acute health effects

Eye contact : Causes serious eye irritation.

Inhalation : Can cause central nervous system (CNS) depression. May cause drowsiness and dizziness.

Skin contact : No known significant effects or critical hazards.

Frostbite : Try to warm up the frozen tissues and seek medical attention.

Ingestion : Can cause central nervous system (CNS) depression. Irritating to mouth, throat and stomach.

Over-exposure signs/symptoms

Eye contact : Adverse symptoms may include the following:
pain or irritation
watering
redness

Inhalation : Adverse symptoms may include the following:
nausea or vomiting
headache
drowsiness/fatigue
dizziness/vertigo
unconsciousness

Skin contact : No specific data.

Ingestion : No specific data.

Indication of immediate medical attention and special treatment needed, if necessary

Notes to physician : Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.

Specific treatments : No specific treatment.

Protection of first-aiders : No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.

See toxicological information (Section 11)

Section 5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media : Use dry chemical, CO_2, water spray (fog) or foam.

Unsuitable extinguishing media : Do not use water jet.

Specific hazards arising from the chemical : Highly flammable liquid and vapor. In a fire or if heated, a pressure increase will occur and the container may burst, with the risk of a subsequent explosion. The vapor/gas is heavier than air and will spread along the ground. Vapors may accumulate in low or confined areas or travel a considerable distance to a source of ignition and flash back. Runoff to sewer may create fire or explosion hazard.

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Section 5. Fire-fighting measures

Hazardous thermal decomposition products : Decomposition products may include the following materials:
carbon dioxide
carbon monoxide

Special protective actions for fire-fighters : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool.

Special protective equipment for fire-fighters : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Shut off all ignition sources. No flares, smoking or flames in hazard area. Avoid breathing vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.

For emergency responders : If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

Environmental precautions : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

Methods and materials for containment and cleaning up

Small spill : Stop leak if without risk. Move containers from spill area. Use spark-proof tools and explosion-proof equipment. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.

Large spill : Stop leak if without risk. Move containers from spill area. Use spark-proof tools and explosion-proof equipment. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see Section 13). Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

Section 7. Handling and storage

Precautions for safe handling

Protective measures : Put on appropriate personal protective equipment (see Section 8). Do not ingest. Avoid contact with eyes, skin and clothing. Avoid breathing vapor or mist. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Do not enter storage areas and confined spaces unless adequately ventilated. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Store and use away from heat, sparks, open flame or any other ignition source. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. Use only non-sparking tools. Take precautionary measures against electrostatic discharges. Empty containers retain product residue and can be hazardous. Do not reuse container.

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Section 7. Handling and storage

Advice on general occupational hygiene : Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

Conditions for safe storage, including any incompatibilities : Store in accordance with local regulations. Store in a segregated and approved area. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Store locked up. Eliminate all ignition sources. Separate from oxidizing materials. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits

Ingredient name	Exposure limits
propan-2-ol	**ACGIH TLV (United States, 3/2012).** TWA: 200 ppm 8 hours. STEL: 400 ppm 15 minutes. **OSHA PEL 1989 (United States, 3/1989).** TWA: 400 ppm 8 hours. TWA: 980 mg/m³ 8 hours. STEL: 500 ppm 15 minutes. STEL: 1225 mg/m³ 15 minutes. **NIOSH REL (United States, 1/2013).** TWA: 400 ppm 10 hours. TWA: 980 mg/m³ 10 hours. STEL: 500 ppm 15 minutes. STEL: 1225 mg/m³ 15 minutes. **OSHA PEL (United States, 6/2010).** TWA: 400 ppm 8 hours. TWA: 980 mg/m³ 8 hours.

Appropriate engineering controls : Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits. The engineering controls also need to keep gas, vapor or dust concentrations below any lower explosive limits. Use explosion-proof ventilation equipment.

Environmental exposure controls : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

Individual protection measures

Hygiene measures : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

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Section 8. Exposure controls/personal protection

Eye/face protection : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: chemical splash goggles.

Skin protection

Hand protection : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated.

Body protection : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product. When there is a risk of ignition from static electricity, wear anti-static protective clothing. For the greatest protection from static discharges, clothing should include anti-static overalls, boots and gloves.

Other skin protection : Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Respiratory protection : Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Section 9. Physical and chemical properties

Appearance

Physical state : Liquid. [COLORLESS LIQUID WITH THE ODOR OF RUBBING ALCOHOL]

Color : Colorless.

Molecular weight : 60.11 g/mole

Molecular formula : C3-H8-O

Boiling/condensation point : 83°C (181.4°F)

Melting/freezing point : -90°C (-130°F)

Critical temperature : Not available.

Odor : Alcohol-like.

Odor threshold : Not available.

pH : Not available.

Flash point : Closed cup: 11.7°C (53.1°F)

Burning time : Not applicable.

Burning rate : Not applicable.

Evaporation rate : 1.7 (butyl acetate = 1)

Flammability (solid, gas) : Not available.

Lower and upper explosive (flammable) limits : Lower: 2%
Upper: 12%

Vapor pressure : 4.4 kPa (33.002681467 mm Hg) [room temperature]

Vapor density : 2.1 (Air = 1)

Specific Volume (ft ^{3}/lb) : 1.2739

Gas Density (lb/ft ^{3}) : 0.785

Relative density : 0.79

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Section 9. Physical and chemical properties

Solubility : Not available.

Solubility in water : Not available.

Partition coefficient: n-octanol/water : 0.05

Auto-ignition temperature : 456°C (852.8°F)

Decomposition temperature : Not available.

SADT : Not available.

Viscosity : Not available.

Section 10. Stability and reactivity

Reactivity : No specific test data related to reactivity available for this product or its ingredients.

Chemical stability : The product is stable.

Possibility of hazardous reactions : Under normal conditions of storage and use, hazardous reactions will not occur.

Conditions to avoid : Avoid all possible sources of ignition (spark or flame). Do not pressurize, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition. Do not allow vapor to accumulate in low or confined areas.

Incompatibility with various substances : Highly reactive or incompatible with the following materials: acids and moisture.

Hazardous decomposition products : Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Hazardous polymerization : Under normal conditions of storage and use, hazardous polymerization will not occur.

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
propan-2-ol	LC50 Inhalation Gas. LD50 Dermal LD50 Oral	Rat Rabbit Rat	45248 ppm 12800 mg/kg 5000 mg/kg	1 hours - -

Irritation/Corrosion

Product/ingredient name	Result	Species	Score	Exposure	Observation
propan-2-ol	Eyes - Moderate irritant	Rabbit	-	24 hours 100 milligrams	-
	Eyes - Moderate irritant	Rabbit	-	10 milligrams	-
	Eyes - Severe irritant	Rabbit	-	100 milligrams	-
	Skin - Mild irritant	Rabbit	-	500 milligrams	-

Sensitization

Not available.

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Section 11. Toxicological information

Mutagenicity

Not available.

Carcinogenicity

Not available.

Classification

Product/ingredient name	OSHA	IARC	NTP
propan-2-ol	-	3	-

Reproductive toxicity

Not available.

Teratogenicity

Not available.

Specific target organ toxicity (single exposure)

Name	Category	Route of exposure	Target organs
propan-2-ol	Category 3	Not applicable.	Narcotic effects

Specific target organ toxicity (repeated exposure)

Not available.

Aspiration hazard

Not available.

Information on the likely routes of exposure : Not available.

Potential acute health effects

Eye contact : Causes serious eye irritation.

Inhalation : Can cause central nervous system (CNS) depression. May cause drowsiness and dizziness.

Skin contact : No known significant effects or critical hazards.

Ingestion : Can cause central nervous system (CNS) depression. Irritating to mouth, throat and stomach.

Symptoms related to the physical, chemical and toxicological characteristics

Eye contact : Adverse symptoms may include the following:
pain or irritation
watering
redness

Inhalation : Adverse symptoms may include the following:
nausea or vomiting
headache
drowsiness/fatigue
dizziness/vertigo
unconsciousness

Skin contact : No specific data.

Ingestion : No specific data.

Delayed and immediate effects and also chronic effects from short and long term exposure

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Section 11. Toxicological information

Short term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Long term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Potential chronic health effects

Not available.

General : No known significant effects or critical hazards.

Carcinogenicity : No known significant effects or critical hazards.

Mutagenicity : No known significant effects or critical hazards.

Teratogenicity : No known significant effects or critical hazards.

Developmental effects : No known significant effects or critical hazards.

Fertility effects : No known significant effects or critical hazards.

Numerical measures of toxicity

Acute toxicity estimates

Not available.

Section 12. Ecological information

Toxicity

Product/ingredient name	Result	Species	Exposure
propan-2-ol	Acute LC50 1400000 to 1950000 µg/l Marine water Acute LC50 4200 mg/l Fresh water	Crustaceans - Crangon crangon Fish - Rasbora heteromorpha	48 hours 96 hours

Persistence and degradability

Not available.

Bioaccumulative potential

Product/ingredient name	$LogP_{ow}$	BCF	Potential
propan-2-ol	0.05	-	low

Mobility in soil

Soil/water partition coefficient (K_{OC}) : Not available.

Other adverse effects : No known significant effects or critical hazards.

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Section 13. Disposal considerations

Disposal methods : The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Vapor from product residues may create a highly flammable or explosive atmosphere inside the container. Do not cut, weld or grind used containers unless they have been cleaned thoroughly internally. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Section 14. Transport information

	DOT	TDG	Mexico	IMDG	IATA
UN number	UN1219	UN1219	UN1219	UN1219	UN1219
UN proper shipping name	ISOPROPANOL OR ISOPROPYL ALCOHOL	ISOPROPANOL; OR ISOPROPYL ALCOHOL	ISOPROPANOL OR ISOPROPYL ALCOHOL	ISOPROPANOL (ISOPROPYL ALCOHOL)	ISOPROPANOL
Transport hazard class(es)	3 	3 	3 	3 	3 
Packing group	II	II	II	II	II
Environment	No.	No.	No.	No.	No.
Additional information	**Limited quantity** Yes. **Packaging instruction** **Passenger aircraft** Quantity limitation: 5 L **Cargo aircraft** Quantity limitation: 60 L **Special provisions** IB2, T4, TP1	**Explosive Limit and Limited Quantity Index** 1 **Passenger Carrying Road or Rail Index** 5	-	-	**Passenger and Cargo Aircraft**Quantity limitation: 5 L **Cargo Aircraft Only** Quantity limitation: 60 L **Limited Quantities - Passenger Aircraft** Quantity limitation: 1 L

"Refer to CFR 49 (or authority having jurisdiction) to determine the information required for shipment of the product."

Special precautions for user : **Transport within user's premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code : Not available.

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Section 15. Regulatory information

U.S. Federal regulations : **TSCA 8(a) CDR Exempt/Partial exemption**: Not determined

United States inventory (TSCA 8b): This material is listed or exempted.

Clean Air Act Section 112 (b) Hazardous Air Pollutants (HAPs) : Not listed

Clean Air Act Section 602 Class I Substances : Not listed

Clean Air Act Section 602 Class II Substances : Not listed

DEA List I Chemicals (Precursor Chemicals) : Not listed

DEA List II Chemicals (Essential Chemicals) : Not listed

SARA 302/304

Composition/information on ingredients

No products were found.

SARA 304 RQ : Not applicable.

SARA 311/312

Classification : Fire hazard
Immediate (acute) health hazard

Composition/information on ingredients

Name	%	Fire hazard	Sudden release of pressure	Reactive	Immediate (acute) health hazard	Delayed (chronic) health hazard
propan-2-ol	100	Yes.	No.	No.	Yes.	No.

SARA 313

	Product name	CAS number	%
Form R - Reporting requirements	Isopropyl alcohol	67-63-0	100
Supplier notification	Isopropyl alcohol	67-63-0	100

SARA 313 notifications must not be detached from the SDS and any copying and redistribution of the SDS shall include copying and redistribution of the notice attached to copies of the SDS subsequently redistributed.

State regulations

Massachusetts : This material is listed.

New York : This material is not listed.

New Jersey : This material is listed.

Pennsylvania : This material is listed.

Canada inventory : This material is listed or exempted.

International regulations

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Section 15. Regulatory information

International lists : **Australia inventory (AICS)**: This material is listed or exempted.
China inventory (IECSC): This material is listed or exempted.
Japan inventory: This material is listed or exempted.
Korea inventory: This material is listed or exempted.
Malaysia Inventory (EHS Register): Not determined.
New Zealand Inventory of Chemicals (NZIoC): This material is listed or exempted.
Philippines inventory (PICCS): This material is listed or exempted.
Taiwan inventory (CSNN): Not determined.

Chemical Weapons Convention List Schedule I Chemicals : Not listed

Chemical Weapons Convention List Schedule II Chemicals : Not listed

Chemical Weapons Convention List Schedule III Chemicals : Not listed

Canada

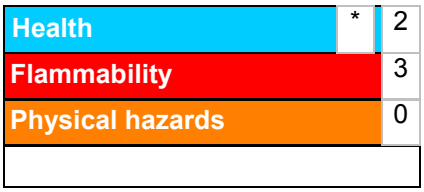
WHMIS (Canada) : Class B-2: Flammable liquid
Class D-2B: Material causing other toxic effects (Toxic).

CEPA Toxic substances: This material is not listed.
Canadian ARET: This material is not listed.
Canadian NPRI: This material is listed.
Alberta Designated Substances: This material is not listed.
Ontario Designated Substances: This material is not listed.
Quebec Designated Substances: This material is not listed.

Section 16. Other information

Canada Label requirements : Class B-2: Flammable liquid
Class D-2B: Material causing other toxic effects (Toxic).

Hazardous Material Information System (U.S.A.)



Caution: HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks Although HMIS® ratings are not required on SDSs under 29 CFR 1910. 1200, the preparer may choose to provide them. HMIS® ratings are to be used with a fully implemented HMIS® program. HMIS® is a registered mark of the National Paint & Coatings Association (NPCA). HMIS® materials may be purchased exclusively from J. J. Keller (800) 327-6868.

The customer is responsible for determining the PPE code for this material.

National Fire Protection Association (U.S.A.)



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Section 16. Other information

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Copyright ©2001, National Fire Protection Association, Quincy, MA 02269. This warning system is intended to be interpreted and applied only by properly trained individuals to identify fire, health and reactivity hazards of chemicals. The user is referred to certain limited number of chemicals with recommended classifications in NFPA 49 and NFPA 325, which would be used as a guideline only. Whether the chemicals are classified by NFPA or not, anyone using the 704 systems to classify chemicals does so at their own risk.

History

Date of printing : 5/20/2015.

Date of issue/Date of revision : 5/20/2015.

Date of previous issue : 10/28/2014.

Version : 0.02

Key to abbreviations : ATE = Acute Toxicity Estimate
BCF = Bioconcentration Factor
GHS = Globally Harmonized System of Classification and Labelling of Chemicals
IATA = International Air Transport Association
IBC = Intermediate Bulk Container
IMDG = International Maritime Dangerous Goods
LogPow = logarithm of the octanol/water partition coefficient
MARPOL 73/78 = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution)
UN = United NationsACGIH – American Conference of Governmental Industrial Hygienists
AIHA – American Industrial Hygiene Association
CAS – Chemical Abstract Services
CEPA – Canadian Environmental Protection Act
CERCLA – Comprehensive Environmental Response, Compensation, and Liability Act (EPA)
CFR – United States Code of Federal Regulations
CPR – Controlled Products Regulations
DSL – Domestic Substances List
GWP – Global Warming Potential
IARC – International Agency for Research on Cancer
ICAO – International Civil Aviation Organisation
Inh – Inhalation
LC – Lethal concentration
LD – Lethal dosage
NDSL – Non-Domestic Substances List
NIOSH – National Institute for Occupational Safety and Health
TDG – Canadian Transportation of Dangerous Goods Act and Regulations
TLV – Threshold Limit Value
TSCA – Toxic Substances Control Act
WEEL – Workplace Environmental Exposure Level
WHMIS – Canadian Workplace Hazardous Material Information System

References : Not available.

Indicates information that has changed from previously issued version.

Notice to reader

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Section 16. Other information

To the best of our knowledge, the information contained herein is accurate. However, neither the above-named supplier, nor any of its subsidiaries, assumes any liability whatsoever for the accuracy or completeness of the information contained herein.
Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

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Safety Data Sheet

according to 1907/2006/EC (REACH), 1272/2008/EC (CLP), and GHS

Effective date: 05/12/2015 **Revision:** 05/12/2015

LIQUINOX

1 Identification of the Substance/mixture and of the Company/Undertaking

1.1 Product identifier

Trade name: LIQUINOX

Application of the substance / the preparation: Hand detergent.

1.2 Relevant identified uses of the substance or mixture and uses advised against:

No additional information available.

1.3 Details of the supplier of the Safety Data Sheet

Manufacturer/Supplier:

Alconox, Inc.
30 Glenn St., Suite 309
White Plains, NY 10603
Phone: 914-948-4040

Further information obtainable from: Product Safety Department.

1.4 Emergency telephone number:

ChemTel Inc.: (800)255-3924, +1 (813)248-0585

2 Hazards Identification

2.1 Classification of the substance or mixture

Classification according to Regulation (EC) No 1272/2008:

Classification according to Directive 67/548/EEC or Directive 1999/45/EC:



GHS07

Skin Irrit. 2, H315: Causes skin irritation.

Information concerning particular hazards for human and environment:

The product has to be labelled due to the calculation procedure of the "General Classification guideline for preparations of the EU" in the latest valid version.

Classification system:

The classification is according to the latest editions of the EU-lists, and extended by company and literature data

2.2 Label elements

Labelling according to Regulation (EC) No 1272/2008:

The product is classified and labelled according to the CLP regulation.

Hazard pictograms:



GHS07

Signal word: Warning

Hazard-determining components of labelling:

Alkyl benzene sulfonic acid, sodium salt.

Safety Data Sheet
according to 1907/2006/EC (REACH), 1272/2008/EC (CLP), and GHS

Effective date: 05/12/2015 **Revision:** 05/12/2015

LIQUINOX

Hazard statements:
H315: Causes skin irritation.

Precautionary statements:

P332+P313: If skin irritation occurs: Get medical advice/attention.

P302+P352: IF ON SKIN: Wash with plenty of soap and water.

P501: Dispose of contents/container in accordance with local/regional/national/international regulations.

Other Hazard description:
WHMIS-classification and symbols:
D2B - Toxic material causing other toxic effects



NFPA ratings (scale 0 - 4)



Health = 1
Fire = 0
Reactivity = 0

HMIS-ratings (scale 0 - 4)

HEALTH	1
FIRE	0
REACTIVITY	0

Health = 1
Fire = 0
Reactivity = 0

2.3 Other hazards
Results of PBT and vPvB assessment
PBT: Not applicable.
vPvB: Not applicable.

3 Composition/Information on Ingredients

3.2 Chemical characterization: Mixture
Description: Hazardous ingredients of mixture listed below.

Identifying Nos.	Description	Wt. %
CAS: 68081-81-2	Alkyl benzene sulfonic acid, sodium salt	10 - 25%
CAS: 1300-72-7 EINECS: 215-090-9	Sodium xylene sulphonate	2.5 - 10%
CAS: 84133-50-6	Alcohol Ethoxylate	2.5 - 10%
CAS: 68603-42-9 EINECS: 271-657-0	Coconut diethanolamide	2.5 - 10%
CAS: 17572-97-3 EINECS: 241-543-5	Ethylenediaminetetraacetic acid, tripotassium salt	2.5 - 10%

Additional information: For the wording of the listed risk phrases refer to section 16.

Safety Data Sheet
according to 1907/2006/EC (REACH), 1272/2008/EC (CLP), and GHS

Effective date: 05/12/2015 **Revision:** 05/12/2015

LIQUINOX

4 First Aid Measures

4.1 Description of first aid measures

General information:

Take affected persons out into the fresh air.

After inhalation:

Supply fresh air; consult doctor in case of complaints.

After skin contact:

Immediately wash with water and soap and rinse thoroughly for 30 minutes. If skin irritation continues, consult a doctor.

After eye contact:

Remove contact lenses if worn.

Rinse opened eye for at least 30 minutes under running water, lifting upper and lower lids occasionally. Immediately consult a doctor.

After swallowing:

Do not induce vomiting; call for medical help immediately. Rinse out mouth and then drink plenty of water.

A person vomiting while laying on their back should be turned onto their side.

4.2 Most important symptoms and effects, both acute and delayed:

Irritating, all routes of exposure.

4.3 Indication of any immediate medical attention and special treatment needed:

No additional information available.

5 Firefighting Measures

5.1 Extinguishing media:

Suitable extinguishing agents:

CO2, powder or water spray. Fight larger fires with water spray or alcohol resistant foam.

5.2 Special hazards arising from the substance or mixture:

No additional information available.

5.3 Advice for firefighters:

Protective equipment:

Wear self-contained respiratory protective device.

Wear fully protective suit.

6 Accidental Release Measures

6.1 Personal precautions, protective equipment and emergency procedures:

Ensure adequate ventilation.

Particular danger of slipping on leaked/spilled product.

6.2 Environmental precautions:

Dilute with plenty of water.

Do not allow to enter sewers/ surface or ground water.

6.3 Methods and material for containment and cleaning up:

Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).

Clean the affected area carefully; suitable cleaners are: Warm water

Dispose contaminated material as waste according to item 13. Ensure adequate ventilation.

6.4 Reference to other sections:

See Section 7 for information on safe handling.

See Section 8 for information on personal protection equipment.

See Section 13 for disposal information

7 Handling and Storage

7.1 Precautions for safe handling:

No special precautions are necessary if used correctly.

Information about fire - and explosion protection:

No special measures required.

Safety Data Sheet
according to 1907/2006/EC (REACH), 1272/2008/EC (CLP), and GHS

Effective date: 05/12/2015 **Revision:** 05/12/2015

LIQUINOX

7.2 Conditions for safe storage, including any incompatibilities:
Storage:
Requirements to be met by storerooms and receptacles: No special requirements.
Information about storage in one common storage facility: No special requirements.
Further information about storage conditions: None

7.3 Specific end use(s): No additional information available.

8 Exposure Controls/Personal Protection

8.1 Control parameters
Ingredients with limit values that require monitoring at the workplace:
The product does not contain any relevant quantities of materials with critical values that have to be monitored at the workplace.

Additional information: The lists valid during the making were used as basis.

8.2 Exposure controls:
Personal protective equipment:
General protective and hygienic measures:
Keep away from foodstuffs, beverages and feed.
Immediately remove all soiled and contaminated clothing.
Wash hands before breaks and at the end of work.
Avoid contact with the eyes and skin.
Respiratory protection:
Not required under normal conditions of use.
Protection of hands:


Protective gloves

The glove material has to be impermeable and resistant to the product. Selection of the glove material should be based on the penetration time, rates of diffusion and the degradation of the glove material.

Material of gloves:
The selection of a suitable gloves does not only depend on the material, but also on the quality, and varies from manufacturer to manufacturer.
Penetration time of glove material:
The exact break through time has to be determined by the manufacturer of the protective gloves. DO NOT exceed the breakthrough time set by the Manufacturer.
For long term contact, gloves made of the following materials are considered suitable:
Butyl rubber, BR
Nitrile rubber, NBR
Natural rubber (NR)
Neoprene gloves
Eye protection:


Safety glasses
Goggles recommended during refilling.

Body protection: Protective work clothing

Safety Data Sheet
according to 1907/2006/EC (REACH), 1272/2008/EC (CLP), and GHS

Effective date: 05/12/2015 **Revision:** 05/12/2015

LIQUINOX

9 Physical and Chemical Properties

9.1 Information on basic physical and chemical properties:

General Information:	
Appearance:	
Form:	Liquid
Color:	Light Yellow
Odor:	Odorless
Odor threshold:	Not determined.
pH-value:	8.5
Change in condition:	
Melting point/Melting range:	Not determined.
Boiling point/Boiling range:	100°C
Flash point:	Not applicable.
Flammability (solid, gaseous):	Not applicable.
Ignition temperature:	Not applicable.
Decomposition temperature:	Not determined.
Self-igniting:	Product is not selfigniting.
Danger of explosion:	Product does not present an explosion hazard.
Explosion limits:	
Lower:	Not determined.
Upper:	Not determined.
Vapor pressure at 20°C:	23 hPa
Density:	1.08 g/cm³
Relative density:	Not determined.
Vapor density:	Not determined.
Evaporation rate:	Not determined.
Solubility in / Miscibility with water:	Fully miscible.
Segregation coefficient (n-octanol/water):	Not determined.
Viscosity:	
Dynamic:	Not determined.
Kinematic:	Not determined.
Solvent content:	
Organic solvents:	Not determined.
Solids content:	Not determined.
9.2 Other information:	No additional information available.

10 Stability and Reactivity

10.1 Reactivity:

10.2 Chemical stability:

Thermal decomposition / conditions to be avoided:

No decomposition if used according to specifications.

10.3 Possibility of hazardous reactions:

Reacts with strong oxidizing agents. Reacts with strong acids.

10.4 Conditions to avoid:

No additional information available.

10.5 Incompatible materials:

No additional information available.

Safety Data Sheet
according to 1907/2006/EC (REACH), 1272/2008/EC (CLP), and GHS

Effective date: 05/12/2015 **Revision:** 05/12/2015

LIQUINOX

10.6 Hazardous decomposition products:
Carbon monoxide and carbon dioxide
Sulphur oxides (SOx)
Nitrogen oxides

11 Toxicological Information

11.1 Information on toxicological effects:
Toxicity data: Toxicity data is available for mixture:
Primary irritant effect:
On the skin: Irritating to skin and mucous membranes.
On the eye: Strong irritant with the danger of severe eye injury.
Sensitization: No sensitizing effects known.
Additional toxicological information:
The product shows the following dangers according to the calculation method of the General EU Classification Guidelines for Preparations as issued in the latest version: Irritant

12 Ecological Information

12.1 Toxicity:
Aquatic toxicity: No additional information available.
12.2 Persistence and degradability: Biodegradable.
12.3 Bioaccumulative potential: Does not accumulate in organisms.
12.4 Mobility in soil: No additional information available.
Additional ecological information:
General notes:
Water hazard class 1 (German Regulation) (Self-assessment): slightly hazardous for water.
Do not allow undiluted product or large quantities of it to reach ground water, water course or sewage system.
Must not reach sewage water or drainage ditch undiluted or un-neutralized.
12.5 Results of PBT and vPvB assessment:
PBT: Not applicable.
vPvB: Not applicable.
12.6 Other adverse effects: No additional information available.

13 Disposal Considerations

13.1 Waste treatment methods:
Recommendation:
Smaller quantities can be disposed of with household waste.
Small amounts may be diluted with plenty of water and washed away. Dispose of bigger amounts in accordance with Local Authority requirements.
The surfactant used in this product complies with the biodegradability criteria as laid down in Regulation (EC) No. 648/2004 on detergents. Data to support this assertion are held at the disposal of the competent authorities of the Member States and will be made available to them, at their direct request or at the request of a detergent manufacturer.
Uncleaned packaging:
Recommendation: Disposal must be made according to official regulations.
Recommended cleansing agents: Water, together with cleansing agents, if necessary.

14 Transport Information

14.1 UN-Number:
DOT, ADR, ADN, IMDG, IATA: Not Regulated

14.2 UN proper shipping name:
DOT, ADR, IMDG, IATA: Not Regulated

Safety Data Sheet
according to 1907/2006/EC (REACH), 1272/2008/EC (CLP), and GHS

Effective date: 05/12/2015 **Revision:** 05/12/2015

LIQUINOX

14.3 Transport hazard class(es):
DOT, ADR, IMDG, IATA:
Class: Not Regulated
Label: -

14.4 Packing group:
DOT, ADR, IMDG, IATA: Not Regulated

14.5 Environmental hazards:
Marine pollutant: No

14.6 Special precautions for user: Not applicable.

14.7 Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code: Not applicable.

UN "Model Regulation": Not Regulated

15 Regulatory Information

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture:
United States (USA):
SARA:
Section 355 (extremely hazardous substances): None of the ingredient is listed.
Section 313 (Specific toxic chemical listings): None of the ingredient is listed.
TSCA (Toxic Substances Control Act): All ingredients are listed.

Proposition 65 (California):
Chemicals known to cause cancer: None of the ingredient is listed.
Chemicals known to cause reproductive toxicity for females: None of the ingredient is listed.
Chemicals known to cause reproductive toxicity for males: None of the ingredient is listed.
Chemicals known to cause developmental toxicity: None of the ingredient is listed.

Carcinogenic Categories:
EPA (Environmental Protection Agency): None of the ingredient is listed.
TLV (Threshold Limit Value established by ACGIH): None of the ingredient is listed.
NIOSH-Ca (National Institute for Occupational Safety and Health): None of the ingredient is listed.
OSHA-Ca (Occupational Safety & Health Administration): None of the ingredient is listed.
Canadá:
Canadian Domestic Substances List (DSL): All ingredients are listed.
Canadian Ingredient Disclosure list (limit 0.1%): None of the ingredient is listed.
Canadian Ingredient Disclosure list (limit 1%): None of the ingredient is listed.

15.2 Chemical safety assessment: A Chemical Safety Assessment has not been carried out.

16 Other Information

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

Relevant phrases:
H315: Causes skin irritation.

Safety Data Sheet
according to 1907/2006/EC (REACH), 1272/2008/EC (CLP), and GHS

Effective date: 05/12/2015 **Revision:** 05/12/2015

LIQUINOX

Abbreviations and Acronyms:

ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road.
IMDG: International Maritime Code for Dangerous Goods.
DOT: US Department of Transportation.
IATA: International Air Transport Association.
GHS: Globally Harmonized System of Classification and Labelling of Chemicals.
ACGIH: American Conference of Governmental Industrial Hygienists.
NFPA: National Fire Protection Association (USA).
HMIS: Hazardous Materials Identification System (USA).
WHMIS: Workplace Hazardous Materials Information System (Canada).
VOC: Volatile Organic Compounds (USA, EU).
LC50: Lethal concentration, 50 percent.
LD50: Lethal dose, 50 percent.

SDS Created by:
Global Safety Management, Inc.
10006 Cross Creek Blvd
Tampa, FL, 33647
Tel: 1-844-GSM-INFO (1-844-476-4636)
Website: www.GSMSDS.com

Fisher Scientific

Part of Thermo Fisher Scientific

SAFETY DATA SHEET

Creation Date 12-Mar-2009 **Revision Date** 28-Nov-2016 **Revision Number** 5

1. Identification

Product Name **Nitric acid (65 - 70%)**

Cat No. : **A198C-212, A200-212, A200-212LC, A200-500, A200-500LC, A200-612GAL, A200C-212, A200S-212, A200S-212LC, A200S-500, A200SI-212, A467-1, A467-2, A467-250, A467-500, A483-212; S719721**

Synonyms Azotic acid; Engraver's acid; Aqua fortis

Recommended Use Laboratory chemicals.

Uses advised against No Information available

Details of the supplier of the safety data sheet

Company
Fisher Scientific
One Reagent Lane
Fair Lawn, NJ 07410
Tel: (201) 796-7100

Emergency Telephone Number
CHEMTREC®, Inside the USA: 800-424-9300
CHEMTREC®, Outside the USA: 001-703-527-3887

2. Hazard(s) identification

Classification

This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Oxidizing liquids	Category 3
Corrosive to metals	Category 1
Skin Corrosion/irritation	Category 1 A
Serious Eye Damage/Eye Irritation	Category 1
Specific target organ toxicity (single exposure)	Category 3
Target Organs - Respiratory system.	

Label Elements

Signal Word
Danger

Hazard Statements
May intensify fire; oxidizer
May be corrosive to metals
Causes severe skin burns and eye damage
May cause respiratory irritation



Precautionary Statements
Prevention
Do not breathe dust/fume/gas/mist/vapors/spray
Wash face, hands and any exposed skin thoroughly after handling
Wear protective gloves/protective clothing/eye protection/face protection
Use only outdoors or in a well-ventilated area
Keep away from heat/sparks/open flames/hot surfaces. - No smoking
Keep/Store away from clothing/ other combustible materials
Take any precaution to avoid mixing with combustibles
Keep only in original container
Response
Immediately call a POISON CENTER or doctor/physician
Inhalation
IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing
Skin
IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower
Wash contaminated clothing before reuse
Eyes
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
Ingestion
IF SWALLOWED: Rinse mouth. DO NOT induce vomiting
Fire
In case of fire: Use CO2, dry chemical, or foam for extinction
Spills
Absorb spillage to prevent material damage
Storage
Store locked up
Store in a well-ventilated place. Keep container tightly closed
Store in corrosive resistant polypropylene container with a resistant inliner
Store in a dry place
Disposal
Dispose of contents/container to an approved waste disposal plant
Hazards not otherwise classified (HNOC)
None identified

3. Composition / information on ingredients

Component	CAS-No	Weight %
Nitric acid	7697-37-2	65 - 70
Water	7732-18-5	30 - 35

4. First-aid measures

General Advice Immediate medical attention is required. Show this safety data sheet to the doctor in attendance.

Eye Contact Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Immediate medical attention is required.

Skin Contact Wash off immediately with plenty of water for at least 15 minutes. Remove and wash contaminated clothing before re-use. Call a physician immediately.

Inhalation If breathing is difficult, give oxygen. Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. Remove from exposure, lie down. Call a physician immediately.

Ingestion Do not induce vomiting. Never give anything by mouth to an unconscious person. Clean mouth with water. Call a physician immediately.

Most important symptoms/effects Causes burns by all exposure routes. Ingestion causes severe swelling, severe damage to the delicate tissue and danger of perforation: Product is a corrosive material. Use of gastric lavage or emesis is contraindicated. Possible perforation of stomach or esophagus should be investigated

Notes to Physician Treat symptomatically

5. Fire-fighting measures

Suitable Extinguishing Media CO_2, dry chemical, dry sand, alcohol-resistant foam.

Unsuitable Extinguishing Media No information available

Flash Point Not applicable
Method - No information available

Autoignition Temperature No information available

Explosion Limits
Upper No data available
Lower No data available

Oxidizing Properties Oxidizer

Sensitivity to Mechanical Impact No information available
Sensitivity to Static Discharge No information available

Specific Hazards Arising from the Chemical
Thermal decomposition can lead to release of irritating gases and vapors. The product causes burns of eyes, skin and mucous membranes. Oxidizer: Contact with combustible/organic material may cause fire. May ignite combustibles (wood paper, oil, clothing, etc.).

Hazardous Combustion Products
Nitrogen oxides (NOx) Thermal decomposition can lead to release of irritating gases and vapors
Protective Equipment and Precautions for Firefighters
As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear. Thermal decomposition can lead to release of irritating gases and vapors.

NFPA

Health	Flammability	Instability	Physical hazards
4	0	0	OX

6. Accidental release measures

Personal Precautions Evacuate personnel to safe areas. Keep people away from and upwind of spill/leak. Ensure adequate ventilation. Use personal protective equipment.

Environmental Precautions Should not be released into the environment. Do not flush into surface water or sanitary sewer system. See Section 12 for additional ecological information.

Methods for Containment and Clean Up Soak up with inert absorbent material. Keep in suitable, closed containers for disposal. Sweep up and shovel into suitable containers for disposal.

7. Handling and storage

Handling Use only under a chemical fume hood. Wear personal protective equipment. Do not get in eyes, on skin, or on clothing. Do not ingest. Do not breathe vapors or spray mist. Keep away from clothing and other combustible materials.

Storage Keep containers tightly closed in a cool, well-ventilated place. Do not store near combustible materials.

8. Exposure controls / personal protection

Exposure Guidelines

Component	ACGIH TLV	OSHA PEL	NIOSH IDLH
Nitric acid	TWA: 2 ppm STEL: 4 ppm	(Vacated) TWA: 2 ppm (Vacated) TWA: 5 mg/m³ (Vacated) STEL: 4 ppm (Vacated) STEL: 10 mg/m³ TWA: 2 ppm TWA: 5 mg/m³	IDLH: 25 ppm TWA: 2 ppm TWA: 5 mg/m³ STEL: 4 ppm STEL: 10 mg/m³

Component	Quebec	Mexico OEL (TWA)	Ontario TWAEV
Nitric acid	TWA: 2 ppm TWA: 5.2 mg/m³ STEL: 4 ppm STEL: 10 mg/m³	TWA: 2 ppm TWA: 5 mg/m³ STEL: 4 ppm STEL: 10 mg/m³	TWA: 2 ppm STEL: 4 ppm

Legend

ACGIH - American Conference of Governmental Industrial Hygienists
OSHA - Occupational Safety and Health Administration
NIOSH IDLH: The National Institute for Occupational Safety and Health Immediately Dangerous to Life or Health

Engineering Measures Use only under a chemical fume hood. Ensure that eyewash stations and safety showers are close to the workstation location. Ensure adequate ventilation, especially in confined areas.

Personal Protective Equipment

Eye/face Protection Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166. Tightly fitting safety goggles. Face-shield.

Skin and body protection Long sleeved clothing.

Respiratory Protection Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.

Hygiene Measures Keep away from food, drink and animal feeding stuffs. When using, do not eat, drink or smoke. Contaminated work clothing should not be allowed out of the workplace. Provide regular cleaning of equipment, work area and clothing. Avoid contact with skin, eyes and clothing. For environmental protection remove and wash all contaminated protective equipment before re-use. Wear suitable gloves and eye/face protection.

9. Physical and chemical properties

Physical State	Liquid
Appearance	Clear Colorless, Light yellow
Odor	Strong Acrid
Odor Threshold	No information available
pH	< 1.0 (0.1M)
Melting Point/Range	-41 °C / -41.8 °F
Boiling Point/Range	Not applicable
Flash Point	Not applicable

Evaporation Rate	No information available
Flammability (solid,gas)	Not applicable
Flammability or explosive limits	
Upper	No data available
Lower	No data available
Vapor Pressure	0.94 kPa (20°C)
Vapor Density	No information available
Specific Gravity	1.40
Solubility	miscible
Partition coefficient; n-octanol/water	No data available
Autoignition Temperature	No information available
Decomposition Temperature	No information available
Viscosity	No information available
Molecular Formula	HNO3
Molecular Weight	63.02

10. Stability and reactivity

Reactive Hazard Yes

Stability Oxidizer: Contact with combustible/organic material may cause fire.

Conditions to Avoid Incompatible products. Combustible material. Excess heat. Exposure to air or moisture over prolonged periods.

Incompatible Materials Combustible material, Strong bases, Reducing agents, Metals, Powdered metals, Organic materials, Aldehydes, Alcohols, Cyanides, Ammonia, Strong reducing agents

Hazardous Decomposition Products Nitrogen oxides (NOx), Thermal decomposition can lead to release of irritating gases and vapors

Hazardous Polymerization Hazardous polymerization does not occur.

Hazardous Reactions None under normal processing.

11. Toxicological information

Acute Toxicity

Product Information

Oral LD50 Based on ATE data, the classification criteria are not met. ATE > 2000 mg/kg.

Dermal LD50 Based on ATE data, the classification criteria are not met. ATE > 2000 mg/kg.

Vapor LC50 Based on ATE data, the classification criteria are not met. ATE > 20 mg/l.

Component Information

Component	LD50 Oral	LD50 Dermal	LC50 Inhalation
Nitric acid	Not listed	Not listed	LC50 = 2500 ppm. (Rat) 1h
Water	-	Not listed	Not listed

Toxicologically Synergistic Products No information available

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Irritation Causes severe burns by all exposure routes

Sensitization No information available

Carcinogenicity The table below indicates whether each agency has listed any ingredient as a carcinogen.

Component	CAS-No	IARC	NTP	ACGIH	OSHA	Mexico
Nitric acid	7697-37-2	Not listed	Not listed	Not listed	Not listed	Not listed
Water	7732-18-5	Not listed	Not listed	Not listed	Not listed	Not listed

Mutagenic Effects No information available

Reproductive Effects No information available.

Developmental Effects No information available.

Teratogenicity No information available.

STOT - single exposure Respiratory system
STOT - repeated exposure None known

Aspiration hazard No information available

Symptoms / effects,both acute and delayed Ingestion causes severe swelling, severe damage to the delicate tissue and danger of perforation: Product is a corrosive material. Use of gastric lavage or emesis is contraindicated. Possible perforation of stomach or esophagus should be investigated

Endocrine Disruptor Information No information available

Other Adverse Effects The toxicological properties have not been fully investigated.

12. Ecological information

Ecotoxicity

Do not empty into drains. Large amounts will affect pH and harm aquatic organisms.

Component	Freshwater Algae	Freshwater Fish	Microtox	Water Flea
Nitric acid	Not listed	LC50: = 72 mg/L, 96h (Gambusia affinis)	Not listed	Not listed

Persistence and Degradability Miscible with water Persistence is unlikely based on information available.
Bioaccumulation/ Accumulation No information available.

Mobility Will likely be mobile in the environment due to its water solubility.

Component	log Pow
Nitric acid	-2.3

13. Disposal considerations

Waste Disposal Methods Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. Chemical waste generators must also consult local, regional, and national hazardous waste regulations to ensure complete and accurate classification.

14. Transport information

DOT

UN-No UN2031
Proper Shipping Name NITRIC ACID
Hazard Class 8
Subsidiary Hazard Class 5.1
Packing Group II

TDG

UN-No UN2031
Proper Shipping Name NITRIC ACID
Hazard Class 8
Subsidiary Hazard Class 5.1
Packing Group II

IATA

UN-No UN2031
Proper Shipping Name NITRIC ACID
Hazard Class 8
Subsidiary Hazard Class 5.1
Packing Group II

IMDG/IMO

UN-No	UN2031
Proper Shipping Name	NITRIC ACID
Hazard Class	8
Subsidiary Hazard Class	5.1
Packing Group	II

15. Regulatory information

All of the components in the product are on the following Inventory lists: X = listed

International Inventories

Component	TSCA	DSL	NDSL	EINECS	ELINCS	NLP	PICCS	ENCS	AICS	IECSC	KECL
Nitric acid	X	X	-	231-714-2	-		X	X	X	X	X
Water	X	X	-	231-791-2	-		X	-	X	X	X

Legend:
X - Listed
E - Indicates a substance that is the subject of a Section 5(e) Consent order under TSCA.
F - Indicates a substance that is the subject of a Section 5(f) Rule under TSCA.
N - Indicates a polymeric substance containing no free-radical initiator in its inventory name but is considered to cover the designated polymer made with any free-radical initiator regardless of the amount used.
P - Indicates a commenced PMN substance
R - Indicates a substance that is the subject of a Section 6 risk management rule under TSCA.
S - Indicates a substance that is identified in a proposed or final Significant New Use Rule
T - Indicates a substance that is the subject of a Section 4 test rule under TSCA.
XU - Indicates a substance exempt from reporting under the Inventory Update Rule, i.e. Partial Updating of the TSCA Inventory Data Base Production and Site Reports (40 CFR 710(B).
Y1 - Indicates an exempt polymer that has a number-average molecular weight of 1,000 or greater.
Y2 - Indicates an exempt polymer that is a polyester and is made only from reactants included in a specified list of low concern reactants that comprises one of the eligibility criteria for the exemption rule.

U.S. Federal Regulations

TSCA 12(b) Not applicable

SARA 313

Component	CAS-No	Weight %	SARA 313 - Threshold Values %
Nitric acid	7697-37-2	65 - 70	1.0

SARA 311/312 Hazard Categories

Acute Health Hazard	Yes
Chronic Health Hazard	Yes
Fire Hazard	No
Sudden Release of Pressure Hazard	No
Reactive Hazard	Yes

CWA (Clean Water Act)

Component	CWA - Hazardous Substances	CWA - Reportable Quantities	CWA - Toxic Pollutants	CWA - Priority Pollutants
Nitric acid	X	1000 lb	-	-

Clean Air Act Not applicable

OSHA Occupational Safety and Health Administration

Component	Specifically Regulated Chemicals	Highly Hazardous Chemicals
Nitric acid	-	TQ: 500 lb

CERCLA
This material, as supplied, contains one or more substances regulated as a hazardous substance under the Comprehensive

Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302)

Component	Hazardous Substances RQs	CERCLA EHS RQs
Nitric acid	1000 lb	1000 lb

California Proposition 65 This product does not contain any Proposition 65 chemicals

U.S. State Right-to-Know Regulations

Component	Massachusetts	New Jersey	Pennsylvania	Illinois	Rhode Island
Nitric acid	X	X	X	X	X
Water	-	-	X	-	-

U.S. Department of Transportation

Reportable Quantity (RQ): Y
DOT Marine Pollutant N
DOT Severe Marine Pollutant N

U.S. Department of Homeland Security
This product contains the following DHS chemicals:

Component	DHS Chemical Facility Anti-Terrorism Standard
Nitric acid	2000 lb STQ

Other International Regulations

Mexico - Grade No information available

Canada
This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all the information required by the CPR

WHMIS Hazard Class
C Oxidizing materials
E Corrosive material
D2B Toxic materials



16. Other information

Prepared By
Regulatory Affairs
Thermo Fisher Scientific
Email: EMSDS.RA@thermofisher.com

Creation Date 12-Mar-2009
Revision Date 28-Nov-2016
Print Date 28-Nov-2016
Revision Summary This document has been updated to comply with the US OSHA HazCom 2012 Standard replacing the current legislation under 29 CFR 1910.1200 to align with the Globally Harmonized System of Classification and Labeling of Chemicals (GHS)

Disclaimer
The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text

End of SDS

Attachment C

Personal Protective Equipment Activity Record

Personal Protective Equipment Activity Record

Site: Saranac Lake Gas Company, Saranac Lake, New York		
Weather Condition:		**On-site Hours: From**
		To
Changes in Personal Protective Equipment Levels[(a)]	**Work Operations**	**Reasons for Change**
Site Health and Safety Plan Violations	**Corrective Action Specified**	**Corrective Action Taken (yes/no)**
Observations and Comments:		
Completed by: _____ **Site Health and Safety Officer** **Date**		
(a) Only the Site Health and Safety Officer may change personal protective equipment levels, using only criteria specified in the Health and Safety Plan.		

Attachment D

Site and Entry Log

Site Entry and Exit Log

Site: Saranac Lake Gas Company, Saranac Lake, New York				
Name	**Date**	**Time of Entry**	**Time of Exit**	**Initials**

Attachment E

Emergency Telephone Number and Hospital Directions

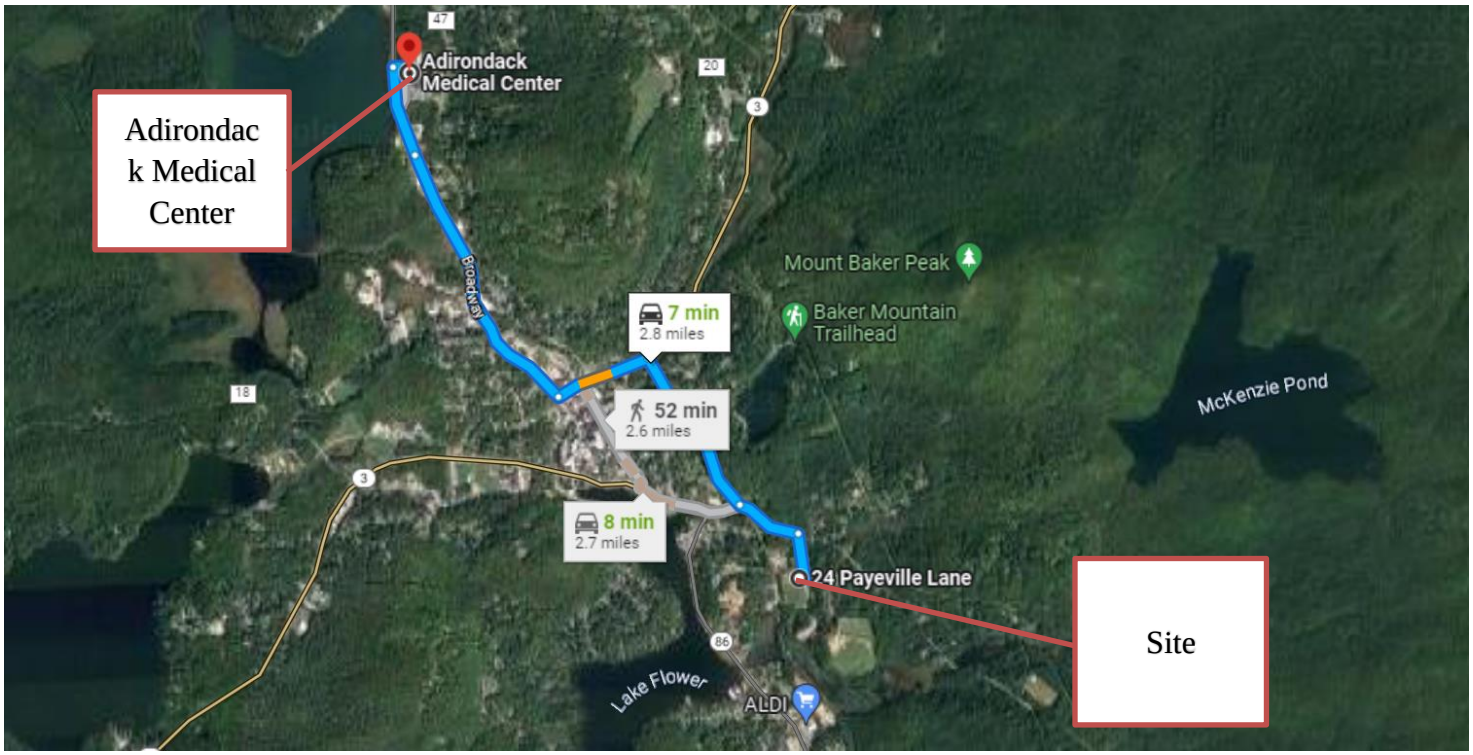
Emergency Telephone Numbers and Hospital Directions

Site: Saranac Lake Gas Company, Saranac Lake, New York	
Police: Saranac Lake Police Department	9-1-1 or (518) 891-4422
Fire: Saranac Lake Volunteer Fire Department	9-1-1 or (518) 891-2333
Ambulance: Lake Placid Volunteer Ambulance Service	9-1-1 or (518) 523-9512
Hospital: Adirondack Medical Center	9-1-1 or (518) 891-4141
Upstate New York Poison Control: 750 E Adams St, Syracuse, NY 13210	1-(800) 222-1222

Directions to Adirondack Medical Center: 2233 NY-86, Saranac Lake, NY 12983

1. Head north on Payeville Ln for 0.2 miles.
2. Turn L onto Pine St. and travel for 0.8 miles.
3. Turn L onto Bloomingdale Ave for 0.3 miles.
4. Turn R onto Route 86 (Broadway) for 1.0 mile.
5. Turn R into Adirondack Medical Center.

Map to Hospital



Directions to Adirondack Medical Center:

1. Head north on Payeville Ln for 0.2 miles.
2. Turn L onto Pine St. and travel for 0.8 miles.
3. Turn L onto Bloomingdale Ave for 0.3 miles.
4. Turn R onto Route 86 (Broadway) for 1.0 mile.
5. Turn R into Adirondack Medical Center.

Attachment F

Accident/Loss Report

ACCIDENT/LOSS REPORT

This report must be completed by the injured employee or supervisor and faxed to EA corporate headquarters within 24 hours of any accident. **Fax number: (410) 771-1780.**

Note: Whenever an employee is sent for medical treatment for a work related injury or illness, **page 4 of this report** must accompany that individual to ensure that all invoices, bills, and correspondence are sent to Human Resources for a timely response.

A. DEMOGRAPHIC INFORMATION		
Name of injured employee:		
Home address:		
Home telephone:		
Date of birth:	Age:	Sex: M F
Marital status:	Name of spouse (if applicable):	
Social security number:		Date of hire:
Number of dependents:		
Employee job title:	Department regularly employed:	
Was employee injured on the job: yes or no		
Primary language of employee:		

B. ACCIDENT/INCIDENT INFORMATION	
Date of accident:	Time of accident:
Reported to whom:	Name of supervisor:
Exact location where accident occurred (include street, city, state, and county):	
Explain what happened (include what the employee was doing at the time of the accident and how it occurred):	
Describe the injury and the specific part of the body affected (i.e., laceration, right hand, third finger):	
Object or substance that directly injured the employee:	
Number of days and hours employee usually works per week:	
Is the employee expected to lose at least one full day of work?	
Does the employee have a previous claim? yes or no	If yes, status? open or closed
Was the employee assigned to restricted duty? yes or no	If yes, describe:

ACCIDENT/LOSS REPORT

C. ACCIDENT INVESTIGATION INFORMATION
Was safety equipment provided? yes or no If yes, was it used? yes or no
Was an unsafe act being formed? yes or no If yes, describe:
Was a machine part involved? yes or no If yes, in what way?
Was the machine part defective? yes or no If yes, in what way?
Was a third party responsible for the accident/incident: yes or no If yes, list name, address, and telephone number.
Was the accident/incident witnessed? yes or no If yes, list name, address, and telephone number.

D. PROVIDER INFORMATION
Was first aid given onsite? yes or no
If yes, what type of medical treatment given?
Physician information (if medical attention was administered): Name: Address (include city, state, and zip): Telephone:
Hospital address (include name, address, city, state, zip code, and telephone number):
Was the employee hospitalized? yes or no If yes, on what date?
Was the employee treated as an outpatient, receive emergency treatment or ambulance service? yes or no
Please attach the physician's written return to work slip.
Note: A physician's return to work slip is required prior to allowing the worker to return to work.

E. AUTOMOBILE ACCIDENT INFORMATION (complete if applicable)
Authority contacted and report number:
EA employee's vehicle year, make, and model:
V.I.N. Plate/tag number:
Owner's name and address:
Driver's name and address:
Relationship to insured?
Driver's license number?

ACCIDENT/LOSS REPORT

E. AUTOMOBILE ACCIDENT INFORMATION (continued)
Describe damage to ***your*** property:
Describe damage to ***other*** vehicle or property:
Other driver's name, address, and telephone:
Other driver's insurance company (include name, address and telephone number):
Location of other vehicle?
Name, address, and telephone of other injured parties:
Witness (include name, address, and telephone number):
Witness's statement:
Witness (include name, address, and telephone number):
Witness's statement:

F. ACKNOWLEDGEMENT

Name of supervisor:
Date of this report:
Report prepared by:
I have read this report and the contents as to how the accident/loss occurred are accurate to the best of my knowledge. Signature (injured employee): Date:

ACCIDENT/LOSS REPORT

I am seeking medical treatment for a work related injury/illness.
Please forward all bills/invoices/correspondence to:

EA Engineering and Geology, P.C
225 Schilling Circle
Suite 400
Hunt Valley, Maryland 21031

Attention: Michele Bailey

Human Resources

(410) 584-7000

Appendix F

Quality Assurance Project Plan

Generic Quality Assurance Project Plan for Work Assignments

NYSDEC Standby Contract No. D009806



Prepared for

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

New York State Department of Environmental Conservation
Division of Environmental Remediation

Prepared by

EA Engineering, P.C. and Its Affiliate
EA Science and Technology
269 W. Jefferson Street
Syracuse, New York 13202

April 2020

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Generic Quality Assurance Project Plan for Work Assignments

NYSDEC Standby Contract No. D009806

Prepared for

New York State Department of Environmental Conservation
625 Broadway
Albany, New York 12233

Prepared by

EA Engineering, P.C. and Its Affiliate
EA Science and Technology
269 West Jefferson Street
Syracuse, New York 13202

Revision No.	Description of changes	Date Revisions Completed	Author(s)
00	Original submittal	Not applicable	AE
01	Added reference to NYSDEC guidance on PFAS analysis and sampling	4/2/2020	AE

April 2020
Revision: 01
EA Project No. 0731111

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Generic Quality Assurance Project Plan for Work Assignments

NYSDEC Standby Contract No. D009806

Prepared for

New York State Department of Environmental Conservation
625 Broadway
Albany, New York 12233

Prepared by

EA Engineering, P.C. and Its Affiliate
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269 West Jefferson Street
Syracuse, New York 13202

3 April 2020

Donald Conan, P.E., P.G., Program Manager
EA Engineering, P.C.

Date

3 April 2020

Daniel Hinckley, Ph.D., Project Chemist
EA Science and Technology

Date

April 2020
Revision: 01
EA Project No. 0731111

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TABLE OF CONTENTS

Page

LIST OF TABLES iii
LIST OF ACRONYMS AND ABBREVIATIONS iv
1. PURPOSE AND OBJECTIVES 1
1.1 PURPOSE 1
1.2 QUALITY ASSURANCE PROJECT PLAN OBJECTIVES 1
2. PROJECT ORGANIZATION AND RESPONSIBILITIES 3
2.1 OVERALL PROJECT ORGANIZATION 3
2.2 LABORATORIES 3
3. QUALITY ASSURANCE/QUALITY CONTROL OBJECTIVES FOR DATA MEASUREMENT 5
3.1 INTRODUCTION 5
3.2 DATA QUALITY CONTROL OBJECTIVES 5
3.3 LABORATORY QUALITY ASSURANCE OBJECTIVES 6
3.4 FIELD PARAMETERS AND QUALITY ASSURANCE OBJECTIVES 6
3.5 DETECTION AND QUANTITATION LEVELS 7
3.5.1 Detection Limits 7
3.5.2 Quantitation Levels 8
3.5.3 Project-Specific Quality Control and Reporting Limits 8
4. SAMPLING AND SAMPLE CUSTODY PROCEDURES 9
4.1 FIELD SAMPLING OPERATIONS 9
4.1.1 Sample Bottle Preparation 9
4.1.2 Sampling Procedures 9
4.2 LABORATORY SAMPLE RECEIPT 9
4.2.1 Laboratory Sample Custody 10
4.2.2 Sample Storage, Security, and Disposal 10
5. CALIBRATION PROCEDURES AND FREQUENCY 11
5.1 CALIBRATION SYSTEM 11
5.1.1 Calibration Procedures 11
5.1.2 Calibration Frequency 11
5.1.3 Calibration Reference Standards 11
5.1.4 Calibration Failure 11
5.1.5 Calibration Records 12
5.2 OPERATIONAL CALIBRATION 12
5.2.1 Preparation of Calibration Curve 12
5.2.2 Blanks 12
5.3 PERIODIC CALIBRATION 12
5.4 FIELD EQUIPMENT CALIBRATION 12
6. ANALYTICAL PROCEDURES 13
6.1 FIELD ANALYTICAL PROCEDURES 13
6.2 LABORATORY ANALYTICAL PROCEDURES 13
6.3 SAMPLE MATRICES 14
6.3.1 Water 14

6.3.2 Soil, Sediment, and Debris....14
6.3.3 Soil Vapor and Indoor/Outdoor Air....14
6.4 STANDARD OPERATING PROCEDURES....14
6.5 RECORDKEEPING....14
7. FIELD AND LABORATORY QUALITY CONTROL CHECKS AND FREQUENCY 15
7.1 LABORATORY QUALITY CONTROL SAMPLES....15
7.1.1 Method Blank....15
7.1.2 Laboratory Control Sample....15
7.1.3 Matrix Spike....16
7.1.4 Surrogates....16
7.2 FIELD QUALITY CONTROL SAMPLES....16
7.2.1 Field/Rinsate Blanks....16
7.2.2 Trip Blanks....17
7.2.3 Field Duplicates....17
7.2.4 Temperature Blanks....17
8. PREVENTIVE MAINTENANCE....19
9. QUALITY ASSURANCE PERFORMANCE AND SYSTEM AUDITS....21
9.1 RESPONSIBILITY, AUTHORITY, AND TIMING....21
9.2 FIELD AUDITS....21
9.3 LABORATORY PERFORMANCE AND SYSTEM AUDITS....22
9.4 AUDIT PROCEDURES....22
9.5 DOCUMENTATION....23
10. DATA REDUCTION, VALIDATION, AND REPORTING....25
10.1 DATA REDUCTION....25
10.1.1 Field and Technical Data Reduction....25
10.1.2 Laboratory Data Reduction....25
10.2 VALIDATION....25
10.2.1 Field and Technical Data Validation....25
10.2.2 Analytical Data Validation....25
10.2.3 Data Usability Summary Report....26
10.3 REPORTING....26
10.3.1 Field Measurements....26
10.3.2 Analytical Data....26
11. CORRECTIVE ACTION PROCEDURE DESCRIPTION....29
11.1 OBJECTIVES....29
11.2 RATIONALE....29
11.3 CORRECTIVE ACTION METHODS....29
11.3.1 Immediate Corrective Actions....29
11.3.2 Corrective Action Steps....29
11.3.3 Audit-Based Non-Conformances....30
11.4 CORRECTIVE ACTION REPORT REVIEW AND FILING....30
11.5 CORRECTIVE ACTION REPORTS TO MANAGEMENT....30
12. QUALITY ASSURANCE/QUALITY CONTROL REPORTS....31
APPENDIX A: DATA USABILITY SUMMARY REPORT GUIDELINES

LIST OF TABLES

Number	Title
1-A	Analytical Reporting Limits EPA Method 8260b Volatile Organic Compounds: Water and Soil
1-B	Analytical Reporting Limits EPA Method 8270c Volatile Organic Compounds: Water and Soil
1-C	Analytical Reporting Limits EPA Method 6010 (Target Analyte List Metals) and EPA Method 7470 (Mercury): Water And Soil
1-D	Analytical Reporting Limits EPA Method TO-15 Standard Volatile Organic Compounds: Air
1-E	Analytical Reporting Limits EPA Method 8082 Polychlorinated Biphenyl Compounds Water, Soil, and Sediment)
1-F	Analytical Reporting Limits EPA Superfund Analytical Services/CLP Method OLM02.4 Volatile Organic Compounds: Water, Soil, and Sediment
1-G	Analytical Reporting Limits EPA Superfund Analytical Services/CLP Method OLM02.4 Semi-volatile Organic Compounds: Water, Soil, and Sediment
1-H	Analytical Reporting Limits EPA Superfund Analytical Services/CLP Method ISM02.4 Metals: Water, Soil, and Sediment
1-I	Analytical Reporting Limits EPA Clean Water Method 537.1 Per- and Polyfluoroalkyl Substances (PFAS)
1-J	Analytical Report Limits ISO Method 25101 Per- and Polyfluoroalkyl Substances (PFAS)
2	Summary of Periodic Laboratory Calibration Requirements
3	Field Instrumentation Calibration Frequency
4	Field Measurement Quality Control Objectives
5	Preventive Maintenance Summary

LIST OF ACRONYMS AND ABBREVIATIONS

°C	Degrees Celsius
mg/kg	Milligram(s) per kilogram
µg/L	Microgram(s) per liter
µg/m^3	Microgram(s) per cubic meter
CLP	Contract laboratory program
DQO	Data quality objective
DUSR	Data Usability Summary Report
EA	EA Engineering, P.C. and Its Affiliate EA Science and Technology
EDD	Electronic data deliverable
EPA	U.S. Environmental Protection Agency
IDL	Instrument detection limit
MDL	Method detection limit
No.	Number
NYSDEC	New York State Department of Environmental Conservation
PFAS	Per- and polyfluoroalkyl substances
QAPP	Quality assurance project plan
QA	Quality assurance
QC	Quality control
SOP	Standard operating procedure
SVOC	Semi-volatile organic compound
VOC	Volatile organic compound

1. PURPOSE AND OBJECTIVES

1.1 PURPOSE

This Generic Quality Assurance Project Plan (QAPP) has been prepared as a generic companion document to accompany site-specific Work Plans for the Standby Subcontract Work Assignments issued to EA Engineering, P.C. and its affiliate EA Science and Technology (EA) by the New York State Department of Environmental Conservation (NYSDEC) under Standby Contract Number (No.) D009806. The principal purpose of this document is to specify quality assurance (QA)/quality control (QC) procedures for the collection, analysis, and evaluation of data that will be legally and scientifically defensible. A site-specific QAPP Addendum will be provided when required to supplement this document for individual work assignments.

1.2 QUALITY ASSURANCE PROJECT PLAN OBJECTIVES

The QAPP provides general information and references Standard Operating Procedures (SOPs) applicable to the analytical sampling program detailed in each site-specific Work Plan. This information includes definitions and generic goals for data quality and required types and quantities of QA/QC samples. The procedures address field documentation; sample handling, custody, and shipping; instrument calibration and maintenance; auditing; data reduction, validation, and reporting; corrective action requirements; and QA reporting specific to the analyses performed by the laboratories (to be determined) under a standby subcontract agreement with EA.

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2. PROJECT ORGANIZATION AND RESPONSIBILITIES

Each work assignment will be managed through an organized effort of scientific and engineering personnel and technical resources. These efforts will employ pre-approved field procedures, sampling techniques, and analytical methods to accomplish the work assignment objectives. Effective program organization will accommodate these requirements while maintaining a manageable degree of control over these activities.

2.1 OVERALL PROJECT ORGANIZATION

The project-specific organizational and management plan will be detailed in each site-specific Work Plan. Each site-specific Work Plan will include an organizational chart that illustrates the project organization for the accomplishment of each effort.

The key technical management of work assignments will be accomplished by a designated Project Manager and an assigned project team. Additional individuals will be made available, if warranted. Each of the laboratories will have a designated Laboratory Project Manager who will serve as the liaison between the laboratory staff and the overall Project Manager.

For the purpose of QA/QC, each work assignment will have an assigned Project QA/QC Officer to provide guidance on technical matters and review technical documents relating to the work assignments. He/she will assess the effectiveness of the QA/QC program and recommend modifications when applicable. Additionally, the QA/QC Officer may delegate technical guidance to specially trained individuals under his/her direction.

The Program Health and Safety Officer, Mr. Peter Garger, is also an integral part of the project implementation teams. He will be responsible for the development, final technical review, and approval of the Generic Health and Safety Plan and project-specific Health and Safety Plans. In addition, he will provide authorization, if warranted, to modify personal protective equipment requirements based on field conditions. He will also provide final review of all health and safety monitoring records and personal protective equipment changes to ensure compliance with the provisions of the Health and Safety Plans.

2.2 LABORATORIES

The laboratories will perform chemical analyses of environmental samples collected for each work assignment, as necessary. The laboratories are capable of providing a complete range of analytical services consistent with U.S. Environmental Protection Agency (EPA) protocols. These laboratories will maintain their certification by the New York State Department of Health Environmental Laboratory Approval Program.

The laboratories will have their own provisions for conducting an internal QA/QC review of the data before they are released to EA. The Laboratory Project Managers will contact EA's Project Managers with any sample discrepancies or data concerns.

Hardcopy and electronic data deliverables (EDDs) and formatted QA/QC reports will be filed by the analytical laboratories when data are submitted to EA. Corrective actions (**Section 11**) will be reported to the EA Project Managers along with the QA/QC reports. The laboratories may be contacted directly by EA or NYSDEC personnel to discuss QA concerns.

3. QUALITY ASSURANCE/QUALITY CONTROL OBJECTIVES FOR DATA MEASUREMENT

3.1 INTRODUCTION

This section discusses QA objectives for work assignments. QA objectives are requirements specifying the quality of environmental data needed to support the decision-making process. The uncertainty must be maintained at levels that will allow the resultant data to be used for its intended purposes.

Data collected during work assignments typically will include field measurements and laboratory analytical data. This section reviews the various types of data anticipated and presents QA objectives for data collected in conjunction with work assignments.

3.2 DATA QUALITY CONTROL OBJECTIVES

Data quality objectives (DQOs) are qualitative and quantitative statements, which specify the quality of data required to support the decision-making process. DQOs are developed to achieve the level of data quality required for anticipated data use. DQOs are implemented so that, for each task, the data are legally and scientifically defensible. The development of DQOs for a specific site and measurement considers work assignment goals; data uses, types, and needs; and data collection. These factors determine whether the quality and quantity of data are adequate for its end use. Sampling protocols have been developed and sampling documentation and handling procedures have been identified to realize the required data quality.

DQOs are established prior to data collection and are not considered a separate deliverable. Rather, the DQO development process is integrated with the work assignment planning process, and the results are incorporated into the site-specific QAPP Addendum for the site location. DQOs will be specified for each planned data collection activity. The DQO process results in an effective plan, which details the chosen sampling and analysis options, and the statements of confidence in decisions made during the corrective action process. Confidence statements are possible through the application of statistical techniques to the data. The DQO process consists of the following steps:[1]

1. State the problem
2. Identify the goals of the study
3. Identify information inputs
4. Define the boundaries of the study
5. Develop the analytic approach
6. Specify performance or acceptance criteria
7. Develop the plan for obtaining data.

[1] EPA. 2016. Guidance on Systematic Planning Using the Data Quality Objectives Process, EPA/240/B-06/001, February.

3.3 LABORATORY QUALITY ASSURANCE OBJECTIVES

The fundamental mechanisms that will be employed to achieve these quality goals in laboratory analyses can be categorized as prevention, assessment, and correction. These include:

- Prevention of defects in the quality through planning and design; documented instructions and procedures; and careful selection of skilled, qualified personnel.

- Quality assessment through a program of regular audits and inspections to supplement continual informal review.

- Permanent correction of conditions adverse to quality through a closed-loop corrective action system.

Overall compliance with laboratory QC procedures will be evaluated against the criteria specified for each method. Deviations will be reported in the narrative, which contains comments or problems encountered during fractional analyses of the samples. The narrative includes the laboratory's assessment of the impact on data usability and will address QC issues related to the following:

- ***Laboratory Method Performance*—**QC criteria for method performance must be met for target analytes for data to be reported. These criteria generally apply to instrument tune, calibration, method blanks, surrogates, and laboratory control samples.

- ***Sample Matrix Effects*—**QC samples are analyzed to determine measurement bias due to the sample, and may include surrogates, matrix spikes, matrix spike duplicates, and laboratory duplicates. If criteria are not met, matrix interferences are confirmed either by reanalysis or by inspection of the laboratory control sample results to verify that laboratory method performance is in control. Data are reported with appropriate qualifiers or discussion.

3.4 FIELD PARAMETERS AND QUALITY ASSURANCE OBJECTIVES

Water quality parameters consisting of pH, conductivity, dissolved oxygen, salinity, temperature, and turbidity will be measured to provide general surface water and groundwater quality information. These parameters will also be monitored for stability during purging of groundwater monitoring wells. Field test methods that will be utilized to measure these specific parameters will be presented in detail in site-specific Field Activity Plans.

Field screening of soil samples using a photoionization detector will be performed to assess the presence and relative concentrations of volatile organic vapors. The method for quantification of soil volatile organic compounds (VOCs) using headspace measurement, as well as operational protocols of the photoionization detector, will be presented in site-specific Field Activity Plans. Soil vapor, indoor/outdoor air, and soil/sediment sampling locations and monitoring wells will be surveyed with the accuracy and precision requirements discussed in site-specific Field Activity

Plans. Ground surface and top-of-casing elevations for each newly installed monitoring wells will be measured to the nearest 0.01 feet as referenced to the National Geodetic Vertical Datum of 1929.

For field QC data, no QA objectives have been determined by the NYSDEC. Field QC data will be maintained primarily for descriptive purposes and data variability. The Site Manager will be responsible for reviewing and evaluating the field QC data.

Similar samples will be collected using consistent sampling methods, analyzed using consistent analytical procedures, and reported in conventional units (e.g., micrograms per liter [µg/L], milligram per kilogram [mg/kg], and micrograms per cubic meter [$\mu g/m^3$] for analytical results). Therefore, the data will be comparable throughout the project.

3.5 DETECTION AND QUANTITATION LEVELS

In addition, analytical sensitivity is an important component of data quality, and is evaluated using analyte detection and quantitation levels.

3.5.1 Detection Limits

A detection limit has been defined by the Committee on Environmental Improvement of the American Chemical Society (Anal. Chem. 55:2210-2218 [1983]) as "the lowest concentration that can be determined to be statistically different from a blank." Various methods are available for determining detection limits, most of which are based on the standard deviation of measurements in the region near the blank responses. The following detection limits are determined routinely in the laboratory.

Instrument detection limits (IDLs) are determined using the protocols given in the inorganic and organic statements of work for the EPA Contract Laboratory Program (CLP). A standard deviation is calculated from replicate measurements of a low-level standard and multiplied by 3 to give the IDL. IDLs are used as an index of instrument performance that does not include sample effects; and therefore, represent the lowest detection limit achievable. IDLs can vary between instruments of the same type and can change when re-determined.

Method detection limits (MDLs) are determined using the EPA procedure published in 40 Code of Federal Regulations 136 Appendix B. The MDL is defined as "the minimum measured concentration of a substance that can be reported with 99 percent confidence that the measured concentration is distinguishable from method blank results." This procedure requires that sample processing steps of the analytical method be included in the determination of the MDL. Therefore, the sample matrix and sample preparation process, as well as the analytical instrumentation, influence MDLs. The value calculated from the spiked samples is called the MDLs. Spiked samples are prepared by the lab from a clean reference matrix, such as reagent water, and spoked with a known quantity of the analyteThe method blank samples are used to calculate the MDL_b, which is a very similar calculation that also calculates the 99 percent confidence level that the result is derived from the sample rather from contamination/noise. The MDL is the higher of the

two values (either the MDL_S calculated using spiked samples or the MDL_b calculated using method blanks). Because of the wide variety of matrix types analyzed by the laboratory, MDLs are routinely determined in reagent water or standard solid matrix. These MDLs represent; therefore, the optimum values, and the MDLs for actual sample matrices are likely to be higher. MDLs can be determined for specific matrices when requested by NYSDEC.

Unless superseded by other program, work assignment, or NYSDEC requirements, IDLs and MDLs are determined annually by the laboratories. In addition, IDLs and MDLs are re-determined after an instrument is moved or modified, and MDLs are re-determined after a method has been significantly changed. Where more than one instrument is used in sample analyses by a given technique (e.g., gas chromatograph/mass spectrometry, gas chromatograph, graphite furnace atomic absorption, or inductively coupled plasma), detection limit studies are performed for each instrument. A standard laboratory reporting limit is determined for each analyte based on the highest detection limit determined. Data for instruments are maintained for use in reporting data when project-specific requirements dictate lower detection limits.

When interpreting data and detection limits, it is important to remember that, when a measured concentration is greater than the detection limit, the analyte has the specified probability of actually being present (i.e., of having a true concentration greater than zero); however, the detection limit cannot be used to say anything about the presence or absence of an analyte that has a measured concentration less than the detection limit. From the definition of the MDL, there is a 1 percent chance that a sample with no analyte will produce a concentration greater than or equal to the MDL (false-positive). The probability is 50 percent; however, that a sample with a concentration at the MDL will be measured at less than the MDL (false-negative).

3.5.2 Quantitation Levels

To ensure better precision in low-level data and to reduce the false-negative error rate, quantitation limits have been proposed as the minimum concentration at which an analyte can be quantified with an acceptable degree of confidence. The American Chemical Society Committee on Environmental Improvement has recommended that quantitation limits be calculated by multiplying 10 times the standard deviation, giving a relative standard deviation of 10 percent. The Committee further advised that quantitative interpretation, decision making, and regulatory actions should be limited to data at or above the limit of quantitation. The laboratories will use the term “reporting limit” for the laboratory quantitation limit.

3.5.3 Project-Specific Quality Control and Reporting Limits

Reporting limits applicable to work assignments are presented in Tables 1A-1J. The relevant tables were prepared based on New York State Department of Health Soil Vapor/Indoor Air Decision Matrices, 6 New York Code of Rules and Regulations Part 375 Soil Cleanup Objectives, and NYSDEC Groundwater Criteria and EPA CLP Contract Required Quantitation Limits, which will be reviewed by the contracting laboratories. Any site-specific revisions will be addressed in the site-specific QAPP Addendums.

4. SAMPLING AND SAMPLE CUSTODY PROCEDURES

4.1 FIELD SAMPLING OPERATIONS

The collection and subsequent laboratory analyses of environmental samples will provide the majority of the data collected during the standby contract work assignments. The number and types of analyses to be performed and the matrix of each of the samples will be detailed in each site-specific Work Plan.

4.1.1 Sample Bottle Preparation

Chain-of-custody procedures begin with preparation of sample containers and preservatives to be used in sample collection. The contract laboratories will provide cleaned sample containers. Batch or Individual certified-clean Summa® canisters will be provided by contract laboratories. Sample kits (coolers containing chain-of-custody forms, custody seals, sample containers, preservatives, and packing materials) will be prepared by the contract laboratories in response to receipt of the analytical task order submitted by the Project Manager.

Container, preservation, and holding time requirements for aqueous and soil samples will be summarized in site-specific QAPP Addendums.

4.1.2 Sampling Procedures

Sampling protocols will be presented in site-specific Field Activity Plans. The protocols include standard sampling procedures for sample collection, accurate sample identification, and packing of samples for shipment. Each sample container is provided with a sample label, which is filled out at the time of sample collection. During sample collection, a chain-of-custody form is initiated, which accompanies the samples during shipment to the analytical laboratory.

4.2 LABORATORY SAMPLE RECEIPT

Upon receipt at the laboratory, a laboratory representative inspects the samples for integrity and checks the shipment against the chain-of-custody/analytical task order form. Discrepancies are addressed at this point and documented on the chain-of-custody form and the cooler checklist (an example will be provided in site-specific Field Activity Plans). Discrepancies are reported to the Laboratory Project Manager who contacts the Project Manager for resolution.

When the shipment and the chain-of-custody are in agreement, the custodian enters the samples into the Laboratory Information Management System and assigns each sample a unique laboratory number. This number is affixed to each sample bottle. The custodian then enters the sample and analysis information into the laboratory computer system.

4.2.1 Laboratory Sample Custody

The laboratory must satisfy the sample chain-of-custody requirements by implementing the following SOPs 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)
- Transfers of samples in and out of storage are documented.

4.2.2 Sample Storage, Security, and Disposal

While in the laboratory, the samples and aliquots that require storage at 4 degrees Celsius (°C) ± 2°C are maintained in a locked refrigerator unless they are being used for analysis. The laboratory is responsible for sample storage and security to ensure that:

- Samples and extracts are stored for 60 days after the final analytical data report has been forwarded to the client. The samples, extracts, and digestates are then discarded in accordance with Occupational Safety and Health Administration guidance.

- Samples are not stored with standards or sample extracts.

5. CALIBRATION PROCEDURES AND FREQUENCY

Instruments and equipment used for analytical procedures are controlled by a formal calibration program, which verifies that equipment is of the proper type, range, accuracy, and precision to provide data compatible with specified requirements. Instruments and equipment that measure a quantity, or whose performance is expected at a stated level, are subject to calibration. Calibration is performed using reference standards or externally by calibration agencies or equipment manufacturers.

5.1 CALIBRATION SYSTEM

The following sections contain a discussion of the elements comprising the calibration system.

5.1.1 Calibration Procedures

Written procedures are used for all instruments and equipment subject to calibration. Whenever possible, recognized procedures, such as those published by the American Society of Testing and Materials or EPA, or procedures provided by manufacturers, are adopted. If established procedures are not available, a procedure is developed considering the type of equipment, stability characteristics of the equipment, required accuracy, and the effect of operational error on the quantities measured.

5.1.2 Calibration Frequency

Calibration frequency is based on the type of equipment, inherent stability, manufacturer's recommendations, values provided in recognized standards, intended data use, specified analytical methods, effect of error upon the measurement process, and prior experience.

5.1.3 Calibration Reference Standards

Two types of reference standards will be used by the contract laboratories for calibration:

- **Physical standards**, such as weights for calibrating balances and certified thermometers for calibrating working thermometers, refrigerators, and ovens, are generally used for periodic calibration.

- **Chemical standards**, such as Standard Reference Materials provided by the National Institute of Standards and Technology or EPA. These may include vendor-certified materials traceable to National Institute of Standards and Technology or EPA Standard Reference Materials. These are primarily used for operational calibration.

5.1.4 Calibration Failure

Equipment that cannot be calibrated or becomes inoperable is removed from service. Such equipment must be repaired and satisfactorily recalibrated before re-use. For laboratory equipment that fails calibration, analysis cannot proceed until appropriate corrective action is taken and the

analyst achieves an acceptable calibration. This is documented in a Non-Conformance Record, which is discussed in Section 11. Laboratory managers are responsible for development and implementation of a contingency plan for major equipment failure. The plan includes guidelines on waiting for repairs, use of other instrumentation, subcontracting analyses, and evaluating scheduled priorities.

5.1.5 Calibration Records

Records are prepared and maintained for each piece of equipment subject to calibration. Records demonstrating accuracy of preparation, stability, and proof of continuity of reference standards are also maintained. Copies of the raw calibration data are kept with the analytical sample data.

5.2 OPERATIONAL CALIBRATION

Operational calibration is generally performed as part of the analytical procedure and refers to those operations in which instrument response (in its broadest interpretation) is related to analyte concentration. Included are the preparation of standard response (calibration) curves and often the analysis of blanks.

5.2.1 Preparation of Calibration Curve

Preparation of a standard calibration curve is accomplished by the analysis of calibration standards, which are prepared by adding the analyte(s) of interest to the solvent that is introduced into the instrument. The concentrations of the calibration standards are chosen to cover the working range of the instrument or method. Sample measurements are made within this working range. The calibration curve is prepared by plotting or regressing the instrument responses versus the analyte concentrations. Concentrations of the analyzed samples are back-calculated from the calibration curve.

5.2.2 Blanks

Reagent and/or solvent blanks are analyzed to assess if the materials used to prepare the standards are free from interfering substances that could affect the analysis. A method blank is prepared whenever samples are processed through steps that are not applied to the calibration standards.

5.3 PERIODIC CALIBRATION

Periodic calibrations are performed for equipment (e.g., balances, thermometers) that is required in the analytical method, but that is not routinely calibrated as part of the analytical procedure. The periodic calibration requirements used by contract laboratories are provided in Table 2.

5.4 FIELD EQUIPMENT CALIBRATION

The procedures and frequencies for the calibration of field equipment are provided in Table 3.

6. ANALYTICAL PROCEDURES

6.1 FIELD ANALYTICAL PROCEDURES

Field analytical procedures include the measurement of temperature, conductivity, dissolved oxygen, pH, turbidity, organic vapors, and groundwater levels. Specific field measurement protocols will be described in greater detail in site-specific Field Activities Plans. Field measurement QC limits in terms of precision and accuracy are presented in Table 4.

6.2 LABORATORY ANALYTICAL PROCEDURES

Laboratory analytical requirements presented in the subsections below include a general summary of requirements related to each sample matrix to be analyzed.

Concentrations of target compounds and analytes will be analyzed according to the laboratory-specific method SOPs approved by the NYSDEC Analytical Services Protocol[2] and EPA SW-846 Methods listed in the table below. Low-level analysis of 1,4-dioxane is performed using SW846 Method 8270 or 8260, although 8270 can offer lower reporting limits. Per- and polyfluoroalkyl substances (PFAS) analytical methods are presently limited to groundwater EPA Method 537.1 , and ISO Method 25101 for drinking water. site-specific QAPPs should reflect the current understanding of analyses at the time of sampling, and reference NYSDEC's January 2020 *Guidelines for Sampling and Analysis of PFAS*. Additional information regarding the number and types of samples to be collected at each area of concern will be presented in site-specific Work Plans.

Analyte List	Matrices	Method No.
EPA CLP Target Compound List organics (VOCs/semi-volatile organic compounds [SVOCs])(1)	Groundwater, surface water, surface and subsurface soil, sediment, and debris	CLP Method OLM02.4 for VOCs CLP Method OLM02.4 for SVOCs including 1,4-dioxane by SIM ***or*** EPA SW-846 Method 8260 for VOCs EPA SW-846 Method 8270 for SVOCs EPA SW-846 Method 8270 SIM for 1,4-dioxane (aqueous)
EPA CLP Target Analyte List metals	Groundwater, surface water, surface and subsurface soil, sediment, and debris	CLP Method ISM02.4 or EPA SW-846 Method 6010 Mercury by EPA SW-846 Method 7470 (liquid) or 7471 (solid)
Polychlorinated biphenyls	Groundwater, surface water, surface and subsurface soil, sediment, and debris	EPA SW-846 Method 8082 or CLP Method OLM02.4
PFAS Analyte List (21 compounds)	Groundwater, surface water, drinking water, surface and subsurface soil, sediment, and debris	EPA Method 537.1 ISO 25101 (drinking water)
VOCs	Air and Soil Vapor	EPA TO-15

(1) Specific method to be used for VOC or SVOC analyses will be identified in each project-specific QAPP Addendum
(2) SIM Selected Ion Monitoring.

[2] NYSDEC. 2001 (as revised). *Analytical Services Protocol.*

Samples will be analyzed by the laboratory within the holding times presented in site-specific Field Activities Plans on a standard turnaround schedule.

6.3 SAMPLE MATRICES

6.3.1 Water

No filtering of groundwater samples will be performed unless pre-approved under a site-specific Field Activities Plan. Field filtration of surface water may be required and will be addressed in the project-specific QAPP Addendum, if necessary. Analytical results for analyses will be reported in units identified in Tables 1A-1J.

6.3.2 Soil, Sediment, and Debris

Analytical results of soil, sediment, and debris samples will be reported in terms of dry weight in the units identified in Tables 1A-1J.

6.3.3 Soil Vapor and Indoor/Outdoor Air

Analytical results for soil vapor and indoor/outdoor air samples will be reported in terms of volume in the units identified in Tables 1A-1J.

6.4 STANDARD OPERATING PROCEDURES

The contract laboratories will maintain a manual of procedures other than laboratory-specific analytical methods in a document-controlled SOP Manual. Laboratory Method SOPs will be maintained as controlled documents in the laboratory's Methods Manuals.

6.5 RECORDKEEPING

The requirements for laboratory recordkeeping are given in the laboratory's SOP Manual. Data entries are made in indelible, water-resistant ink. The date of the entry and the observer are clear on each entry. The observer uses his/her full name or initials. An initial and signature log is maintained so that the recorder of every entry can be identified. Information is recorded in a notebook or on other records at the time the observations are made. Recording information on loose pieces of paper is not allowed.

When a mistake is made, the wrong entry is crossed out with a single line initialed and dated by the person making the entry, and the correct information recorded. Obliteration of an incorrect entry or writing over it is not allowed; neither is the use of correction tape or fluid on any laboratory records.

7. FIELD AND LABORATORY QUALITY CONTROL CHECKS AND FREQUENCY

QC measurements for analytical protocols are designed to evaluate laboratory performance and measurement biases resulting from the sample matrix and field performance.

- ***Laboratory Method Performance***—QC criteria for method performance must be met for all target analytes for data to be reported. These criteria generally apply to instrument tune, calibration, method blanks, laboratory control samples, and Standard Reference Materials.

- ***Sample Performance***—The accuracy and precision of sample analyses are influenced by both internal and external factors. Internal factors are those associated with sample preparation and analysis. Internal factors are monitored by the use of laboratory QC samples. QC field samples are analyzed to determine any measurement bias due to the sample matrix based on evaluation of matrix spikes, matrix spike duplicates, and laboratory duplicates.

- ***Field Performance***—QC samples are used to evaluate the effectiveness of the sampling program to obtain representative samples, eliminating any cross contamination.

7.1 LABORATORY QUALITY CONTROL SAMPLES

Laboratory QC samples are included in each analysis to provide information on both method performance and sample measurement bias and are included in each analytical batch. A batch is defined as a group of field samples of similar matrix, not to exceed 20, which are processed as a unit using the same method and the same lots of standards and reagents. The laboratory QC samples discussed in the following sections are not counted in the maximum batch size of 20.

7.1.1 Method Blank

The method blank is used to monitor laboratory contamination. This is usually a sample of laboratory reagent water, or a standard solid matrix, processed through the same analytical procedure as the sample (i.e., digested, extracted, distilled). One method blank is prepared and analyzed with each analytical batch.

7.1.2 Laboratory Control Sample

A fortified method blank is analyzed with each analysis. These samples generally consist of a standard solid matrix or laboratory water fortified with the analytes of interest for single-analyte methods and selected analytes for multi-analyte methods according to the appropriate analytical method. The analyte recovery from each is used to monitor analytical accuracy and precision.

7.1.3 Matrix Spike

A matrix spike is an aliquot of a field sample, which is fortified with the analyte(s) of interest and analyzed to monitor measurement bias associated with the sample matrix. A matrix spike duplicate will be performed for every analytical batch.

7.1.4 Surrogates

Surrogates are organic compounds that are similar to analytes of interest in chemical composition, extraction, and chromatography, but are not normally found in environmental samples. Surrogates are added to field and QC samples in every batch. These compounds are used to monitor system performance, as well as sample measurement bias. Percent recoveries are calculated for each surrogate and evaluated against acceptance criteria.

7.2 FIELD QUALITY CONTROL SAMPLES

These samples are not included specifically as laboratory QC samples but are analyzed when submitted. Data for these QC samples are reported with associated samples.

7.2.1 Field/Rinsate Blanks

Field/rinsate blanks will be collected to evaluate the cleanliness of aqueous sampling equipment and sampling bottles, and the potential for cross-contamination of samples due to equipment handling and/or contaminants in the air. Field blanks will be collected at a frequency of one per 20 decontamination event for each type of sampling equipment (e.g., a groundwater bailer for groundwater) and, at a minimum, one per equipment type and/or media per day. Field/rinsate blanks will not be collected in conjunction with the air/vapor samples.

Field/rinsate blanks will be collected prior to the occurrence of any analytical field sampling event by pouring deionized or potable water over a piece of sampling equipment and into a sample container. The analytical laboratory will provide field blank water and sample jars with preservatives for the collection of all field blanks. Glass jars will be used for organic blanks. The field blanks, as well as the trip blanks, will accompany field personnel to the sampling location. The field blanks will be analyzed for the same analytes as the environmental samples being collected that day and shipped with the samples.

Field blanks will be collected in accordance with the procedures described below:

- Decontaminate sampler using the procedures specified in the site-specific QAPP addendum.

- Pour distilled/deionized water over the sampling equipment and collect the rinsate water in the appropriate bottles.

- Immediately place sample in a cooler and maintain a temperature of 4ºC until receipt by the laboratory.

- Fill out sample log, labels, and chain of custody forms, and record in field logbook.

7.2.2 Trip Blanks

The trip blank will be used to determine if any volatile organic cross-contamination occurs between aqueous samples during shipment. They are only appropriate for volatile organic samples in water. Trip blanks will be supplied by the analytical laboratory as aliquots of distilled, deionized water that will be sealed in a sample bottle prior to initiation of each day of field work. Glass vials (40 milliliters) with Teflon®-lined lids will be used for trip blanks. The sealed trip blank bottles will be placed in a cooler with the empty sample bottles and shipped to the site by laboratory personnel. If multiple coolers are necessary to store and transport aqueous VOC samples, then each cooler must contain an individual trip blank. Trip blanks will not be collected in conjunction with the air/vapor samples.

7.2.3 Field Duplicates

Field duplicates are two samples of the same matrix, which are collected, to the extent possible, from the same location at the same time using the same techniques. Field duplicates provide information on the precision of the sampling and analysis process. Field duplicates will be collected at a frequency of 1 duplicate per 20 sample media. Separate duplicate samples will be collected for the following media: surface and subsurface soil, sediment, surface water, groundwater, air, and soil vapor samples.

7.2.4 Temperature Blanks

Laboratory will use either an infrared instrument to measure the temperature of liquid samples or a temperature blank will be used to measure the temperature of liquid samples. If used, temperature blanks will be supplied by the analytical laboratory. If multiple coolers are necessary to store and transport aqueous samples, then each cooler must contain an individual temperature blank.

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8. PREVENTIVE MAINTENANCE

Periodic preventive maintenance is required for all sensitive field equipment. Instrument manuals will be kept on file for reference if equipment needs repair. The troubleshooting chapter of factory manuals may be used in assisting personnel in performing maintenance tasks. The frequency of preventive maintenance for field equipment is indicated in each operating instruction manual. Field equipment is checked by field personnel under the supervision of the Site Manager. It is the responsibility of EA's Technical Services Group's Site Manager to conduct preventive maintenance. A summary of a general preventative maintenance schedule is provided in Table 5.

Major instruments in the laboratory are covered by annual service contracts between the laboratory and the manufacturers. Under these agreements, regular preventive maintenance visits will be made by trained service personnel. Maintenance is documented and maintained in permanent records by the individual responsible for each instrument.

Laboratory management is responsible for preparation and implementation of the program, including verification of compliance. The laboratory preventive maintenance program includes the following:

- Listing of the instruments and equipment that are included in the program
- Frequency of maintenance considering manufacturer's recommendations and/or previous experience with equipment
- For each instrument in the program, a file is maintained for the following information:
  - List of spare parts maintained by the laboratory
  - External service contracts
  - Items to be checked and/or serviced during maintenance and directions for performing maintenance (if external service is not provided of if not stated in manufacturer's instrument manuals).

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9. QUALITY ASSURANCE PERFORMANCE AND SYSTEM AUDITS

Audits are systematic checks to determine the quality of operation of some activity or function in the field or laboratory. One field audit will be conducted to assure adherence to proper field and sampling procedures. Audits are of two types:

- ***Performance audits*** are independent safety and health, procedure, and/or sample checks made by a supervisor or auditor to arrive at a **quantitative** measure of the quality of the data produced by one section or the entire measurement process.

- ***System audits*** are onsite **qualitative** inspections and reviews of the QA system used by some part of or the entire measurement system. The audits are performed against the QAPP. A checklist is typically generated from the requirements and becomes the basis for the audit. The results of any deficiencies noted during the audit are summarized in an audit report.

Laboratory performance and system audits are performed by the QA staff to assess the effectiveness of the quality system. These internal audits are performed on a routine basis. Audits are also performed by certifying agencies. Audit reports and corrective actions are available to NYSDEC for review.

9.1 RESPONSIBILITY, AUTHORITY, AND TIMING

QA audits to be conducted for the project may include system, performance, and data audits. The Project QA Officer will keep a tentative schedule on record that details the number and types of audits.

9.2 FIELD AUDITS

Field performance audits will be conducted on an ongoing basis during a work assignment as field data are generated, reduced, and analyzed. Numerical manipulations, including manual calculations, will be documented. Records of numerical analyses will be legible, of reproduction quality, and sufficiently complete to permit logical reconstruction by a qualified individual other than the originator.

Indicators of the level of field performance include the analytical results of the blank and replicate samples. Each blank analysis will be considered an indirect audit of the effectiveness of measures taken in the field to ensure sample integrity (e.g., field decontamination procedures). The results of the field replicate analyses are an indirect audit of the ability of each field team to collect representative sample portions of each matrix type.

System audits of site activities will be accomplished by an inspection of all field site activities. During this audit, the auditor(s) will compare current field practices with standard procedures. The following elements will be evaluated during a field system audit:

- Activities conducted in accordance with the Work Plan
- Procedures and analyses conducted according to procedures outlined in the QAPP and Addendum
- Sample documentation
- Working order of instruments and equipment
- Level of QA conducted per each field team
- Contingency plans in case of equipment failure or other event preventing the planned activity from proceeding
- Decontamination procedures
- Level of efficiency with which each team conducts planned activities at one site and proceeds to the next
- Sample packaging and shipment.

After completion of the audit, any deficiencies will be discussed with the field staff and corrections identified. If any of these deficiencies could affect the integrity of the samples being collected, the auditor(s) will inform the field staff and corrections will be implemented immediately. The audit will be performed by the Project QA/QC Coordinator or the Site Manager.

9.3 LABORATORY PERFORMANCE AND SYSTEM AUDITS

The New York State Department of Health Environmental Laboratory Analytical Program CLP-certified laboratory that has satisfactorily completed performance audits and performance evaluation samples will be used for all sample analysis. The results of the most recent performance audits and performance evaluations will be made available upon request.

9.4 AUDIT PROCEDURES

Prior to an audit, the designated lead auditor prepares an audit checklist. During an audit and upon its completion, the auditor(s) will discuss the findings with the individuals audited and discuss and agree on corrective actions to be initiated. The auditor will then prepare and submit an audit report to the manager of the audited group and the Project Manager.

The manager of the audited group will then prepare and submit, to the Project QA Officer and the Project Manager, a plan for implementing the corrective action to be taken on non-conformances indicated in the audit report, the date by which such corrective action will be completed, and actions taken to prevent reoccurrence. If the corrective action has been completed, supporting

documentation should be attached to the reply. The auditor will ascertain (by re-audit or other means) if appropriate and timely corrective action has been implemented.

Records of audits will be maintained in the project files.

9.5 DOCUMENTATION

To ensure that the previously defined scope of the individual audits is accomplished and that the audits follow established procedures, a checklist will be completed during each audit. The checklist will detail the activities to be executed and ensure that the auditing plan is accurate. Audit checklists will be prepared in advance and will be available for review. Following each system, performance, and data audit, the Quality Services Manager will prepare a report to document the findings of the specific audit.

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10. DATA REDUCTION, VALIDATION, AND REPORTING

10.1 DATA REDUCTION

10.1.1 Field and Technical Data Reduction

Field personnel will record field data in bound field logbooks and on standard forms. After checking the validity of the data in the field notes, the Site Manager or his/her designee will reduce the data to tabular form, when possible, by entering the data into data files. Where appropriate, the data files will be set up for direct input into a work assignment database. Subjective data will be filed as hard copies for later review by the Project Manager and incorporation into technical reports, as appropriate.

10.1.2 Laboratory Data Reduction

Data reduction is the process by which raw analytical data generated from laboratory instrument systems is converted into usable concentrations. The raw data, which may take the form of area counts, instrument responses, or observations, are processed by the laboratory and converted into concentrations expressed in the parts per million or parts per billion range. Raw data from these systems include compound identifications, concentrations, retention times, and data system print-outs. Raw data are usually reported in graphic form, bar graph form, or tabular form. The laboratory will follow SOPs consistent with the data handling requirements of the applicable methods.

The laboratory reporting limits for each site must be less than or equal to those stipulated by each work assignment. The reporting limits will be presented in site-specific QAPP Addendum.

10.2 VALIDATION

10.2.1 Field and Technical Data Validation

Validation of objective field and technical data will be performed at two different levels. The first level of data validation will be performed at the time of collection by following standard procedures and QC checks. The Site Manager, who will review the data to ensure that the correct codes and units have been included, will complete the second level of data validation. After data reduction into tables and arrays is complete, the Site Manager will review data sets for anomalous values. The Project Manager, who will review field reports for reasonableness and completeness, will validate subjective field and technical data. In addition, the Site Manager will conduct random checks of sampling and field conditions.

10.2.2 Analytical Data Validation

If a work assignment requires the validation of analytical data, data validation will be performed to establish the data quality for work assignment data that are to be considered when making project decisions. Laboratories will submit results that are supported by sufficient back-up data and QA/QC results to enable the reviewer to conclusively determine the quality of the data. The

laboratory will review data prior to its release from the laboratory. Objectives for review are in accordance with the QA/QC objectives stated in each site-specific QAPP Addendum. The laboratory is required to evaluate their ability to meet these objectives. Outlying data will be flagged in accordance with laboratory SOPs and corrective action will be taken to rectify the problem.

A NYSDEC-approved qualified independent third-party data validator will review the data package to determine completeness and compliance in accordance with Attachment 1 (Scope of Services), Work Element V (Analytical QA/QC Activities) of the Standby Contract No. D009806 (**Appendix A**).

A narrative describing how the data did or did not meet the validation criteria is part of the data validation procedure. The validation assessment will describe the overall quality of the data and the data validation report will provide a written statement upon completion of the validation indicating whether or not the data are valid and usable and include a percent completeness value of usable data.

10.2.3 Data Usability Summary Report

A Data Usability Summary Report (DUSR) provides a thorough evaluation of analytical data without the third-party data validation. The primary objective of a DUSR is to determine whether or not the data, as presented, meet the site/project specific criteria for data quality and data use. If a work assignment requires a DUSR, the DUSR will be developed by a NYSDEC-approved qualified environmental scientist in accordance with Attachment 1 (Scope of Services), Work Element V (Analytical QA/QC Activities) of the Standby Contract No. D009806 (**Appendix A**).

10.3 REPORTING

10.3.1 Field Measurements

Any field analysis results will be recorded in a dedicated field logbook at the time the results are available. The results will be tabulated and plotted in the office as part of the reporting tasks. Reports also will consist of the field logbook, required standard forms, photographic documentation, and daily QC reports.

10.3.2 Analytical Data

The content of analytical laboratory data packages designed for work conducted during a work assignment are site-specific and will include the following information:

- Pertinent physical data presented in concise, easy to follow formats (i.e., sample, number, client, date of sample preparation, date analyzed, percent moisture, etc.)

- Reference for analytical methodology used

- General discussion including a description of sample types, tests performed, any problems encountered, and general comments

- Data from each discrete sample reported using cross-referencing between normal samples and QC samples and including all pertinent dates, information, and reporting limits

- Reported data to include associated QC samples such as blanks, spikes and spike duplicates, laboratory duplicates, field duplicates, and appropriate check standards

- EDD that meet the NYSDEC EDD requirements

- Copies of chain-of-custody sheets

- Raw data.

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11. CORRECTIVE ACTION PROCEDURE DESCRIPTION

11.1 OBJECTIVES

The objectives of the corrective action procedures presented below are to ensure that recognized errors in performance of sample and data acquisition lead to effective remedial measures and that those steps are documented to provide assurance that any data quality deficiencies are recognized in later interpretation and are not recurrent.

11.2 RATIONALE

Many times, corrective measures are undertaken in a timely and effective fashion but go undocumented. In other cases, corrective actions are of a complex nature and may require scheduled interactions between departmental groups. In either case, documentation in a formal or informal sense can reinforce the effectiveness and duration of the corrective measures taken.

11.3 CORRECTIVE ACTION METHODS

11.3.1 Immediate Corrective Actions

Immediate corrective actions are of a minor or routine nature such as correcting malfunctioning equipment, correction of data transcription errors, and other such activities routinely made in the field, laboratory, or office by technicians, analysts, and other project staff.

11.3.2 Long-Term Corrective Actions

Long-term corrective action will be used to identify and eliminate causes of non-conformances which are of a complex nature and that are formally reported between management groups.

11.3.2 Corrective Action Steps

For long-term corrective actions, steps comprising closed-loop corrective action systems are as follows:

- Define the problem
- Assign responsibility for investigating the problem
- Investigate and determine the cause of the problem
- Determine a corrective action to eliminate the problem
- Assign and accept responsibility for implementing the corrective action
- Verify that the corrective action has eliminated the problem.

Non-conformance events associated with analytical work are documented by the laboratories' Non-Conformance Records, which are reviewed and approved by the Quality Services Manager.

11.3.3 Audit-Based Non-Conformances

Following audits, corrective action is initiated by documenting the audit finding and recommended corrective action on an audit finding report.

11.4 CORRECTIVE ACTION REPORT REVIEW AND FILING

Immediate and long-term corrective actions require review to assure that, during the time of non-conformance, erroneous data were not generated or that, if possible, correct data were acquired instead. Such confirmation and review is the responsibility of the supervisor of the staff implementing the corrective action. Confirmation will be acknowledged by notation and dated signature on the affected data record or appropriate form or by memorandum to cognizant project management.

11.5 CORRECTIVE ACTION REPORTS TO MANAGEMENT

The Project QA Officer will provide project management with corrective action reports. The Project Manager is informed verbally of non-conformance events as soon as possible and decisions made after evaluation are documented in the Non-Conformance Records. A copy of each Non-Conformance Record is maintained in the report.

12. QUALITY ASSURANCE/QUALITY CONTROL REPORTS

Fundamental to the success of this QA/QC is the active participation of the Project Manager and the Project QA Officer. The Program QA Officer will be advised of work assignment activities and will participate in development, review, and operation of the project. Project management will be informed of QA activities through the receipt, review, and/or approval of:

- Project-specific QA project plans
- Corporate and project-specific QA/QC plans and procedures
- Corrective action notices
- Non-conformance records.

Periodic assessment of field and laboratory QA/QC activities and data accuracy, precision, and completeness will be conducted and reported by the laboratory. Items to be included in the QA reports are the summary of results for the performance or the system audit, and where applicable:

- Assessment of adherence to work scope and schedule for the audited task
- Assessment of the precision, accuracy, and completeness of sample batches and subsequent status of data processing and analyses
- Significant QC problems and the status of any ongoing corrective actions
- Changes to the site-specific Work Plan
- Status of implementation of the site-specific Work Plan.

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Tables

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Table 1-A Analytical Reporting Limits EPA Method 8260b
Volatile Organic Compounds: Water and Soil

Analyte	Reporting Limit	
	Groundwater (µg/L)	Soil (ppm)
1,1,1,2-Tetrachloroethane	0.5	0.005
1,1,1-Trichloroethane	0.5	0.005
1,1,2,2-Tetrachloroethane	0.5	0.005
1,1,2-Trichloroethane	0.5	0.005
1,1-Dichloroethane	0.5	0.005
1,1-Dichloroethene	0.5	0.005
1,1-Dichloropropene	0.5	0.005
1,2,3-Trichloropropane	0.04	0.005
1,2-Dibromo-3-chloropropane	0.04	0.005
1,2-Dibromoethane	0.5	0.005
1,2-Dichlorobenzene	0.5	0.005
1,2-Dichloroethane	0.5	0.005
1,2-Dichloropropane	0.5	0.005
1,3-Dichlorobenzene	0.5	0.005
1,3-Dichloropropane	0.5	0.005
1,4-Dichlorobenzene	0.5	0.005
2,2-Dichloropropane	0.5	0.005
2-Butanone	10	0.01
2-Chlorotoulene	0.5	0.005
2-Hexanone	10	0.01
4-Chlorotoulene	0.5	0.005
4-Methyl-2-pentanone	0.5	0.005
Acetone	10	0.02
Benzene	0.5	0.005
Bromobenzene	0.5	0.005
Bromochloromethene	0.5	0.01
Bromodichloromethane	0.5	0.005
Bromoform	1	0.005
Bromomethane	1	0.01
Carbon disulfide	0.5	0.005
Carbon tetrachloride	0.5	0.005
Chlorobenzene	0.5	0.005
Chloroethane	1	0.01
Chloroform	0.5	0.005
Chloromethane	1	0.01
cis-1,2-dichloroethene	0.5	0.005
cis-1,3-dichloropropene	0.5	0.005
Dibromochloromethane	0.5	0.005
Dibromomethane	0.5	0.005
Dichlorodifluoromethane	0.5	0.005
Ethylbenzene	0.5	0.005
Isopropylbenzene	0.5	0.005
Methlyene chloride	5	0.02
n-Propylbenzene	0.5	0.005
Styrene	0.5	0.005
Tetrachloroethene	0.5	0.005
Toluene	0.5	0.005
trans-1,2-dichloroethene	0.5	0.005
trans-1,3-dichloropropene	0.5	0.005
Trichloroethene	0.5	0.005
Vinyl chloride	0.5	0.01
Xylene (Total)	0.5	0.005

NOTES: µg/L = Microgram(s) per liter
ppm = Parts per million

Table 1-B Analytical Reporting Limits EPA Method 8270c
Semi-Volatile Organic Compounds: Water and Soil

Analyte	Reporting Limit ppb	
	Groundwater (µg/L)	Soil (ppm)
1,4-Dioxane	0.2	0.067
1,2,4-Trichlorobenzene	5	0.067
1,2-Dichlorobenzene	3	0.33
1,3-Dichlorobenzene	3	0.33
1,4-Dichlorobenzene	3	0.33
2,2-oxybis(1-Chloropropane)	10	0.33
2,4,5-Trichlorophenol	10	0.33
2,4,6-Trichlorophenol	10	0.33
2,4-Dichlorophenol	5	0.33
2,4-Dimethylphenol	10	0.33
2,4-Dinitrophenol	10	0.67
2,4-Dinitrotoulene	5	0.33
2,6-Dinitrotoulene	5	0.33
2-Chloronapthalene	10	0.33
2-Chlorophenol	10	0.33
2-Methylnapthalene	10	0.33
2-Methylphenol	10	0.33
2-Nitroaniline	5	0.67
2-Nitrophenol	20	0.67
3,3-Dichlorobenzidine	5	0.67
3-Nitroaniline	5	0.67
4,6-Dinitro-2-methylphenol	20	0.67
4-Bromophenyl phenyl ether	10	0.33
4-Chloroaniline	5	0.33
4-Chlorophenyl phenyl ether	10	0.33
4-Cholor-3-methylphenol	10	0.33
4-Methylphenol	10	0.33
4-Nitroaniline	5	0.67
4-Nitrophenol	20	0.67
Acenaphthene	10	0.067
Acenaphthylene	10	0.067
Anthracene	10	0.067
Benzo(a)anthracene	0.002	0.33
Benzo(a)pyrene	10	0.067
Benzo(b)fluoranthene	0.002	0.067
Benzo(g,h,I)perylene	10	0.067
Benzo(k)fluoranthene	0.002	0.067
Bis(2-Chloroethoxy)methane	5	0.33
Bis(2-chloroethyl)ether	1	0.33
Bis(2-Ethylhexyl)phthalate	5	0.33
Butyl benzyl phthalate	10	0.33
Carbazole	10	0.067
Chrysene	0.002	0.067
Dibenz(a,h)anthracene	10	0.33
Dibenzofuran	10	0.33
Diethyl phthalate	10	0.33
Dimethyl phthalate	10	0.33
Di-n-butyl phthalate	10	0.33
Di-n-octyl phthalate	10	0.33
Fluoranthene	10	0.067

Table 1-B Analytical Reporting Limits EPA Method 8270c
Semi-Volatile Organic Compounds: Water and Soil

Analyte	Reporting Limit ppb	
	Groundwater (µg/L)	Soil (ppm)
Fluorene	10	0.067
Hexachlorobenzene	0.04	0.33
Hexachlorobutadiene	0.5	0.33
Hexachlorocyclopentadiene	5	0.67
Hexachloroethane	5	0.33
Indeno[1,2,3-cd]pyrene	0.002	0.067
Isophorone	10	0.33
Naphthalene	10	0.067
N-Nitroso-di-n-propylamine	10	0.33
Pentachorophenol	1	0.67
Phenanthrene	10	0.067
Phenol	1	0.33
Pyrene	10	0.067

NOTES:
µg/L = Microgram(s) per liter
ppm = Parts per million

Table 1-C Analytical Reporting Limits EPA Method 6010 (Target Analyte List Metals) and EPA Method 7470 (water) or 7471 (soil) for Mercury: Water and Soil

Analyte	Reporting Limit ppm	
	Groundwater (µg/L)	Soil (ppm)
Aluminum	2,000	2.0
Antimony	3	0.6
Arsenic	25	0.1
Barium	1,000	2.0
Beryllium	3	0.05
Cadmium	5	0.05
Calcium	50,000	50.0
Chromium	50	0.1
Cobalt	500	0.5
Copper	200	0.25
Iron	300	1.0
Lead	25	0.03
Magnesium	35,000	50.0
Manganese	300	0.15
Mercury (Method 7470)	0.7	0.002
Nickel	100	0.4
Potassium	50,000	50.0
Selenium	10	0.05
Silver	50	0.1
Sodium	20,000	50.0
Thallium	0.5	0.1
Vanadium	500	0.5
Zinc	5,000	0.2

NOTES:
µg/L = Microgram(s) per liter
ppm = Parts per million

Table 1-D Analytical Reporting Limits EPA Method TO-15 Standard Volatile Organic Compounds: Air

Analyte	Reporting Limit (µg/m3)	
	Standard	Low Level
1,1,1-Trichloroethane	100	1
1,1,2,2-Tetrachloroethane	100	1
1,1,2-Trichloroethane	100	1
1,1,2-Trichlorotrifluoroethane	100	1
1,1-Dichloroethane	100	1
1,1-Dichloroethene	100	1
1,2,4-Trichlorobenzene	100	1
1,2,4-Trimethylbenzene	100	1
1,2-Dibromoethane	100	1
1,2-Dichlorobenzene	100	1
1,2-Dichloroethane	100	1
1,2-Dichloropropane	100	1
1,3,5-Trimethylbenzene	100	1
1,3-Butadiene	100	1
1,3-Dichlorobenzene	100	1
1,4-Dichlorobenzene	100	1
1,4-Dioxane	100	1
2,2,4-Trimethylpentane	100	1
2-Butanone	100	1
2-Hexanone	100	1
4-Ethyltoluene	100	1
4-Methyl-2-Pentanone	100	1
Acetone	100	1
Allyl Chloride	100	1
Benzene	100	1
Benzyl Chloride	100	1
Bromodichloromethane	100	1
Bromoethene	100	1
Bromoform	100	1
Bromomethane	100	1
Carbon Disulfide	100	1
Carbon Tetrachloride	5	0.25
Chlorobenzene	100	1
Chloroethane	100	1
Chloroform	100	1
Chloromethane	100	1
cis-1,2-Dichloroethene	100	1
cis-1,3-Dichloropropene	100	1
Cyclohexane	100	1
Dibromochloromethane	100	1
Dichlorodifluoromethane	100	1
Dichlorotetrafluoroethane	100	1
Ethyl Acetate	100	1
Ethyl Benzene	100	1
Heptane	100	1
Hexachloro-1,3-Butadiene	100	1
Hexane	100	1
Isopropyl Alcohol	100	1

Table 1-D Analytical Reporting Limits EPA Method TO-15 Standard Volatile Organic Compounds: Air

Analyte	Reporting Limit (µg/m3)	
	Standard	Low Level
m/p-Xylene	100	1
Methyl tert-Butyl Ether	100	1
Methylene Chloride	100	1
o-Xylene	100	1
Propene	100	1
Styrene	100	1
t-1,3-Dichloropropene	100	1
Tetrachloroethene	100	1
Tetrahydrofuran	100	1
Toluene	100	1
trans-1,2-Dichloroethene	100	1
Trichloroethene	5	0.25
Trichlorofluoromethane	100	1
Vinyl Acetate	100	1
Vinyl Chloride	100	1

NOTES:
µg/m3 = Microgram(s) per cubic meter

Table 1-E Analytical Reporting Limits EPA Method 8082 (Polychlorinated Biphenyl Compounds Water, Soil, and Sediment)

Constituent	Reporting Limits[a]	
	Water (µg/L)	Soil, Sediment, Debris (ppm)
Aroclor 1016	0.1	0.1
Aroclor 1221	0.1	0.1
Aroclor 1232	0.1	0.1
Aroclor 1242	0.1	0.1
Aroclor 1248	0.1	0.1
Aroclor 1254	0.1	0.1
Aroclor 1260	0.1	0.1
Total polychlorinated biphenyls [b]	0.7	0.1

(a) Reporting limits shown are based on NYSDEC 2000 Analytical Services Protocol contract required quantitation limits and are for guidance purposes.
(b) Reporting limits shown for total polychlorinated biphenyls are the summation of the reporting limits for each Aroclor listed.
NOTES:
µg/L = Microgram(s) per liter
ppm = Parts per million

Table 1-F Analytical Reporting Limits EPA Superfund Analytical Services/CLP Method OLM02.4 Volatile Organic Compounds: Water, Soil, and Sediment

Constituent	Reporting Limits[a] (ppb)		
	Low Water	Low Soil, Sediment, Debris	Medium Soil, Sediment, Debris
Chloromethane	5	5	250
Bromomethane	5	5	250
Vinyl Chloride	5	5	250
Chloroethane	5	5	250
Methylene chloride	5	5	250
Acetone	5	5	250
Carbon disulfide	5	5	250
1,1-Dichloroethene	5	5	250
1,1-Dichloroethane	5	5	250
1,2-Dichloroethene (total)	5	5	250
Chloroform	5	5	250
1,2-Dichloroethane	5	5	250
2-Butanone	5	5	250
1,1,1-Trichloroethane	5	5	250
Carbon tetrachloride	5	5	250
Bromodichloromethane	5	5	250
1,2-Dichloropropane	5	5	250
cis-1,3Dichloropropene	5	5	250
Trichloroethene	5	5	250
Dibromochloromethane	5	5	250
1,1,2-Trichloroethane	5	5	250
Benzene	5	5	250
trans-1,3-Dichloropropene	5	5	250
Bromoform	5	5	250
4-Methyl-2-pentanone	5	5	250
2-Hexanone	5	5	250
Tetrachloroethene	5	5	250
Toluene	5	5	250
1,1,2,2-Tetrachloroethane	5	5	250
Chlorobenzene	5	5	250
Ethylbenzene	5	5	250
Styrene	5	5	250
Total Xylenes	5	5	250

(a) Reporting limits presented are EPA Superfund Analytical Services/Contract Laboratory Program (CLP) contract required quantitation limits. Quantitation limits for soil, sediment, and debris are based on dry-weight. Specific quantitation limits are highly matrix dependent.
NOTES:
ppb = Parts per billion

Table 1-G Analytical Reporting Limits EPA Superfund Analytical Services/CLP Method OLM02.4 Semi-volatile Organic Compounds: Water, Soil, and Sediment

Constituent	Reporting Limits[a] (ppb)		
	Water	Low Soil, Sediment, Debris	Medium Soil, Sediment, Debris
1,4-Dioxane	2	67	2,000
Phenol	5	170	5,000
bis(2-chloroethyl)ether	5	170	5,000
2-Chlorophenol	5	170	5,000
1,2-Dichlorobenzene	5	170	5,000
1,3-Dichlorobenzene	5	170	5,000
1,4-Dichlorobenzene	5	170	5,000
2-Methylphenol	5	170	5,000
2,2'-oxybis (1-chloropropane)	5	170	5,000
4-Methylphenol	5	170	5,000
N-Nitroso-di-n-propylamine	5	170	5,000
Hexachloroethane	5	170	5,000
Nitrobenzene	5	170	5,000
Isophorone	5	170	5,000
2-Nitrophenol	5	170	5,000
2,4-Dimethylphenol	5	170	5,000
bis(2-chloroethoxy)methane	5	170	5,000
2,4-Dichlorophenol	5	170	5,000
1,2,4-Trichlorobenzene	5	170	5,000
Naphthalene	5	170	5,000
4-Chloroaniline	5	170	5,000
Hexachlorobutadiene	5	170	5,000
4-Chloro-3-methylphenol	5	170	5,000
2-Methylnaphthalene	5	170	5,000
Hexachlorocyclopentadiene	5	170	5,000
2,4,6-Trichlorophenol	5	170	5,000
2,4,5-Trichlorophenol	10	330	10,000
2-Chloronaphthalene	5	170	5,000
2-Nitroaniline	10	330	10,000
Dimethylphthalate	5	170	5,000
Acenaphthylene	5	170	5,000
2,6-Dinitrotoluene	5	170	5,000
3-Nitroaniline	5	330	10,000
Acenaphthene	5	170	5,000

Table 1-G Analytical Reporting Limits EPA Superfund Analytical Services/CLP Method OLM02.4 Semi-volatile Organic Compounds: Water, Soil, and Sediment

Constituent	Reporting Limits[(a)] ppb		
	Water	Low Soil, Sediment, Debris	Medium Soil, Sediment, Debris
2,4-Dinitrophenol	10	330	10,000
4-Nitrophenol	10	330	10,000
Dibenzofuran	5	170	5,000
2,4-Dinitrotoluene	5	170	5,000
Diethylphthalate	5	170	5,000
4-Chlorophenyl phenyl ether	5	170	5,000
Fluorene	5	170	5,000
4-Nitroaniline	10	330	10,000
4,6-Dinitro-2-methylphenol	10	330	10,000
N-nitrosodiphenylamine	5	170	5,000
4-Bromophenyl phenyl ether	5	170	5,000
Hexachlorobenzene	5	170	5,000
Pentachlorophenol	10	330	10,000
Phenanthrene	5	170	5,000
Anthracene	5	170	5,000
Carbazole	5	170	5,000
Di-n-butyl phthalate	5	170	5,000
Fluoranthene	5	170	5,000
Pyrene	5	170	5,000
Butyl benzyl phthalate	5	170	5,000
3,3'-Dichlorobenzidine	5	170	5,000
Benz(a)anthracene	5	170	5,000
Chrysene	5	170	5,000
bis(2-Ethylhexyl)phthalate	5	170	5,000
Benzo(b)fluoranthene	5	170	5,000
Benzo(k)fluoranthene	5	170	5,000
Benzo(a)pyrene	5	170	5,000
Indeno(1,2,3-cd)pyrene	5	170	5,000
Dibenzo(a,h)anthracene	5	170	5,000
Benzo(g,h,i)perylene	5	170	5,000

(a) Reporting limits presented are EPA Superfund Analytical Services/Contract Laboratory Program (CLP) contract required quantitation limits. Quantitation limits for soil, sediment, and debris are based on dry-weight. Specific quantitation limits are highly matrix dependent.
NOTES:
ppb = Parts per billion

Table 1-H Analytical Reporting Limits EPA Superfund Analytical Services/CLP Method ISM02.4 Metals: Water, Soil, and Sediment

Constituent	Reporting Limits[a]	
	Water (ppb)	Soil, Sediment, Debris (ppm)
Aluminum	200	20
Antimony	60	6
Arsenic	10	1
Barium	200	20
Beryllium	5	0.5
Cadmium	5	0.5
Calcium	5,000	500
Chromium	10	1
Cobalt	50	5
Copper	25	2.5
Iron	100	10
Lead	10	1
Magnesium	5,000	500
Manganese	15	1.5
Mercury	0.2	0.1
Nickel	40	4
Potassium	5,000	500
Selenium	35	3.5
Silver	10	1
Sodium	5,000	500
Thallium	25	2.5
Vanadium	50	5
Zinc	60	6
Cyanide	10	2.5

(a) Reporting limits presented are EPA Superfund Analytical Services/Contract Laboratory Program (CLP) contract required detection limits for inorganics analyzed with ICP-AES (Inductively Coupled Plasma-Atomic Emission Spectroscopy.
NOTES:
ppb = Parts per billion
ppm = Parts per million

Table 1-I Analytical Reporting Limits EPA Clean Water Method 537.1 Per- and Polyfluoroalkyl Substances (PFAS)

Constituent[(a)]	Reporting Limits	
	Water (ng/L)	Soil, Sediment, Debris (µg/kg)
Perfluorooctanesulfonic acid (PFOS)	2	1
Perfluorooctanoic acid (PFOA)	2	1
Perfluorobutanoic acid (PFBA)	2	1
Perfluoropentanoic acid (PFPeA)	2	1
Perfluorohexanoic acid (PFHxA)	2	1
Perfluorobutanesulfonic acid (PFBS)	2	1
Perfluoroheptanoic acid (PFHpA)	2	1
Perfluorohexanesulfonic acid (PFHxS)	2	1
Perfluorononanoic acid (PFNA)	2	1
Perfluorodecanoic acid (PFDA)	2	1
Perfluoroundecanoic acid (PFUdA or PFUnA)	2	1
Perfluorodecanesulfonic acid (PFDS)	2	1
Perfluorododecanoic acid (PFDoA)	2	1
Perfluorotridecanoic acid (PFTrDA)	2	1
Perfluorotetradecanoic acid (PFTeDA)	2	1
Perfluorohexadecanoic acid (PFHxDA)	2	1
Perfluorooctadecanoic acid (PFODA)	2	1
N-methyl perfluorooctane sulfonamidoacetic acid (N-MeFOSAA)	2	1
N-ethyl perfluorooctane sulfonamidoacetic acid (N-EtFOSAA)	2	1
Propanoic acid, 2,3,3,3-tetrafluoro-2-(1,1,2,2,3,3,3-heptafluoropropoxy) (PFPrOPrA*)	2	1
Dodecafluoro-3H-4,8-dioxanonanoate (NaDONA*)	2	1

(a) PFAS Analyte List (21 compounds). The site-specific QAPP should list all PFAS compounds of interest.
NOTES:
ng/L = Nanogram(s) per liter
µg/kg = Microgram(s) per liter

Table 1-J Analytical Reporting Limits ISO Method 25101 Per- and Polyfluoroalkyl Substances (PFAS)

Constituent	Reporting Limits Drinking Water (ng/L)
Perfluorooctanesulfonic acid (PFOS)	2
Perfluorooctanoic acid (PFOA)	2
Perfluorononanoic acid (PFNA)	2
Perfluorobutanesulfonic acid (PFBS)	2
Perfluoroheptanoic acid (PFHpA)	2
Perfluorohexanesulfonic acid (PFHxS)	2

NOTES:
ng/L = Nanogram(s) per liter

Table 2 Summary of Periodic Laboratory Calibration Requirements

Instrument	Calibration Frequency	Acceptance Limits	Corrective Actions
Analytical Balances	Daily: Sensitivity (with a Class P weight)	0.001 g	Adjust sensitivity
	Monthly: Checked with Class S weights	Standard deviation of <0.1 mg	Service balance
	Annually: Calibrated by outside vendor against certified Class S weights	Standard deviation of <0.1 mg	Service balance
Thermometers	Annually: Calibrated against certified National Institute of Standards and Technology thermometers by outside vendor	± 0.5°C	Tag and remove from service
Automatic Pipettors	Quarterly: Gravimetric check	High volume (>100 mL): ≤1.0% relative error as relative standard deviation	Service or replace
		Low volume (<100 mL): ≤2.0% relative error as relative standard deviation	

Table 3 Field Instrumentation Calibration Frequency

Instrument	Frequency of Calibration Check	Calibration Standard
pH Meter	Prior to use – daily	Commercially prepared pH buffer solutions (4.01, 7.00, 10.00)
Conductivity Meter	Prior to use – daily	Commercially prepared saline solution (12.9 mS/cm)
Water Level Meter	Prior to initiating field work	100-ft engineer's tape
Dissolved Oxygen Meter	Per sampling event	Saturation
Photoionization Detector	Prior to use – daily	100 ppm isobutylene
Turbidity	Prior to use – daily	10 NTU, 200 NTU

NOTES:
ft = Foot (feet)
mS/cm = MilliSiemens(s) per centimeter
NTU = Nephelometric turbidity units
ppm = Part(s) per million

Table 4 Field Measurement Quality Control Objectives

Field Parameter	Precision[(a)]	Accuracy
Water Temperature	±1°C	±1°C (instrument capability)
pH	±1 pH Standard Unit	±1 pH Standard Unit (instrument capability)
Conductivity	±1 mS/cm	±5% standard
Dissolved Oxygen	±0.02 mg/L	±5%
Turbidity	±1.0 Nephelometric turbidity units	±2% standard
Water Level	±0.1 ft	±0.01 ft

(a) Precision units presented in applicable significant figures.
% = Percent
°C = Degrees Celsius
ft = Foot (feet)
mS/cm = milliSiemen(s) per centimeter
mg/L = Milligram(s) per liter

Table 5 Preventive Maintenance Summary

Maintenance	Frequency
Conductivity, pH, Dissolved Oxygen Meters	
Store in protective casing	D
Inspect equipment after use	D
Clean probes	D
Keep logbook in instrument	D
Have replacement meter available	D
Replace probes	X
Return to manufacturer for service	X
Calibration	D
Turbidity Meter	
Store in protective casing	D
Inspect equipment after use	D
Clean sample cells	D
Clean lens	M or X
Check and recharge batteries	D
Keep logbook in instrument	D
Have replacement meter available	D
Return to manufacturer for service	X
Calibration	D
Thermometer	
Store in protective casing	D
Inspect equipment after use	D
Have replacement thermometer available	D
Water Level Meter	
Store in protective covering	D
Inspect equipment after use	D
Check indicators/batteries	D
Keep logbook on instrument	D
Have replacement meter available	X
Photoionization Detector	
Store in protective casing	D
Inspect equipment after use	D
Check and recharge batteries	D
Clean ultraviolet lamp and ion chamber	M or X
Keep logbook in instrument	D
Have replacement meter available	D
Return to manufacturer for service	X
Calibration	D

NOTES:
D = Daily
M = Monthly
X = Operator's discretion

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Appendix A

Data Usability Summary Report Guidelines

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completed and meets the requirements of the Construction Contract. Once this inspection has been performed, the Consultant shall deliver to the Department a written notice with regard to the disposition of the project. If the Consultant determined that the project has been satisfactorily completes according to the Construction Contract plans and specifications, certification to this fact shall be made to the Department by the Consultant.

- All files, reports, and other documentation are to be turned over to the Department at the completion of the project, including one copy in an electronic format that complies with the Department's Electronic Document Standards or as otherwise directed by the Department. All data generated under the Contract shall be submitted in an electronic data deliverable (EDD) that complies with the Department's Electronic Data Warehouse Standards or as otherwise directed by the Department.

Task VII. Site Management Plans

In many instances there is a requirement for some degree of regular operation and maintenance activity associated with completed remedial action projects. A Site Management Plan, prepared in accordance with Section 6.2 of DER-10, is needed to provide detailed description, schedules, budgets, HASP, and reporting/recordkeeping requirements (e.g., OM&M and the environmental easement) for the operation and maintenance of a remedial site.

Task VIII. Construction Certification Report

The Consultant shall prepare a construction certificate report acceptable to the Department. The report shall describe all variations from the Construction Contract documents, confirmatory soil sampling results, final qualities, aerial and vertical survey of the extent of the work including the location of confirmatory samples, and summary record drawings. The report shall include a New York State Licensed P.E. certification that work was completed in accordance with the approved design.

Task IX. Final Remediation Report

At the request of the Department, prepare a site-wide final remediation report, in accordance with Section 5.8 of DER-10, acceptable to the Department. The report shall describe all previous components of remedial work performed at the site. It shall describe the overall implementation of the remedy as described in the Record of Decision (ROD). It shall incorporate by reference all previous construction certification reports and include drawings that show any and all required engineering controls to maintain the integrity of the remedy. The report shall include a New York State Licensed P.E. certification that work was completed in accordance with the ROD.

Work Element V – Analytical Quality Assurance/Quality Control Activities (QA/QC)

General: This work element may include development of Quality Assurance Project Plans, oversight of independent third-party validation, and/or data usability assessments by the Consultant's Quality Assurance Officer (QAO).

Subtask A: Data Validation Scope of Work

Data Validation is the systemic process by which the data quality is determined with respect to data quality criteria that are defined in project and laboratory quality control programs and in the referenced analytical methods. The data validation process consists of an assessment of the acceptability or validity of project data with respect to stated project goals and requirements for data usability. Data validation consists of editing, screening, checking, auditing, certification, review, and interpretation. The purpose of data validation is to define and document analytical data quality and determine if the data quality is sufficient for the intended use(s) of the data. In accordance with DEC requirements, all project data must be of known and acceptable quality. Data validation is performed to establish the data quality for all data which are to be considered when making project decisions. Laboratories will be required to submit results which are supported by sufficient back-up data and QA/QC results to enable the reviewer to conclusively determine the quality of data.

Subtask B: Duties and Qualifications of a Data Validator

- The following qualifications and requirements are established for the Consultant or subcontractor to the Consultant or retained by a responsible party functioning under the guidance and direction of an order of consent. The data validator shall be independent of the laboratory generating the data.
- The data validator shall demonstrate that all staff members involved in the date validation process have:
  - A Bachelor's degree in chemistry or natural sciences
  - One (1) year experience in implementation and application of the protocol(s) used in generating the date for which they are responsible, the successful completion of an EPA data validation training course or equivalent, as evidenced by a certificate of completion, may be substituted for the analytical experience requirement
  - A minimum of one (1) year experience evaluating data packages for contract and protocol compliance.
- Consistent with the Division of Environmental Remediation's Quality Assurance Program Plan (QAPP), all laboratory data generated in support of any investigation, remediation, or monitoring activity carried out under the Division's program responsibility shall be developed under the administrative and operational control of a QAPP. To this end, the QAPP shall become an integral part of the Project and those portions that pertain to the development and production of analytical data shall define the task of the laboratory charged with developing and producing this data. The site-specific variances to the QAPP shall include the following:
  - The number and types of sampling to be analyzed
  - Sampling holding times to be observed and the time from which these holding times shall be measured
  - Site specific limits of concern for each of the analytes listed in each of the matrices to be sampled

- The matrix specific method detection limits that must be obtained for each of the analytes and matrices listed (this value should be in the neighborhood of 1/5 the site-specific limit of concern)
- Analytical protocols that shall be employed including any special handling or required cleanup procedures
- The frequency and types of any required quality control samples (e.g., trip blanks, rise blanks, replicates, matrix samples, matrix spike duplicates, and matrix spike blanks)
- Identification of any critical samples and any special analytical treatment that may be required
- Required deliverables and supporting documentation where these differ from or are not part of the required analytical protocols
- Library search of the top ten (1) Tentatively Identified Compounds.

- In order to facilitate the date validation process, copies of the QAPP (addressing the above referenced points of information), together with the project required deliverables and supporting documentation, and laboratory subcontract shall be submitted to the Data Validator contracted to carry out the data validation portion of the Contract.

Task I. Completeness

- The Data Validator (DV) shall review the data package to determine completeness. A completed data package will consist of the following components:
  - Chain of Custody forms for all samples
  - The case narrative(s) including all sample/analysis summary forms
  - QA/QC summaries including all supporting documentation
  - Instrument and method of performance data, including equipment and process blanks
  - Documentation showing the laboratory's ability to attain the Contract specific method detection limits for all target analytes in all required matrices
  - All data report forms including examples of the calculations used in determining final concentrations
  - All raw data used in the identification and quantitation of the Contract specific target limits.
- All deficiencies in the requirement for completeness shall be reported to the Consultant immediately. The laboratory shall be contacted by the Consultant's QAO and shall be given ten (10) days to produce the documentation necessary to remove the deficiencies.

Task II. Compliance

- The DV shall review the data package to determine compliance with those portions that pertain to the production of laboratory data. Compliance is defined by the following criteria:
  - The date package is complete as defined in Task I above

- The date has been produced and reported in a manner consistent with the requirements of the QAPP and the laboratory subcontract
- All protocol required QA/QC criteria have been met
- All instrument tuning and calibration requirements have been met for the time frame during which the analyses were completed
- All protocol requiring initial and continuing calibration data is present and documented
- All data reporting forms are complete for all samples submitted (including all sample dilution/concentration factors and all premeasurement sample cleanup procedures)
- All problems encountered during the analytical process have been reported in the case narrative along with any and all corrective actions taken by the laboratory.

- This task requires that the DV conduct a detailed comparison of the reported data with the raw data submitted as part of the supporting documentation package. It is the responsibility of the DV to determine that the reported data can be completely substantiated by applying protocol defined procedures for the identification and quantification of the individual analytes. To assist the DV in this determination the following documents are recommended, however the EPA Functional Guidelines will be used for format only. The specific requirements noted in the project QAPP are prerequisite (e.g., holding times or specific analytical project needs), to those noted in the Functional Guidelines:
  - The particular protocol(s) under which the date was generated (e.g., EPA SW-845; EPA Series 500 Protocols)
  - Data validation guidance documents such as:
    - "National Functional Guidelines for Inorganic Superfund Methods Data Review (ISM02.4)" at https://www.epa.gov/clp/national-functional-guidelines-inorganic-superfund-methods-data-review-ism024
    - Table 2: Region 2 RCRA and CERCLA Field and Data Validation Standard Operating Procedures (SOPs) at https://www.epa.gov/quality/region-2-quality-assurance-guidance-and-standard-operating-procedures
  - NOTE: These documents undergo periodic revisions, the most current documents and guidance apply.
- The DV shall submit a final report covering the results of the data review process. This report shall be submitted to the Department Project Manager or his/her designee and shall include the following:
  - A general assessment of the data packages as determined by the accomplishment of Tasks I-II above
  - Detailed description of any and all deviations from required protocols, including references to the portion of the protocols involved in the alleged deviations
  - Any and all failures in the DV's attempt to reconcile the reported data with the raw data from which it was derived, including telephone logs should be included in the validation report

- A detailed assessment by the DV of the degree the data has been compromised by any deviations from the protocol, QA/QC breakdowns, lack of analytical control, etc., that occurred during the analytical process
- The report shall include, a copy of the laboratory's case narrative including the Department required sample analysis summary sheets, as an attachment
- The report shall include an overall appraisal of the data package
- The validation report shall include a chart presented in spreadsheet format, consisting of site name, sample numbers, data submitted to the laboratory, year and number of the analytical protocol used, matrix, fractions analyzed (e.g., volatiles, semi-volatiles, pesticides/PCBs, Metals, CN). Space should be provided for notations of non-compliance and a column for an explanation of such violation (see following form):

Group #	Date	Protocol No.	Sample No.	Matrix	VOA Compliancy	Pest/PCB Compliancy	BCN Compliancy	Metals Compliancy	CN	Totals	NonCompliance

Task III. Data Usability Summary Report (DUSR) Scope of Work

- The Data Usability Summary Report (DUSR) provides a thorough evaluation of analytical data without the costly and time-consuming process of third party validation. The primary objective of a DUSR is to determine whether the data, as presented, meets the site-specific criteria for data quality and data use.
- The development of the DUSR must be performed by an experienced environmental scientist, such as the project QAO, fully capable of conducting a full data validation. Furthermore, the DUSR is developed from Department approved guidelines or a USEPA Contract Laboratory Protocol (CLP) deliverables package.
- The DUSR and the data deliverables package will be reviewed by quality assurance staff in the Department's Bureau of Technical Support. In most cases, this review will result in agreement or minor differences that can be reconciled. If data validation is found to be necessary (e.g., pending litigation) this can be carried out at a later date on the same package used for the development of the DUSR.

The environmental scientist preparing the DUSR must hold a bachelor's degree in relevant natural or physical science or field of engineering and must submit a resume documenting experience in environmental sampling, analysis, and data review.

Task IV. Preparation of the DUSR

- The DUSR is developed by reviewing and evaluating the analytical data package. During the course of this review the following questions must be asked and answered:
  - Is the data package complete as defined under the requirements for the most current version of Department approved guidelines or USEPA CLP deliverables?
  - Have all holding times been met?
  - Do all the QC data: (blanks, instrument tunings, calibration standards, calibration verifications, surrogate recoveries, spike recoveries, replicate analyses, laboratory controls, and sample data) fall within the protocol required limits and specifications?
  - Have all the data been generated using established and agrees upon analytical protocols?
  - Does an evaluation of the raw data conform the results provided in the data summary sheets and quality control verification forms?
- Evaluation of Matrix Spike Blanks (MSB) data – If the MSB recovery is less than the Department criteria the positive results should be qualified as J, estimated biased low. If the MSB recovery is less than the Department criteria but greater than ten percent (10%), the nondetects should be qualified J, biased low. If the MSB recovery is less than ten percent (10%), the nondetect data must be rejected.
- Any QC exceedances must be numerically specified in the DUSR and the corresponding QC summary sheet from the data package should be attached to the DUSR.
- All data that would be rejected by the EPA Region 2 Data Validation Guidelines must also be rejected in the DUSR.
- Once the data package has been reviewed and the above questions answered the DUSR describes the samples and analytical parameters. Data deficiencies, analytical protocol deviations and quality control problems are identified and their effect on the data discussed. The DUSR shall also include recommendations on resampling/reanalysis. All data quantifications must be documented following the most current version of the Department approved guidelines or the USEPA Region 2 Validation Guidelines.

Work Element VI – Site Response Activities/Interim Remedial Measures (IRM)

General: This work element may include short term response activities to alleviate environmental or health risk at a site. Interim remedial measures such as excavation, drum removals, short term operation of facilities, and other activities may also be included.

- Conditions at sites with hazardous waste, hazardous substance or petroleum contamination often require immediate response actions to protect human health and the environment. The Consultant is expected, whether directly or through subcontract, to perform the following response activities/interim remedial measures (IRMs):

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Appendix G

Field Sampling Plan and Site Management Forms

OU1, OU2, and OU3
Saranac Lake Gas Company, Inc.
Essex County
Saranac Lake, New York

Field Sampling Plan

NYSDEC Site No. 516008

Prepared for

New York State Department of Environmental Conservation
Division of Environmental Remediation
625 Broadway
Albany, New York 12207

Prepared by

EA Engineering and Geology, P.C.
333 W. Washington Street, Suite 300
Syracuse, New York 13202
315-431-4610

April 2025

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MONITORING AND SAMPLING PLAN

Monitoring

All site inspections will be performed by a qualified environmental professional. The attached Site Inspection Form shall be used during monitoring events.

Monitoring of operable unit (OU) 01 at 24 Payeville Lane, Brandy Brook (OU02), and Pontiac Bay (OU03), institutional and engineering controls will occur during every regularly scheduled site inspection as per the Site Management Plan (SMP). Monitoring of OU01 will include a visual inspection of the soil cover, specifically for erosion along the banks, evidence of subsurface impacts or ponding water. Monitoring of OU02 will include a visual inspection of Brandy Brook, specifically areas where reactive core mat (RCM) was placed and backfilled over. Monitoring of OU03 will include visual inspection of Pontiac Bay, specifically areas where Aquablok® was installed along the banks and backfilled over. Both OU02 and OU03 visual inspections will be performed from dry land, no boat will be required.

Inspection of OU01, OU02, and OU03 engineering controls will be performed to identify any disturbance or break in protective barrier layers and inspection of areas surrounding OU01, OU02 and OU03 be performed to identify failure of the land use restrictions. The remaining monitoring point installed at the OU01 / OU02 interface and the one installed downstream of the rail trail culvert will be monitored for the presence sheens or non-aqueous phased liquid (NAPL). Additionally, the approximate location of in situ solidification (ISS) adjacent to OU03 will be inspected to identify if there has been any suspected subsurface construction in the area.

Sampling

Sediment, surface water and groundwater sampling for the former Saranac Lake Gas Company (Co.) Site will occur during all routine site inspections or at the request of the New York State Department of Environmental Conservation (NYSDEC). During each site inspection, three surface water samples and three collocated sediment samples will be taken from OU02 and one surface water sample will be collected from OU03. Additionally, three groundwater samples, one from OU01 just upgradient of OU02 and two from OU02 will be collected. All sample will be submitted to Test America in Buffalo, New York for analysis of polycyclic aromatic hydrocarbons (PAHs) by method 8270. Field parameters will be taken at each surface water and groundwater sampling location using a multimeter, and will include: temperature, pH, oxidation reduction potential, dissolved oxygen, and specific conductance.

OU01

Seven groundwater samples will be taken from the Former Saranac Lake Gas Co. Property at locations shown on Figure 2-6 of the SMP. Groundwater samples will be collected using Low Flow procedures and will be submitted for analysis for PAHs. Purge water will be treated on-site through a portable activated carbon unit so that no investigative derived waste is generated.

OU02

Three sediment samples and three collocated surface water samples will be taken from Brandy Brook at locations shown on Figure 2-4 of the SMP. All samples will be taken from the center of the stream, with surface water samples drawn from a depth equal to 50% the water column and sediment samples taken from the top 0.5 feet of sediment. Surface water samples will be taken with a peristaltic pump and sediment samples will be taken with a Ponar sampler or hand auger, depending on the depth of water.

One set of samples (SD/SW-402) will be collected from Brandy Brook Avenue just upstream (east) of the Brandy Brook discharge culvert that flows under Slater Avenue. A second set of samples (SD/SW-401) will be collected from Brandy Brook at the corner of Pine Street and River Street, just upstream (northeast) of the railroad culvert. The third and final set of samples (SD/SW-400) will be collected from Brandy Brook adjacent to and north of OU01, downstream of the RCM barrier and monitoring points. All samples will be submitted for analysis for polycyclic PAHs.

Additionally, groundwater samples will be collected from PZ-301 and MW-104 using low-flow sampling methods and tested for PAHs.

OU03

One surface water sample (SW-403) will be taken from Pontiac Bay at the corner of River Street and Lake Flower Avenue, just south of the Brandy Brook discharge culvert. The surface water sample will be taken from one foot off the bottom of the bay and sampled with a peristaltic pump. The sample will be submitted for analysis for PAHs. Estimated sample location can be seen on Figure 2-5 of the SMP.

The network of on-site sediment, surface water and groundwater sampling locations has been designed based on the following criteria:

OU01

- Groundwater samples will be collected from seven monitoring wells to evaluate the effectiveness of the remedy and groundwater concentrations over time: MW-106R, MW-108R, MW-110R, MW-204S, MW-204D, MW-205S, MW-205D.

    — MW-106R is located at the north end of property adjacent to Brandy Brook, located inside the OU01 excavation area.

    — MW-108R is located on the east side of property, outside the ISS/Soil Cover area.

    — MW-110R is located on the west side of property, inside the fence line, outside of the ISS/Soil Cover Area.

    — MW-204S and D are located southwest of property, just outside the fence line, outside of the ISS/Soil Cover Area.

- MW-205 S and D are located south of the property, located adjacent to the rail trail, downgradient of the ISS/Soil Cover Area.

OU02

- Sediment samples within Brandy Brook are to be taken from the backfill placed on top of RCM and shall be collected with a decontaminated Ponar sampler. If contamination is to be reencountered within OU02, it likely that remaining impacted soil pushed the RCM beyond the point of breakthrough and seeped into Brandy Brook, threatening both the brook and bay sediment.

- Collocated surface water samples are also collected to monitor potential surface water impacts.

- Groundwater samples are collected from MW-104 and PZ-301 located within OU02, one to the east of Brandy Brook and one to the west across the rail trail.

OU03

- The water sample within Pontiac Bay is to be taken close to the culvert where Brandy Brook discharges into the bay. In the unlikely event that surface water from Brandy Brook is impacted, this water sample would provide results of a mixed sample after the brook water meets the bay. Additionally, this location is adjacent to the area where Aquablok® was placed in the bay to provide a barrier between remaining impacted sediment and the Pontiac Bay surface water. Due to the depth of the bay, sediment samples are not proposed.

Figures 2-4 through 2-6 of the SMP outline estimated sampling locations; specific location of the sediment samples will be determined at the digression of the site inspector and based on visual and/or olfactory characteristics of each sampling point. Sampling location, description, and rationale will be recorded on the site inspection form and global positioning system coordinates of each location will be taken recorded. If no visual and/or olfactory characteristics are present, the inspector is to collect each sample as close to the pre-determined sampling location as possible, taking into consideration environmental factors and contaminant characteristics.

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Appendix G
Saranac Lake Gas Co., OU01, OU02 & OU03
Site Inspection Form

A. General Information

Inspector Name: _____
Inspection Date: _____
Weather (AM/PM): _____
Purpose for Inspection: _____

Comments: _____

B. Site Property (OU01)

The Site property is located at 24 Payeville Lane and encompasses the portion of the Site where in-situ solidification was conducted and a soil cover placed over it. Brandy Brook (OU02) is located North of the property and the property is surrounded by a perimeter fence.

	No	Yes
1. Are there any odors emanating from the site?		
2. Are there bare, dead or damaged vegetated areas along the wetland at the north end of the site?		
3. Is there any erosional damage to the slopes of the soil cover?		
4. Is there any evidence of excavation or damage to the soil cover?		
5. Is there visible damage to the perimeter fence?		
6. Is there visible damage to any of the monitoring wells?		
7. Is there any ponding water on or around the soil cover?		
8. Has any wildlife (terrestrial or aquatic) been observed?		
12. Were any groundwater samples collected?		
If so, what is the sample ID(s)?		

Comments: (Please comment for each question answered "yes")

_____
_____
_____
_____

C. Brandy Brook (OU02)

OU02, Brandy Brook, extends from Pontiac Bay (culverted under Lake Flower Ave. and Slater Ave.) to OU01, or approximately 0.75 miles.

	No	Yes
1. Is there an increase in turbidity causing a visible contrast to natural conditions?		
2. Is there residue from oil and/or floating substances, visible oil film, or globules or grease?		
3. Are there any odors emanating from the brook?		
4. Are culverts free of debris or blockages?		

5. Are there bare, dead or damaged vegetated areas along bank? _____ _____
6. Is there any erosional damage to the banks? _____ _____
7. Has backfill (construction) sediment accumulated in any locations? If yes, photograph. _____ _____
8. Is there any evidence of damage to the RCM? _____ _____
9. Are monitoring points in the proper, upright position? _____ _____
10. Insert the oil-water interface probe into each RCM monitoring stickup; is an interface observed? If yes, explain. _____ _____
11. Is any wildlife (terrestrial or aquatic) observed?
12. Were any sediment/water samples collected? _____ _____
    If so, what is the sample ID(s)? _____

Comments: (Please comment for each question answered "yes")

_____

_____

_____

D. Pontiac Bay (OU03)

Pontiac Bay is located in the northeastern portion of Lake Flower and encompasses the area east of the Lake Flower Boat Launch to the Brandy Brook culvert and south of the Lake Flower Boat Launch to the Fogarty's Lake Flower Marina.

	No	Yes
1. Is there an increase in turbidity causing a visible contrast to natural conditions?	_____	_____
2. Is there residue from oil and/or floating substances, visible oil film, or globules or grease?	_____	_____
3. Are there any odors emanating from the bay?	_____	_____
4. Are there bare, dead or damaged vegetated areas along bank?	_____	_____
5. Is there any erosional damage to the banks?	_____	_____
6. Is there any damage to structural retaining walls along banks?	_____	_____
7. Is there visible damage to the Aquablok® barrier layer?	_____	_____
8. Has any wildlife (terrestrial or aquatic) been observed?	_____	_____
9. Were any surface water samples collected?	_____	_____
If so, what is the sample ID(s)?	_____	

Comments: (Please comment for each question answered "yes")

_____

_____

_____

E. Site Management Activities

Upon completion of the inspection the following should be checked for compliance with the SMP.

	No	Yes
1. Was routine sampling conducted during this inspection?		
2. Was a Health and Safety Inspection Conducted?		
3. Are there any known missing site records?		
4. Are Engineering controls performing as designed?		
5. Do EC/ICs continue to be protective of human health and the environment?		
6. Is the remedial performance criteria being achieved?		
7. Is the site in compliance with the requirements of the SMP?		

Comments: (Please comment for each question answered "no")

Notes from last inspection: (Please review and comment)

Inspector

Signature Date

Reviewer Date

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Appendix H

ACOE Permit Information

NEW YORK STATE | Department of Environmental Conservation | Office of General Services | Department of State

US Army Corps of Engineers

JOINT APPLICATION FORM

For Permits for activities activities affecting streams, waterways, waterbodies, wetlands, coastal areas, sources of water, and endangered and threatened species.

You must separately apply for and obtain Permits from each involved agency before starting work. Please read all instructions.

1. **Applications To:**

>NYS Department of Environmental Conservation ☑ Check here to confirm you sent this form to NYSDEC.

Check all permits that apply:

- ☑ Stream Disturbance
- ☑ Excavation and Fill in Navigable Waters
- ☐ Docks, Moorings or Platforms
- ☐ Dams and Impoundment Structures
- ☐ 401 Water Quality Certification
- ☑ Freshwater Wetlands
- ☐ Tidal Wetlands
- ☐ Wild, Scenic and Recreational Rivers
- ☐ Coastal Erosion Management
- ☐ Water Withdrawal
- ☐ Long Island Well
- ☐ Incidental Take of Endangered / Threatened Species

>US Army Corps of Engineers ☑ Check here to confirm you sent this form to USACE.

Check all permits that apply: ☑ Section 404 Clean Water Act ☐ Section 10 Rivers and Harbors Act

Is the project Federally funded? ☐ Yes ☑ No

If yes, name of Federal Agency:

General Permit Type(s), if known:

Preconstruction Notification: ☑ Yes ☐ No

>NYS Office of General Services ☐ Check here to confirm you sent this form to NYSOGS.

Check all permits that apply:

- ☐ State Owned Lands Under Water
- ☐ Utility Easement (pipelines, conduits, cables, etc.)
- ☐ Docks, Moorings or Platforms

>NYS Department of State ☐ Check here to confirm you sent this form to NYSDOS.

Check if this applies: ☐ Coastal Consistency Concurrence

2. **Name of Applicant**

Michael Mason (NYSDEC)

Taxpayer ID (if applicant is NOT an individual)

Mailing Address: New York Department of Environmental Conservation, 625 Broadway, 12th Floor

Post Office / City: Albany

State: NY

Zip: 12233-7017

Telephone: (518) 402-9814

Email: michael.mason@dec.ny.gov

Applicant Must be (check all that apply): ☐ Owner ☐ Operator ☑ Lessee

3. **Name of Property Owner (if different than Applicant)**

See attached Table, multiple properties and owners

Mailing Address

Post Office / City

State

Zip

Telephone

Email

For Agency Use Only	Agency Application Number:

4. **Name of Contact / Agent**

Mark Stelmack, Amec Foster Wheeler

Mailing Address	Post Office / City	State	Zip
511 Congress Street, Suite 200	Portland	ME	04101

Telephone 207-828-3592 Email charles.lyman@amecfw.com

5. **Project / Facility Name**

Saranac Lake Gas Company

Property Tax Map Section / Block / Lot Number: Map:32.OKC-1-11.00; Book/Page:141/92

Project Street Address, if applicable	Post Office / City	State	Zip
Payeville Ln	Saranac Lake/North Alba	NY	12983

Provide directions and distances to roads, intersections, bridges and bodies of water

See attached site location map;Rte 86 Saranac Lake; Right, Brandy Brook 0.11 mi; Right, Pine St (cross RR tracks) 0.30 mi; Payeville ln.; site located on right 1st dirt driveway.

☐ Town ☐ Village ☐ City

County	Stream/Waterbody Name
Essex	Brandy Brook/Lake Flower (Pontiac Bay)

North Elba/Saranac Lake

Project Location Coordinates: Enter Latitude and Longitude in degrees, minutes, seconds:

Latitude: 44 ° 19 ' 14.95 " Longitude: 74 ° 07 ' 02.58 "

6. **Project Description:** Provide the following information about your project. Continue each response and provide any additional information on other pages. **Attach plans on separate pages.**

a. Purpose of the proposed project:

The purpose of the the proposed project is to remediate soil and sediment contaminated through operations at the Saranac Lake Gas Company, Inc. The site is a former manufactured gas plant, listed as a Class 2 Inactive Hazardous Waste Site in New York State. The remedy for the brook and lake are outlined in the Record of Decisions (RODs) for OU02 Brandy Brook and OU03 Pontiac Bay (NYSDEC, 2016 and NYSDEC, 2015).

b. Description of current site conditions:

The areas being remediated include a 1,360 foot reach of Brandy Brook (Operable Unit [OU] 2) and a portion of Pontiac Bay (OU 3) in Lake Flower. See attached Pre-Design Investigation Field Activities Report (MACTEC, 2017) and design drawings (attached to Restoration Plan - Attachment E) for a description and drawings showing the existing conditions.

c. Proposed site changes:

There are no proposed site changes. The site is being remediated and will be returned to existing conditions. See the attached Restoration Plan (MACTEC, 2017) .

d. Type of structures and fill materials to be installed, and quantity of materials to be used (e.g., square feet of coverage, cubic yards of fill material, structures below ordinary/mean high water, etc.):

The purpose of this work is to excavate contaminated sediment and soil to eliminate impacts to human health and the environment. There are no new structures proposed, the site will be restored to pre-existing conditions. The proposed work will impact several existing culverted crossing, which will be replaced with "open bottom" culverts. See Restoration Plan and design drawings (MACTEC, 2017) in Attachment E.

e. Area of excavation or dredging, volume of material to be removed, location of dredged material placement:

The brook excavation will result in 25,272 sf of wetland impact and 4,076 sf of upland impact and excavating approximately 5,800 cy of material. The area of bay excavation includes 76,000 sf and includes approximately 16,900 cy of contaminated sediment. Excavated contaminated sediment and soil will be trucked off site and disposed of at an approved disposal facility.

f. Is tree cutting or clearing proposed? ☑ Yes If Yes, explain below. ☐ No

Timing of the proposed cutting or clearing (month/year): Between November 1 and April 1

Number of trees to be cut: TBD Acreage of trees to be cleared: <0.5 acre

g. Work methods and type of equipment to be used:

Brandy brook will be diverted and excavation will be done in the dry. Earthwork will be accomplished by tracked excavator. Pontiac Bay will be dredged using mechanical dredging methods. See attached Pre-Design Investigation Field Activities Report for details (MACTEC, 2017).

h. Describe the planned sequence of activities:

The general sequence of remedial activities will include installation of erosion control measures, diversion of stream channel, excavation of contaminated sediment and soil, and site restoration. The bay will be dredged and backfilled to the approximate existing bathymetry. The remediation work along Brandy Brook will be done before the work in Pontiac Bay. See attached Pre-Design Investigation Field Activities Report (MACTEC, 2017)

i. Pollution control methods and other actions proposed to mitigate environmental impacts:

See attached Design Drawing Package for engineering drawings and specifications.

j. Erosion and silt control methods that will be used to prevent water quality impacts:

See attached Design Drawing Package for engineering drawings and specifications.

k. Alternatives considered to avoid regulated areas. If no feasible alternatives exist, explain how the project will minimize impacts:

An alternative analysis was completed as a part of the Record of Decision for OU02 and OU03 (NYSDEC, 2017 and NYSDEC, 2015). The selected alternative for both OU's is excavation of contaminated sediment and soil. The project will be executed utilizing the best management practices to minimize impacts. The remediation project includes a full restoration of impacted brook channel, bordering wetlands, bordering uplands and Pontiac Bay.

l. Proposed use: ☐ Private ☑ Public ☐ Commercial

m. Proposed Start Date: March 2018 Estimated Completion Date: December 2019

n. Has work begun on project? ☐ Yes If Yes, explain below. ☑ No

o. Will project occupy Federal, State, or Municipal Land? ☑ Yes If Yes, explain below. ☐ No

The project will impact Brandy Brook and Pontiac Bay in Lake Flower both of these features are considered federal and state land. The impacts to this land will be temporary, no permanent structures are proposed.

p. List any previous DEC, USACE, OGS or DOS Permit / Application numbers for activities at this location:

None.

q. Will this project require additional Federal, State, or Local authorizations, including zoning changes?

☐ Yes If Yes, list below. ☑ No

7. Signatures.

Applicant and Owner (If different) must sign the application.
Append additional pages of this Signature section if there are multiple Applicants, Owners or Contact/Agents.

I hereby affirm that information provided on this form and all attachments submitted herewith is true to the best of my knowledge and belief.

Permission to Inspect - I hereby consent to Agency inspection of the project site and adjacent property areas. Agency staff may enter the property without notice between 7:00 am and 7:00 pm, Monday - Friday. Inspection may occur without the owner, applicant or agent present. If the property is posted with "keep out" signs or fenced with an unlocked gate, Agency staff may still enter the property. Agency staff may take measurements, analyze site physical characteristics, take soil and vegetation samples, sketch and photograph the site. I understand that failure to give this consent may result in denial of the permit(s) sought by this application.

False statements made herein are punishable as a Class A misdemeanor pursuant to Section 210.45 of the NYS Penal Law. Further, the applicant accepts full responsibility for all damage, direct or indirect, of whatever nature, and by whomever suffered, arising out of the project described herein and agrees to indemnify and save harmless the State from suits, actions, damages and costs of every name and description resulting from said project. In addition, Federal Law, 18 U.S.C., Section 1001 provides for a fine of not more than $10,000 or imprisonment for not more than 5 years, or both where an applicant knowingly and willingly falsifies, conceals, or covers up a material fact; or knowingly makes or uses a false, fictitious or fraudulent statement.

Signature of Applicant: Michael Mason — Date: 8/23/2017

Applicant Must be (check all that apply): ☑ Owner ☐ Operator ☐ Lessee

Printed Name: MICHAEL MASON — Title: PROJECT MANAGER (NYSDE)

Signature of Owner (if different than Applicant) — Date:

Printed Name — Title:

Signature of Contact / Agent: Mark Stelmack — Date: August 22, 2017

Printed Name: MARK STELMACK — Title: PROJECT MANAGER (ENGINEER)

For Agency Use Only **DETERMINATION OF NO PERMIT REQUIRED**

Agency Application Number

(Agency Name) has determined that No Permit is required from this Agency for the project described in this application.

Agency Representative:

Printed Name — Title

Signature — Date

JOINT APPLICATION REFERENCES AND ATTACHMENTS

SARANAC LAKE GAS COMPANY, INC.

NYSDEC SITE 516008

REFERENCES:

MACTEC, 2017. Pre-Design Investigation Field Activities Report, Operable Units OU02 and OU03, Saranac Lake Gas Company, Inc., NYSDEC Site No. 516008, MACTEC Engineering and Consulting, P.C. July 2017.

MACTEC, 2017. Restoration Plan, Brandy Brook (OU02) and Pontiac Bay on Lake Flower (OU03), Saranac Lake Gas Company, Inc., NYSCEC Site No. 516008, MACTEC Engineering and Consulting, P.C. August 2017.

New York State Department of Environmental Conservation (NYSDEC), 2016. Record of Decision, Saranac Lake Gas Company, Inc., Operable Unit Number 02: Brandy Brook. March 2016.

NYSDEC, 2015. Record of Decision, Saranac Lake Gas Company, Inc., Operable Unit Number 03: Pontiac Bay on Lake Flower. March 2015.

ATTACHMENTS:

A) Figure 1 – Site Location Map

B) Property Owners

a. Property Owners Table.xls

C) Correspondence with Regulators (Attach a copy of each correspondence)

a. New York Natural Heritage Program – Letter

b. New York State Historic Preservation – Letter

c. US Fish and Wildlife – Letter

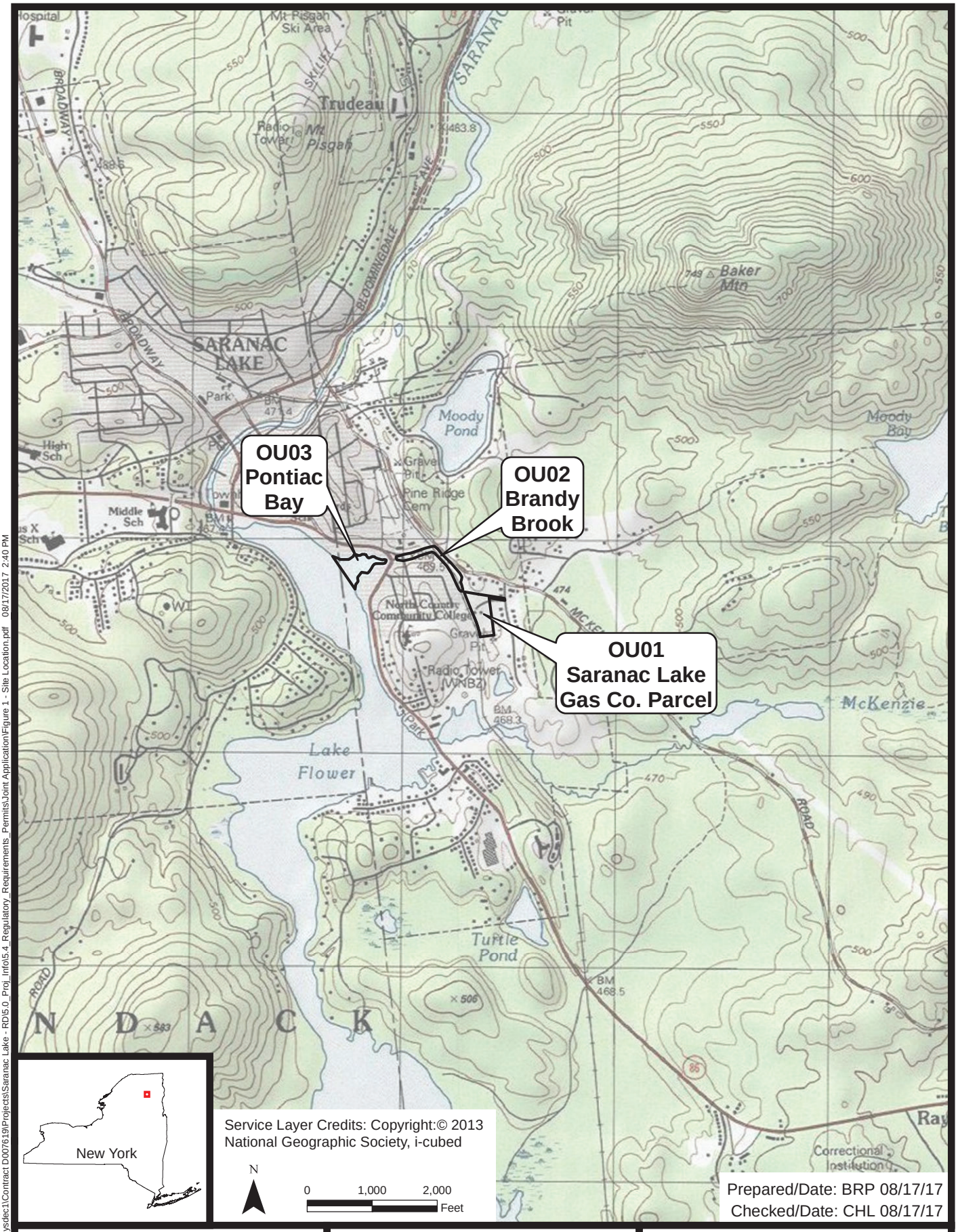
D) Army Corps of Engineers (ACOE) Jurisdictional Determination (JD)

a. ACOE JD Appendix 1

E) Restoration Plan

F) Pre Design Investigation Field Activities Report

ATTACHMENT A
SITE LOCATION MAP



NYSDEC Site # 516008
Saranac Lake Gas Co., Inc.
Saranac Lake, New York

MACTEC

Site Location Map

Project 3611161193 Figure 1

Document: P:\Projects\nysdec1\Contract D007619\Projects\Saranac Lake - RI_FS\4.0_Deliverables\4.5_Databases\GIS\MapDocuments\Phase II RI\SiteLocation_OU123.mxd
PDF: P:\Projects\nysdec1\Contract D007619\Projects\Saranac Lake - RD\5.0_Proj_Info\5.4_Regulatory_Requirements_Permits\Joint Application\Figure 1 - Site Location.pdf 08/17/2017 2:40 PM

ATTACHMENT B
PROPERTY OWNERS

3. Name of Property Owner

TOWN	VILLAGE	OWNER	LOCATION	TAXMAP	BOOKPAGE	CLASS	ACRES	OWNER ADDRESS		
North Elba	Saranac Lake	Saranac Lake Gas Co Inc	Payeville Ln	32.0KC-1-11.000	141_392	441: Fuel Store&Dist	4.5	PO Box 798	Valley Forge PA	19482
North Elba	Saranac Lake	Dormitory Authority	Pontiac St	32.0KC-1-19.000	638_102	330: Vacant comm	11	515 Broadway	Albany NY	12207
North Elba	Saranac Lake	Carlene K Cloud	70 Slater Ave	32.0JC-4-1.000	1304_130	210: 1 Family Res	0.3	70 Slater Ave	Saranac Lake NY	12983
North Elba	Saranac Lake	David J Munn	20 Brandy Brook Ave	32.0JC-4-2.000	1199_35	210: 1 Family Res	0.3	20 Brandy Brook Ave	Saranac Lake NY	12983
North Elba	Saranac Lake	NYSARC Inc	26 Brandy Brook Ave	32.0JC-4-3.000	1276_224	230: 3 Family Res	0.63	12 Mohawk St	Tupper Lake NY	129861028
North Elba	Saranac Lake	Mary E Handley	34 Brandy Brook Ave	32.0JC-4-4.000	621_90	210: 1 Family Res	0.3	34 Brandy Brook Ave	Saranac Lake NY	12983
North Elba	Saranac Lake	Gary E Martin	38 Brandy Brook Ave	32.0JC-4-5.000	769_219	210: 1 Family Res	0.3	38 Brandy Brook Ave	Saranac Lake NY	12983
North Elba	Saranac Lake	Barbara A Kent	42 Brandy Brook Ave	32.0JC-4-6.000	1117_49	210: 1 Family Res	0.48	42 Brandy Brook Ave	Saranac Lake NY	12983
North Elba	Saranac Lake	Trustees Village Saranac Lake	Pine St	32.0JC-6-1.000	547_067	963: Municpl park	1	3 Main St	Saranac Lake NY	129832294
North Elba	Saranac Lake	Mark S Nason	1071 Pine St	32.0JC-6-5.000	884_333	210: 1 Family Res	0.4	1071 Pine St	Saranac Lake NY	12983

Note:
1] NYSDEC is in the process of obtaining access from the property owners.

MACTEC

engineering and constructing a better tomorrow

Response to Comments Letter

Army Corps of Engineers
Upstate Regulatory Field Office
1 Buffington St., Building 10, 3rd FL. North
Watervliet, New York 121189-4000

To:	Bruce, Kevin
From:	Stelmack, Mark (MACTEC)
CC:	Mason, Mike (NYSDEC); Lyman, Charles (MACTEC)
Date:	October 10, 2017
Re:	Permit Application No. NAN02017-00440-UBR – Additional Information and Clarification

Dear Mr. Bruce

This letter contains a response to your request for additional information and clarification regarding the subject Permit Application, outlined in your letter dated September 18, 2017.

1) **USACOE Comment:** Additional Joint Application signature pages with property owner signatures or copies of formal signed legal consent documents for each property owner.

   Response: Copies of property owner access agreements, currently being arranged by the New York State Department of Environmental Conservation (NYSDEC), will be furnished to the USCOE when completed.

2) **USACOE Comment:** An official list of Endangered or Threated species in the vicinity of the project site from the U.S. Fish and Wildlife Service IPaC website, as referenced in FWS correspondence dated June 8, 2017 which was included in your submittal. Provide an assessment of the proposed project and its potential impact on any bats listed.

   Response: Attachment 1 to this letter is the output from the IPaC website and a brief Endangered or Threatened Species Assessment for the Northern Long-eared Bat.

3) **USACOE Comment**: The application states you are requesting an Approved JD for the project. I will be emailing you a more current JD request (Appendix 1) form along with information on the types of JDs available. Please review this information and submit the revise form.

   Response: Attachment 2 is the revised Appendix 1 – Request of Corps Jurisdictional Determination (JD) form. Based on our review of the information you provided we are not requesting a JD at this time. The Regulatory Guidance Letter No. 16-01 dated

MACTEC Engineering and Consulting, P.C.
511 Congress Street, Suite 200 • Portland, ME 04112-7050 • Phone: 207-775-5401 • Fax: 207-772-4762

October 2016 suggests that a JD is not issued when seeking authorization to do work under nationwide general permits.

4) **USACOE Comment:** A narrative providing details on how excavation of sediment from the brook and bay would be conducted, how the materials would be handled, where the materials would be dewatered and whether there would be return flow to the waterway. Locations of dewatering areas should be depicted on drawings.

Response: The following text provides a description of the excavation process proposed for Brandy Brook and Pontiac Bay.

Sediment Excavation from Brandy Brook.

The selected remedial action contractor will be responsible for providing details for the diversion of upstream brook flow around the excavation area. Diverted flows will be routed to Pontiac Bay.

The remedial action contractor will be responsible for providing details for dewatering within the sediment excavation area. Construction water will be transported to an onsite treatment unit located at a yet to be determined location. Treated water is planned to be discharged to the Village of Saranac Lake sanitary sewer with permission/approval from the receiving facility.

Sediment will be removed with an excavator bucket and transported in lined vehicles to a dewatering facility located at a yet to be determined location, possibly at the former Saranac Lake Gas Company (OU-1) property located adjacent to the brook as depicted on Drawing C-101.

Sediment Excavation from Pontiac Bay.

The selected remedial action contractor will be responsible for providing details for the diversion of upstream brook flow around the bay excavation area. Diverted brook flow will be routed to a location in Pontiac Bay outside of the excavation area.

The remedial action contractor will be responsible for providing details for dewatering within the sediment excavation area. Construction water will be transported to an onsite treatment unit located at a yet to be determined location. Treated water is planned to be discharged to the Village of Saranac Lake sanitary sewer with permission/approval from the receiving facility.

Sediment will be removed using mechanical dredging (an excavator mounted on a floating barge) and loaded onto support barge(s) for transport to a dewatering facility located at the public boat launch property owned by the NYSDEC as depicted on Drawing C-104.

5) **USACOE Comment**: Cross-section drawings of all stream channel crossings that will be replaced.

Response: Attachment 3 contains drawings (which will be included in the final remedial action design) of the stream channel crossings proposed. The crossing design complies with the requirements of Section G-B in Section G of the Buffalo and New York Districts General Regional Conditions.

6) **USACOE Comment:** Volumes of all temporary and permanent fills that would be discharged into waters of the United States for in-stream structures, check dams for

dewatering, temporary access, cofferdams, etc. In addition, please provide the volume of materials that would be used for restoration both in the brook and Lake Flower.

Response: To effectively conduct diversion of up gradient brook flows around active work areas as well as manage dewatering activities within active work areas, remediation of OU2 Brandy Brook will be conducted in segments starting from the upstream end and progressing downstream. The actual limits of each segment will be provided by the Remedial Contractor prepared Construction Work Plan, however it is expected the segments will be approximately 200 to 400 feet in length (shorter lengths for deeper excavation areas). The actual methods for temporary isolation of the active work areas will also be outlined in the Remedial Contractor's Construction Work Plan but will likely consist of temporary cofferdams using aqua dams or sheeting. The temporary cofferdams would be removed and reused as work progresses downstream and restored areas are stabilized. The total impacted sediment and soil excavation for OU2 Brandy Brook is approximately 5800 cubic yards (cy) (includes 25% contingency since actual excavation limits will be determined by confirmation sampling). Permanent filling for the restoration activities will also be approximately 5800 cy with the goal to generally restore the existing topography. Permanent fill for restoration will include clean subgrade fill (approximately 4500 cy), wetland topsoil (approximately 830 cy), and stream bed material (approximately 470 cy).

Sediment removal within UO3 Pontiac Bay in Lake Flower will be conducted by dredging therefore no temporary fills, check dams or cofferdams will be used, with the OU3 limits isolated within a turbidity curtain. The total impacted sediment excavation for OU3 Pontiac Bay is approximately 15,950 cy (includes 25% contingency since actual excavation limits will be determined by confirmation sampling). Some of the sediment to be excavated includes a mound of sediment deposition near the east end of the bay likely from storm drain piping systems within adjacent roads. Permanent filling for the restoration activities will not include replacing this sediment mound so the fill volume will be slightly less than the excavated volume but the goal is to generally restore the original bay topography. Permanent fill for restoration will include clean granular dredged area backfill material of approximately 15,100 cy.

We hope that the responses and information provided satisfactorily address your request for clarification and additional information. Please feel free to contact us should you require additional information or have any questions.

Sincerely,

MACTEC Engineering and Consulting, P.C.

Mark Stelmack

Mark Stelmack, P.E.

Project Manager

cc: Mike Mason, NYSDEC

United States Department of the Interior

FISH AND WILDLIFE SERVICE
New York Ecological Services Field Office
3817 Luker Road
Cortland, NY 13045-9349
Phone: (607) 753-9334 Fax: (607) 753-9699
http://www.fws.gov/northeast/nyfo/es/section7.htm

In Reply Refer To:
Consultation Code: 05E1NY00-2017-SLI-3457
Event Code: 05E1NY00-2017-E-09887
Project Name: Saranac Lake Gas Company Site

September 21, 2017

Subject: List of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. 1531 et seq.). This list can also be used to determine whether listed species may be present for projects without federal agency involvement. New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list.

Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the ESA, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC site at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list. If listed, proposed, or candidate species were identified as potentially occurring in the project area, coordination with our office is encouraged. Information on the steps involved with assessing potential impacts from projects can be found at: http://www.fws.gov/northeast/nyfo/es/section7.htm

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 et seq.), and projects affecting these species may require development of an eagle conservation plan (

http://www.fws.gov/windenergy/eagle_guidance.html). Additionally, wind energy projects should follow the Services wind energy guidelines (http://www.fws.gov/windenergy/) for minimizing impacts to migratory birds and bats.

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at: http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm; http://www.towerkill.com; and http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the ESA. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

New York Ecological Services Field Office
3817 Luker Road
Cortland, NY 13045-9349
(607) 753-9334

Project Summary

Consultation Code: 05E1NY00-2017-SLI-3457

Event Code: 05E1NY00-2017-E-09887

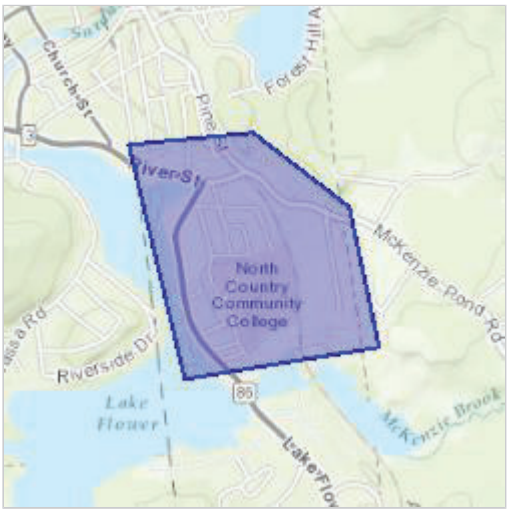
Project Name: Saranac Lake Gas Company Site

Project Type: Superfund Site Remediation

Project Description: The site is a former manufactured gas plant in Saranac Lake, New York. The site is a State superfund site and has been slated for clean up. The clean up project is going to take several years and includes dredging Pontiac Bay of Lake Flower and a 2000 ft section of Brandy Brook a small perennial stream that discharges to Pontiac Bay. The remediation work will require the removal of trees over 3" DBH in order to access the site and excavate contaminated sediment and soil. The site will be restored in kind once contaminated sediment and soil have been excavated and trucked off site. A formal inventory of trees that will be impacted has not been conducted however, It has already been established that any tree removal would occur during the period between November 1st and March 31st.

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/place/44.32043990403298N74.11939229368554W



Counties: Essex, NY | Franklin, NY

Endangered Species Act Species

There is a total of 1 threatened, endangered, or candidate species on this species list. Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species. See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

Mammals

NAME	STATUS
Northern Long-eared Bat *Myotis septentrionalis* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9045	Threatened

Critical habitats

There are no critical habitats within your project area under this office's jurisdiction.

Appendix 1 - REQUEST FOR CORPS JURISDICTIONAL DETERMINATION (JD)

To: New York District

- Type of determination being requested:
  ___ I am requesting an approved JD.
  ___ I am requesting a preliminary JD.
  X___ I am not requesting a JD.
  ___ I am requesting a "no permit required" letter as I believe my proposed activity is not regulated.
  ___ I am unclear as to which JD I would like to request and require additional information to inform my decision.

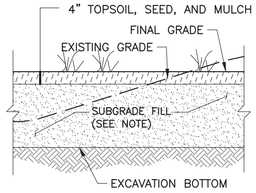
- On property located at: Payeville Road
  (Street Address)
  City/Township/Parish: Saranac Lake County: Essex State: ME
  Acreage of Parcel/Review Area for JD: 2.23 acres
  Section: NA Township: NA Range: NA
  Latitude (decimal degrees): 44.32082° Longitude (decimal degrees): 74.11726°
  (For linear projects, please include the center point of the proposed alignment.)
- Please attach a survey/plat map and vicinity map identifying location and review area for the JD.
- ___ I currently own this property. ___ I plan to purchase this property.
  X___ I am an agent/consultant acting on behalf of the requestor.
  ___ Other (please explain): _____
- Reason for request: (check as many as applicable)
  ___ I intend to construct/develop a project or perform activities on this parcel which would be designed to avoid all aquatic resources.
  ___ I intend to construct/develop a project or perform activities on this parcel which would be designed to avoid all jurisdictional aquatic resources under Corps authority.
  ___ I intend to construct/develop a project or perform activities on this parcel which may require authorization from the Corps, and the JD would be used to avoid and minimize impacts to jurisdictional aquatic resources and as an initial step in a future permitting process.
  ___ I intend to construct/develop a project or perform activities on this parcel which may require authorization from the Corps; this request is accompanied by my permit application and the JD is to be used in the permitting process.
  ___ I intend to construct/develop a project or perform activities in a navigable water of the U.S. which is included on the district Section 10 list and/or is subject to the ebb and flow of the tide.
  ___ A Corps JD is required in order to obtain my local/state authorization.
  ___ I intend to contest jurisdiction over a particular aquatic resource and request the Corps confirm that jurisdiction does/does not exist over the aquatic resource on the parcel.
  ___ I believe that the site may be comprised entirely of dry land.
  Other: Work is being done under Nationwide Permit

By signing below, you are indicating that you have the authority, or are acting as the duly authorized agent of a person or entity with such authority, to and do hereby grant Corps personnel right of entry to legally access the site if needed to perform the JD. Your signature shall be an affirmation that you possess the requisite property. rights to request a JD on the subject property.

*Signature: Mark Stelmack as agent for NYSDEC Date: 10/10/2017

- Typed or printed name: Mark Stelmack, P.E.
  Company name: MACTEC Engineering and Consulting, P.C.
  Address: 511 Congress Street, Suite 200, Portland, Maine 04101
  Daytime phone no.: 207-775-5401
  Email address: mark.stelmack@amecfw.com

*Authorities: Rivers and Harbors Act, Section 10, 33 USC 403; Clean Water Act, Section 404, 33 USC 1344; Marine Protection, Research, and Sanctuaries Act, Section 103, 33 USC 1413; Regulatory Program of the U.S. Army Corps of Engineers; Final Rule for 33 CFR Parts 320-332.
Principal Purpose: The information that you provide will be used in evaluating your request to determine whether there are any aquatic resources within the project area subject to federal jurisdiction under the regulatory authorities referenced above.
Routine Uses: This information may be shared with the Department of Justice and other federal, state, and local government agencies, and the public, and may be made available as part of a public notice as required by federal law. Your name and property location where federal jurisdiction is to be determined will be included in the approved jurisdictional determination (AJD), which will be made available to the public on the District's website and on the Headquarters USACE website.
Disclosure: Submission of requested information is voluntary; however, if information is not provided, the request for an AJD cannot be evaluated nor can an AJD be issued.

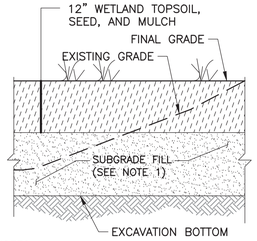


NOTE:
DEPTHS OF SUBGRADE FILL VARIES BASED ON ACTUAL EXCAVATION BOTTOM AND FINAL GRADE ELEVATIONS.

VEGETATED UPLAND RESTORATION

NTS

TYP N C-304

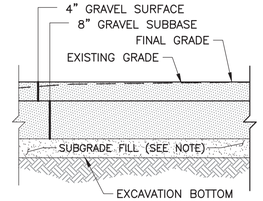


NOTES:
1. DEPTHS OF SUBGRADE FILL VARIES BASED ON ACTUAL EXCAVATION BOTTOM AND FINAL GRADE ELEVATIONS.
2. INSTALL PLANTINGS AS SHOWN ON DRAWINGS.

VEGETATED WETLAND RESTORATION

NTS

TYP O C-304

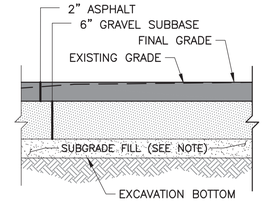


NOTE:
DEPTHS OF SUBGRADE FILL VARIES BASED ON ACTUAL EXCAVATION BOTTOM AND FINAL GRADE ELEVATIONS.

GRAVEL DRIVE RESTORATION

NTS

TYP P C-304

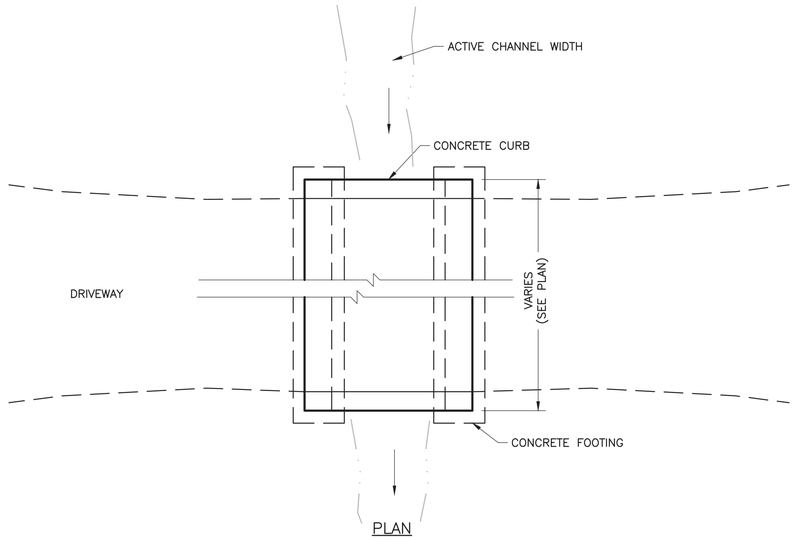


NOTE:
DEPTHS OF SUBGRADE FILL VARIES BASED ON ACTUAL EXCAVATION BOTTOM AND FINAL GRADE ELEVATIONS.

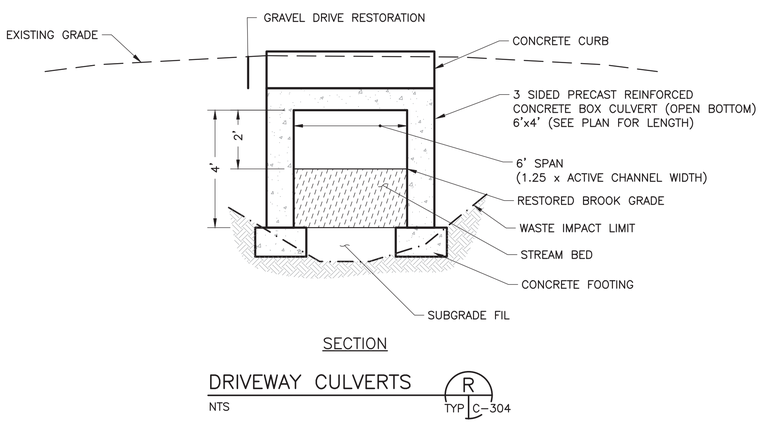
PAVED DRIVE RESTORATION

NTS

TYP Q C-304



PLAN

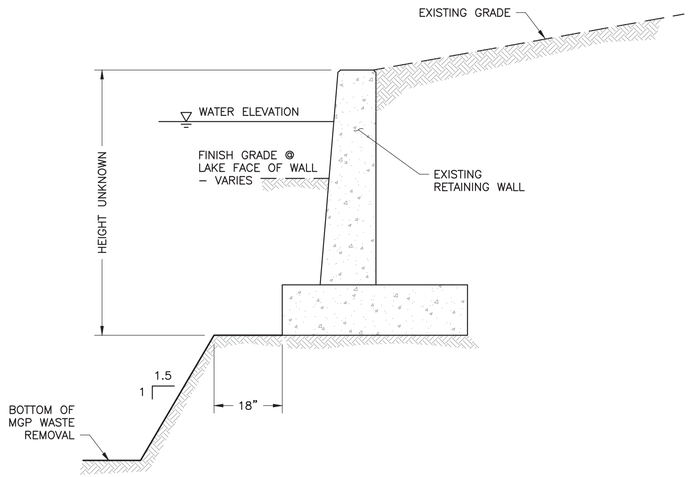


SECTION

DRIVEWAY CULVERTS

NTS

TYP R C-304



RETAINING WALL

NTS

TYP S C-304

NO.	DATE	DSGN
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B	8/22/17	CHL
A	4/20/17	MAP
-	PERMITTING	MJS
-	30% DESIGN	MJS
-	REVISION	BY

DR MAP | CHK WJW | APVD MAP | APVD MJS

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NEW YORK STATE OF OPPORTUNITY. Department of Environmental Conservation

REMEDIAL ACTION
SARANAC LAKE GAS CO., INC.
SARANAC LAKE, NEW YORK
NYSDEC SITE NUMBER - 516008

MACTEC Engineering and Consulting, P.C.
P.O. Box 1026, 11 Commercial Street
Portland, Maine 04112-7050
(207) 775-5401

MACTEC

CIVIL

CIVIL DETAILS - 2

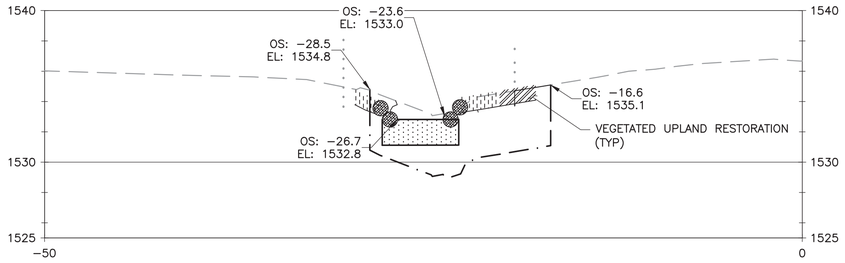
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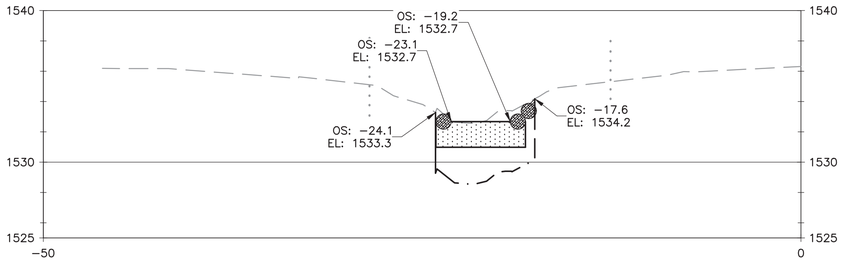
DATE	JULY 2017
PROJ	3611-16-1193
DWG	C-304
SHEET	16 OF 29

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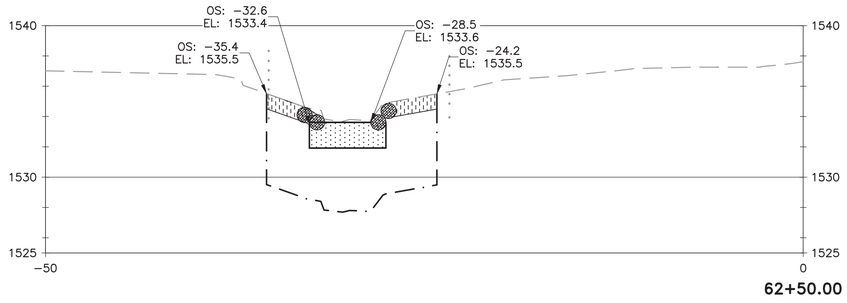
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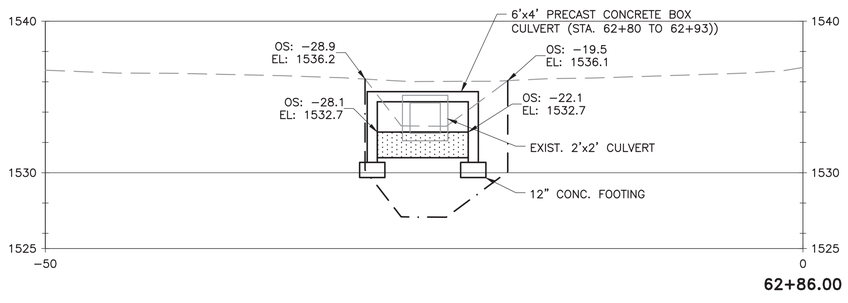
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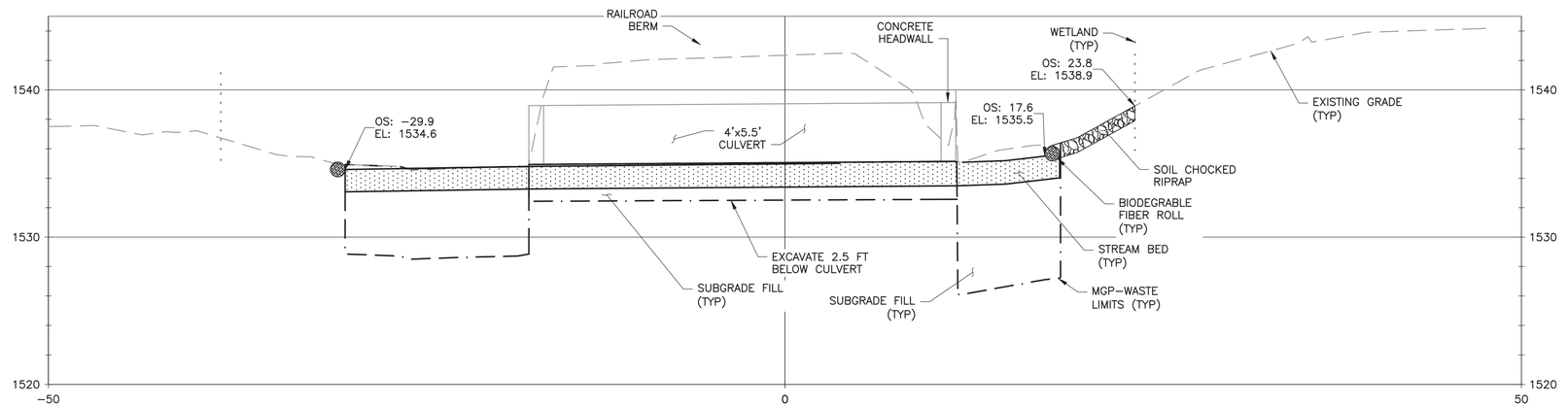
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NO.	DATE	DSGN	DR	CHK	APVD
C	10/06/17	CHL	MJS	MJS	MJS
B	8/22/17	CHL	MJS	MAP	MJS
A	4/20/17	MAP	WJW	MAP	APVD

PERMITTING - REVISED PER COMMENTS
PERMITTING
30% DESIGN
REVISION

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NEW YORK STATE OF OPPORTUNITY. Department of Environmental Conservation

REMEDIAL ACTION
SARANAC LAKE GAS CO., INC.
SARANAC LAKE, NEW YORK
NYSDEC SITE NUMBER - 516008

MACTEC Engineering and Consulting, P.C.
P.O. Box 1062, 11 Commercial Street
Portland, Maine 04112-7050
(207) 775-5401

MACTEC

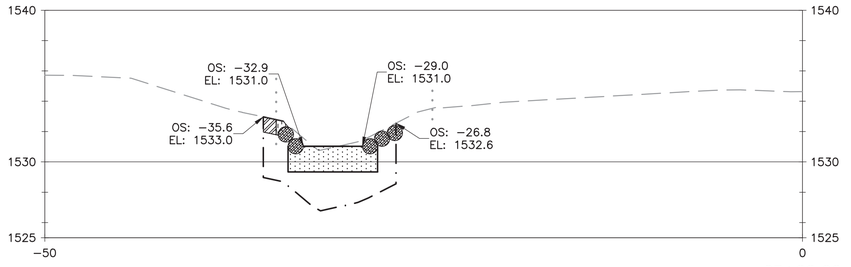
CIVIL
CONSTRUCTION BASELEINE
CROSS SECTIONS
OU02

VERIFY SCALE

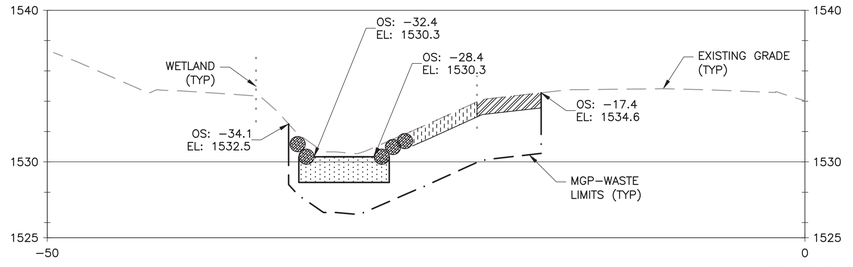
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DATE	FEB 2017
PROJ	3611-16-1193
DWG	C-405
SHEET	21 OF 29

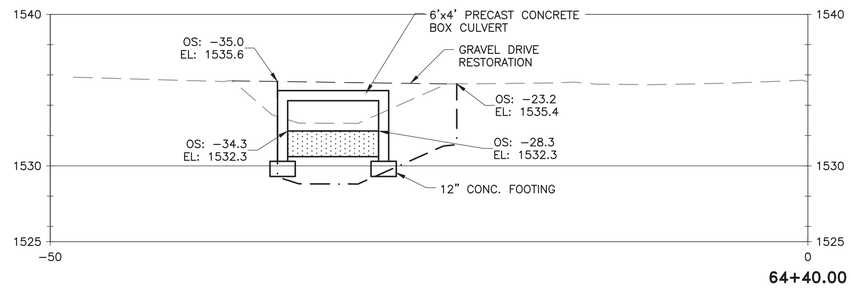
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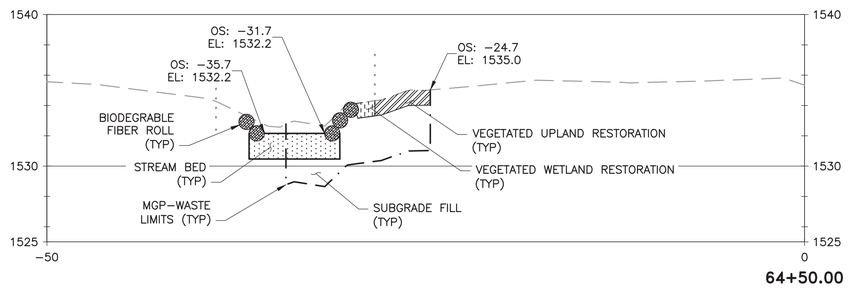
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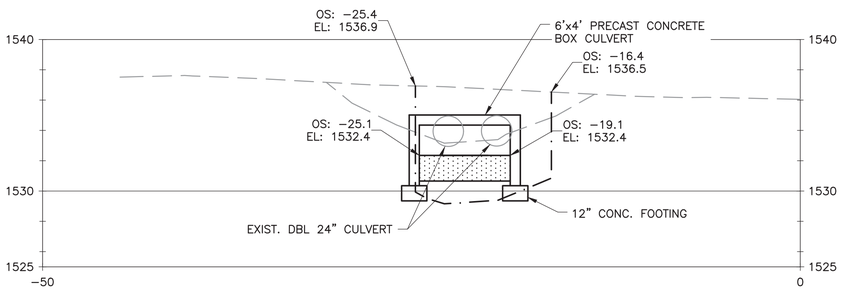
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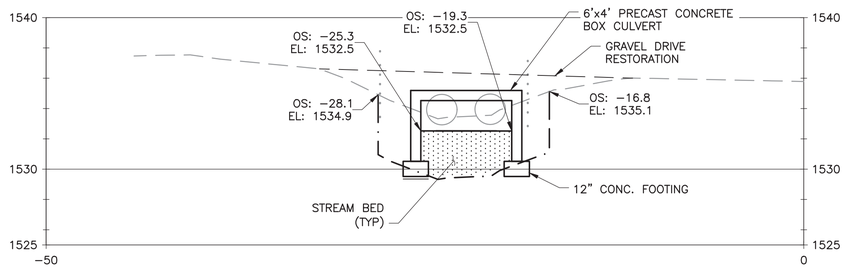
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NO.	DATE	DSGN	DR	CHK	APVD
C	10/06/17	MAP	WJW	MAP	MJS
B	8/22/17	PERMITTING - REVISED PER COMMENTS		CHL	MJS
A	4/20/17	PERMITTING		CHL	MJS
		30% DESIGN		MAP	MJS
		REVISION		BY	APVD

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NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
Department of Environmental Conservation

REMEDIAL ACTION
SARANAC LAKE GAS CO., INC.
SARANAC LAKE, NEW YORK
NYSDEC SITE NUMBER - 516008

MACTEC Engineering and Consulting, P.C.
P.O. Box 7050, 511 Congress Street
Portland, Maine 04112-7050
(207) 775-5401

MACTEC

CIVIL
CONSTRUCTION BASELEINE
CROSS SECTIONS
OU02

VERIFY SCALE

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DATE	FEB 2017
PROJ	3611-16-1193
DWG	C-406
SHEET	22 OF 29

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ATTACHMENT C
CORRESPONDENCE WITH REGULATORS

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Division of Fish and Wildlife, New York Natural Heritage Program
625 Broadway, Fifth Floor, Albany, NY 12233-4757
P: (518) 402-8935 | F: (518) 402-8925
www.dec.ny.gov

June 13, 2017

Charles H. Lyman
Mactec
511 Congress Street
Portland, ME 04101

Re: Proposed remedial activity at Saranac Lake Gas Company, Site No. 516008
County: Essex Town/City: North Elba

Dear Mr. Lyman:

In response to your recent request, we have reviewed the New York Natural Heritage Program database with respect to the above project.

Enclosed is a report of rare or state-listed animals and plants, and significant natural communities that our database indicates occur within two miles of the project site (but all are more than one mile from the project site).

For most sites, comprehensive field surveys have not been conducted; the enclosed report only includes records from our database. We cannot provide a definitive statement as to the presence or absence of all rare or state-listed species or significant natural communities. Depending on the nature of the project and the conditions at the project site, further information from on-site surveys or other sources may be required to fully assess impacts on biological resources.

Our database is continually growing as records are added and updated. If this proposed project is still under development one year from now, we recommend that you contact us again so that we may update this response with the most current information.

This response applies only to known occurrences of rare or state-listed animals and plants, and significant natural communities, maintained in the Natural Heritage database. For information regarding other regulated areas or resources (e.g., regulated wetlands; streams and lakes; and wild, scenic, and recreational rivers), please contact the NYS DEC Region 5 Office, Division of Environmental Permits, at dep.r5@dec.ny.gov, (518) 623-1286.

Sincerely,

Nicholas Conrad
Information Resources Coordinator
New York Natural Heritage Program

624

New York Natural Heritage Program

Report on Rare Animals, Rare Plants, and Significant Natural Communities

The following rare animals and significant natural communities have been documented within two miles of the Saranac Lake Gas Company Site.

The following animals, while not listed by New York State as Endangered or Threatened, are of conservation concern to the state, and are considered rare by the New York Natural Heritage Program.

COMMON NAME	*SCIENTIFIC NAME*	*NY STATE LISTING*	*HERITAGE CONSERVATION STATUS*	
Birds				
Common Loon	*Gavia immer*	Special Concern		
Breeding				
Mckenzie Pond				5835
Common Loon	*Gavia immer*	Special Concern		
Breeding				
Lake Colby				6458
Dragonflies and Damselflies				
Delicate Emerald	*Somatochlora franklini*	Unlisted	Critically Imperiled in NYS	
Oseetah Lake Bog, 2012:				14499
Ocellated Emerald	*Somatochlora minor*	Unlisted	Imperiled in NYS	
Oseetah Lake Bog, 2013:				14517
Ebony Boghaunter	*Williamsonia fletcheri*	Unlisted	Critically Imperiled in NYS	
Oseetah Lake Shore, 2008: The dragonflies were observed in a sedge and grass dominated bog, a marsh with cattails and reeds, in an opening along a woods road, and near a lake.				13431

The following significant natural communities are considered significant from a statewide perspective by the NY Natural Heritage Program. They are either occurrences of a community type that is rare in the state, or a high quality example of a more common community type. By meeting specific, documented criteria, the NY Natural Heritage Program considers these community occurrences to have high ecological and conservation value.

COMMON NAME	*HERITAGE CONSERVATION STATUS*	
Wetland/Aquatic Communities		
Dwarf Shrub Bog	High Quality Occurrence of Uncommon Community Type	
Lake Colby Bog: This large dwarf shrub bog that is in excellent condition within a large, moderate/high quality landscape.		15096

This report only includes records from the NY Natural Heritage database. For most sites, comprehensive field surveys have not been conducted, and we cannot provide a definitive statement as to the presence or absence of all rare or state-listed species. Depending on the nature of the project and the conditions at the project site, further information from on-site surveys or other sources may be required to fully assess impacts on biological resources.

If any rare plants or animals are documented during site visits, we request that information on the observations be provided to the New York Natural Heritage Program so that we may update our database.

Information about many of the rare animals and plants in New York, including habitat, biology, identification, conservation, and management, are available online in Natural Heritage's Conservation Guides at www.guides.nynhp.org, from NatureServe Explorer at www.natureserve.org/explorer, and from USDA's Plants Database at http://plants.usda.gov/index.html (for plants).

Information about many of the natural community types in New York, including identification, dominant and characteristic vegetation, distribution, conservation, and management, is available online in Natural Heritage's Conservation Guides at www.guides.nynhp.org. For descriptions of all community types, go to www.dec.ny.gov/animals/97703.html for Ecological Communities of New York State.

PLEASE NOTE

Requests for Information May Be Submitted Online or Via E-Mail

For future requests, we are pleased to invite you to use our new online Project Screening Request Form (www.nynhp.org/ProjectScreening), which allows online submission of information requests. Alternatively, you may submit requests via e-mail to our dedicated e-mailbox, NaturalHeritage@dec.ny.gov. Instructions for submitting requests can be found at http://www.dec.ny.gov/animals/31181.html. While we encourage submission of requests via e-mail, we will still accept mailed requests.

In order to receive responses to requests sooner, we recommend that before you submit a request for a project screening, you use the newly upgraded online Environmental Resources Mapper, http://www.dec.ny.gov/animals/38801.html.
** If your project site does not fall within an area displayed in the Rare Plants and Rare Animals layer, then New York Natural Heritage has no records in the vicinity of your project site, and you will know that we have nothing to report. Therefore, you will not need to submit a request for a project screening. **
For a record of your results, use the Identify Tool to click on your project location, and print or save the Identify Results window that opens.
(Information on Significant Natural Communities is provided in the Identify Results Window.)

If your project site does fall within an area displayed in the Rare Plants and Rare Animals layer, and you would like more information, then submit a request for a project screening via our new online Project Screening Request Form or our dedicated e-mailbox as described above.

Thank-you,
The New York Natural Heritage Information Services Team

NEW YORK
STATE OF
OPPORTUNITY.

Parks, Recreation, and Historic Preservation

ANDREW M. CUOMO
Governor

ROSE HARVEY
Commissioner

August 01, 2017

Mr. Charles Lyman
Senior Project Scientist
AmecFW working with NYSDEC
511 Congress Street
Portland , ME 04101

Re: USACE
Saranac Lake Gas Company, Inc. Remediation
Pontiac Bay and Brandy Brook, Saranac Lake, NY
17PR03069

Dear Mr. Lyman:

Thank you for requesting the comments of the State Historic Preservation Office (SHPO). We have reviewed the project in accordance with Section 106 of the National Historic Preservation Act of 1966. These comments are those of the SHPO and relate only to Historic/Cultural resources. They do not include potential environmental impacts to New York State Parkland that may be involved in or near your project. Such impacts must be considered as part of the environmental review of the project pursuant to the National Environmental Policy Act and/or the State Environmental Quality Review Act (New York Environmental Conservation Law Article 8).

Based upon this review, the New York SHPO has determined that no historic properties will be affected by this undertaking.

If further correspondence is required regarding this project, please be sure to refer to the OPRHP Project Review (PR) number noted above.

Sincerely,

Michael F. Lynch, P.E., AIA
Director, Division for Historic Preservation

United States Department of the Interior

FISH AND WILDLIFE SERVICE
New York Field Office
3817 Luker Road
Cortland, NY 13045
Phone: (607) 753-9334 Fax: (607) 753-9699
http://www.fws.gov/northeast/nyfo

Document Control Number: 17TA2137

To: Mark Stelmack Date: Jun 8, 2017

Regarding: Saranac Lake Gas Company Site

Town/County: Village of Saranac Lake / Essex County

We have received your request for information regarding occurrences of federally-listed threatened and endangered species within the vicinity of the above-referenced project/property. In an effort to streamline project reviews, species lists may now be obtained from our website at **http://www.fws.gov/northeast/nyfo/es/section7.htm**. Please go to this site and follow the instructions to obtain: an official list request response; information about listed, proposed, and candidate species; and steps to complete initial assessments of whether a species may be present and impacted by a proposed action. Please note that this process involves two parts: (1) visiting the U.S. Fish and Wildlife Service's IPaC website to obtain an official species list; and (2) returning to the New York Field Office's website to complete the remaining steps in determining your project's potential impacts.

As a reminder, Section 9 of the Endangered Species Act (ESA) (87 Stat. 884, as amended; 16 U.S.C. 1531 *et seq.*) prohibits unauthorized taking* of listed species and applies to federal and non-federal activities. Additionally, threatened and endangered species and their habitats are protected by Section 7(a)(2) of the ESA, which requires federal agencies, in consultation with the Service, to ensure that any action they authorize, fund, or carry out is not likely to jeopardize the continued existence of listed species or result in the destruction or adverse modification of designated critical habitat. An assessment of the potential direct, indirect, and cumulative impacts is required for all federal actions that may affect listed species.

For projects not authorized, funded, or carried out by a federal agency, we provide technical assistance to individuals and other non-federal entities to assist with project planning to avoid the potential for "take," or when appropriate, to provide assistance with their application for an incidental take permit pursuant to Section 10(a)(1)(B) of the ESA.

Project construction or implementation should not commence until all requirements of the ESA have been fulfilled. If you have any questions or require further assistance regarding threatened or endangered species, please contact the Endangered Species Program at (607) 753-9334. Please refer to the above document control number in any future correspondence.

*Under the ESA and regulations, it is illegal for any person subject to the jurisdiction of the United States to ***take*** (includes harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect; or to attempt any of these), import or export, ship in interstate or foreign commerce in the course of commercial activity, or sell or offer for sale in interstate or foreign commerce any endangered fish or wildlife species and most threatened fish and wildlife species. It is also illegal to possess, sell, deliver, carry, transport, or ship any such wildlife that has been taken illegally. "Harm" includes any act which actually kills or injures fish or wildlife, and case law has clarified that such acts may include significant habitat modification or degradation that significantly impairs essential behavioral patterns of fish or wildlife.

ATTACHMENT D
ARMY CORPS OF ENGINEERS (ACOE)
JURISDICTIONAL DETERMINATION (JD)

Appendix 1 - REQUEST FOR CORPS JURISDICTIONAL DETERMINATION (JD)

To: District Name Here

- I am requesting a JD on property located at: Saranac Lake Gas Co., Inc.
  (Street Address)
  City/Township/Parish: Saranac Lake County: Essex State: NY
  Acreage of Parcel/Review Area for JD: _____
  Section: NA Township: NA Range: NA
  Latitude (decimal degrees): 44 19' 14.95" Longitude (decimal degrees): 74 07' 02.58"
  (For linear projects, please include the center point of the proposed alignment.)
- Please attach a survey/plat map and vicinity map identifying location and review area for the JD.
- ☐ I currently own this property. ☐ I plan to purchase this property.
  ☐ I am an agent/consultant acting on behalf of the requestor.
  ☑ Other (please explain): State Regulatory addressing a hazardous waste site.
- Reason for request: (check as many as applicable)
  ☐ I intend to construct/develop a project or perform activities on this parcel which would be designed to avoid all aquatic resources.
  ☐ I intend to construct/develop a project or perform activities on this parcel which would be designed to avoid all jurisdictional aquatic resources under Corps authority.
  ☐ I intend to construct/develop a project or perform activities on this parcel which may require authorization from the Corps, and the JD would be used to avoid and minimize impacts to jurisdictional aquatic resources and as an initial step in a future permitting process.
  ☑ I intend to construct/develop a project or perform activities on this parcel which may require authorization from the Corps; this request is accompanied by my permit application and the JD is to be used in the permitting process.
  ☐ I intend to construct/develop a project or perform activities in a navigable water of the U.S. which is included on the district Section 10 list and/or is subject to the ebb and flow of the tide.
  ☐ A Corps JD is required in order to obtain my local/state authorization.
  ☐ I intend to contest jurisdiction over a particular aquatic resource and request the Corps confirm that jurisdiction does/does not exist over the aquatic resource on the parcel.
  ☐ I believe that the site may be comprised entirely of dry land.
  ☐ Other: _____
- Type of determination being requested:
  ☑ I am requesting an approved JD.
  ☐ I am requesting a preliminary JD.
  ☐ I am requesting a "no permit required" letter as I believe my proposed activity is not regulated.
  ☐ I am unclear as to which JD I would like to request and require additional information to inform my decision.

By signing below, you are indicating that you have the authority, or are acting as the duly authorized agent of a person or entity with such authority, to and do hereby grant Corps personnel right of entry to legally access the site if needed to perform the JD. Your signature shall be an affirmation that you possess the requisite property rights to request a JD on the subject property.

*Signature: Michael Mason Date: 8/23/2017

- Typed or printed name: Michael Mason
  Company name: NYDEC, Division of Environmental Remediation
  Address: 625 Broadway, 12th floor
  Albany, New York 12233-7017
  Daytime phone no.: (518) 402-9814
  Email address: michael.mason@dec.ny.gov

*Authorities: Rivers and Harbors Act, Section 10, 33 USC 403; Clean Water Act, Section 404, 33 USC 1344; Marine Protection, Research, and Sanctuaries Act, Section 103, 33 USC 1413; Regulatory Program of the U.S. Army Corps of Engineers; Final Rule for 33 CFR Parts 320-332.
Principal Purpose: The information that you provide will be used in evaluating your request to determine whether there are any aquatic resources within the project area subject to federal jurisdiction under the regulatory authorities referenced above.
Routine Uses: This information may be shared with the Department of Justice and other federal, state, and local government agencies, and the public, and may be made available as part of a public notice as required by federal law. Your name and property location where federal jurisdiction is to be determined will be included in the approved jurisdictional determination (AJD), which will be made available to the public on the District's website and on the Headquarters USACE website.
Disclosure: Submission of requested information is voluntary; however, if information is not provided, the request for an AJD cannot be evaluated nor can an AJD be issued.

ATTACHMENT E
RESTORATION PLAN

RESTORATION PLAN
BRANDY BROOK (OU02) AND PONTIAC BAY ON LAKE FLOWER (OU03)

SARANAC LAKE GAS COMPANY, INC
NYSDEC SITE No. 516008

WORK ASSIGNMENT NO. D007619-39

Prepared for:

New York State Department of Environmental Conservation
Albany, New York

Prepared by:

MACTEC Engineering and Consulting, P.C.
Portland, Maine

MACTEC: 3611161193

AUGUST 2017

RESTORATION PLAN
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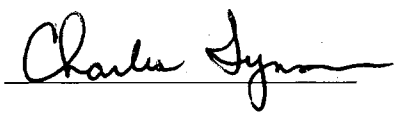
Prepared by:

MACTEC Engineering and Consulting, P.C.
Portland, Maine

MACTEC: 3611161193

August 2017

Submitted by:



Charles Lyman
Senior Project Scientist

Approved by:



Mark Stelmack, P.E.
Project Manager

TABLE OF CONTENTS

LIST OF TABLES iii

GLOSSARY OF ACRONYMS AND ABBREVIATIONS iv

1.0 INTRODUCTION 1-1

2.0 IMPACT AREAS 2-1
2.1 PROPOSED MITIGATION ACTIONS 2-3

3.0 HYDROLOGY 3-1

4.0 GRADING PLAN 4-1

5.0 PLANTING PLAN 5-1
5.1 TREES 5-1
5.2 SHRUBS 5-2
5.3 HERBACEOUS PLANTS 5-3

6.0 EROSION CONTROL 6-1

7.0 INVASIVE/NOXIOUS SPECIES 7-1

8.0 RESTORATION MONITORING 8-1
8.1 RESTORATION OBJECTIVE 8-1
8.2 MEASUREMENTS OF SUCCESS FOR WETLAND/UPLAND RESTORATION 8-1
8.3 PERFORMANCE STANDARDS FOR SUCCESS OF THE RESTORATION 8-2
8.4 MONITORING 8-3
8.4.1 Monitoring Report Guidance 8-3
8.4.2 Monitoring Schedule 8-4
8.4.3 Monitoring Vegetation and Soils 8-4
8.4.4 Meander Surveys 8-5
8.4.5 Monitoring General Wildlife Use 8-5
8.4.6 Photographic Documentation 8-6
8.5 ANNUAL MONITORING REPORTS 8-6
8.6 CORRECTIVE ACTIONS FOR RESTORATION DEFICIENCIES 8-7

9.0 PROJECT SCHEDULE 9-1

10.0 ASSESSMENT PLAN 10-1

11.0 RESPONSIBLE PARTIES FOR RESTORATION ACTIONS 11-1

12.0 REFERENCES 12-1

TABLE OF CONTENTS (CONTINUED)

TABLES

APPENDICES

Appendix A: Design Drawings

LIST OF TABLES

Table

4.1 Brook Channel and Riparian Area Specifications

5.1 Replacement Tree and Shrub Species and Quantities Required

7.1 New York State Invasive Plant Species

GLOSSARY OF ACRONYMS AND ABBREVIATIONS

bgs	below ground surface
C&D	construction and demolition
sf	square feet
MACTEC	MACTEC Engineering and Consulting, P.C.
MGP	manufactured gas plant
NYS	New York State
NYSDOT	New York State Department of Transportation
NYSDEC	New York State Department of Environmental Conservation
ROD	Record of Decision
sf	square feet
Site	Saranac Lake Gas Co, Inc.

1.0 INTRODUCTION

The Record of Decision (ROD) for OU02: Brandy Brook (New York State Department of Environmental Conservation [NYSDEC], 2016) and OU03: Pontiac Bay on Lake Flower (NYSDEC, 2015) present the selected remedies for the operable units OU02 and OU03 of the Saranac Lake Gas Co, Inc. Site (the Site), a Class 2 inactive hazardous waste disposal site.

The selected remedy for OU02 is the removal of manufactured gas plant (MGP)-related contamination within Brandy Brook and bordering wetlands which exceed guidance values for Class A sediments or restricted residential and protection of ecological resources soil cleanup objectives. Implementation of the OU02 remedy will require sediment and soil removal within an area approximately of 29,000 square feet (sf), excavated to an anticipated depth of 4.5 feet, impacting approximately 1,360 linear feet of Brandy Brook.

The selected remedy for OU03 is the removal of MGP-related contamination exceeding Class A sediment guidance values within Pontiac Bay on Lake Flower. Implementation of the remedy will require sediment removal within a bay area of approximately 76,000 sf to a depth of up to seven feet, and in-situ solidification of soil within an area of approximately 3,078 sf to a depth of approximately 15 feet along the upland bordering the bay.

The purpose of this restoration plan is to provide the details for the restoration of OU02 and OU03 following the remedial action. The Site is located in the Lake Champlain Basin within the Sumner Brook – Saranac River watersheds (#0415040602).

The Site has been thoroughly characterized through previous environmental site characterization efforts including the Remedial Investigation (MACTEC, 2015) and the Pre-Design Investigation (MACTEC, 2017).

Remedial design drawings prepared for the NYSDEC Division of Environmental Remediation for the remedial action at the Site are included in Appendix A. The design drawings depict existing conditions, proposed erosion and sediment control and site preparation plans, excavation plans, site restoration plans, brook excavation and restoration plans, and details.

Brandy Brook ranges from approximately three to five feet wide, and the wetlands bordering the brook range from five to 50 feet wide. The material below the stream and bordering wetlands will be excavated to a minimum depth of 4.5 feet below the ground surface. An estimated area of 25,272 sf of emergent and scrub-shrub wetland is expected to be impacted.

The proposed remedial action at of OU03 will require excavation of an area of 71,650 sf of Pontiac Bay bottom sediments to a depth of up to seven feet below the current lake bottom. In addition, the remediation of OU03 may result in impacts to approximately 175 linear feet of Pontiac Bay bank/shoreline. This restoration plan is based on the important ecological functions and values these areas provide.

2.0 IMPACT AREAS

OU02

The reach of Brandy Brook starting at the northwestern boundary of the property to the culvert at Slater Street is proposed for remediation. There are several culverted driveways crossing the brook that will be replaced. The box culvert under the railroad tracks and the portion of the brook that is culverted under Slater Street and Lake Flower Avenue to the head of Pontiac Bay will not be replaced. The remediation will impact approximately 1,360 linear feet of brook habitat and will impact an estimated 25,272 sf of scrub-shrub wetland bordering the brook including a small area of scrub-shrub wetland on the west side of the railroad tracks that parallels the brook. Approximately 4,076 sf of upland will also be impacted. The restored brook will mimic existing stream slope and sinuosity, as well as channel depth and width. Wetlands bordering the brook and on the west side of the railroad tracks will be restored as per the proposed grading plan.

The proposed remediation includes the riparian area along the brook, a mix of scrub/shrub wetland, upland forested habitat, and managed lawns. The riparian area along the brook that is currently scrub/shrub and forested bank habitat will be restored with the objective of recreating this type of habitat, thus replacing the functions and values the area is currently providing.

Approximately 430 linear feet of riparian area along the brook from the culvert below the railroad tracks to Slater Avenue is a mix of managed lawn and overgrown stream bank habitat. This portion of the brook will be restored to pre-construction contours and elevations, and the areas that are currently lawn will be restored as lawn in kind.

The final site grading plans are shown in design Drawings C-501 and C-502 provided in Appendix A. The restoration of the brook and bordering wetlands will include re-grading to match the existing grade to the extent practicable and planting scrub/shrub, as well as herbaceous cover vegetation. Drawings C-501 and C-502 show the areas on-site proposed for remediation. The brook and bordering riparian areas being impacted by the remediation of site contamination are summarized below:

- 1,360 linear feet of Brandy Brook channel,
- 25,272 sf of Brandy Brook bordering scrub-shrub wetland

- 4,076 sf of Brandy Brook bank and upland riparian area.

OU03

The remediation of Pontiac Bay will impact an area of 71,650 sf of lake bottom, which will be excavated to an anticipated depth of seven feet. In addition, approximately 175 linear feet of bank habitat bordering the bay will also be impacted and an area of approximately 16,530 sf of upland, exceeding the soil clean up goals will also be remediated. Remediation of the upland area will include in-situ stabilization and any bank habitat disturbed during this work will be restored.

The area of OU03 being remediated includes unconsolidated lake bottom sediment, bordering bank habitat, and upland managed lawn habitat. This contaminated sediment and soil excavated from the area will be restored to replicate existing conditions. The final site grading plans are shown on Drawing C-502 in Appendix A. Restoration of the lake bottom, bank, and bordering uplands will include re-grading to match the existing grade to the extent practicable and planting scrub/shrub and trees, as well as herbaceous cover vegetation. Drawing C-501 shows the areas on-site proposed for remediation. The lake and bordering upland areas being impacted by the remediation of site contamination are summarized below:

- 71,650 sf of Pontiac Bay sediment
- 175 linear feet of bank.

The area and volume being remediated are estimates as the extent of excavation of soil and sediment will ultimately be bounded by confirmation sample results compared to standards, criteria, and guidance values as defined in the ROD. Once it has been determined that the contamination has been removed to the levels outlined in the ROD, impacted areas (e.g., brook channel, riparian areas, and lake bottom) will be restored.

Investigations have determined that there are no freshwater wetlands that are regulated under Title 6 of the New York Codes, Rules, and Regulations Part 664 within two miles of the Site. The Saranac River is a designated wild, scenic, or recreational river. Information received from the New York Natural Heritage Program (NYSDEC, 2017) indicates no significant habitats (as defined by the New York State [NYS] Natural Heritage Program) or other significant natural communities or rare or state listed animals or plants are located on or in the immediate vicinity of the Site.

2.1 PROPOSED MITIGATION ACTIONS

To mitigate the temporal loss of in-stream habitat and bordering riparian habitat being remediated, the brook and bay will be restored as described in the Grading Plan and Planting Plan (Sections 4.0 and Section 5.0 of this document, respectively), and as shown on the Excavation Plan and Profile Plans (Drawing C-201 through C-203), Construction Baseline Cross Sections (Drawings C-401 through C-409, Brandy Brook Restoration/Landscaping-OU02 (Drawing C-501), Pontiac Bay Restoration/Landscaping-OU03 (Drawing C-502) and the Restoration Details (Drawings C-601 and C-602) in Appendix A. The primary goal of the restoration is to restore functions and values to be temporarily lost due to site remediation. As a part of site restoration, extensive shrub planting and seeding is planned in the upland and wetland areas to expedite the re-vegetation and stabilization of remediated areas.

3.0 HYDROLOGY

The hydrology in OU02 is derived from Brandy Brook, fed by a large wetland complex located to the east of the site and by shallow groundwater discharge. Brandy Brook is culverted under Payeville Lane and flows across the north side of the former MGP property (OU01). Where the brook turns to the north and flows along the existing railroad tracks, the surface water hydrology is augmented by shallow groundwater discharging to the brook. Below the railroad tracks, the brook appears to act as a surface water conduit, conveying surface water (i.e., Brandy Brook) to Pontiac Bay in Lake Flower.

OU03 is Pontiac Bay of Lake Flower, and the hydrology is derived from the lake, shallow groundwater discharging to the lake, and Brandy Brook which discharges to the bay. The lake also receives storm water runoff from the developed areas (i.e., uplands and roads) surrounding the bay. Remediation of contaminated sediment and soil is not expected to have a long-term impact on local hydrology. Surface water and groundwater will be temporarily collected and piped around work areas during the remediation of the operable units. The remedial action contractor will provide the means and methods for the diversion of the Brandy Brook during construction. After completion of construction, the overall site hydrology will be unchanged compared to current conditions.

4.0 GRADING PLAN

The impacted brook and bordering wetland will be re-graded to pre-existing conditions, following removal of contaminated soil and sediment. The impacted brook channel and bordering wetlands will be restored to replace existing functions and values. The restored brook will be reconstructed to pre-excavation elevations in its current location. The proposed final site grading subsequent to the remedial action is depicted in plan view on Drawings C-501 and C-502 in Appendix A. Representative cross section details for the brook and bordering wetland are shown on Drawings C-401 through C-409. The Excavation Plan and Profile drawings (Drawings C-201 through C-203) also show the finish grades for the brook and bay.

The existing conditions of Brandy Brook and bordering wetlands have been characterized through extensive field survey conducted in support of and reported in the "Wetland Delineation and Functional Assessment Report", included as an attachment to the "Pre-Design Investigation Field Activities Report" (MACTEC, 2017). The following supplemental data was collected in the spring 2017:

- Stream Channel/Riparian Area Characterization (every 25 feet)
- Stream channel substrate grain size
- Channel width measurements
- Water depth measurements
- Floodplain widths
- Bordering vegetation
- Condition of stream bank
- Photo documentation of Brandy Brook.

Prior to conducting earthwork on-site, erosion and sediment controls will be installed as shown on Drawings C-106 and C-107 and described on drawing C-301 (Erosion and Sediment Control Notes) Erosion and sediment controls details are included in Drawing C-302. During restoration activities, a wetland scientist with experience in stream and wetland restoration will be onsite to oversee restoration activities. Restoration of the Brook and associated riparian buffer areas will be initiated as soon as results of confirmation samples have been received.

The restoration of Pontiac Bay will result in the replacement in-kind of lake bottom, bank, and uplands impacted during site remediation. The existing bathymetry, bank, and upland will be restored to pre-existing conditions and approximate elevation contours. Backfill material will be composed of clean fill with a grain size consistent with the material being excavated (i.e., fine to medium sand with trace silt).

Cleanup goals for soil and sediment are presented in the Record of Decisions for OU02 and OU03 and their application is shown on Figure 4.1 of the "Pre-Design Investigation Field Activity Report" (MACTEC, 2017).

Brandy Brook and Pontiac Bay Specifications

Wetlands bordering Brandy Brook channel will be restored using a mixture of clean gravelly sand mixed with organic material. Backfill in the brook and in Pontiac Bay will be comprised of a New York State Department of Transportation (NYSDOT) specified bedding material. The edges of the brook channel will be restored using coir logs (i.e., biodegradable fiber roll). In addition, timber logs and other vegetative material (e.g., branches and saplings) salvaged from the clearing and grubbing of the impacted areas will be used in restoring the brook channel and bordering wetland. The brook and bordering wetlands will be restored using various stream bank restoration techniques consistent with the biotechnical measures for erosion and sediment control, defined in Section 4 of the *New York State Standard and Specifications for Erosion and Sediment Control* (NYSDEC, 2005). Data collected during the stream characterization efforts including grain size/stream channel substrate, channel width, bank type, and riffle and pool locations, were used to select appropriate restoration techniques that mimic the existing conditions of the brook. A plan view of the brook shown on Drawing C-501 identifies the type and location of in-stream and bank features, structures, and treatments that have been selected to restore the brook. Cross section details shown on Drawings C-401 through C-406 include typical cross sections for the selected channel restoration treatments. Table 4.1 provides information on the proposed stream bottom substrate and bank treatments for a given reach of the brook. Restoration details of in-stream and bank features, structures, and treatments are shown on Drawings C-601 and C-602.

To restore pre-construction wetland functions and values, the following in-stream structures and techniques are incorporated in the design including placement of boulders in the stream channel,

keyed-in boulders along the bank, channel protection soft armoring (coir logs or equivalent), and log bank and cover logs. NYSDOT size designations are used to specify bottom substrate that is consistent with the existing stream bed material. To match the existing bottom substrates, mixing of different sized material (as shown in Table 4.1) will be required.

Grain size data collected during the initial characterization of the tributary was used to develop a suitable specification for material to restore the brook channel substrate and bordering wetlands. Table 4.1 presents the specifications for the brook and bay substrates as well as the specifications for the wetland substrate proposed for use in restoring the impacted areas. The brook channel and lake bottom, as well as uplands bordering the bay and brook, will be restored with a gravelly loamy sand. Upland restoration will include a six-inch layer of loam. The wetlands bordering the brook will be restored using a mix of mineral soil and organic matter. A histic epipedon (i.e., bordering wetland topsoil) approximately one foot thick will be created using a mixture of mineral soil and organic material, as noted in Table 4.1. This material will be used in areas where wetlands bordering the brook have been impacted.

Table 4.1: Restoration Material Specifications

Wetland Topsoil (Gravelly Sand mixed with Organic Material)		
	Percent Composition	**Size**
Sand	70 – 85%	#10 Sieve to #200 Sieve
Silt	0-30%	<#200 Sieve
Gravel	15-35%	2 mm to 75 mm
Organic Material	70% mineral/30% organic	Fibric to hemic organic matter
Brook Channel and Pontiac Bay Backfill (NYSDOT Bedding Material)		
Gradation (Sieve Size)	**Percentage Passing**	**Size**
4 inch	100	Cobble
1 inch	15 – 60	Gravel
¼ inch	0 – 25	Gravel
No. 40	0 - 10	Sand

After topsoil has been placed and final grading has been completed, elevations of the restored stream bed, banks, and wetlands will be verified with survey level by the remedial action contractor prior to

planting. Disturbed bordering riparian areas will be seeded and mulched after establishing the finished grade. These areas area will also be planted with shrubs. Erosion control blanket consisting only of natural fiber and biodegradable material will be used to stabilize newly restored areas. A detailed planting plan for impacted areas is presented in the Section 5.0 of this document.

5.0 PLANTING PLAN

All vegetation (i.e., shrubs, trees, and herbaceous plants) within the areas being excavated will be removed during remediation activities. Most of the shrubs and trees exist within the bordering riparian areas along the brook and Pontiac Bay. The wetland bordering the brook will be replanted with scrub shrub (i.e., alders) and herbaceous wetland plants (i.e., wetland grasses and sedges). The upland adjacent to the bay will be replanted with shrubs and trees and seeded with a conservation/erosion control grass seed mix. Trees and shrubs listed in Table 5.1 proposed in these areas are to be planted as shown on Drawing C-501 and C-502.

The scrub/shrub and emergent wetland habitat bordering the brook will be restored after confirmation samples have determined cleanup goals have been met, construction activities associated with removal of contamination has been completed, and the Site has been re-graded. Tree and shrub species proposed for restoration of the bordering riparian areas are described in the following subsections. Mature shrubs currently provide shade to the brook and soil stabilization as well. During the growing season, overhanging and bordering trees and shrubs help moderate the water temperature which affects fish and invertebrate species that inhabit the brook. Tree and shrub species proposed for the restoration of the riparian area will restore these functions and values by providing soil stabilization and erosion control as well as providing shade for the brook. Shrubs and herbaceous plants also provide nesting and forage opportunities for small mammals and birds that utilize the Site.

5.1 TREES

The following are proposed replacement tree species for the impacted riparian along Pontiac Bay:

- Red maple (*Acer rubrum*)
- Ash (*Fraxinus pennsylvanica*)
- Gray birch (*Betula populifolia*)
- Willow (*Salix babylonica*)
- Red spruce (*Picea rubens*)
- Red Cedar (Juniperus virginiana)

- Black cherry (*Prunus serotina*)
- White pine (*Pinus strobus*)
- Scotch pine (*Pinus sylvestryis*)

The riparian area and proposed tree restoration is shown on Drawings C-501 and C-502. Tree plantings proposed in this area will replace those removed during the remedial action. Trees to be impacted by the remediation work will be flagged and identified in the field prior to commencing site work. Replacement trees to be used in restoring the Site will be four to six feet tall and have soil surrounding the root mass (e.g., potted or wrapped in burlap). Tree planting shall be completed by excavating an area twice the diameter of the root mass and associated soil. Topsoil will be used to backfill the voids along the edges of the planted species. Mulch will be applied to soil at the base of the planted trees. A general detail of the proposed tree planting method is shown on Drawing C-602.

5.2 SHRUBS

The following species are proposed for restoration of the wetland adjacent to Brandy Brook:

- Alder (*Alnus incana/rugosa*)
- Red-osier dogwood (*Cornus sericea*)
- Gray dogwood (*C. racemosa*)
- Common elderberry (*Sambucus canadensis*)

The wetland shrub planting areas are shown on Drawing C-501. The shrub planting density within the restored wetland is 500 shrubs per acre. The riparian area to be replanted with shrubs is approximately 0.58 acres, which will require a minimum of 290 shrubs. Based on the species composition observed in the existing wetland the following numbers of shrub species are proposed: 160 alders, 40 red-osier dogwoods, 40 gray dogwoods, and 60 common elderberries.

Each shrub planted shall be 1.5 to 2 feet tall and have soil surrounding the root mass (e.g., potted or wrapped in burlap). Planting shall be completed by excavating an area twice the diameter of the root mass and associated soil. Topsoil shall be used to backfill the voids along the edges of the planted species. Mulch shall be applied to soil at the base of the planted trees. A typical detail of the proposed shrub planting method is shown on Drawing C-602.

5.3 HERBACEOUS PLANTS

The impacted wetland along Brandy Brook will be seeded and mulched once the final site grading and restoration of the brook channel have been completed. The specification for the seed mix is included in Specification Section 020921-Seeding and Soil Supplements. Additional planting specifications are included in Specification Section 02930-Exterior Plants. If a seed mix other than the one described in the specifications is proposed by the contractor, the mix shall be approved in writing by a MACTEC natural resource scientist prior to use. The application rate for seed mix in the wetland area is 35 lbs/acre. The seeded areas shall be mulched in accordance with Specification Section 02930-Exterior Plants. The upland adjacent to Pontiac Bay will be restored, seeded, fertilized and mulched.

6.0 EROSION CONTROL

Prior to disturbance of earthwork during the remedial action, erosion and sediment controls will be put in place as shown on the Erosion and Sediment Control Plans (Drawing C-106 through C-108) and described in notes and details provided on Drawings C-301 (Notes) and C-302 (Details). Implementation of the erosion and sediment controls as specified therein is intended to minimize impacts from surface water runoff.

Temporary devices and structures to control erosion and sedimentation in and around remediation areas will be properly maintained at all times. The devices and structures will be disassembled and properly disposed of as soon as the Site is stable but no later than November 1 one full growing season after plantings. Soil and/or sediment collected by these devices will be removed and placed in the upland in a manner that prevents its erosion and transport to the Brook or Lake Flower.

7.0 INVASIVE/NOXIOUS SPECIES

Invasive plant species identified by the NYSDEC are listed on the Interim list of Invasive Plant Species in NYS (http://www.dec.ny.gov/animals/65408.html). Table 7.1 provides a summary of the listed species, which are categorized based on the habitat type in which they are typically found. None of the floating and submerged aquatic plants listed in the table have been observed in the Brook or Lake Flower. In addition, none of the common invasive emergent wetland and littoral species have been found on the Site. Several of the terrestrial herbaceous, vine, and shrub and tree species listed have been observed on the Site including, Japanese honeysuckle (*Lonicera japonica*), Japanese barberry (*Berberis thunbergii*), shrub honeysuckles (*L. morrowii/tatarica/x bella*), and multiflora rose (*Rosa multiflora*). These species are commonly found in fallow waste areas. It is likely that all of the invasive species within the proposed work area will be removed during the remedial action; however these species pose the highest risk in reestablishing once the remediation of the Site is completed. These species will not be used in the restoration of the riparian areas.

Future monitoring of the Site will focus on wetland and aquatic invasive species, as they appear to be the most likely to become established on the Site. The location of invasive species and measures employed to control invasive plants will be noted during monitoring events. If other invasive plants are identified colonizing the Site, corrective actions will be completed to control them.

8.0 RESTORATION MONITORING

Post-construction monitoring is necessary to determine whether the restoration efforts are (or will eventually be) successful in meeting the restoration objectives. The monitoring plan presented in this section contains: (1) project overview, (2) requirements and specific performance standards that will be used to evaluate whether the restoration objectives have been met, (3) a summary of data collected during the monitoring including corrective actions conducted, (4) maps of the restoration site, and (5) conclusions based on the data collected and the requirements of the mitigation. The NYSDEC will monitor the restored Site for one year, as per the ROD for the site.

8.1 RESTORATION OBJECTIVE

The primary objective of restoring the Brandy Brook and Pontiac Bay and associated riparian areas is to replace lost functions and values, due to the remediation of the Site. The primary functions and values these bordering habitats provide include sediment and shoreline stabilization, production export, and wildlife habitat. The vegetation (i.e., trees and shrubs) in this area are also providing shade which moderates the water temperature in the tributary and creek. The Brook and Pontiac Bayare known to provide habitat for juvenile and adult fish and macroinvertebrates.

8.2 MEASUREMENTS OF SUCCESS FOR WETLAND/UPLAND RESTORATION

This subsection outlines the standards or criteria that will be used to determine if the above objective has been, or will be, met. These standards have been developed to meet the requirements of the Corps as described in the guidance document “Revision of New England District Compensatory Mitigation Guidance” (USACE, 2010) and the goals outlined in this plan. The monitoring methods described in Subsection 8.4 are designed to evaluate whether each of the standards for success are being met. Though the monitoring efforts and reports will address each of the standards on an annual basis, and the time frames for the realization of individual standards do vary to some degree, the ultimate determination of success or failure of the restoration project will not be made before the fifth year of monitoring. This determination will be based in part on an updated function and value assessment that will be conducted in the fifth year, after soils, hydrology, vegetation, and functions and values have had sufficient time to become established.

The first year monitoring event will occur after the Site has been through a full growing season following completion of the construction and planting. For these special conditions, a growing season starts no later than May 31. However, if there are problems that need to be addressed and if the measures to correct them require prior approval from the Corps, the permittee shall contact the Corps by phone or letter as soon as the need for corrective action is discovered.

Remedial measures shall be implemented to attain the success standards described below within five growing seasons after completion of construction of the restoration site(s). Measures requiring earth movement or changes in hydrology shall not be implemented without written approval from the Corps.

8.3 PERFORMANCE STANDARDS FOR SUCCESS OF THE RESTORATION

Field conditions will be measured against the following criteria to determine whether the restoration is successful:

1) The proposed vegetation diversity and/or density goals for woody plants specified are as follows. At least 70% of the tree and shrub species planted in the riparian zone are healthy and vigorous and showing signs of growth. In the riparian area, at least the following number of non-exotic species including planted and volunteer species should be observed by Year 5.

   To count species as a volunteer, it must be well represented on the Site (i.e., greater than 50 individuals per acre). Volunteer species should support functions consistent with the design goals.

2) Common reed (*Phragmites australis*), Purple loosestrife *(Lythrum salicaria*), Russian and Autumn olive (*Elaeagnus* spp.), Buckthorn (*Rhamnus* spp.), Japanese knotweed (*Polygonum cuspidatum*), and/or Multiflora rose (*Rosa multiflora*) plants at the restoration site are being controlled. For this standard, small patches must be eliminated during the entire monitoring period. Large patches must be aggressively treated and the treatment documented.

3) All slopes, soils, substrates, and constructed features within and adjacent to the restored Brook and Bay are stable.

4) The horizontal brook channel location and associated banks are exhibiting a change of less than 0.5 feet per year in restored locations as measured from known fixed points.

It is understood that some wetland functions and values (e.g., forested wildlife habitat) will not be completely replaced for many years due to the time it takes for trees to mature. Success for this type of function will be evaluated based on monitoring data regarding the likelihood that conditions will

remain favorable for the full replacement over time (e.g., trees will survive, mature, and remain vigorous over the long term to allow development of forested wetland habitat).

8.4 MONITORING

Within 60 days of completing the restoration of the tributary and riparian zones, the applicant will submit a signed letter to the Corps, Policy Analysis and Technical Support Branch, specifying the date of completion of the mitigation work and the Corps permit number.

If mitigation construction is initiated in, or continues throughout the year, but is not completed by December 31 of any given year, the permittee will provide the Corps, Policy Analysis and Technical Support Branch, a letter providing the date mitigation work began and the work completed as of December 31. The letter will be sent no later than January 31 of the next year. The letter will include the Corps permit number.

8.4.1 Monitoring Report Guidance

The Site will be monitored and monitoring reports submitted on an annual basis for five years after site restoration has been completed. If observations indicate a need for corrective actions during the five year monitoring period a written correspondence will be sent to the Corps and NYSDEC outlining any corrective action(s) needed, and proposed solution(s) by December 15th of that year.

Annual monitoring will be conducted during the growing season, consisting of a site visit in the summer/early fall. Each annual monitoring report, in the format provided in the "Revision to the New England District Compensatory Mitigation Guidance" (USACE, 2010), will be submitted to the Corps, Regulatory Division, Policy Analysis and Technical Support Branch, no later than December 15th of the year being monitored. Failure to perform the monitoring and submit monitoring reports constitutes permit non-compliance. A self-certification form will be completed and signed as the transmittal coversheet for each annual monitoring report and will indicate the permit number and the report number (Monitoring Report 1 of 5, for example).

The reports will address the performance standards in the summary data section, and will address the additional items noted in the monitoring report requirements in the appropriate section. The reports will also include the monitoring-report appendices.

Remedial measures will be implemented - at least two years prior to the completion of the monitoring period—to attain the success standards described below within 3 growing seasons after completion of construction of the mitigation site(s). Should measures be required within two years of the end of the original monitoring period, the monitoring period will be extended to ensure two years of monitoring after the remedial work is completed. Measures requiring earth movement or changes in hydrology will not be implemented without written approval from the Corps.

The overall objective of monitoring will be to determine how well the standards for restoration success are being met. Monitoring will primarily include annual assessments of wetland hydrology, soils, planted stock, vegetation density, general wildlife use, and detrimental erosion.

8.4.2 Monitoring Schedule

It is proposed that monitoring occur annually for five years after completion of the restoration. Monitoring site visits will occur once a year. The success of the restoration will be assessed at the end of the fifth year to determine if additional monitoring or corrective measures are necessary. Monitoring events will be conducted in summer/early fall to assess the general condition of the restoration areas and to collect detailed information on soils, hydrology, and vegetation, and general observations of wildlife use.

8.4.3 Monitoring Vegetation and Soils

Monitoring trees and shrubs planted in the riparian areas will focus on the overall health and growth of each individual tree or shrub planted within the restored areas. Tags will be placed on planted trees and shrubs in these areas for easy identification in subsequent monitoring events. Sample plots will be established to characterize and measure herbaceous vegetation in the restored areas.

Information collected in each restored area will include the following:

- Condition of planted stock (i.e., number alive versus number dead),

- Number of planted stock and naturally-colonized (i.e., volunteer) woody plants,
- Plant vigor,
- Shrub and tree height range, and
- The presence of invasive species within the area or plot.

Observations of the type, quality, and integrity of the soil will be made in each of the restored riparian areas during each year of monitoring.

8.4.4 Meander Surveys

Meander surveys will be conducted during site visits to assess the overall vegetative and hydrologic conditions in the restored brook and bordering wetland. The meander surveys will provide an opportunity to identify and implement needed corrective actions during the growing season. These surveys will involve walking random routes throughout the restoration areas to identify problems such as significant plant mortality, erosion, and insufficient hydrology.

Overall distribution and survivorship of planted stock will also be assessed during the meander survey by comparing on-site conditions with planned community type and success criteria (and reflecting any plants subsequently replaced due to mortality). Reasons for significant plant mortality or low vigor will be investigated and reported to NYSDEC so that remedial actions can be planned and implemented. Problems with erosion and insufficient hydrology will be addressed in the same manner.

During meander surveys, the location and distribution of any invasive species, listed in Standard of Success Item 3, shall be noted.

8.4.5 Monitoring General Wildlife Use

Data on general wildlife use will be collected during each site visit during meander surveys. Actual wildlife sightings and observed signs will be recorded by species and presented in a list for general year-to-year comparisons.

8.4.6 Photographic Documentation

Representative photographs of the restored areas will be taken from established points to allow yearly comparisons of vegetative cover and hydrologic conditions. Photos from established locations will be taken during mid-summer. Additional photos may be taken during the spring monitoring events if areas or conditions needing corrective action are observed.

8.5 ANNUAL MONITORING REPORTS

An Annual Monitoring Report shall be prepared following each year of monitoring. The purpose of this report will be to document the results of monitoring, document progress of the tributary and riparian area habitat development and identify any corrective actions that may be needed to obtain the performance standards.

The annual reports will provide evaluation of the standards for success outlined in Subsection 8.3.

Additional items to be discussed in the narrative will include:

- Description of the monitoring inspections and the dates, that occurred since the last report;
- Soils data, commensurate with the requirements of the soils portion of the 1987 Delineation Manual data form, should be collected after construction and every alternate year throughout the monitoring period;
- Any remedial actions done during the monitoring year to meet the success standards. Actions such as removing debris, replanting, controlling invasive plant species (with biological, herbicidal, or mechanical methods), re-grading the Site, applying additional topsoil or soil amendments, adjusting site hydrology, etc. will be reported;
- The status of all erosion control measures on the restoration sites. Included in this discussion will be a recommendation to remove or maintain in place;
- Estimates of percent vegetative cover for each restoration site and percent cover of the invasive species listed under Success Standard No. 2, (presented in Subsection 9.2 of this document, above);
- Observation of wildlife and aquatic organisms using the Site and type of use (e.g., nesting, feeding, shelter, etc.,);
- Description of the health and vigor of the surviving plants, the prognosis for their future survival and a diagnosis of the cause(s) of morbidity or mortality;

- Recommended remedial measures to achieve or maintain achievement of the success standards and otherwise improve the extent to which the restoration sites replace the functions and values lost because of project impacts.

The monitoring reports shall include three appendices listed below:

Appendix A - An as-built planting plan showing one-foot contours, and the location and extent of the designed plant community types. Within each community type the plan shall show the species planted. This is only needed in the first monitoring report unless there are additional plantings of different species in subsequent years.

Appendix B - A vegetative species list of volunteer species in each plant community type. The volunteer species list should, at a minimum, include those that cover at least 5% of their vegetative layer.

Appendix C - Representative photos of the Site taken from the same locations for each monitoring event.

The format of the monitoring report will follow that outlined in the Revision to New England District Compensatory Mitigation Guidance (USACE, 2010).

8.6 CORRECTIVE ACTIONS FOR RESTORATION DEFICIENCIES

To ensure the success of the Brook, bordering wetland, and Pontiac Bay, problems identified during monitoring will be addressed in a timely manner. NYSDEC will be consulted on a case-by-case basis in regards to the need for major remedial measures.

Minor corrective action or remedial steps, such as replacing dead plantings, fertilizing plants to increase growth rate, or re-seeding small areas, may be done without notice to the regulatory agencies, however, they will be detailed in the annual reports. No changes in grading and hydrology will be completed without consultation and approval by the Corps.

9.0 PROJECT SCHEDULE

The current project schedule estimate is for commencement of pre-excavation activities in March 2018 with removal of contaminated materials completed at OU02 by December 2018. Remediation work on OU03 would begin in March 2019 and wrap up in December 2019. Restoration work will be performed as excavation activities and confirmation sampling activities are completed. This schedule should allow time for excavation and confirmatory sampling and analysis and restoration efforts to be completed, including establishment of the herbaceous layer, prior to the winter season.

10.0 ASSESSMENT PLAN

A post-construction assessment of the condition of the restored upland and wetlands shall be performed following the fifth growing season (Year 5) after completion of the project, or by the end of the monitoring period, whichever is later. "Growing season" in this context begins no later than May 31st. To ensure objectivity, the person(s) who prepared the annual monitoring reports shall not perform this assessment without written approval from the Corps. The assessment report shall be submitted to the Corps by December 15 of the year the assessment is conducted; this will coincide with the year of the final monitoring report, so it is acceptable to include both the final monitoring report and assessment in the same document

The post-construction assessment shall include the following:

- Summary of the original and/or modified restoration objectives and discussion of the level of attainment of these objectives in the restored uplands and wetlands.
- Description of significant problems and solutions during construction and monitoring of the restoration areas.
- Identification of agency procedures or policies that encumbered implementation of the restoration plan, specifically noting procedures or policies that contributed to less success or less effectiveness than anticipated in the restoration plan.
- Recommendations of measures to improve the efficiency, reduce the cost, or improve the effectiveness of similar projects in the future.

The following appendices shall also be included in the assessment report:

Appendix A - Summary of the results of a functions and values assessment of the restoration areas, using the same methodology used to determine the functions and values of the impacted wetlands.

Appendix B – A plan showing the restoration area along the Brook and Bay including major vegetation community types and notes on the condition of the stream channel and wetland restoration.

Appendix C - Photos of each restoration site taken from the same locations as the monitoring photos.

11.0 RESPONSIBLE PARTIES FOR RESTORATION ACTIONS

NYSDEC shall be responsible for constructing, monitoring, correcting deficiencies, and reporting (e.g., annual monitoring reports and the assessment report) associated with Brandy Brook and riparian area restoration.

12.0 REFERENCES

USACE, 2010. "Revision of New England District Compensatory Mitigation Guidance", U.S. Corp of Engineers, New England District Regulatory Division, July, 2010.

MACTEC Engineering and Consulting, (MACTEC), 2015. Remedial Investigation Report– Saranac Lake Gas Company Site #516008. Prepared for New York State Department of Environmental Conservation, Albany, New York. January 2015.

MACTEC, 2017. Pre-Design Investigation Field Activities Report, OU02 and OU03 – Saranac Lake Gas Company, NYSDEC Site #516008. Prepared for New York State Department of Environmental Conservation, Albany, New York. August 2017.

New York State Department of Environmental Conservation (NYSDEC), 2016. Record of Decision, Saranac Lake Gas Co., Inc., Operable Unit Number: 02: Brandy Brook, State Superfund Project, Saranac Lake, Essex County, Site No. 516008. March.

NYSDEC, 2015. Record of Decision, Saranac Lake Gas Co., Inc., Operable Unit Number: 03: Pontiac Bay on Lake Flower, State Superfund Project, Saranac Lake, Essex County, Site No. 516008. March.

New York State Department of Environmental Conservation (NYSDEC), 2017. Response letter from the New York Natural Heritage Program, regarding Rare or State Listed animals or plants, or Significant Natural Communities in the vicinity of the site. June 13, 2017.

NYSDEC, 2005. "New York State Standards and Specifications for Erosion and Sediment Control", New York State Department of Environmental Conservation, Division of Water, August, 2005.

TABLES

Table 5.1: Replacement Tree and Shrub Species and Quantities Required

Trees (Upland restoration along Brandy Brook and area bordering Pontiac Bay)		
Common Name	**Scientific Name**	**Quantity**
Red Maple	*Acer rubrum*	10
Ash	*Fraxinus pennsylvanica*	5
Gray Birch	*Betula populifolia*	10
Willow	*Salix babylonica*	5
Red Spruce	*Picea rubens*	10
Red Cedar	*Juniperus virginiana*	10
Black Cherry	*Prunus serotina*	5
White Pine	*Pinus strobus*	20
Scotch Pine	*Pinus sylvestryis*	5
	Total	**80**
Shrubs (Wetland restoration along Brandy Brook)		
Common Name	**Scientific Name**	**Quantity**
Alder	*Alnus incana/rugosa*	160
Red-Osier Dogwood	*Cornus sericea*	40
Gray Dogwood	*C. racemosa*	40
Common Elderberry	*Sambucus Canadensis*	60
	Total	**300**

Table 7.1: New York State Invasive Plant Species

Floating & Submerged Aquatic	
Common Name	Scientific Name
Carolina Fanwort	*Cabomba caroliniana*
Rock Snot (diatom)	*Didymosphenia geminata*
Brazilian Elodea	*Egeria densa*
Water thyme	*Hydrilla verticillata*
European Frog's Bit	*Hydrocharis morus-ranae*
Floating Water Primrose	*Ludwigia peploides*
Parrot-feather	*Myriophyllum aquaticum*
Variable Watermilfoil	*Myriophyllum heterophyllum*
Eurasian Watermilfoin	*Myriophyllum spicatum*
Brittle Naiad	*Najas minor*
Starry Stonewort (green alga)	*Nitellopsis obtusa*
Yellow Floating Heart	*Nymphoides peltata*
Water-lettuce	*Pistia stratiotes*
Curly-leaf Pondweed	*Potamogeton crispus*
Water Chestnut	*Trapa natans*

Emergent Wetland & Littoral	
Common Name	Scientific Name
Flowering Rush	*Butomus umbellatus*
Japanese Knotweed	*Fallopia japonica*
Giant Knotweed	*Fallopia sachalinensis*
Yellow Iris	*Iris pseudacorus*
Purple Loosestrife	*Lythrum salicaria*
Reed Canarygrass	*Phalaris arundinacea*
Common Reed-nonnative variety	*Phragmites australis* var. *australis*

Terrestrial - Herbaceous	
Common Name	Scientific Name
Garlic Mustard	*Alliaria petiolata*
Mugwort	*Artemisia vulgaris*
Brown Knapweed	*Centaurea jacea*
Black Knapweed	*Centaurea nigra*
Spotted Knapweed	*Centaurea stoebe* ssp. *micranthos*
Canada Thistle	*Cirsium arvense*
Bull Thistle	*Cirsium vulgare*
Crown vetch	*Coronilla varia*
Black Swallow-wort	*Cynanchum louiseae (nigrum)*
European Swallow-wort	*Cynanchum rossicum*
Fuller's Teasel	*Dipsacus fullonum*
Cutleaf Teasel	*Dipsacus laciniatus*
Giant Hogweed	*Heracleum mantegazzianum*
Japanese Stilt Grass	*Microstegium vimineum*

Table 7.1: New York State Invasive Plant Species

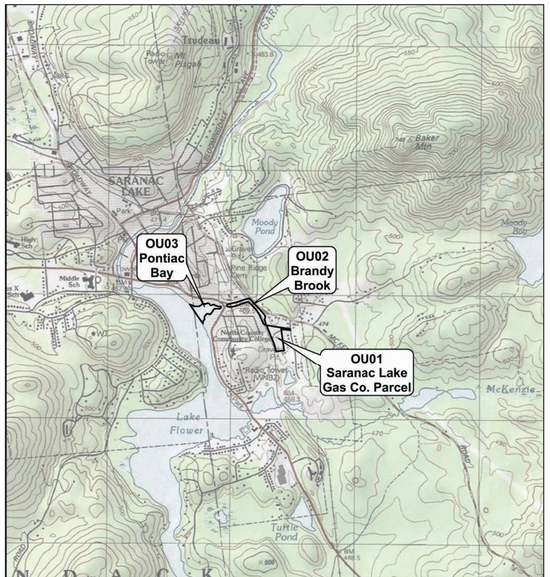
Terrestrial - Vines	
Common Name	Scientific Name
Porcelain Berry	*Ampelopsis brevipedunculata*
Oriental Bittersweet	*Celastrus orbiculatus*
Japanese Honeysuckle	*Lonicera japonica*
Mile-a-minute Weed	*Persicaria perfoliata*
Kudzu	*Pueraria montana* var. *lobata*

Terrestrial - Shrubs & Trees	
Common Name	Scientific Name
Norway Maple	*Acer platanoides*
Tree of Heaven	*Ailanthus altissima*
Japanese Barberry	*Berberis thunbergii*
Russian Olive	*Elaegnus angustifolia*
Autumn Olive	*Elaegnus umbellata*
Glossy Buckthorn	*Frangula alnus*
Border Privet	*Ligustrum obtusifolium*
Amur Honeysuckle	*Lonicera maackii*
Shrub Honeysuckles	*Lonicera morrowii/tatarica/x bella*
Bradford Pear	*Pyrus calleryana*
Common Buckthorn	*Rhamnus cathartica*
Black Locust	*Robinia pseudoacacia*
Multiflora Rose	*Rosa multiflora*

APPENDIX A

DESIGN DRAWINGS

REMEDIAL ACTION
NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
SARANAC LAKE GAS CO., INC., SITE NO. 516008
OU02: BRANDY BROOK AND OU03 PONTIAC BAY ON LAKE FLOWER
SARANAC LAKE, NEW YORK
PERMITTING
AUGUST 2017



MAP SOURCE: NGS, I-CUBED

PROJECT SITE:
BRANDY BROOK AND SARANAC LAKE:
TOWN OF SARANAC LAKE SECTION SITE
RIVER STREET, ROUTE 86
SARANAC LAKE, NEW YORK

0 1000 2000 4000
SCALE IN FEET

LOCUS MAP



MAP SOURCE: AERIAL PHOTOGRAPH FROM HTTP://NYSGIS.STATE.NY.US

0 250 500 1000
SCALE IN FEET

KEY MAP

DRAWING INDEX

INCLUDED THIS SUBMITTAL	SHEET NUMBER	DRAWING TITLE	DISCIPLINE NUMBER
•	1	COVER SHEET	G–001
•	2	NOTES, LEGENDS, AND ABBREVIATIONS	G–002
•	3	EXISTING CONDITIONS PLAN – OVERVIEW	C–101
•	4	EXISTING CONDITIONS PLAN – OU01	C–102
•	5	EXISTING CONDITIONS PLAN – OU02	C–103
•	6	EXISTING CONDITIONS PLAN– OU03	C–104
•	7	CONSTRUCTION STAGING AND TRAFFIC PLAN	C–105
•	8	EROSION AND SEDIMENT CONTROL PLAN – OU02	C–106
•	9	EROSION AND SEDIMENT CONTROL PLAN – OU03	C–107
•	10	EXCAVATION PLAN AND PROFILE – OU02	C–201
•	11	EXCAVATION PLAN AND PROFILE – OU02	C–202
•	12	EXCAVATION PLAN AND PROFILE – OU03	C–203
•	13	EROSION AND SEDIMENT CONTROL NOTES	C–301
•	14	EROSION AND SEDIMENT CONTROL DETAILS	C–302
•	15	CIVIL DETAILS – 1	C–303
•	16	CIVIL DETAILS – 2	C–304
•	17	CONSTRUCTION BASELINE CROSS SECTIONS – OU02	C–401
•	18	CONSTRUCTION BASELINE CROSS SECTIONS – OU02	C–402
•	19	CONSTRUCTION BASELINE CROSS SECTIONS – OU02	C–403
•	20	CONSTRUCTION BASELINE CROSS SECTIONS – OU02	C–404
•	21	CONSTRUCTION BASELINE CROSS SECTIONS – OU02	C–405
•	22	CONSTRUCTION BASELINE CROSS SECTIONS – OU02	C–406
•	23	CONSTRUCTION BASELINE CROSS SECTIONS – OU03	C–407
•	24	CONSTRUCTION BASELINE CROSS SECTIONS – OU03	C–408
•	25	CONSTRUCTION BASELINE CROSS SECTIONS – OU03	C–409
•	26	BRANDY BROOK RESTORATION/LANDSCAPING – OU02	C–501
•	27	PONTIAC BAY RESTORATION/LANDSCAPING – OU03	C–502
•	28	RESTORATION DETAILS	C–601
•	29	RESTORATION DETAILS	C–602

NO.	DATE	DSGN	DR	CHK	APVD
B	8/22/17	MAP	WJW	MAP	APVD
A	4/20/17	MAP		CHL	MJS
				MAP	MJS
				BY	APVD

PERMITTING
30% DESIGN
REVISION

MJS

UNAUTHORIZED ALTERATION OR ADDITION TO THIS DOCUMENT IS A VIOLATION OF SECTION 7209 OF THE NEW YORK STATE EDUCATION LAW.

NEW YORK OPPORTUNITY | Department of Environmental Conservation

REMEDIAL ACTION
SARANAC LAKE GAS CO., INC.
SARANAC LAKE, NEW YORK
NYSDEC SITE NUMBER - 516008

MACTEC Engineering and Consulting, P.C.
P.O. Box 5050, 5 Empire Street
Portland, Maine 04112-7050
(207) 775-5401

MACTEC

GENERAL
COVER

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	CDD-DATE
PROJ	3611-16-1193
DWG	G-001
SHEET	1 OF 29

THIS DRAWING IS THE PROPERTY OF MACTEC, INCLUDING ALL PATENTED AND PATENTABLE FEATURES, AND/OR CONFIDENTIAL INFORMATION AND ITS USE IS CONDITIONED UPON THE USERS AGREEMENT NOT TO REPRODUCE THE DRAWING, IN WHOLE OR PART, NOR THE MATERIAL DESCRIBED THEREON, NOR THE USE OF THE DRAWING FOR ANY PURPOSE OTHER THAN SPECIFICALLY PERMITTED IN WRITING BY MACTEC.

BASE MAP SOURCES:

1. TOPOGRAPHY COMPLETED BY FIELD SURVEY SUPPLIED BY PRUDENT ENGINEERING, 6390 FLY ROAD, EAST SYRACUSE, NY 13057, DATED 1-6-2017.
2. PARCEL LINES SHOWN ARE BASED ON A DIGITAL CAD FILE OF A BOUNDARY SURVEY ENTITLED "PART OF LOT 13, TOWN OF NORTH ELBA, COUNTY OF ESSEX, STATE OF NEW YORK" PERFORMED BY PRUDENT ENGINEERING, DATED 1-6-2017.

GENERAL NOTES:

1. THE NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION IS RESPONSIBLE FOR COORDINATING PERMISSIONS AND SECURING ACCESS AGREEMENTS TO PERMIT WORK AND CONSTRUCTION SUPPORT ACTIVITIES ON THE PROPERTIES ADJACENT TO THE LIMIT OF WORK.
2. WATER SURFACE ELEVATIONS SHOWN ARE APPROXIMATE AND BASED ON FIELD OBSERVATIONS OF THE WORK AREA DURING COMPLETION OF THE 2017 SURVEY. ACTUAL WATER ELEVATIONS MAY VARY IN THE FIELD.
3. SELECT A CONSTRUCTION SEQUENCE AND METHODOLOGY THAT MINIMIZES IMPACTS TO BUSINESSES AND PUBLIC AREAS IN THE VICINITY OF THE WORK.
4. THE LOCATION OF EXISTING UNDERGROUND UTILITIES AND STRUCTURES SHOULD BE CONSIDERED APPROXIMATE. OTHER UNIDENTIFIED UNDERGROUND FEATURES MAY BE PRESENT. VERIFY THE LOCATION OF ALL EXISTING UTILITIES OR STRUCTURES WITHIN THE LIMIT OF WORK PRIOR TO THE COMMENCEMENT OF EARTH DISTURBING ACTIVITIES. DIG SAFELY NEW YORK: 811 OR 1-800-962-7962.
5. SHOULD UNCHARTED, OR INCORRECTLY CHARTED, PIPING OR OTHER UTILITIES BE ENCOUNTERED DURING EARTH DISTURBING ACTIVITIES, CONSULT THE UTILITY OWNER AND ENGINEER IMMEDIATELY FOR DIRECTION. REPAIR OR COORDINATE REPAIR OF CONTRACTOR-DAMAGED UTILITIES TO THE SATISFACTION OF THE UTILITY OWNER, PROPERTY OWNER, AND ENGINEER.
6. DO NOT INTERRUPT EXISTING UTILITIES SERVING OCCUPIED FACILITIES WITHOUT ADVANCED NOTIFICATION TO THE DEPARTMENT AND THE OWNER. PROVIDE COORDINATION AND TIMELY NOTIFICATION TO THE AFFECTED UTILITY OWNER FOR SHUT-OFF AND RE-CONNECTION OF SERVICES FOR TEMPORARY REMOVAL AND REPLACEMENT DURING AND FOLLOWING EARTH DISTURBING ACTIVITIES. PROVIDE TEMPORARY FACILITIES DURING CONSTRUCTION.
7. CONTROL DUST GENERATION THROUGHOUT THE DURATION OF THE WORK IN ACCORDANCE WITH THE CONTRACT DOCUMENTS. DUST MONITORING WILL CONSIST OF CONTINUOUS PARTICULATE/DUST VISUAL OBSERVATION FOR DUST GENERATION DURING EXCAVATION/CONSTRUCTION ACTIVITIES. DURING NON-WORKING HOURS, LEAVE THE SITE IN A CONDITION THAT WILL PREVENT DUST FROM BEING GENERATED. MONITOR WEATHER REPORTS FOR DRY AND/OR WINDY CONDITIONS AND PREPARE THE SITE ACCORDINGLY.
8. AIR MONITORING WILL BE UNDERTAKEN BY THE RA CONTRACTOR AT THE PERIMETER OF THE WORK AREA TO DETERMINE WHEN ADDITIONAL ENGINEERING CONTROLS (E.G., WATER SPRAY) ARE REQUIRED TO SUPPRESS DUST EMISSION DURING THE EXECUTION OF THE WORK. AIR MONITORING WILL ALSO BE CONDUCTED TO MEASURE AMOUNTS OF VOLATILE ORGANIC COMPOUNDS (VOCS) ASSOCIATED WITH MGP WASTE, INCLUDING BENZENE AND NAPHTHALENE, ANTICIPATED TO BE RELEASED DURING THE RA.
9. CONTROL ODOR GENERATION THROUGHOUT THE DURATION OF THE WORK IN ACCORDANCE WITH THE CONTRACT DOCUMENTS. TYPICAL ODOR CONTROL MEASURES INCLUDE APPLYING HYDROCARBON VAPOR SUPPRESSING AGENTS, DETERGENTS, OR ODOR-SUPPRESSING FOAMS TO ACTIVE EXCAVATION AREAS AND STOCKPILED WASTES, AS WELL AS CONDUCTING SOIL STABILIZATION OPERATIONS IN TEMPORARY ENCLOSURES.
10. SEGREGATE CLEAN MATERIALS FROM MGP IMPACTED SOIL AND SEDIMENT AND STOCKPILE SEPARATELY.
11. COVER STOCKPILES WITH TARPS AND SANDBAG DURING NON-WORKING PERIODS.
12. DEWATER OR STABILIZE STOCKPILED WASTES TO MEET THE MOISTURE CONTENT AND WORKABILITY REQUIREMENTS OF THE FACILITY CHOSEN FOR OFF-SITE DISPOSAL. HISTORICAL BENCH SCALE TEST RESULTS OF STABILIZATION OF FINE-GRAINED DEPOSITS ARE PROVIDED IN THE LIMITED SITE DATA DOCUMENT OF THE CONTRACT DOCUMENTS FOR THE CONTRACTOR'S REFERENCE. SUBMIT A MIX DESIGN FOR STABILIZING FINE-GRAINED DEPOSITS AS PART OF THE CONSTRUCTION WORK PLAN TO ENGINEER FOR APPROVAL IF STABILIZATION METHODS ARE USED.
13. COLLECT ALL CONSTRUCTION WATER, INCLUDING SURFACE WATER ENTERING THE WORK ZONE, WATER FROM DECONTAMINATION OF VEHICLES AND EQUIPMENT, AND WATER FROM EXCAVATION DEWATERING. CONSTRUCTION WATER SHALL BE TREATED ON-SITE AND DISCHARGED TO THE LOCAL POTW AT THE REQUIRED TREATMENT STANDARDS OR ALTERNATIVELY TO SURFACE WATER IF AVAILABLE PERMIT CRITERIA ARE MET. SUBMIT CONSTRUCTION WATER MANAGEMENT PLAN TO ENGINEER FOR APPROVAL.
14. PROVIDE APPROPRIATE PROTECTION FOR SITE WORKERS AND TRESPASSERS WHEN THERE IS DANGER OF FALLING INTO AN OPEN EXCAVATION.

GENERAL CONSTRUCTION SEQUENCE:

1. THE FOLLOWING PROVIDES A GENERAL SEQUENCE OF ACTIVITIES FOR THE EXECUTION OF THE REMEDIAL ACTION AT OU02 AND OU03. THE REMEDIAL ACTIVITIES WILL BE CONDUCTED GENERALLY STARTING UPSTREAM AT OU02 AND PROGRESSING DOWNSTREAM AND COMPLETING OU03 REMEDIATION LAST.
2. INITIATE CONSTRUCTION MONITORING AND CONTINUE THROUGHOUT THE DURATION OF THE WORK AS SPECIFIED.
3. PERFORM FIELD VERIFICATION SURVEY AND CONSTRUCTION LAYOUT. PERFORM ADDITIONAL SURVEY THROUGHOUT CONSTRUCTION FOR LAYOUT, MEASUREMENT FOR PAYMENT, AND FINAL AS-BUILT RECORD.
4. MOBILIZE EQUIPMENT AND INSTALL TEMPORARY FACILITIES AND CONTROLS INCLUDING VEHICLE DECONTAMINATION PAD; SOIL/SEDIMENT STOCKPILE CONTAINMENT; DEWATER STAGING AREA; CONSTRUCTION WATER TREATMENT FACILITY; TRAFFIC AND ACCESS CONTROLS; EROSION AND SEDIMENTATION CONTROLS, ETC.
5. REFER TO DRAWING C-301, FOR EROSION AND SEDIMENT CONTROL NOTES.
6. CLEAR TREES, SHRUBS, AND OTHER VEGETATION WITHIN THE LIMIT OF CLEARING. TRANSPORT AND DISPOSE OF CLEARING DEBRIS OFF-SITE AT AN APPROVED LICENSED TREATMENT, STORAGE, AND DISPOSAL FACILITY (TSDF). COORDINATE CLEARING WITH INSTALLATION OF PERIMETER EROSION AND SEDIMENT CONTROLS INCLUDING SILTATION FENCE AND AUGMENTED SILTATION FENCE.
7. ESTABLISH THE ACTIVE EXCLUSION ZONE FOR EACH PLANNED PHASE OF WORK. INSTALL ACCESS CONTROLS TO SEPARATE REMEDIAL ACTION WORK FROM THE ADJACENT CLEAN AREAS, OFF-SITE PROPERTY OWNERS, AND GENERAL PUBLIC. INSTALL CONTROLS TO SEPARATE AREAS CONTAINING IMPACTED SOIL FROM CLEAN AREAS. CONSTRUCT TEMPORARY ACCESS ROADS AND OTHER ENGINEERED CONTROLS, AS REQUIRED, WITHIN THE EXCLUSION ZONE TO MANAGE CLEAN WASTE HANDLING ACTIVITIES SEPARATE FROM CONTAMINATED WASTE/MATERIAL HANDLING. RE-LOCATE, SUPPLEMENT, OR REMOVE CONTROLS TO COORDINATE WITH THE PROGRESSION OF THE WORK. ADJUST/MODIFY THE EXCLUSION ZONE BOUNDARY TO ACCOMMODATE THE PHASE OF WORK BEING PERFORMED.
8. INSTALL, OPERATE, AND MAINTAIN A CONSTRUCTION WATER MANAGEMENT SYSTEM THAT IS CAPABLE OF COMPLYING WITH THE REQUIREMENTS OF LOCAL WASTE WATER TREATMENT FACILITY (WWTF) FOR DISPOSAL AND ALL APPLICABLE PERMITS.
9. CONTRACTOR SHALL PROVIDE A LAYOUT FOR THE CONTRACTOR STAGING/STORAGE AREA BASED ON THE PROPOSED MEANS AND METHODS FOR CONDUCTING THIS WORK FOR THE APPROVAL BY THE DEPARTMENT.

OU02 BRANDY BROOK:

1. SEDIMENT EXCAVATION IS EXPECTED TO BE CONDUCTED IN SEGMENTS, STARTING FROM THE UPSTREAM END OF THE CANAL AND PROCEEDING DOWNSTREAM. ACTIVE SEDIMENT REMOVAL AREAS SHALL BE ISOLATED FROM COMPLETED UPSTREAM AREAS OR USING WATER-FILLED COFFER/BLADDER DAMS OR OTHER APPROPRIATE MEANS. THE ACTUAL LIMITS OF PHASING; METHODS OF ISOLATION AND SEDIMENT REMOVAL; AND DEWATERING AND BROOK BY-PASS PUMPING, SHALL BE DEVELOPED BY THE CONTRACTOR FOR APPROVAL BY THE DEPARTMENT.
2. DURING OU02 REMEDIAL ACTIVITIES, INSTALL, OPERATE, AND MAINTAIN TEMPORARY BROOK BYPASS SYSTEM TO CONVEY CLEAN UP GRADIENT BROOK FLOWS AROUND THE ACTIVE EXCAVATION SEGMENTS TO A STABLE OUTLET POINT. BYPASS SYSTEMS MAY INCLUDE TEMPORARY BERMS OR COFFERDAMS TO ISOLATE THE ACTIVE WORK AREA AND PUMP AND PIPING SYSTEMS, OR IF SUITABLE GRAVITY PIPING.
3. CONDUCT THE REMEDIATION IN WORKABLE SEGMENTS. RELOCATE BYPASS SYSTEMS AS THE WORK PROGRESSES TO THE NEXT SEGMENT.
4. DEWATER EACH ACTIVE WORK SEGMENT ALONG AND WITHIN THE BROOK TO ESTABLISH A SUITABLE WORKING ENVIRONMENT PRIOR TO EXCAVATING.
5. DURING EXCAVATIONS, SEGREGATE IMPACTED SOIL AND SEDIMENT FROM CLEAN MATERIAL OR BULKY/CONSTRUCTION DEBRIS ENCOUNTERED DURING THE WORK. EACH CLASSIFICATION OF WASTE SHALL BE HANDLED AND MANAGED SEPARATELY INCLUDING WASTE CHARACTERIZATION AND OFF-SITE DISPOSAL.
6. DURING SOIL AND SEDIMENT EXCAVATION, CONTINUE TO DEWATER AS NECESSARY AND COLLECT AS CONSTRUCTION WATER FOR TREATMENT AND DISCHARGE TO THE LOCAL WWTF.
7. REMOVE EXCAVATED SOIL/SEDIMENT TO THE DEWATER AND/OR STABILIZATION STAGING AREA THEN OFF-SITE TO AN APPROVED LICENSED TSDF.
8. TEST THE EXCAVATION LIMITS TO CONFIRM THE SOIL CLEANUP GOAL HAS BEEN MET. IF NOT, EXCAVATE AN ADDITIONAL 6 INCHES OR AS DIRECTED AND RETEST. CONTINUE EXCAVATION AND TESTING UNTIL CLEANUP GOAL IS CONFIRMED.
9. DEMOLISH CULVERTS AND PAVEMENT FOR DRIVEWAYS LOCATED ALONG RIVER STREET WITHIN REMEDIATION LIMITS. AS REQUIRED PROVIDE TEMPORARY ACCESS TO RESIDENCES IMPACTED BY THE WORK
10. LAYOUT THE BROOK FOR RESTORATION, HOLDING THE BANKFULL DIMENSIONS OF THE FORMER EXISTING BROOK AS NOTED ON DRAWINGS.
11. IMPORT SUBGRADE FILL, PLACE IN EXCAVATION, COMPACT, AND GRADE TO THE LINES AND GRADES ESTABLISHED FOR TRIBUTARY SUBGRADE ON DRAWINGS.
12. INSTALL IMPORTED STREAM BED MATERIAL TO THE GRADES ESTABLISHED FOR TRIBUTARY FINAL GRADE ON DRAWINGS.
13. RESTORE THE TRIBUTARY BANKS UTILIZING BIOTECHNOLOGIES INCLUDING BRUSH MATTRESSES, BIODEGRADABLE FIBER ROLLS, ROCK WITH SOIL AND VEGETATION, LOG CRIBBING, BOULDERS, AND A LOG DEFLECTOR. PLANT SHRUBS WITHIN THE BANK SECTION OF THE RIPARIAN AREA AS INDICATED ON DRAWINGS. SEED AND MULCH BETWEEN PLANTINGS AS INDICATED ON DRAWINGS.
14. RE-INTRODUCE FLOW THROUGH THE RESTORED TRIBUTARY SEGMENT IN A PHASED CONTROLLED MANNER. DISCONTINUE TEMPORARY TRIBUTARY BYPASS SYSTEM FOR EACH COMPLETED SEGMENT.
15. REPEAT REMEDIATION AND RESTORATION ACTIVITIES FOR EACH OU02 SEGMENT.
16. REPLACE CULVERTS AND RESTORE PAVEMENTS FOR DRIVEWAY CROSSING DEMOLISHED AS PART OF THE WORK.
17. REMOVE SEDIMENT ACCUMULATED IN TWIN 24-INCH DRAIN PIPES FOR THE CULVERTED SECTION OF BRANDY BROOK LOCATED UNDER SLATER AND LAKE FLOWER AVENUES PRIOR TO DISCHARGE INTO PONTIAC BAY.

OU03 PONTIAC BAY:

1. CONSTRUCT A BARGE OFFLOADING AREA ADJACENT TO THE OU03 LIMITS AND OTHER REQUIRED SUPPORT FACILITIES ALONG THE NORTH SHORE OF THE BAY.
2. INSTALLATION OF AN AQUA-DAM OR A SHEET-PILE COFFERDAM AT THE EAST END OF PONTIAC BAY TO ALLOW COLLECTION AND BY-PASS OF INCOMING FLOWS FROM BRANDY BROOK AND OTHER STORMWATER AROUND THE REMEDIATION AREA.
3. THE AREA OF PROPOSED SEDIMENT EXCAVATION IN PONTIAC BAY WILL BE ISOLATED FROM LAKE FLOWER BY INSTALLING A HEAVY DUTY IMPERMEABLE TURBIDITY BARRIER WITH THE BOTTOM OF THE CURTAIN KEPT IN CONTACT WITH THE BOTTOM OF THE BAY WITH BALLAST CHAINS AND ANCHORS. MARKER BUOYS AND FLOATING MARKER LIGHTS WILL BE DEPLOYED AS WARNING DEVICES.
4. DURING OU03 REMEDIAL ACTIVITIES, INSTALL, OPERATE, AND MAINTAIN THE TEMPORARY BROOK STORMWATER BYPASS SYSTEM TO CONVEY CLEAN UP GRADIENT FLOWS AROUND THE OU03 REMEDIATION LIMITS. BYPASS SYSTEMS MAY INCLUDE TEMPORARY BERMS OR COFFERDAMS TO ISOLATE THE ACTIVE WORK AREA AND PUMP AND PIPING SYSTEMS.
5. DURING DREDGING OPERATIONS, REAL-TIME TURBIDITY MONITORING WILL BE CONDUCTED WITH A BUOY-BASED TURBIDITY MONITORING SYSTEM AND DATA REVIEWED ON AN HOURLY BASIS. DISCONTINUE DREDGING OPERATIONS WHEN DATA INDICATES EXCEEDANCE TO THE ESTABLISHED NTU LIMITS ARE EXCEEDED ON OUTSIDE OF BARRIER AND MODIFICATIONS TO TURBIDITY BARRIER TO ACHIEVE ACCEPTABLE PERFORMANCE.
6. CONDUCT MECHANICAL DREDGING OF THE OU03 SEDIMENTS USING BARGES TO SUPPORT THE DREDGE EQUIPMENT AND RECEIVE THE SEDIMENT. ACCESS FOR BARGE LAUNCHING AT THE BEGINNING OF THE PROJECT AND REMOVAL AT THE END OF THE PROJECT WILL LIKELY BE CONDUCTED AT THE PUBLIC BOAT LAUNCH LOCATED JUST WEST OF THE OU03 LIMITS.
7. THE BARGE SUPPORTING THE DREDGE EQUIPMENT SHALL BE EQUIPPED WITH AN ANCHORING SYSTEM SUCH AS SPUDS TO HOLD IT IN PLACE. THE DREDGE EQUIPMENT SHALL BE PROVIDED WITH PRECISION NAVIGATION EQUIPMENT (SUCH AS RTK GPS) FOR BOTH VERTICAL AND HORIZONTAL CONTROL AND USE ENVIRONMENTAL OR CLOSED BUCKETS.
8. DREDGED SEDIMENT WILL BE PLACED IN A RECEIVING BARGE AND THEN TRANSFERRED TO HAUL TRUCKS AT THE BARGE OFFLOADING AREA LOCATED DIRECTLY ADJACENT TO THE OU03 LIMITS. THE USE OF ADDITIONAL RECEIVING BARGES MAY BE USED TO INCREASE DREDGING PRODUCTION AND ALLOW MORE TIME FOR SEDIMENT TO DEWATER POTENTIALLY ELIMINATING THE NEED FOR ADDITIONAL HANDLING ONSHORE FOR DEWATERING OR THE NEED TO STABILIZE THE SEDIMENT FOR DISPOSAL.
9. THE SEDIMENTS ARE GENERALLY COARSE GRAINED AND MAY READILY DEWATER WHILE STAGED IN THE RECEIVING BARGE. THE DEWATER FLUIDS WILL BE COLLECTED IN THE RECEIVING BARGE AND PUMPED TO A TEMPORARY SUITABLE TANK OR CONTAINER UNTIL TREATMENT AND DISCHARGED TO THE LOCAL WWTF.
10. IF REQUIRED, A SOIL/SEDIMENT STOCKPILE CONTAINMENT AREA MAY BE CONSTRUCTED FOR THE EXCAVATED SEDIMENT FOR DEWATERING AND/OR STABILIZATION AND THEN TRANSPORTED OFF-SITE TO AN APPROVED LICENSED TSDF.
11. TEST THE EXCAVATION LIMITS TO CONFIRM THE SEDIMENT CLEANUP GOAL HAS BEEN MET. IF NOT, EXCAVATE AN ADDITIONAL 6 INCHES OR AS DIRECTED AND RETEST. CONTINUE EXCAVATION AND TESTING UNTIL CLEANUP GOAL IS CONFIRMED.
12. MGP IMPACTED SOIL ALONG THE NORTH SHORE AND THE SOUTHEAST END OF PONTIAC BAY SHALL BE REMEDIATED BY IN-SITU STABILIZATION/SOLIDIFICATION (ISS). EXISTING FEATURES WILL REQUIRE DEMOLITION, TEMPORARY REMOVAL, AND/OR SUPPORT OF SOME PARK/LANDSCAPE FEATURES, INCLUDING SIGNS, LIGHT/UTILITY POLES, LOW CONCRETE RETAINING OR HEADWALLS, UNDERGROUND ELECTRIC LINES, AND RIPRAP SHORELINE PROTECTION. CLEARING OF TREES, SHRUBS, AND OTHER VEGETATION WILL ALSO BE REQUIRED.
13. THE CONTRACTOR SHALL CONDUCT A PILOT TEST USING THE SAME EQUIPMENT PLANNED FOR USE DURING THE FULL SCALE OPERATION. THE PILOT TEST WILL PROVIDE THE APPROPRIATE GROUT MIX AND MIXING PROCEDURE TO BE USED IN ORDER TO MEET THE SPECIFIED PERFORMANCE CRITERIA.
14. THE ISS METHOD SHALL USE AUGER MIXING AND JET GROUTING OF THE IN PLACE SOIL PRODUCING STABILIZED SOIL COLUMNS THAT WOULD BE JOINED TOGETHER BY OVERLAPPING COLUMNS TO FORM A LARGE TREATED BLOCK OF SOIL. THE USE OF BACKHOE MIXING WILL NOT BE CONSIDERED ACCEPTABLE METHOD FOR THE ISS TREATMENT.
15. THE ISS TREATMENT WILL CAUSE SWELLING OF THE TREATED SOIL (TYPICALLY LESS THAN 15%), THEREFORE, EXCESS SOIL WILL REQUIRE EXCAVATION AND OFFSITE DISPOSAL IN ORDER RESTORE THE TREATED AREA TO MATCH EXISTING GRADES.
16. AREAS WITHIN PONTIAC BAY DISTURBED DURING THE WORK WILL BE RESTORED AS SHOWN ON THE DRAWINGS, GENERALLY IN-KIND TO THE EXTENT PRACTICABLE, USING CLEAN MATERIAL CONSISTENT WITH THE GRAIN SIZE DISTRIBUTION OF THE MATERIAL REMOVED. THE BATHYMETRY OF THE RESTORED LAKE BOTTOM WILL BE CONSISTENT WITH THE EXISTING CONDITIONS, EXCLUSIVE OF SEDIMENT DEPOSITS OBSERVED AT THE EAST END OF THE BAY IN FRONT OF AND PARTIALLY FILLING THE BRANDY BROOK CULVERTS.
17. DISCONTINUE TEMPORARY TRIBUTARY BYPASS SYSTEM FOR REMEDIATION AND RESTORATION OF THE BAY.
18. THE EXISTING BANK LOCATION, SLOPE AND ELEVATION, AS WELL AS ELEVATIONS IN THE BORDERING UPLANDS WILL BE RESTORED TO EXISTING CONDITIONS AND AS SHOWN ON THE DRAWINGS. INDIVIDUAL PARK FEATURES REMOVED DURING THE RA WILL BE REPLACED OR RESTORED IN-KIND UNLESS OTHERWISE DIRECTED BY THE VILLAGE. THE SIZE OF NEW LANDSCAPE TREE/SHRUB PLANTINGS WILL BE LIMITED TO THE AVAILABILITY AND SUITABILITY FOR PLANTS TO SURVIVE TRANSPLANTING.
19. RESTORE THE TRIBUTARY BANKS UTILIZING BIOTECHNOLOGIES INCLUDING BRUSH MATTRESSES, BIODEGRADABLE FIBER ROLLS, ROCK WITH SOIL AND VEGETATION, LOG CRIBBING, BOULDERS, AND A LOG DEFLECTOR. PLANT SHRUBS WITHIN THE BANK SECTION OF THE RIPARIAN AREA AS INDICATED ON DRAWINGS. SEED AND MULCH BETWEEN PLANTINGS AS INDICATED ON DRAWINGS.
20. REMOVE TEMPORARY FACILITIES AND CONTROLS, ACCESS CONTROLS, AND EROSION AND SEDIMENT CONTROLS. PERFORM FINAL SITE CLEANUP.
21. DEMOBILIZE EQUIPMENT FROM THE SITE.
22. NOTE THAT THE ACTUAL SEQUENCE OF CONSTRUCTION MAY BE MODIFIED TO ACCOMMODATE CHANGING CONDITIONS OR COORDINATION REQUIREMENTS. ALTERNATELY, SOME IDENTIFIED TASKS MAY OCCUR CONCURRENTLY SUCH AS PREPARATION ACTIVITIES FOR OU03 CONCURRENT WITH OU02 ACTIVITIES.

LEGEND - EXISTING FEATURES:

BENCHMARK
FENCE
MAJOR CONTOUR (420)
MINOR CONTOUR
PROPERTY LINE
CATCH BASIN
EDGE OF WATER
WETLANDS
WASTE LIMITS
SOIL BORING
SURFACE WATER FLOW DIRECTION

LEGEND - PROPOSED FEATURES:

FS — FILTER SOCK
LOW — LIMIT OF WORK
PORTABLE CHAIN LINK FENCE PANELS
BY-PASS DISCHARGE
DEWATERING LOCATION
FINE-GRAINED DEPOSITS TO BE REMOVED
ANTICIPATED EXTENT OF HAZARDOUS FINE-GRAINED DEPOSITS TO BE REMOVED
SF — SILT FENCE
COFFERDAM/BLADDER DAM
TB — TURBIDITY BARRIER
DEWATERING POINT

REFERENCE LEGEND:

A / C-103 C-301
DETAIL LETTER
WHERE DETAIL APPEARS
WHERE DETAIL TAKEN

ABBREVIATIONS:

IN	INCH(ES)	MAX	MAXIMUM
FT	FOOT OR FEET	MIN	MINIMUM
APPROX	APPROXIMATE	MW	MONITORING WELL
BM	BENCHMARK	NAVD	NORTH AMERICAN VERTICAL DATUM
CB	CATCH BASIN	NTS	NOT TO SCALE
CL	CENTER LINE	NYSDEC	NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
DIA	DIAMETER	OC	ON CENTER
DWG	DRAWING	OZ	OUNCE
EL	ELEVATION	PCB	POLYCHLORINATED BIPHENYL
GPM	GALLON(S) PER MINUTE	TSCA	TOXIC SUBSTANCES CONTROL ACT
HDPE	HIGH DENSITY POLYETHYLENE	TYP	TYPICAL
INV	INVERT		

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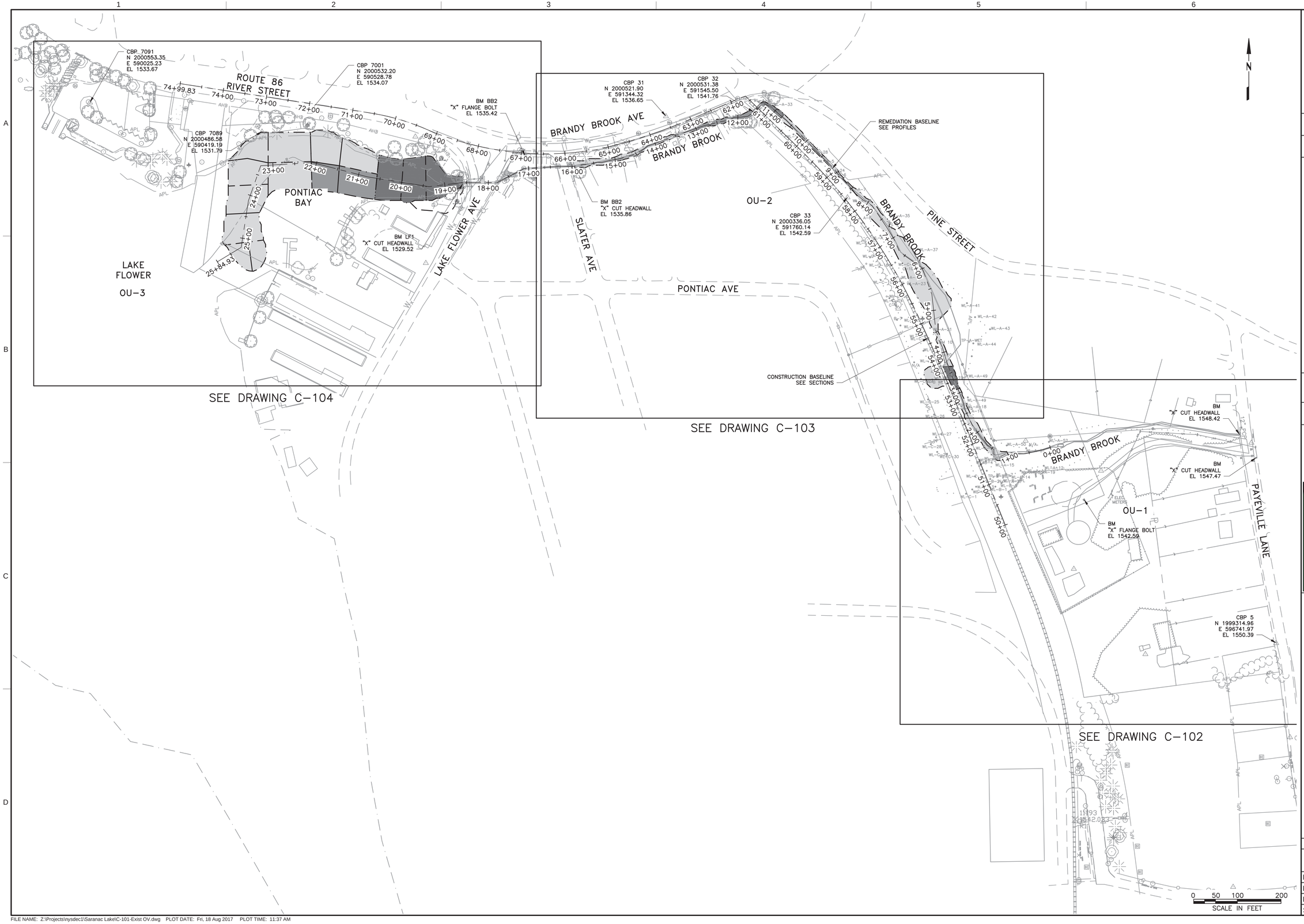
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OVERVIEW

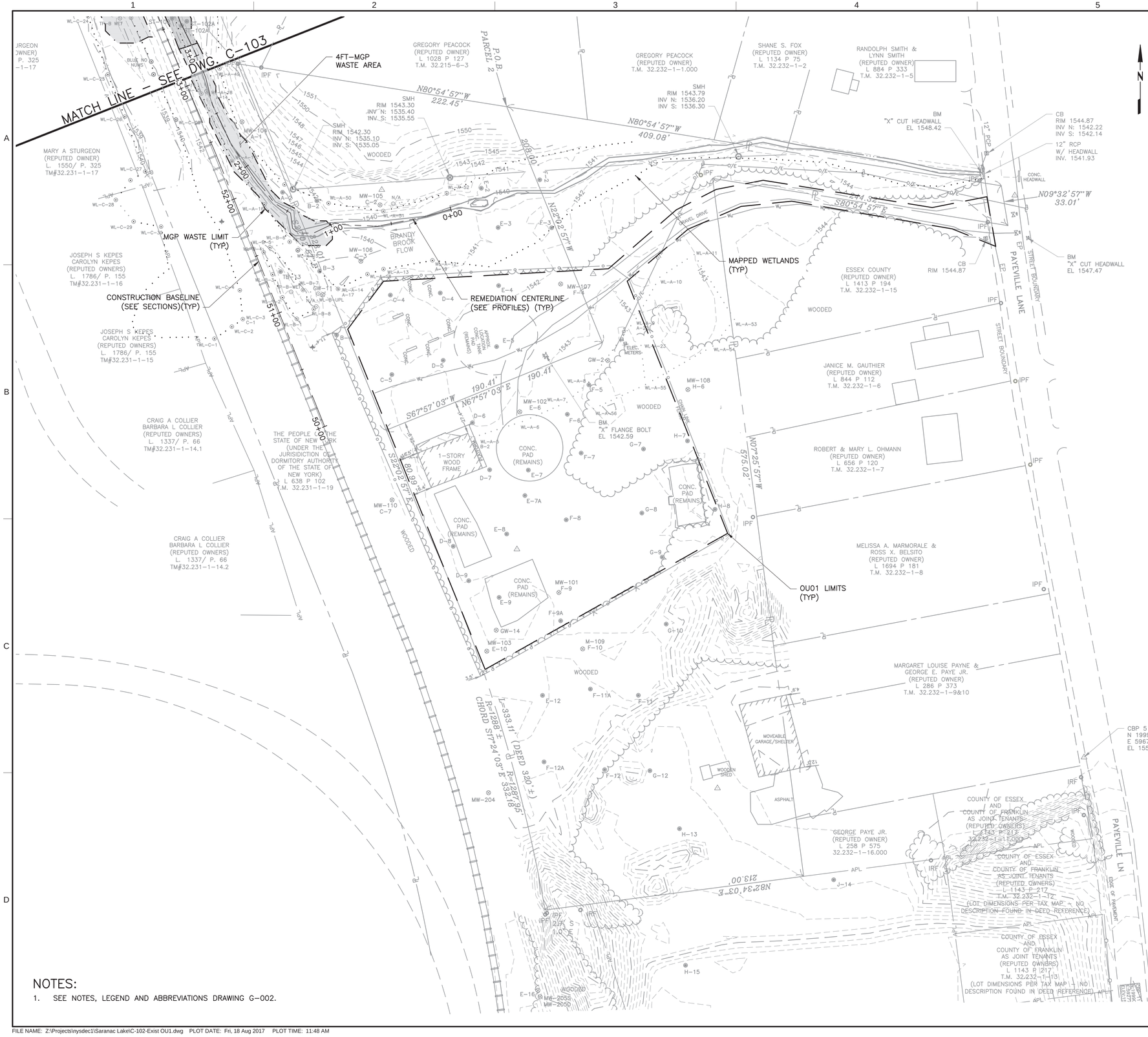
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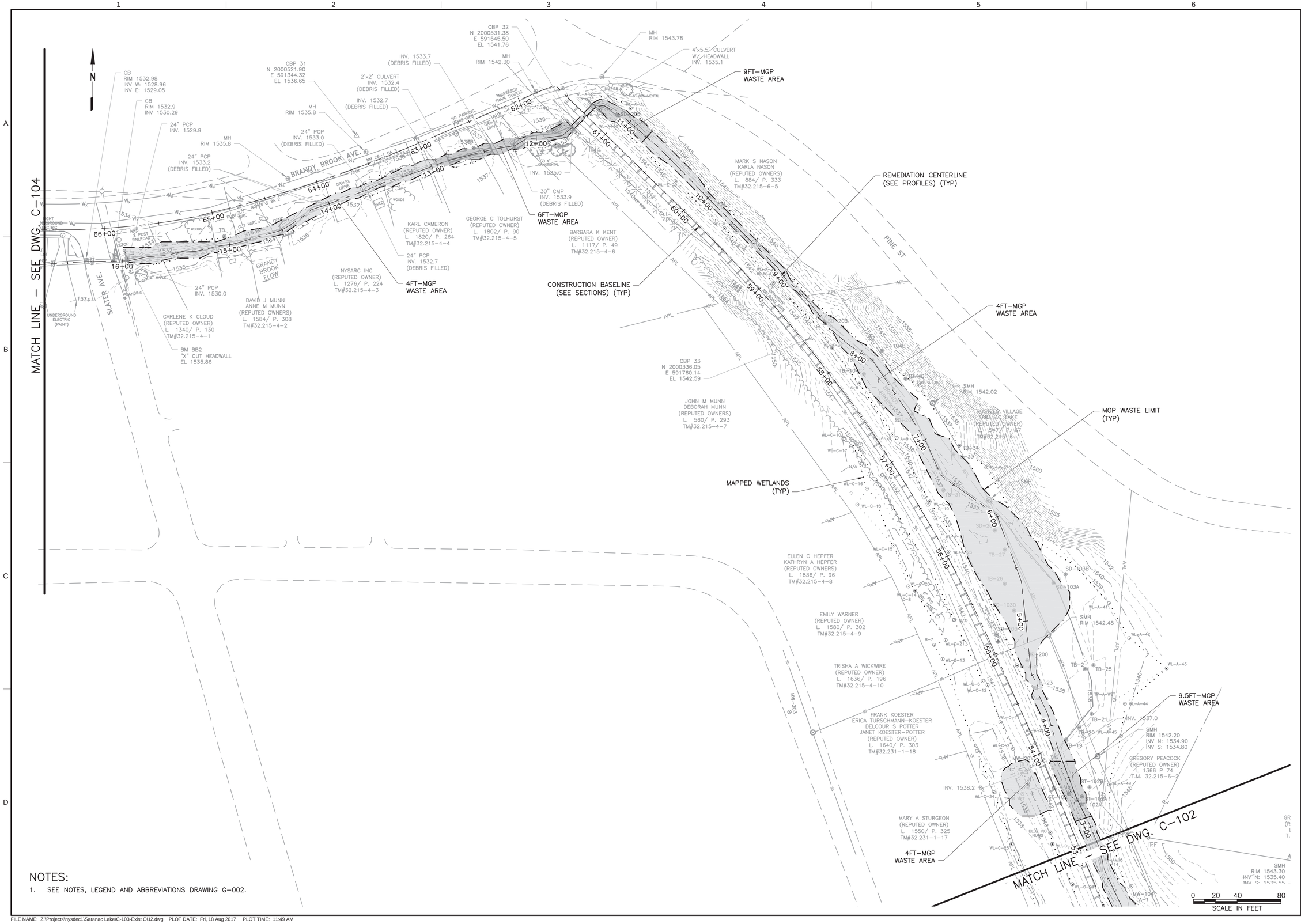
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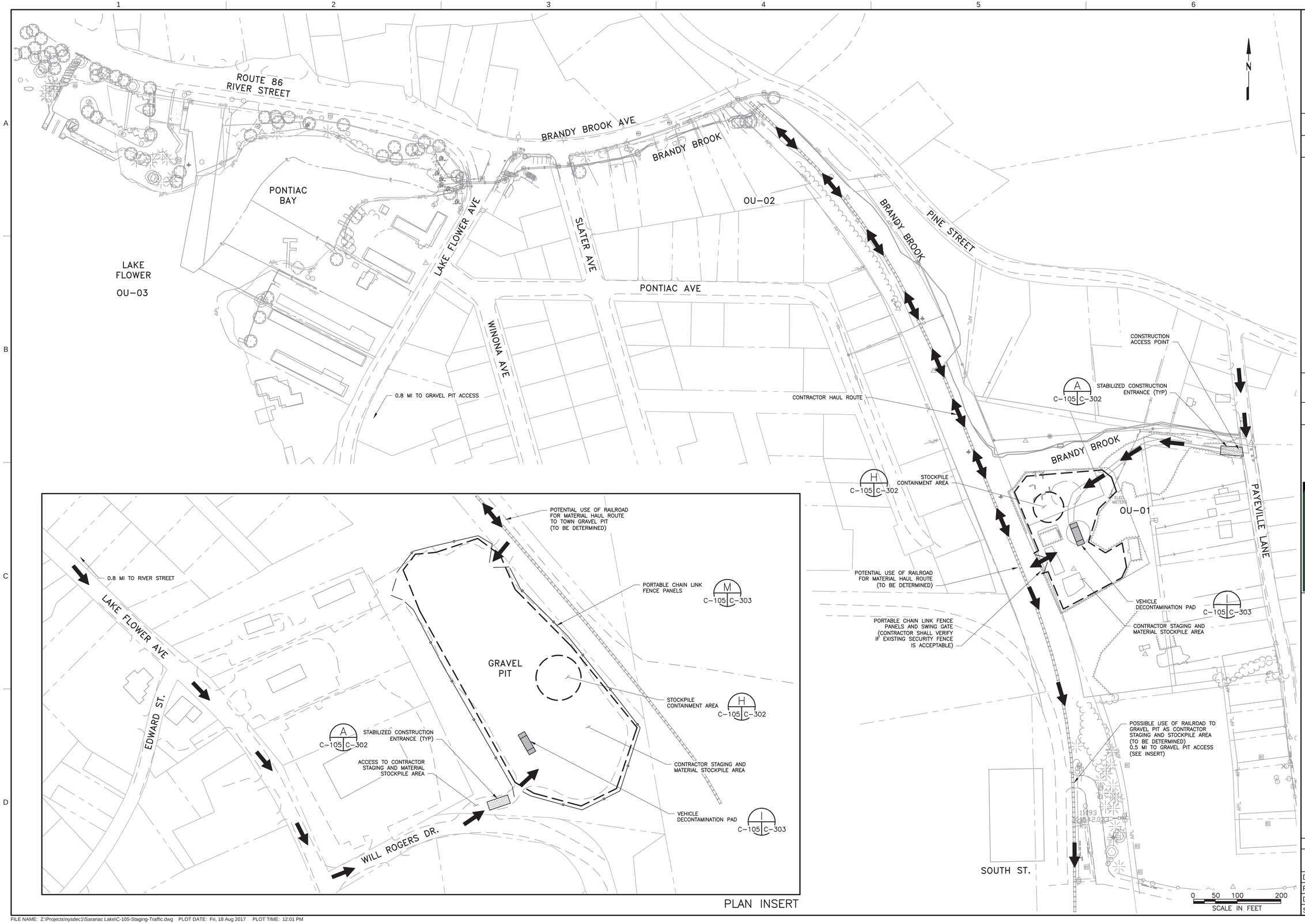
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SARANAC LAKE, NEW YORK
NYSDEC SITE NUMBER - 516008

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	FEB 2017
PROJ	3611-16-1193
DWG	C-104
SHEET	6 OF 29

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PLAN INSERT

NO.	DATE	DSGN	DR	CHK	APVD
B	8/22/17	MAP	WJW	MAP	MJS
A	4/20/17	PERMITTING			
		30% DESIGN			
		REVISION		BY	APVD
				CHL	MJS
				MAP	MJS

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NEW YORK STATE OF OPPORTUNITY. Department of Environmental Conservation

REMEDIAL ACTION
SARANAC LAKE GAS CO., INC.
SARANAC LAKE, NEW YORK
NYSDEC SITE NUMBER - 516008

MACTEC Engineering and Consulting, P.C.
P.O. Box 1062, 11 Commercial Street
Portland, Maine 04112-7050
(207) 775-5401

MACTEC

CIVIL

CONASTRUCTION STAGING
AND TRAFFIC PLAN

VERIFY SCALE

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0 1"

DATE	FEB 2017
PROJ	3611-16-1193
DWG	C-105
SHEET	7 OF 29

FILE NAME: Z:\Projects\nysdec1\Saranac Lake\C-105-Staging-Traffic.dwg PLOT DATE: Fri, 18 Aug 2017 PLOT TIME: 12:01 PM

NOTES:

1. SEE NOTES, LEGEND AND ABBREVIATIONS DRAWING G-002.
2. SEE EROSION AND SEDIMENT CONTROL NOTES DRAWING C-301, AND EROSION AND SEDIMENT CONTROL DETAILS DRAWING C-302.

MATCH LINE – SEE DWG. C-107

BRANDY BROOK AVE.

SLATER AVE.

PINE ST

BRANDY BROOK FLOW

CONSTRUCTION BASELINE (SEE SECTIONS) (TYP)

TEMPORARY ROCK CHECK DAM/COFFERDAM/BLADDER DAM W/ TURBIDITY CURTAIN INSTALLED IMMEDIATELY DOWNSTREAM OF BY-PASS DISCHARGE (TYP)

REMEDIATION CENTERLINE (SEE PROFILES) (TYP)

MGP WASTE LIMIT (TYP)

MAPPED WETLANDS (TYP)

SILT FENCE/AUGMENTED SILTATION FENCE

STABILIZED CONSTRUCTION ENTRANCE

SILT FENCE

INSET MATCH LINE

MATCH LINE – SEE INSET

INSET

CB 31 N 2000521.90 E 591344.32 EL 1536.65

CB 32 N 2000531.38 E 591545.50 EL 1541.76

CBP 33 N 2000336.05 E 591760.14 EL 1542.59

BM BB2 "X" CUT HEADWALL EL 1535.86

BM "X" FLANGE BOLT EL 1542.59

BM "X" CUT HEADWALL EL 1548.42

MH RIM 1543.78

MH RIM 1542.30

MH RIM 1535.8

SMH RIM 1542.02

SMH RIM 1542.48

SMH RIM 1542.20 INV N: 1534.90 INV S: 1534.80

SMH RIM 1543.30 INV N: 1535.40 INV S: 1535.55

SMH RIM 1542.30 INV N: 1535.10 INV S: 1535.05

SMH RIM 1543.79 INV N: 1536.20 INV S: 1536.30

CB RIM 1532.98 INV W: 1528.96 INV E: 1529.05

CB RIM 1532.9 INV 1530.29

CB RIM 1544.87

4'x5.5' CULVERT W/ HEADWALL INV. 1535.1

2'x2' CULVERT INV. 1532.4 (DEBRIS FILLED)

INV. 1533.7 (DEBRIS FILLED)

INV. 1532.7 (DEBRIS FILLED)

24" PCP INV. 1529.9

24" PCP INV. 1533.0 (DEBRIS FILLED)

24" PCP INV. 1533.2 (DEBRIS FILLED)

24" PCP INV. 1530.0

24" PCP INV. 1532.7 (DEBRIS FILLED)

30" CMP INV. 1533.9 (DEBRIS FILLED)

INV. 1535.0

INV. 1537.0

CARLENE K CLOUD (REPUTED OWNER) L. 1340/ P. 130 TM#32.215-4-1

DAVID J MUNN ANNE M MUNN (REPUTED OWNERS) L. 1584/ P. 308 TM#32.215-4-2

NYSARC INC (REPUTED OWNER) L. 1276/ P. 224 TM#32.215-4-3

KARL CAMERON (REPUTED OWNER) L. 1820/ P. 264 TM#32.215-4-4

GEORGE C TOLHURST (REPUTED OWNER) L. 1802/ P. 90 TM#32.215-4-5

BARBARA K KENT (REPUTED OWNER) L. 1117/ P. 49 TM#32.215-4-6

MARK S NASON KARLA NASON (REPUTED OWNERS) L. 884/ P. 333 TM#32.215-6-5

TRUSTEES VILLAGE SARANAC INKE (REPUTED OWNER) L. 947/ P. 87 TM#32.215-6-1

GREGORY PEACOCK (REPUTED OWNER) L 1366 P 74 T.M. 32.215-6-2

GREGORY PEACOCK (REPUTED OWNER) L 1028 P 127 T.M. 32.215-6-3

GREGORY PEACOCK (REPUTED OWNER) T.M. 32.232-1-1.000

SHANE S. FOX (REPUTED OWNER) L 1134 P 75 T.M. 32.232-1-2

RANDOLPH SMITH & LYNN SMITH (REPUTED OWNER) L 884 P 333 T.M. 32.232-1-5

ESSEX COUNTY (REPUTED OWNER) L 1413 P 194 T.M. 32.232-1-15

JANICE M. GAUTHIER (REPUTED OWNER) L 844 P 112 T.M. 32.232-1-6

ROBERT & MARY L. OHMANN (REPUTED OWNER) L 656 P 120

THE PEOPLE OF THE STATE OF NEW YORK (UNDER THE JURISIDICTION OF DORMITORY AUTHORITY OF THE STATE OF

A COLLIER RA L COLLIER TED OWNERS) 337/ P. 66 .231-1-14.1

1-STORY WOOD FRAME

CONC. PAD (REMAINS)

APPROX. LOCATION OF CONC. PAD (REMAINS)

PAYEVILLE LANE

STREET BOUNDARY

CHAIN LINK FENCE

BLDG NO. NUMS

0 20 40 80
SCALE IN FEET

NO.	DATE	DSGN	CHK	APVD
A	8/22/17	CHL	BY	APVD
		MJS	WJW	MJS

PERMITTING REVISION

MAP DR MAP

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NEW YORK OPPORTUNITY

Department of Environmental Conservation

REMEDIAL ACTION
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SARANAC LAKE, NEW YORK
NYSDEC SITE NUMBER - 516008

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(207) 775-5401

MACTEC

CIVIL

EROSION AND SEDIMENT CONTROL PLAN
OU02

VERIFY SCALE

BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	AUG 2017
PROJ	3611-16-1193
DWG	C-106
SHEET	8 OF 29

FILE NAME: Z:\Projects\nysdec1\Saranac Lake\C-106-ESCP OU2.dwg PLOT DATE: Fri, 18 Aug 2017 PLOT TIME: 12:03 PM



NO.	DATE	DSGN	CHK	APVD
A	8/22/17	MAP	WJW	MAP
		DR	CHL	MJS
			MJS	BY

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P.O. Box 7050, 195 Lehigh Cross Street
Portland, Maine 04112-7050
(207) 775-5401

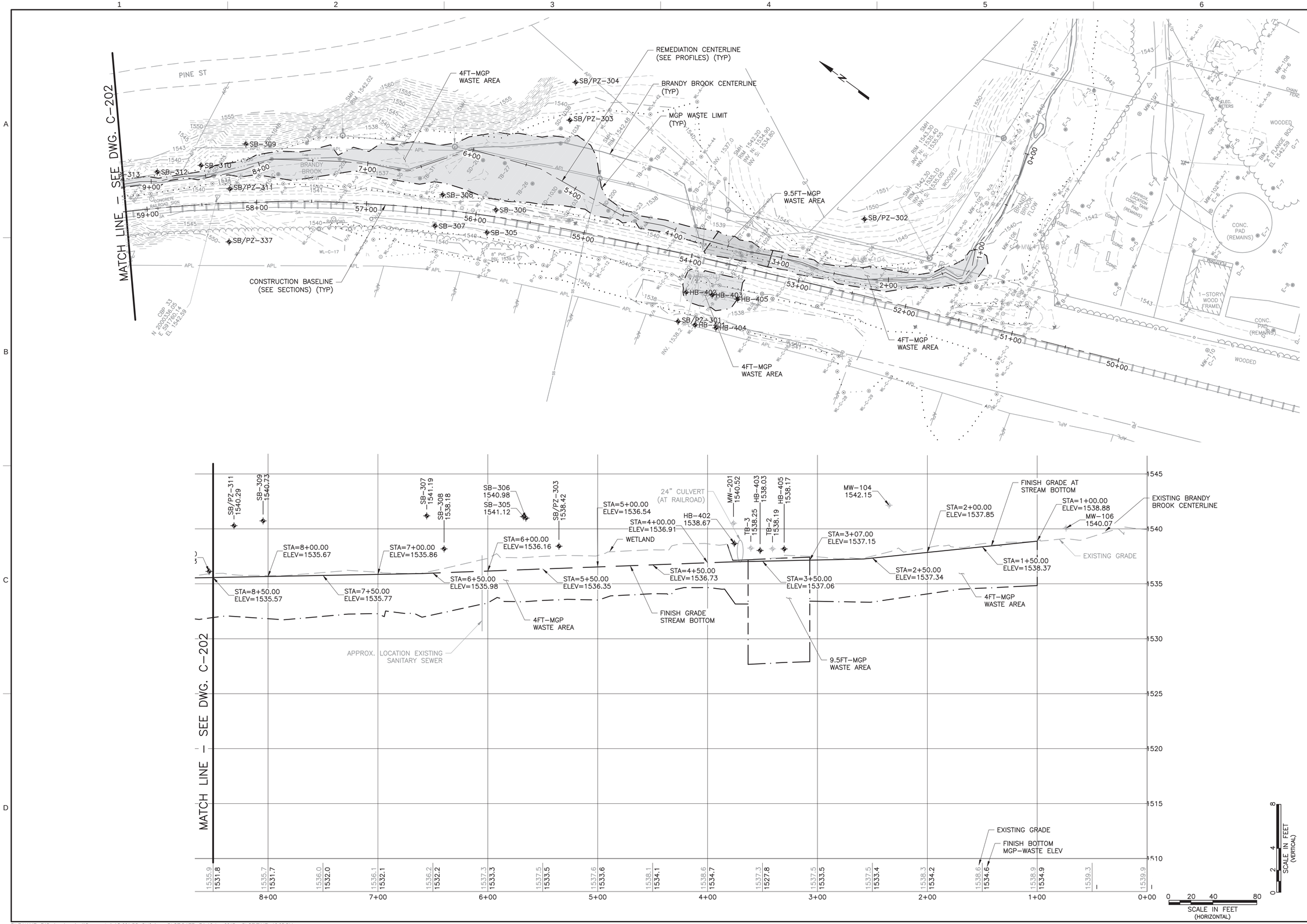
CIVIL

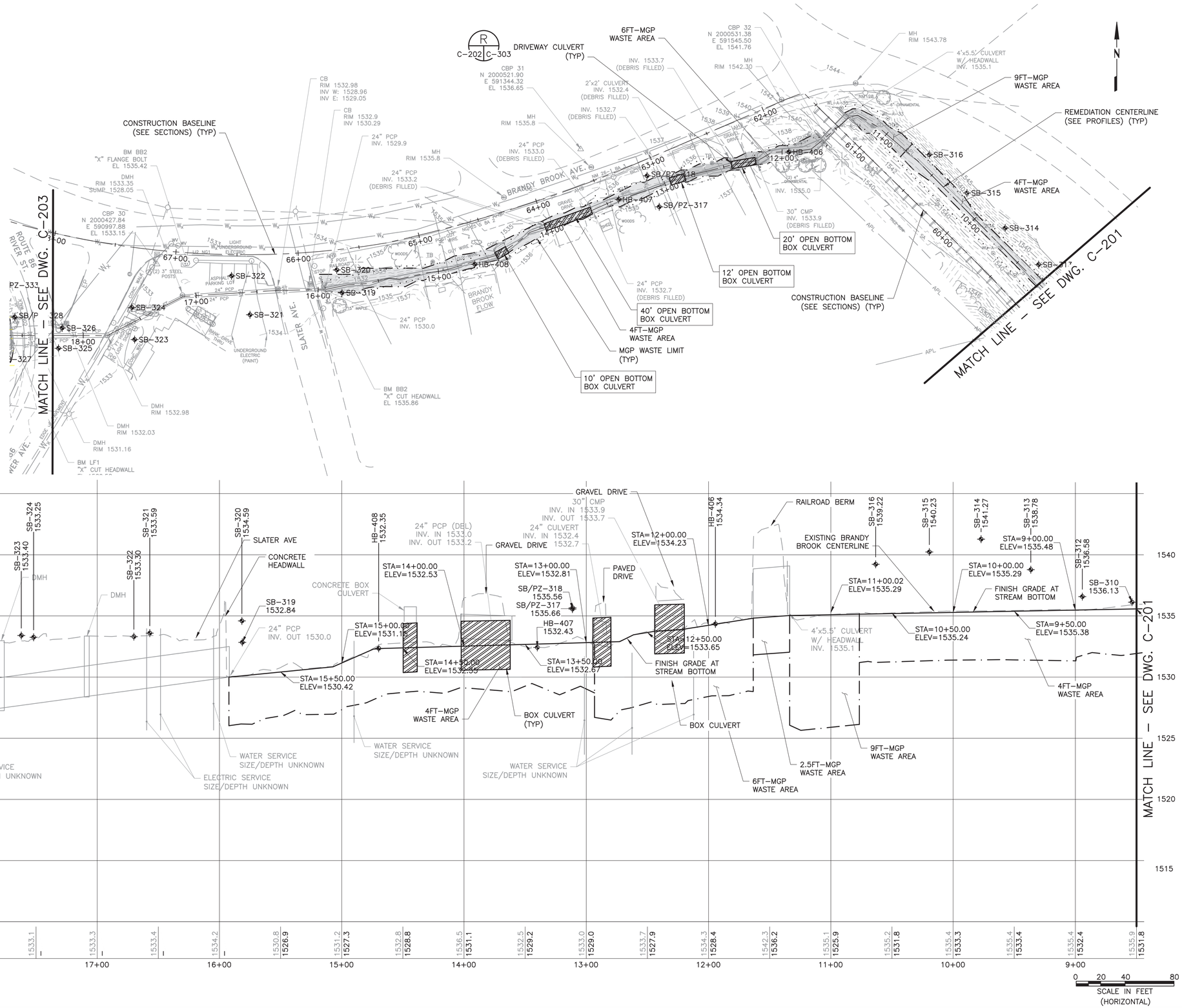
EROSION AND SEDIMENT CONTROL PLAN OU03

VERIFY SCALE
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0 1"

DATE	JULY 2017
PROJ	3611-16-1193
DWG	C-107
SHEET	9 OF 29

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MATCH LINE – SEE DWG. C-202
PINE ST
BRANDY BROOK FLOW
REMEDIATION CENTERLINE (SEE PROFILES) (TYP)
BRANDY BROOK CENTERLINE (TYP)
MGP WASTE LIMIT (TYP)
4FT-MGP WASTE AREA
9.5FT-MGP WASTE AREA
CONSTRUCTION BASELINE (SEE SECTIONS) (TYP)
SB/PZ-337
SB/PZ-311
SB-309
SB-310
SB-312
SB-313
SB/PZ-304
SB/PZ-303
SB-308
SB-306
SB-307
SB-305
SB/PZ-302
SB/PZ-301
HB-402
HB-403
HB-404
HB-405
MW-107
MW-108
MW-102
MW-105
MW-110
MW-104
MW-106
CHAIN FENCE
ELEC. METERS
WOODED
GW-2
GW-1
CONC. PAD (REMAINS)
APPROX. LOCATION CONCRETE PAD/TANK (REMAINS)
1-STORY WOOD (FRAME)
CONCRETE RAILROAD SIGN
CSP 33 N 2000136.05 E 891760.14 EL 1542.59
8" PVC INV. 1539.4
INV. 1538.2
SMH RIM 1542.02
SMH RIM 1542.48
SMH RIM 1542.30 INV. N: 1535.40 INV. S: 1535.05
SMH RIM 1542.20 INV. W: 1535.49 INV. S: 1534.80
INV. 1537.0
RIM 1542.59 FLANGE BOLT
APL
WL-C-17
WL-C-28
WL-C-29
WL-C-2
WL-C-7
WL-C-14
WL-C-15
WL-C-13
WL-C-12
WL-C-11
WL-C-10
WL-C-9
WL-C-8
WL-C-6
WL-C-5
WL-C-4
WL-C-3
WL-C-1
WL-A-10
WL-A-9
WL-A-8
WL-A-7
WL-A-6
WL-A-5
WL-A-4
WL-A-3
WL-A-2
WL-A-1
WL-B-1
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WL-B-34
WL-B-35
WL-B-36
WL-B-37
WL-B-38
WL-B-39
WL-B-40



NO.	DATE	DSGN	DR	CHK	APVD
B	8/22/17	MAP	MAP	WJW	MJS
A	4/20/17	PERMITTING 30% DESIGN REVISION			

CHL	MJS
MAP	MJS
BY	APVD

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NEW YORK STATE Department of Environmental Conservation

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SARANAC LAKE, NEW YORK
NYSDEC SITE NUMBER - 516008

MACTEC Engineering and Consulting, P.C.
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(207) 775-5401

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EXCAVATION PLAN AND PROFILE OU02

VERIFY SCALE

BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	FEB 2017
PROJ	3611-16-1193
DWG	C-202
SHEET	11 OF 29

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ROUTE 86
RIVER ST.

CBP 7089
N 2000486.58
E 590419.19
EL 1531.79

CBP 7001
N 2000532.20
E 590528.78
EL 1534.07

CONSTRUCTION BASELINE
(SEE SECTIONS) (TYP)

S
C-203 C-304

RETAINING WALL

74+99.83
74+00
73+00
72+00
71+00
70+00
69+00
68+

W EDGE OF PAVEMENT W

ROUTE 86
RIVER ST.

MATCH LINE - SEE DWG. C-202

SB-501
SB-502
SB-503
SB-504
SB-505
SB-506
SB/PZ-331
SB/PZ-332
SB/PZ-333
SB/PZ-335
SB-334
SB-330
SB-329
SB-327

PONTIAC LAKE
BAY FLOWER
(PONTIAC BAY)
WATER ELEV.: 1528.7'

23+00
22+00
21+00
20+00
19+00
24+00
25+00

18" INV. 1527.6
24" INV. 1526.4
24" INV. 1526.3
18" INV. 1527.2

4FT-MGP
WASTE AREA

5FT-MGP
WASTE AREA

7.5FT-MGP
WASTE AREA

UPLAND-MGP
WASTE AREA

RETAINING WALL
(AS REQUIRED)

S
C-203 C-304

ROUTE 86
LAKE FLOWER AVE.

REMEDIATION CENTERLINE
(SEE PROFILES) (TYP)

25+84.93

MGP WASTE LIMIT
(TYP)

EDGE OF WATER
11/7/16

CONCRETE SIDEWALK

GRAVEL DRIVEWAY

WOODEN POST
WITH UGE

POLE WITH
BOX AND
OUTLET

UTILITY POLE
WITH LIGHT

POLE WITH
NO NUMBERS
BOX AND
OUTLET

POLE WITH
NO NUMBERS

WOODEN POST
WOOD PICKET FENCE

CONCRETE ROAD WALL

WOODEN CANOE RACK

SHED

TREE

STUMP

2 BOLE CEDAR

APL
AHB
UE
UGE
WOODS

NO.	DATE	DSGN	DR	CHK	APVD
B	8/22/17		MAP	WJW	MJS
A	4/20/17		MAP	CHL	MJS

PERMITTING
30% DESIGN
REVISION

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Department of Environmental Conservation

REMEDIAL ACTION
SARANAC LAKE GAS CO., INC.
SARANAC LAKE, NEW YORK
NYSDEC SITE NUMBER - 516008

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(207) 775-5401

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EXCAVATION PLAN AND PROFILE
OU03

VERIFY SCALE
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0 1"

DATE	FEB 2017
PROJ	3611-16-1193
DWG	C-203
SHEET	12 OF 29

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FILE NAME: Z:\Projects\nysdec1\Saranac Lake\C-203-PP- OU3.dwg PLOT DATE: Fri, 18 Aug 2017 PLOT TIME: 12:36 PM

GENERAL EROSION AND SEDIMENT CONTROL NOTES:

1. ALL WORK IS TO BE DONE IN ACCORDANCE WITH THE NEW YORK STATE STANDARDS AND SPECIFICATIONS FOR EROSION AND SEDIMENT CONTROL (STATE STANDARDS) AND THE CONTRACT DOCUMENTS, SPECIFICALLY:

   - SPECIFICATION SECTION 02370 EROSION AND SEDIMENTATION CONTROL;
   - DRAWING C–106, EROSION AND SEDIMENT CONTROL PLAN – OU01;
   - DRAWING C–107, EROSION AND SEDIMENT CONTROL PLAN – OU02;
   - DRAWING C–108, EROSION AND SEDIMENT CONTROL PLAN – OU03;
   - DRAWING C–301, EROSION AND SEDIMENT CONTROL NOTES ; AND
   - DRAWING C–302, EROSION AND SEDIMENT CONTROL DETAILS.

2. REFER TO CONSTRUCTION SEQUENCING NOTES ON DRAWING G–002, NOTES, LEGEND AND ABBREVIATIONS.

3. IF A DISCREPANCY EXISTS BETWEEN THE STATE STANDARDS AND THE CONTRACT DOCUMENTS, THE STATE STANDARDS SHALL TAKE PRECEDENCE.

4. ALL SOIL EROSION AND SEDIMENT CONTROL PRACTICES ARE TO BE INSTALLED PRIOR TO ANY MAJOR SOIL DISTURBANCE, OR IN THEIR PROPER SEQUENCE, AND MAINTAINED UNTIL PERMANENT PROTECTION IS ESTABLISHED.

5. EROSION AND SEDIMENTATION CONTROLS SHALL BE AUGMENTED OR SUPPLEMENTED IF THE INSTALLED MEASURES DO NOT PROVIDE ADEQUATE PROTECTION OF DOWNSTREAM RESOURCES AS DETERMINED BY THE ENGINEER OR DEPARTMENT.

6. ANY DISTURBED AREAS THAT WILL BE LEFT EXPOSED MORE THAN FOURTEEN (14) DAYS, AND NOT SUBJECT TO CONSTRUCTION TRAFFIC, WILL IMMEDIATELY RECEIVE TEMPORARY SEEDING AND MULCHING. IF THE SEASON PREVENTS THE ESTABLISHMENT OF TEMPORARY COVER, THE DISTURBED AREAS WILL BE MULCHED WITH HAY OR STRAW, OR EQUIVALENT MATERIAL, AT A RATE OF 2 TONS PER ACRE, ACCORDING TO STATE STANDARDS.

7. IMMEDIATELY FOLLOWING INITIAL DISTURBANCE OR ROUGH GRADING, ALL CRITICAL AREAS SUBJECT TO EROSION (I.E. STEEP SLOPES AND TRIBUTARY/CREEK BANKS) WILL RECEIVE TEMPORARY SEEDING IN COMBINATION WITH HAY OR STRAW MULCH OR A SUITABLE EQUIVALENT, AT A RATE OF 2 TONS PER ACRE, ACCORDING TO STATE STANDARDS.

8. ANY STEEP SLOPES (I.E. SLOPES GREATER THAN 3:1) WILL BE COMPLETELY GRADED AND STABILIZED DAILY, AS CONSTRUCTION PROGRESSES.

9. THE STANDARD FOR STABILIZED CONSTRUCTION ENTRANCE REQUIRES THE INSTALLATION OF A PAD OF CLEAN CRUSHED STONE AT POINTS WHERE TRAFFIC WILL BE ACCESSING THE CONSTRUCTION SITE.

10. ALL SOIL WASHED, DROPPED, SPILLED, OR TRACKED OUTSIDE THE LIMIT OF WORK OR ONTO PUBLIC RIGHT–OF–WAYS SHALL BE REMOVED IMMEDIATELY.

11. PERMANENT VEGETATION IS TO BE SEEDED OR SODDED ON ALL EXPOSED AREAS AS SOON AS POSSIBLE AFTER FINAL GRADING. IF SEEDING IS NOT PERFORMED WITHIN 48 HOURS OF COMPLETION OF FINAL GRADING, ADDITIONAL SURFACE SCARIFICATION SHALL BE COMPLETED PRIOR TO SEEDING.

12. AT THE TIME THAT SITE PREPARATION FOR PERMANENT VEGETATIVE STABILIZATION IS TO BE UNDERTAKEN, ANY SOIL THAT WILL NOT PROVIDE A SUITABLE ENVIRONMENT TO SUPPORT ADEQUATE VEGETATIVE GROWTH SHALL BE REMOVED OR TREATED IN SUCH A WAY THAT WILL PERMANENTLY ADJUST THE SOIL CONDITIONS AND RENDER IT SUITABLE TO SUSTAIN VEGETATIVE GROWTH. IF THE REMOVAL OR TREATMENT OF THE SOIL WILL NOT PROVIDE SUITABLE CONDITIONS, NON–VEGETATIVE MEANS OF PERMANENT STABILIZATION SHALL BE EMPLOYED.

13. DEWATERING OPERATIONS SHALL BE UNDERTAKEN IN A MANNER TO MINIMIZE SEDIMENT TRANSFER. ANY DEWATERING METHODS USED MUST BE IN ACCORDANCE WITH THE SPECIFICATIONS.

14. SHOULD THE CONTROL OF DUST AT THE SITE BE NECESSARY, THE SITE WILL BE SPRINKLED WITH WATER UNTIL THE SURFACE IS WET. TEMPORARY VEGETATIVE COVER SHALL BE ESTABLISHED OR MULCH SHALL BE APPLIED PER THE STATE STANDARDS. CALCIUM CHLORIDE SHALL ONLY BE USED FOR DUST CONTROL DURING FREEZING CONDITIONS.

15. STOCKPILE AND STAGING LOCATIONS ESTABLISHED IN THE FIELD SHALL BE PLACED WITHIN THE LIMIT OF WORK WITH APPROPRIATE PROTECTIVE EROSION AND SEDIMENTATION CONTROLS.

16. ALL SOIL STOCKPILES ARE TO BE TEMPORARILY STABILIZED IN ACCORDANCE WITH GENERAL EROSION AND SEDIMENT CONTROL NOTE NO. 4.

17. STABILIZED PLUNGE POOLS/SCOUR PADS MUST BE INSTALLED AT ALL TEMPORARY TRIBUTARY BYPASS SYSTEM DISCHARGE LOCATIONS AND/OR CONSTRUCTION WATER DISCHARGE LOCATIONS PRIOR TO THE DISCHARGE BECOMING OPERATIONAL.

18. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY EROSION OR SEDIMENTATION THAT MAY OCCUR DOWNGRADIENT OF STORMWATER OUTFALLS/OUTLETS OR OFFSITE AS A RESULT OF CONSTRUCTION OF THE PROJECT.

SOIL EROSION AND SEDIMENT CONTROL INSPECTION AND MAINTENANCE:

1. STABILIZED CONSTRUCTION ENTRANCE

   A. STABILIZED CONSTRUCTION ENTRANCES SHALL, AT A MINIMUM, BE INSPECTED WEEKLY AND WITHIN 24 HOURS AFTER EVERY PRECIPITATION EVENT THAT PRODUCES 0.5 INCHES OF RAIN OR MORE DURING A 24–HOUR PERIOD.

   B. STABILIZED CONSTRUCTION ENTRANCES SHALL BE MAINTAINED IN A CONDITION THAT WILL PREVENT TRACKING OF SEDIMENT ONTO PAVED SURFACES. CHECK FOR DAMAGE/DETERIORATION/CLOGGING AND IMMEDIATELY REPAIR OR RECONSTRUCT AS NECESSARY.

   C. THE PERFORMANCE OF STABILIZED CONSTRUCTION ENTRANCES SHALL BE MAINTAINED BY LENGTHENING, SCRAPING, OR TOP–DRESSING WITH ADDITIONAL AGGREGATE.

   D. STABILIZED CONSTRUCTION ENTRANCES SHALL HAVE A 6–INCH MINIMUM THICKNESS.

   E. INSPECT ADJACENT IMPERVIOUS SURFACES DAILY (MINIMUM). IMMEDIATELY REMOVE VISIBLE ACCUMULATED SEDIMENT DEPOSITED ON PAVED SURFACES VIA SWEEPING, VACUUMING, OR WASHING. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH AGGREGATE, WHICH DRAINS INTO AN APPROVED SEDIMENT TRAPPING DEVICE. PROPERLY DISPOSE OF SEDIMENT.

2. SEDIMENT BARRIERS

   A. SILTATION FENCE

      A.1. SILTATION FENCES SHALL, AT A MINIMUM, BE INSPECTED WEEKLY AND WITHIN 24 HOURS AFTER EVERY PRECIPITATION EVENT THAT PRODUCES 0.5 INCHES OF RAIN OR MORE DURING A 24–HOUR PERIOD.

      A.2. REMOVE THE SEDIMENT DEPOSITS OR INSTALL A SECONDARY BARRIER UPSLOPE FROM THE EXISTING BARRIER WHEN SEDIMENT DEPOSITS REACH ONE HALF THE HEIGHT OF THE FENCE. PROPERLY DISPOSE OF SEDIMENT.

      A.3. REPLACE OR REPAIR FENCES WITHIN 24 HOURS OF OBSERVED FAILURE (E.G., DAMAGE OR DECOMPOSITION; FENCE MOVED OUT OF POSITION; UNDERCUTTING, OVERTOPPING, OR FLOW CHANNELS AROUND THE END OF FENCES).

      A.4. MAINTAIN SILTATION FENCES UNTIL THE CONTRIBUTING AREA IS STABILIZED.

   B. AUGMENTED SILTATION FENCE

      B.1. AUGMENTED SILTATION FENCES SHALL, AT A MINIMUM, BE INSPECTED WEEKLY AND WITHIN 24 HOURS AFTER EVERY PRECIPITATION EVENT THAT PRODUCES 0.5 INCHES OF RAIN OR MORE DURING A 24– HOUR PERIOD.

      B.2. REMOVE THE SEDIMENT DEPOSITS OR INSTALL A SECONDARY BARRIER UPSLOPE FROM THE EXISTING BARRIER WHEN SEDIMENT DEPOSITS REACH ONE HALF THE HEIGHT OF THE FENCE. PROPERLY DISPOSE OF SEDIMENT.

      B.3. REPLACE OR REPAIR FENCES WITHIN 24 HOURS OF OBSERVED FAILURE (E.G., DAMAGE OR DECOMPOSITION; FENCE MOVED OUT OF POSITION; UNDERCUTTING, OVERTOPPING, OR FLOW CHANNELS AROUND THE END OF FENCES).

      B.4. RESHAPE, ADD ADDITIONAL MATERIAL, OR REPLACE FILTER BERM WHEN DISTURBED BY CONSTRUCTION ACTIVITIES OR SIGNIFICANT STORM EVENTS.

      B.5. MAINTAIN AUGMENTED SILTATION FENCES UNTIL THE CONTRIBUTING AREA IS STABILIZED.

   C. FILTER BERMS

      C.1. FILTER BERMS, AT A MINIMUM, BE INSPECTED WEEKLY AND WITHIN 24 HOURS AFTER EVERY PRECIPITATION EVENT THAT PRODUCES 0.5 INCHES OF RAIN OR MORE DURING A 24– HOUR PERIOD.

      C.2. REMOVE THE SEDIMENT DEPOSITS FROM THE BARRIER WHEN SEDIMENT DEPOSITS REACH ONE HALF THE HEIGHT OF THE FENCE. PROPERLY DISPOSE OF SEDIMENT.

      C.3. REPLACE OR REPAIR BERMS WITHIN 24 HOURS OF OBSERVED FAILURE (E.G., DAMAGE OR DECOMPOSITION, BERM MATERIAL DISPLACED, OVERTOPPING, OR FLOW AROUND THE END OF BERM).

      C.4. RESHAPE, ADD ADDITIONAL MATERIAL, OR REPLACE FILTER BERM WHEN DISTURBED BY CONSTRUCTION ACTIVITIES OR SIGNIFICANT STORM EVENTS.

      C.5. MAINTAIN FILTER BERMS UNTIL THE CONTRIBUTING AREA IS STABILIZED

3. TURBIDITY BARRIER

   A. TURBIDITY BARRIER, AT A MINIMUM, BE INSPECTED DAILY. IF THE CURTAIN IS ORIENTED IN A MANNER THAT FACES THE PREVAILING WIND, FREQUENTS CHECKS OF THE ANCHORAGE SYSTEM SHALL BE CONDUCTED.

   B. IMMEDIATELY REPAIR OR REPLACE DAMAGED CURTAIN, BUOYS, OR ANCHORAGES.

   C. DURING DREDGING OPERATIONS, REAL–TIME TURBIDITY MONITORING WILL BE CONDUCTED WITH A BUOY–BASED TURBIDITY MONITORING SYSTEM AND DATA REVIEWED ON AN HOURLY BASIS. DISCONTINUE DREDGING OPERATIONS WHEN DATA INDICATES EXCEEDANCE TO THE ESTABLISHED NTU LIMITS ARE EXCEEDED ON OUTSIDE OF BARRIER. MAKE MODIFICATIONS TO TURBIDITY BARRIER TO ACHIEVE ACCEPTABLE PERFORMANCE.

   C. MAINTAIN TURBIDITY BARRIER SYSTEMS UNTIL THE REMEDIATION AND RESTORATION ACTIVITIES ARE COMPLETED FOR THE BAY AND SHORELINE AND TURBIDITY BARRIER SYSTEM IS NO LONGER REQUIRED.

4. TEMPORARY BYPASS SYSTEMS

   A. TEMPORARY BYPASS SYSTEMS SHALL, AT A MINIMUM, BE INSPECTED DAILY AND WITHIN 24 HOURS AFTER EVERY PRECIPITATION EVENT THAT PRODUCES 0.5 INCHES OF RAIN OR MORE DURING A 24–HOUR PERIOD.

   B. MAINTAIN TEMPORARY BYPASS SYSTEMS UNTIL THE REMEDIATION AND RESTORATION ACTIVITIES ARE COMPLETED FOR EACH PHASE OF WORK AND TEMPORARY TRIBUTARY BYPASS SYSTEM IS NO LONGER REQUIRED.

   C. TEMPORARY CONVEYANCES SHOULD BE COMPLETELY REMOVED AT THE COMPLETION OF BROOK OR BAY RESTORATION.

5. STABILIZED PLUNGE POOL/SCOUR PAD.

   A. STABILIZED PLUNGE POOL/SCOUR PAD, AT A MINIMUM, BE INSPECTED DAILY AND WITHIN 24 HOURS AFTER EVERY PRECIPITATION EVENT THAT PRODUCES 0.5 INCHES OF RAIN OR MORE DURING A 24–HOUR PERIOD.

   B. REPLACE OR REPAIR POOL/PAD WITHIN 24 HOURS OF OBSERVED FAILURE (E.G., MOVED STONE, ERODED SOIL AROUND OR UNDER THE POOL/PAD, DEPOSITED SEDIMENT). TRIBUTARY BYPASS DISCHARGE SHALL BE SUSPENDED UNTIL THE REPAIR IS COMPLETE.

6. CHECK DAMS

   A. CHECK DAMS SHALL, AT A MINIMUM, BE INSPECTED WEEKLY AND WITHIN 24 HOURS AFTER EVERY PRECIPITATION EVENT THAT PRODUCES 0.5 INCHES OF RAIN OR MORE DURING A 24 HOUR PERIOD.

   B. REPLACE OR REPAIR CHECK DAMS WITHIN 24 HOURS OF OBSERVED FAILURE (E.G., MOVED STONE, ERODED SOIL AROUND OR UNDER THE CHECK DAM, TRAPPED SEDIMENTS OVERTOPPING CHECK DAM).

   C. UNLESS INCORPORATED INTO A PERMANENT STORMWATER MANAGEMENT SYSTEM, CHECK DAMS SHALL BE REMOVED ONCE THE FINAL GRADING AND CHANNEL STABILIZATION IS APPLIED.

   D. SEDIMENT DEPOSITS SHALL BE REMOVED WHEN DEPOSITS REACH HALF THE HEIGHT OF THE CHECK DAM. REMOVAL OF SEDIMENT MAY REQUIRE REPLACEMENT OF STONE. PROPERLY DISPOSE OF SEDIMENT.

7. ODOR CONTROL

   A. THE PROJECT SITE AND ADJACENT RESIDENTIAL AND COMMERCIAL PROPERTIES SHALL, AT A MINIMUM, DUST CONTROL SHALL BE CONDUCTED AT ALL TIMES DURING EXCAVATION AND HANDLING OF IMPACTED SOIL AND SEDIMENT.

   B. AIR MONITORING WILL BE CONDUCTED AT THE PERIMETER OF THE WORK AREA BE CONDUCTED TO MEASURE AMOUNTS OF VOLATILE ORGANIC COMPOUNDS (VOCS) ASSOCIATED WITH MGP WASTE, INCLUDING BENZENE AND NAPHTHALENE, ANTICIPATED TO BE RELEASED DURING THE RA.

   C. APPLY ODOR CONTROL MEASURES BASED ON AIR MONITORING READINGS OR WHEN ODOR BECOMES VISUALLY EVIDENT.

   D. ODOR CONTROL MEASURES INCLUDE APPLYING HYDROCARBON VAPOR SUPPRESSING AGENTS, DETERGENTS, OR ODOR–SUPPRESSING FOAMS TO DREDGED SEDIMENTS, ACTIVE IN–SITU STABILIZATION AREAS, AND STOCKPILED WASTES, AND IF SEDIMENT STABILIZATION IS REQUIRED TO MEET DISPOSAL FACILITY REQUIREMENTS, CONDUCTING THE STABILIZATION OPERATIONS IN A TEMPORARY ENCLOSURE.

8. DUST CONTROL

   A. THE PROJECT SITE AND ADJACENT RESIDENTIAL AND COMMERCIAL PROPERTIES SHALL, AT A MINIMUM, DUST CONTROL SHALL BE CONDUCTED AT ALL TIMES DURING EXCAVATION AND HANDLING OF IMPACTED SOIL AND SEDIMENT.

   B. AIR MONITORING WILL BE CONDUCTED AT THE PERIMETER OF THE WORK AREA TO DETERMINE WHEN ENGINEERING CONTROLS (E.G., WATER SPRAY, COVERING STOCKPILES) ARE REQUIRED TO SUPPRESS DUST EMISSION DURING THE EXECUTION OF THE WORK.

   C. APPLY DUST CONTROL MEASURES WHEN FUGITIVE DUST BASED AIR MONITORING READINGS OR DUST BECOMES VISUALLY EVIDENT.

9. TEMPORARY SEEDING AND MULCHING

   A. AREAS RECEIVING TEMPORARY SEEDING AND MULCHING SHALL, AT A MINIMUM, BE INSPECTED WEEKLY AND WITHIN 24 HOURS AFTER EVERY PRECIPITATION EVENT THAT PRODUCES 0.5 INCHES OF RAIN OR MORE DURING A 24–HOUR PERIOD.

   B. WHERE SEED/MULCH HAS MOVED OR SOIL EROSION HAS OCCURRED, REPAIR THE AREA APPROPRIATELY AND RE–APPLY SEED AND/OR MULCH. APPLY NETTING, TACKIFIER, OR OTHER ANCHORING TECHNIQUES AS NECESSARY TO PREVENT FAILURE. ADDITIONAL TEMPORARY MEASURES MAY ALSO BE INSTALLED TO CONTROL STORMWATER RUNOFF AND SEDIMENT MOVEMENT.

   C. CONTINUE INSPECTION AND MAINTENANCE OF AREAS RECEIVING TEMPORARY SEEDING AND MULCHING UNTIL AT LEAST 90% OF THE SOIL SURFACE IS BE COVERED BY MATURE, ESTABLISHED VEGETATION CAPABLE OF CONTROLLING SOIL EROSION AND SURVIVING SEVERE WEATHER.

10. ALL TEMPORARY EROSION AND SEDIMENT CONTROLS SHALL BE REMOVED ONCE DISTURBED AREAS ARE STABILIZED WITH PERMANENT ESTABLISHED VEGETATION, PAVEMENT, RIPRAP, OR GRAVEL.

NO.	DATE	DSGN	DR	CHK	APVD	BY
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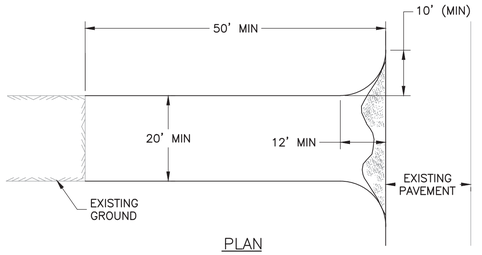
EROSION AND SEDIMENT CONTROL NOTES

VERIFY SCALE

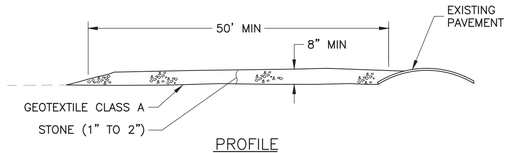
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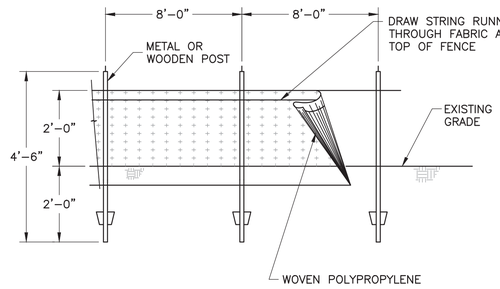
PLAN

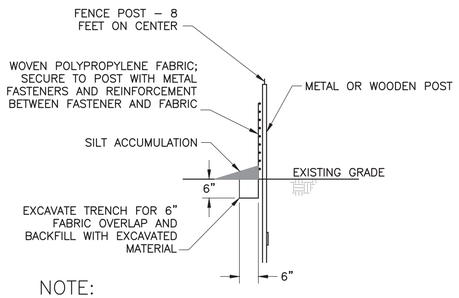


PROFILE

STABILIZED CONSTRUCTION ENTRANCE (A)

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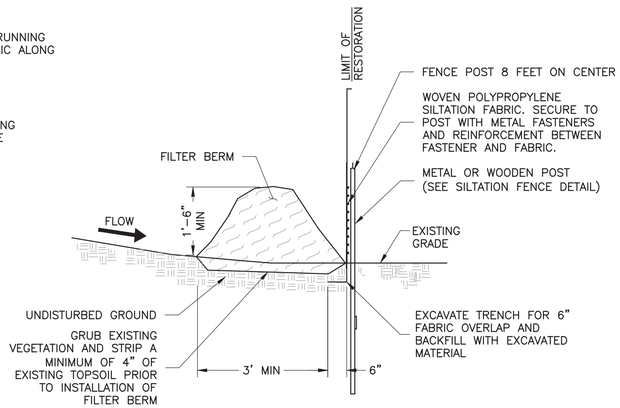


NOTE:

WHERE REQUIRED AT CRITICAL LOCATIONS, AUGMENTED SILT FENCE OR SILTATION FENCE REINFORCED WITH HOG OR CHICKEN WIRE OR INTEGRAL PLASTIC MESH REINFORCING MAY BE USED.

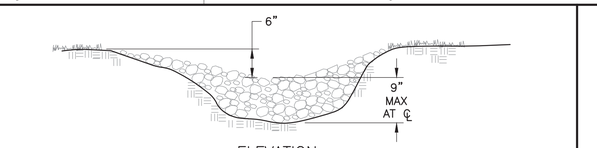
SILT FENCE (B)

NTS — TYP C-302

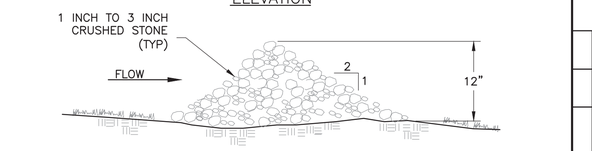


AUGMENTED SILTATION FENCE (C)

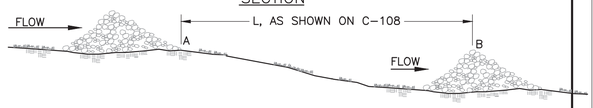
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ELEVATION



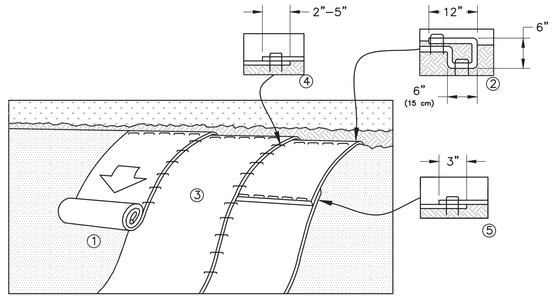
SECTION



PROFILE

TEMPORARY STONE CHECK DAM (D)

NTS — C-108 | C-302



NOTES:

1. PREPARE TOPSOIL BEFORE INSTALLING MATTING, INCLUDING ANY NECESSARY APPLICATION OF LIME, FERTILIZER, AND SEED.
2. BEGIN AT THE TOP OF THE SLOPE BY ANCHORING THE BLANKET IN A 6" DEEP X 6" WIDE TRENCH WITH APPROXIMATELY 12" OF BLANKET EXTENDED BEYOND THE UP-SLOPE PORTION OF THE TRENCH. ANCHOR THE BLANKET WITH A ROW OF STAPLES/STAKES APPROXIMATELY 12" APART IN THE BOTTOM OF THE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING. APPLY SEED TO COMPACTED TOPSOIL AND FOLD REMAINING 12" PORTION OF BLANKET BACK OVER SEED AND COMPACTED TOPSOIL. SECURE BLANKET OVER COMPACTED GROWING MEDIUM WITH A ROW OF STAPLES/STAKES SPACED APPROXIMATELY 12" (30cm) APART ACROSS THE WIDTH OF THE BLANKET.
3. ROLL THE MATTING DOWN THE SLOPE. MATTING WILL UNROLL WITH APPROPRIATE SIDE AGAINST THE TOPSOIL SURFACE. ALL MATTING MUST BE SECURELY FASTENED TO TOPSOIL SURFACE BY PLACING STAPLES/STAKES IN APPROPRIATE LOCATIONS AS SHOWN IN THE STAPLE PATTERN GUIDE. WHEN USING MANUFACTURER STAPLE PATTERN MARKING, STAPLES/STAKES SHOULD BE PLACED THROUGH EACH OF THE COLORED MARKS CORRESPONDING TO THE APPROPRIATE STAPLE PATTERN.
4. THE EDGES OF PARALLEL MATTING MUST BE STAPLED WITH APPROXIMATELY 2"-5" OVERLAP DEPENDING ON MATTING TYPE. TO ENSURE PROPER SEAM ALIGNMENT, PLACE THE EDGE OF THE OVERLAPPING MATTING (MATTING BEING INSTALLED ON TOP) EVEN WITH THE SEAM ON THE PREVIOUSLY INSTALLED MATTING.
5. CONSECUTIVE MATTING SPLICED DOWN THE SLOPE MUST BE PLACED END OVER END (SHINGLE STYLE) WITH AN APPROXIMATE 3" OVERLAP. STAPLE THROUGH OVERLAPPED AREA, APPROXIMATELY 12" APART ACROSS ENTIRE MATTING WIDTH.
6. DETAIL PROVIDED BY NORTH AMERICAN GREEN ®.
7. INSTALL ON ALL FINAL STABILIZED UPLAND SURFACES TO BE VEGETATED WITH SLOPES STEEPER THAN 10H:1V AND UPLAND VEGETATED DRAINAGE SWALES.

BIODEGRADABLE EROSION CONTROL MATTING (E)

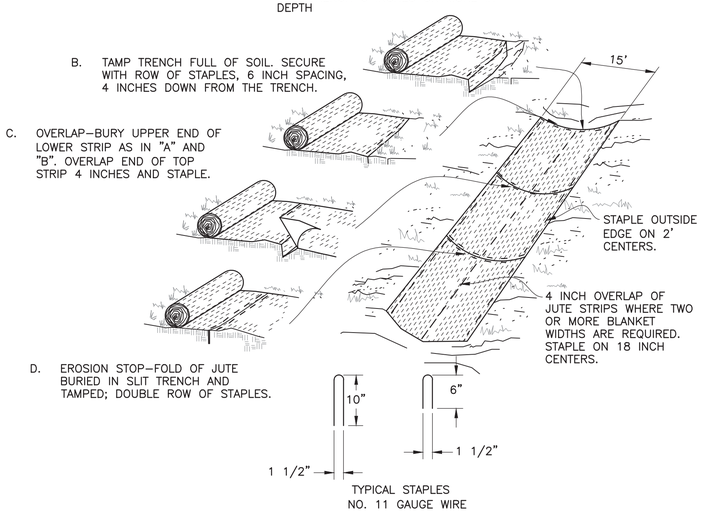
NTS — TYP C-302

A. BURY THE TOP END OF THE JUTE STRIPS IN A TRENCH 6 INCHES OR MORE IN DEPTH

B. TAMP TRENCH FULL OF SOIL. SECURE WITH ROW OF STAPLES, 6 INCH SPACING, 4 INCHES DOWN FROM THE TRENCH.

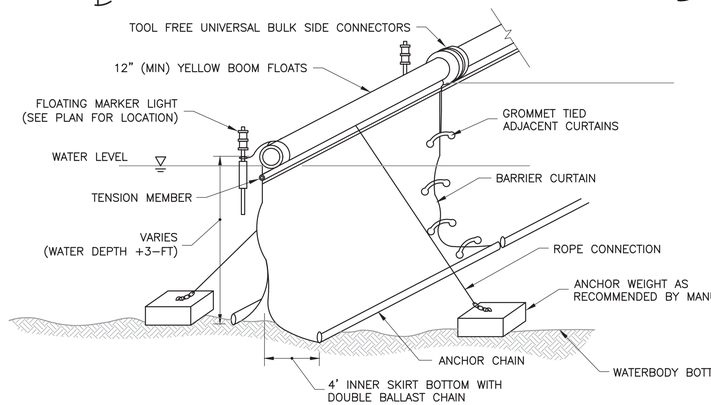
C. OVERLAP-BURY UPPER END OF LOWER STRIP AS IN "A" AND "B". OVERLAP END OF TOP STRIP 4 INCHES AND STAPLE.

D. EROSION STOP-FOLD OF JUTE BURIED IN SLIT TRENCH AND TAMPED; DOUBLE ROW OF STAPLES.



EROSION CONTROL BLANKET ON SWALE (F)

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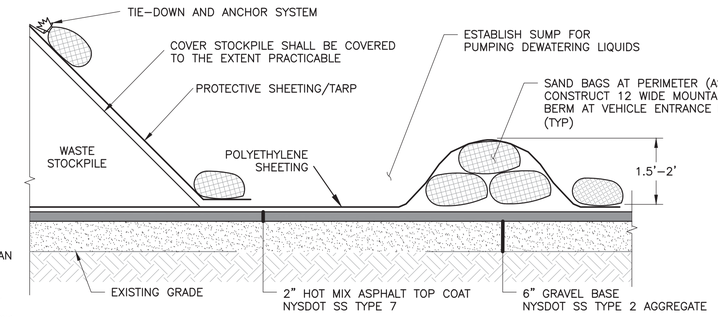


NOTES:

1. PLACE TURBIDITY BARRIER IMMEDIATELY DOWNSTREAM OF BYPASS DISCHARGE.
2. TURBIDITY BARRIER SHALL BE DEPLOYED PRIOR TO DREDGING OR DISTURBING UPLAND SOILS.

TURBIDITY CURTAIN (G)

NTS — TYP C-302



NOTES:

1. GEOMEMBRANE COVER IS NOT REQUIRED FOR STOCKPILES OF CERTIFIED CLEAN MATERIAL; THEY MAY BE USED AS DUST CONTROL MEASURE.
2. SOIL/SEDIMENT STOCKPILE SHALL BE COVERED TO THE EXTENT PRACTICABLE.
3. SOIL/SEDIMENT STOCKPILE SHALL BE LOCATED WITHIN TEMPORARY CONTRACTOR STAGING AND STORAGE AREA.

STOCKPILE CONTAINMENT AREA (H)

NTS — TYP C-302

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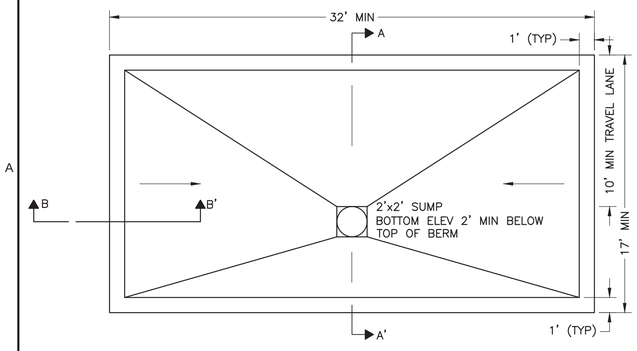
CIVIL

EROSION AND SEDIMENT CONTROL DETAILS

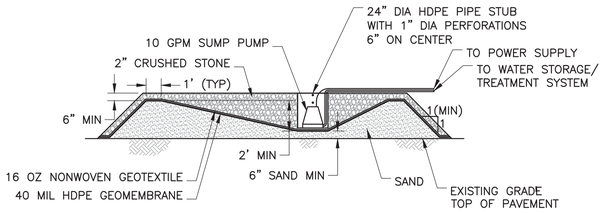
VERIFY SCALE

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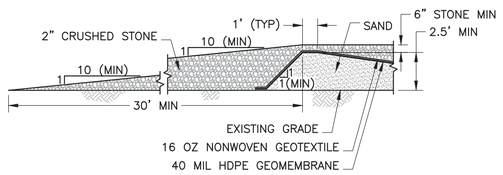
DATE	FEB 2017
PROJ	3611-16-1193
DWG	C-302
SHEET	14 OF 29



PLAN



SECTION A–A'



SECTION B–B'

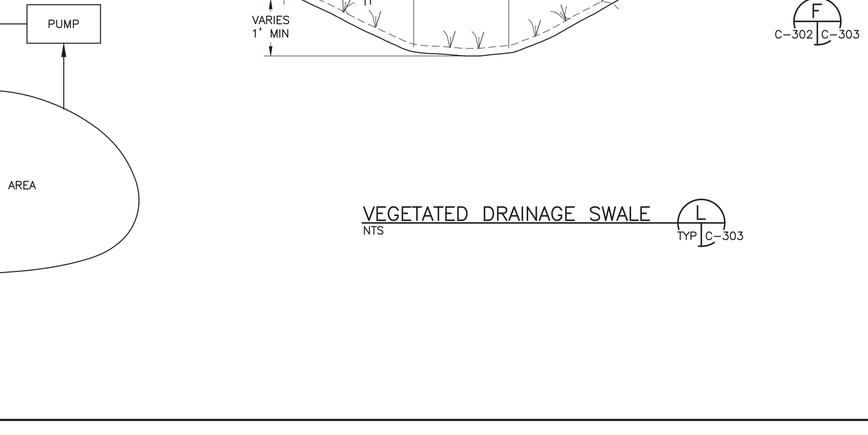
NOTE:

CONTRACTOR MAY PROPOSE ALTERNATE MEANS AND METHODS OF DECONTAMINATION FOR APPROVAL BY THE ENGINEER.

VEHICLE DECONTAMINATION PAD

NTS

TYP I C–303



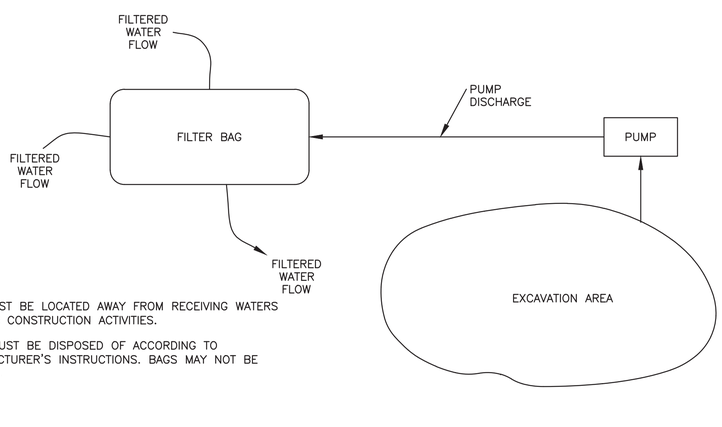
NOTE:

REFER TO NYSDOT STANDARD SHEET NO. M619–3R1

DEWATER STAGING AREA

NTS

TYP J C–303



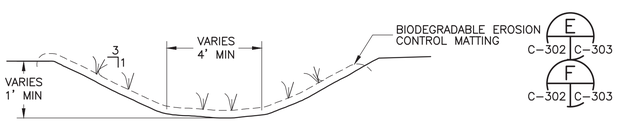
NOTES:

1. BAG MUST BE LOCATED AWAY FROM RECEIVING WATERS AND/OR CONSTRUCTION ACTIVITIES.
2. BAGS MUST BE DISPOSED OF ACCORDING TO MANUFACTURER'S INSTRUCTIONS. BAGS MAY NOT BE REUSED.

FILTER BAG FOR DEWATERING

NTS

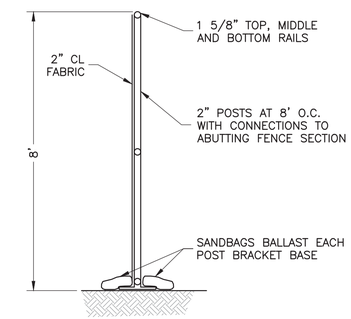
TYP K C–303



VEGETATED DRAINAGE SWALE

NTS

TYP L C–303



PORTABLE CHAIN LINK FENCE PANELS

NTS

TYP M C–303

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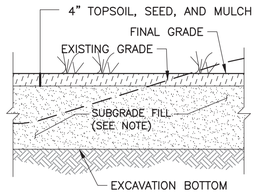
CIVIL DETAILS - 1

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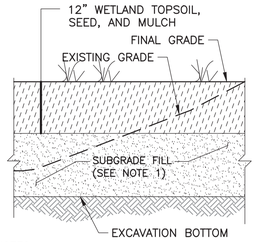
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NOTE:
DEPTHS OF SUBGRADE FILL VARIES BASED ON ACTUAL EXCAVATION BOTTOM AND FINAL GRADE ELEVATIONS.

VEGETATED UPLAND RESTORATION

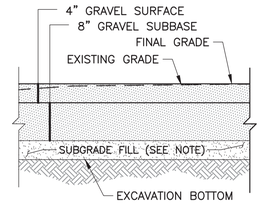
NTS — TYP C-304 (N)



NOTES:
1. DEPTHS OF SUBGRADE FILL VARIES BASED ON ACTUAL EXCAVATION BOTTOM AND FINAL GRADE ELEVATIONS.
2. INSTALL PLANTINGS AS SHOWN ON DRAWINGS.

VEGETATED WETLAND RESTORATION

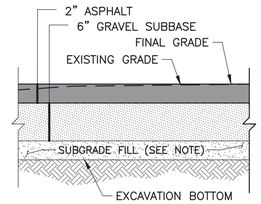
NTS — TYP C-304 (O)



NOTE:
DEPTHS OF SUBGRADE FILL VARIES BASED ON ACTUAL EXCAVATION BOTTOM AND FINAL GRADE ELEVATIONS.

GRAVEL DRIVE RESTORATION

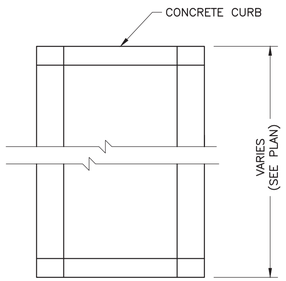
NTS — TYP C-304 (P)



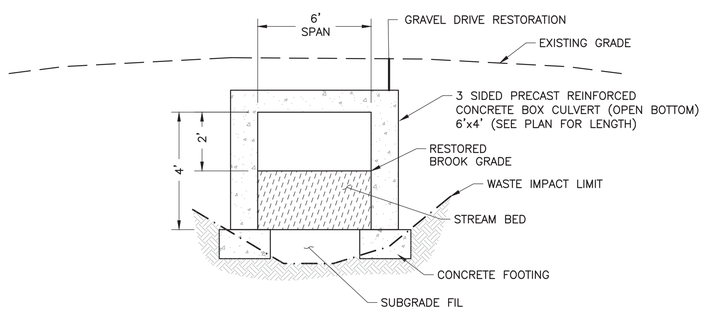
NOTE:
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PAVED DRIVE RESTORATION

NTS — TYP C-304 (Q)



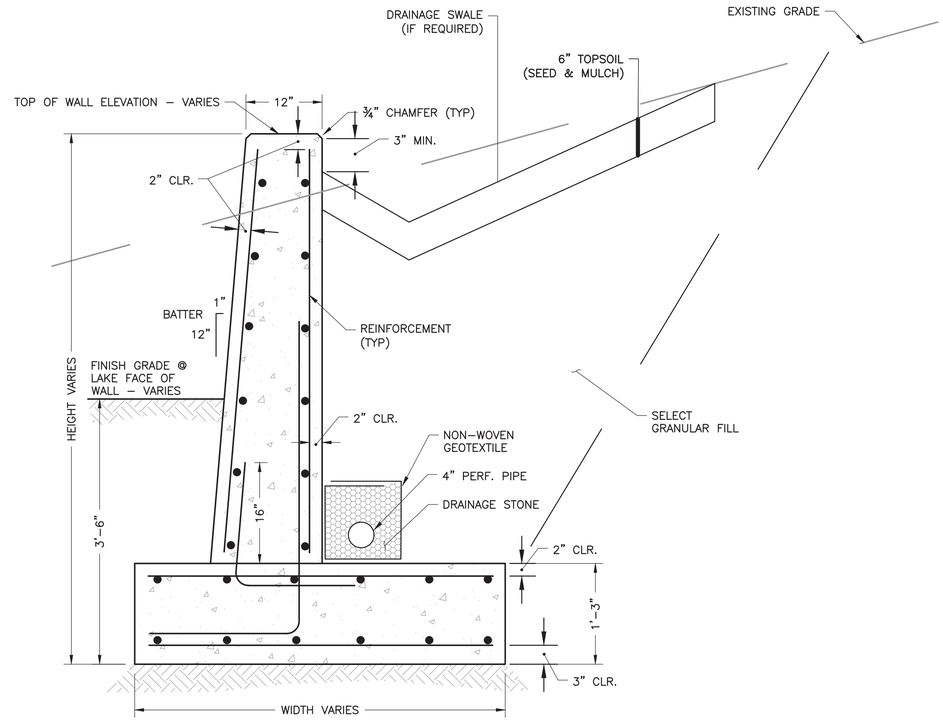
PLAN



SECTION

DRIVEWAY CULVERTS

NTS — TYP C-304 (R)



RETAINING WALL

NTS — TYP C-304 (S)

NO.	DATE	DSGN
B	8/22/17	MAP
A	4/20/17	DR

PERMITTING — MAP
30% DESIGN — WJW
REVISION — CHK

BY	APVD
CHL	MJS
MAP	MJS
MAP	APVD
WJW	APVD
CHK	MAP
DR	WJW
MAP	CHK
MJS	DR
APVD	MAP
APVD	MJS

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Portland, Maine 04112-7050
(207) 775-5401

MACTEC

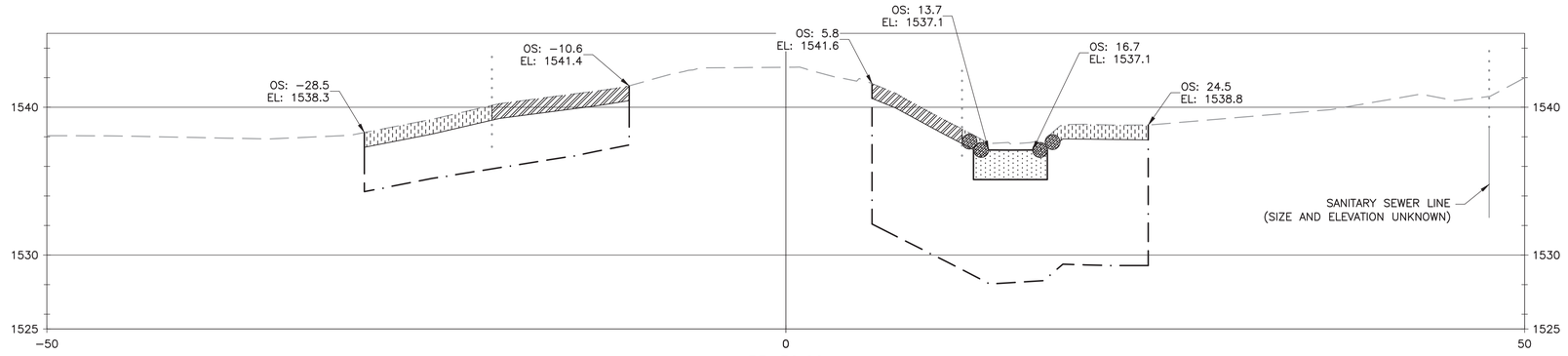
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CIVIL DETAILS - 2

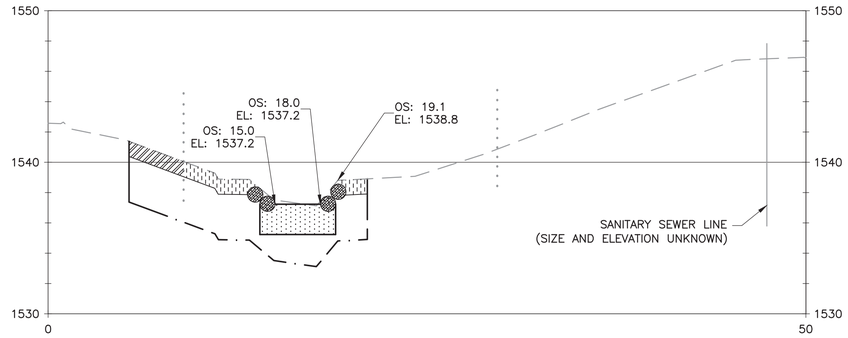
VERIFY SCALE

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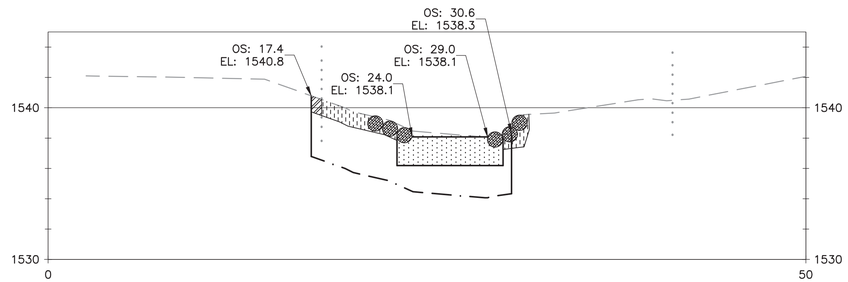
DATE	JULY 2017
PROJ	3611-16-1193
DWG	C-304
SHEET	16 OF 29



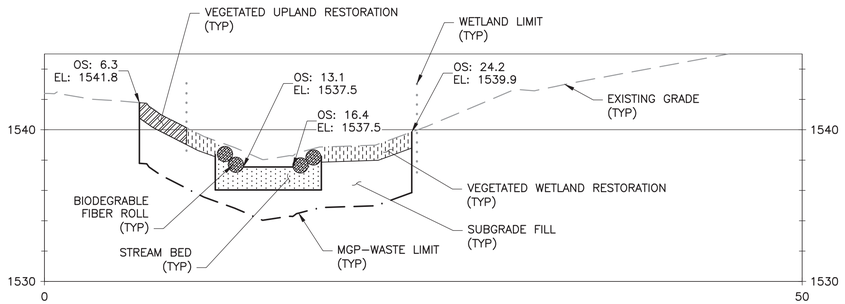
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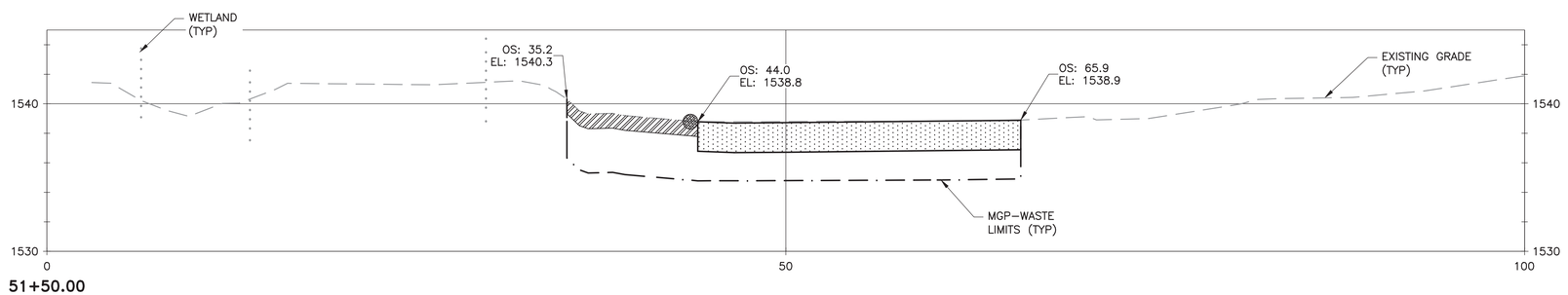
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52+00.00



52+50.00



51+50.00

SCALE IN FEET VERTICAL: 0, 2.5, 5, 10

SCALE IN FEET HORIZONTAL: 0, 2.5, 5, 10

NO.	DATE	DSGN	DR	CHK	APVD
B	8/22/17	MAP	WJW	MAP	MJS
A	4/20/17	PERMITTING / 30% DESIGN / REVISION		CHL / MAP	MJS / MJS

BY

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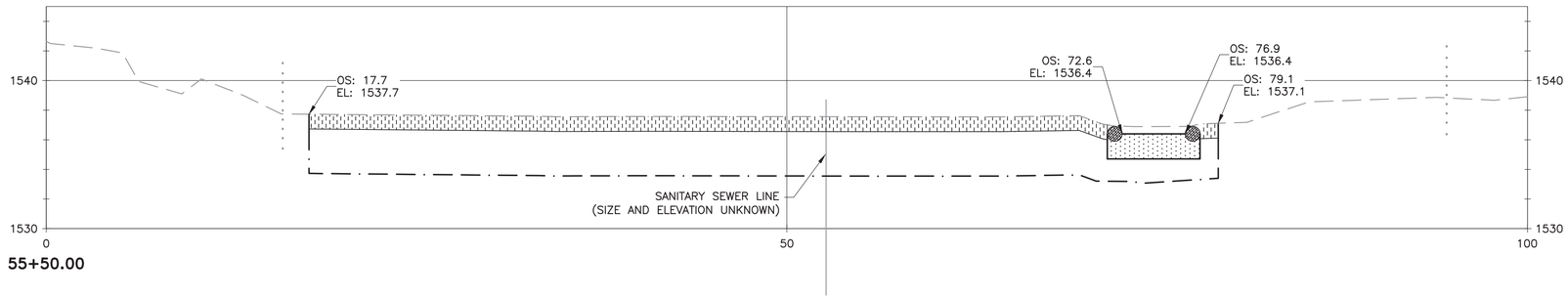
CIVIL
CONSTRUCTION BASELEINE
CROSS SECTIONS
OU02

VERIFY SCALE

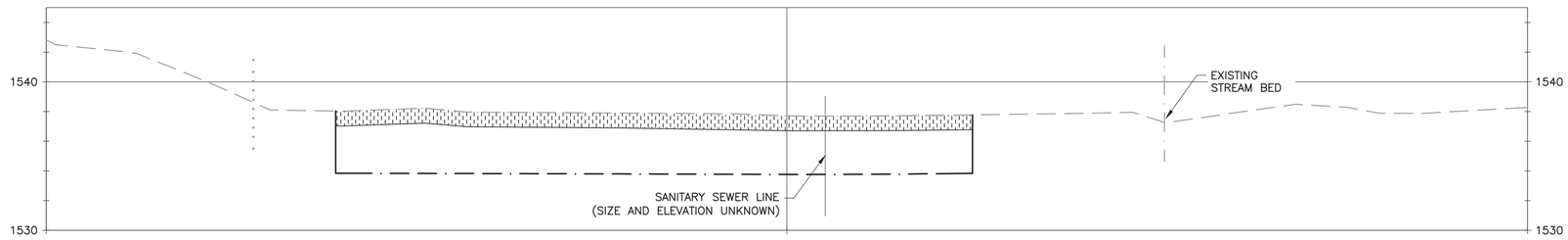
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DATE	FEB 2017
PROJ	3611-16-1193
DWG	C-401
SHEET	17 OF 29

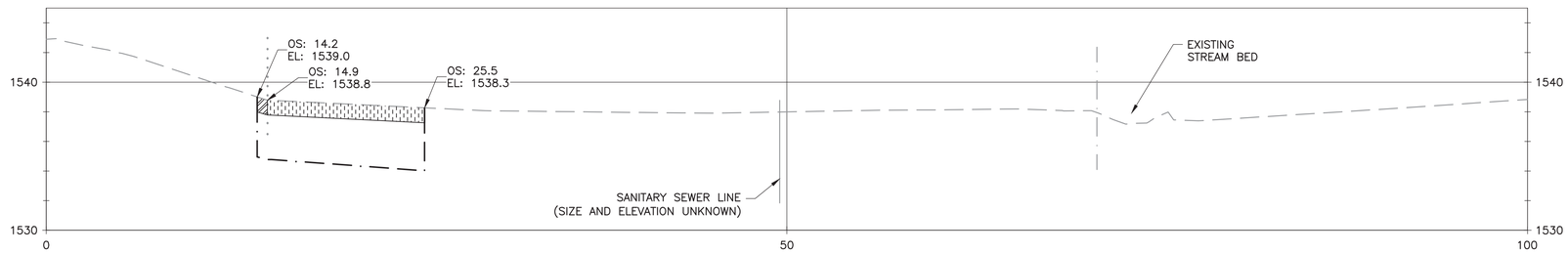
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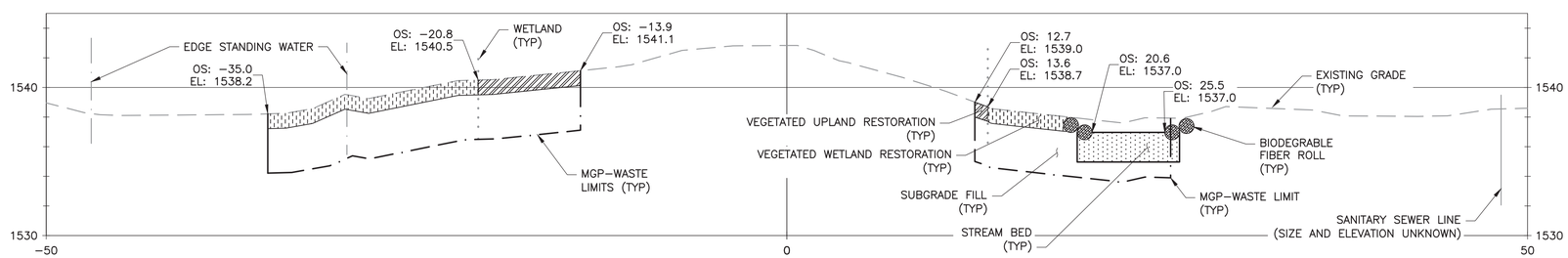
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55+00.00



54+50.00



54+00.00

0 2.5 5 10
SCALE IN FEET
HORIZONTAL

0 2.5 5 10
SCALE IN FEET
VERTICAL

NO.	DATE	DSGN	DR	CHK	APVD
B	8/22/17	MAP	MAP	WJW	MJS
A	4/20/17	MJS	CHL	MAP	MJS

PERMITTING
30% DESIGN
REVISION

BY

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(207) 775-5401

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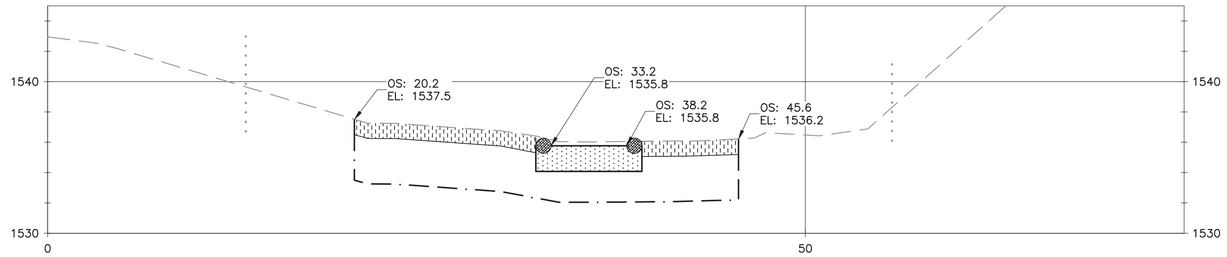
CIVIL
CONSTRUCTION BASELEINE
CROSS SECTIONS
OU02

VERIFY SCALE

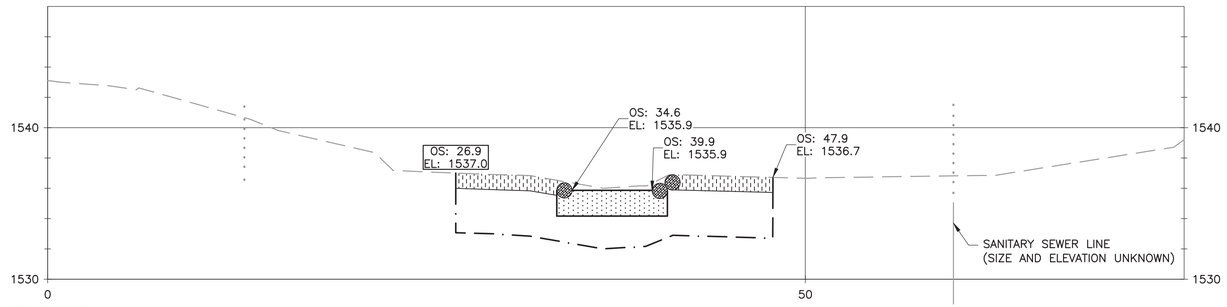
BAR IS ONE INCH ON ORIGINAL DRAWING.
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DATE	FEB 2017
PROJ	3611-16-1193
DWG	C-402
SHEET	18 OF 29

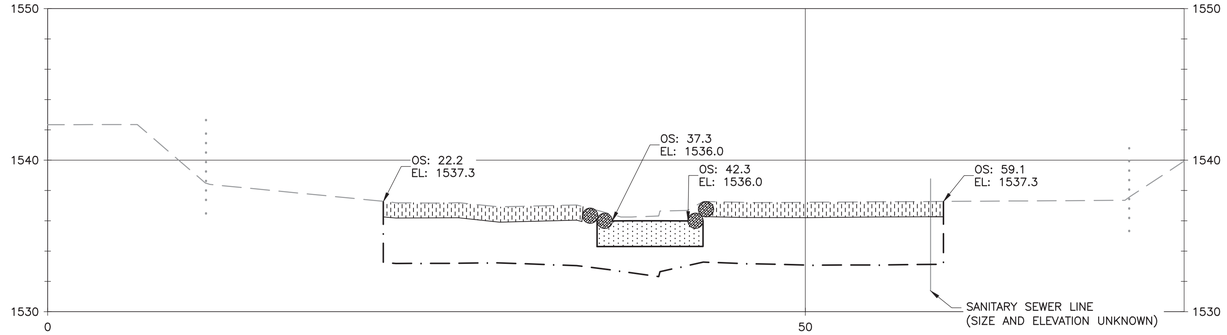
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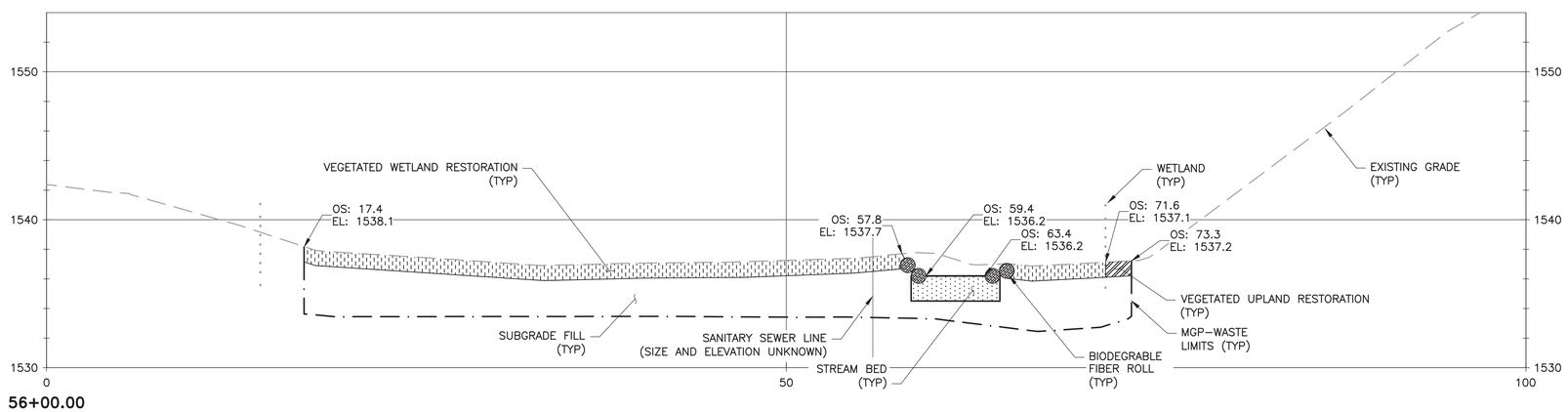
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57+00.00



56+50.00



56+00.00

0 2.5 5 10
SCALE IN FEET
HORIZONTAL

0 2.5 5 10
SCALE IN FEET
VERTICAL

NO.	DATE	DSGN
B	8/22/17	MAP
A	4/20/17	DR

PERMITTING
30% DESIGN
REVISION

BY	CHK
MJS	APVD
MJS	APVD
CHL	MAP
MAP	WJW
MJS	MJS

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Portland, Maine 04112-7050
(207) 775-5401

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CIVIL
CONSTRUCTION BASELEINE
CROSS SECTIONS
OU02

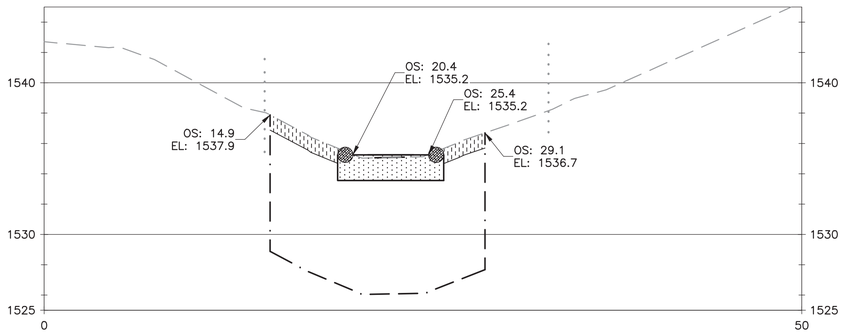
VERIFY SCALE

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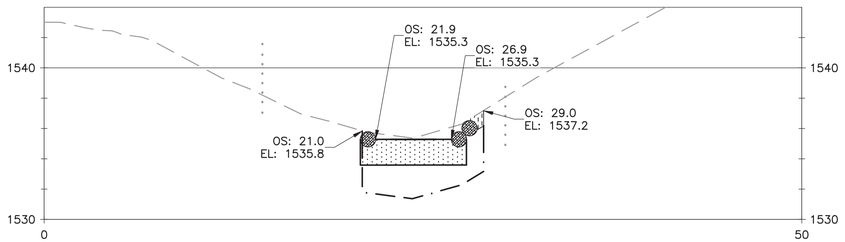
DATE	FEB 2017
PROJ	3611-16-1193
DWG	C-403
SHEET	19 OF 29

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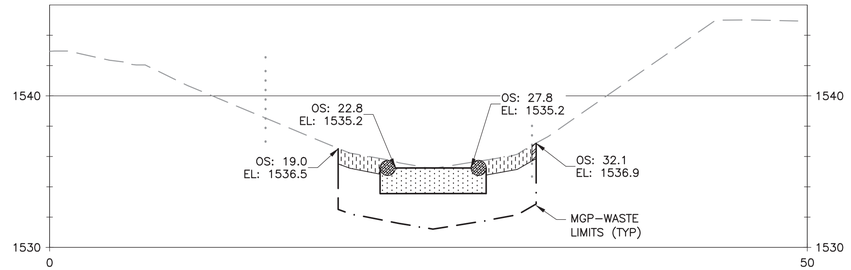
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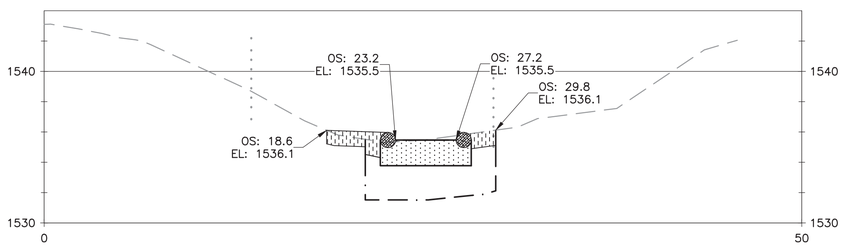
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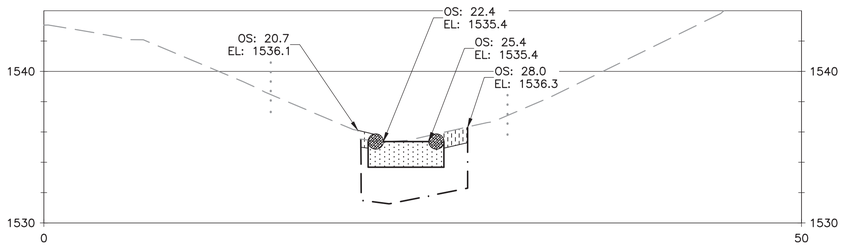
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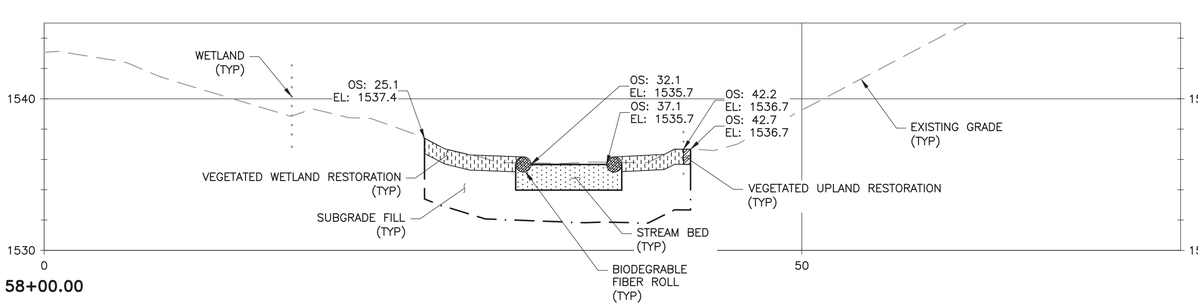
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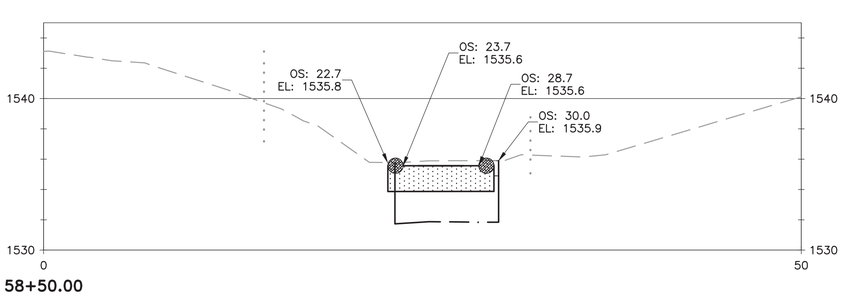
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59+50.00



58+00.00



58+50.00

SCALE IN FEET
HORIZONTAL
0 2.5 5 10

SCALE IN FEET
VERTICAL
0 2.5 5 10

NO.	DATE	DSGN	DR	CHK	APVD
B	8/22/17	MAP	WJW	MAP	MJS
A	4/20/17	PERMITTING			
		30% DESIGN			
		REVISION			

BY	APVD
CHL	MJS
MAP	MJS

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(207) 775-5401

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CROSS SECTIONS
OU02

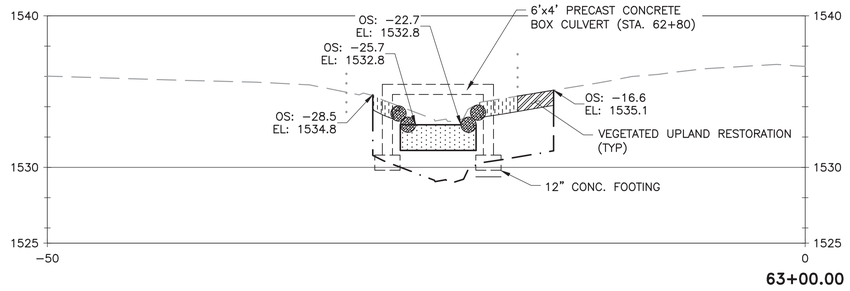
VERIFY SCALE

BAR IS ONE INCH ON ORIGINAL DRAWING.
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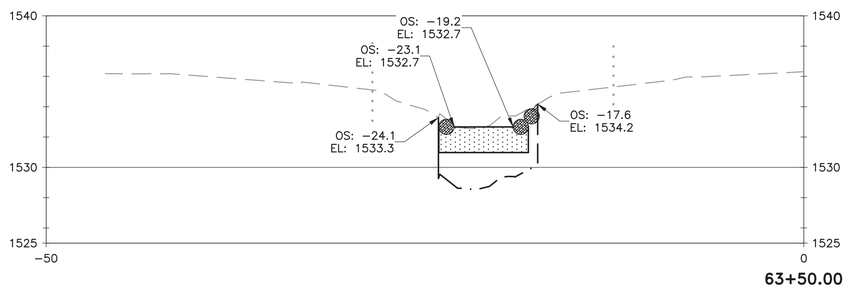
DATE	FEB 2017
PROJ	3611-16-1193
DWG	C-404
SHEET	20 OF 29

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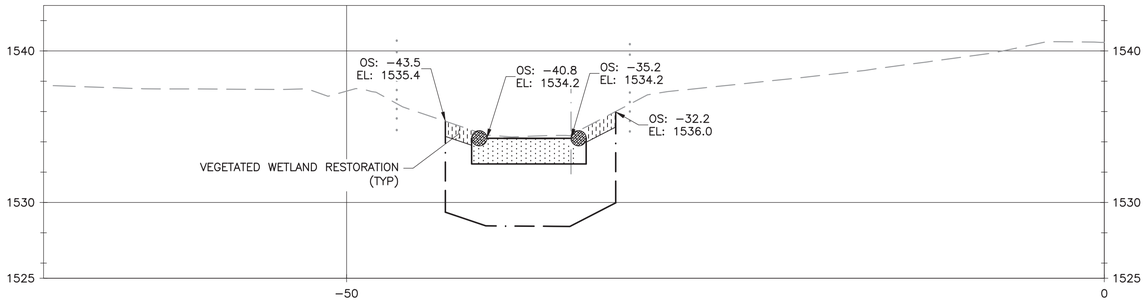
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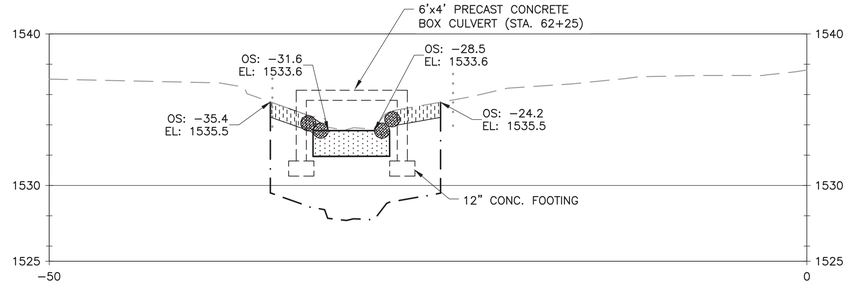
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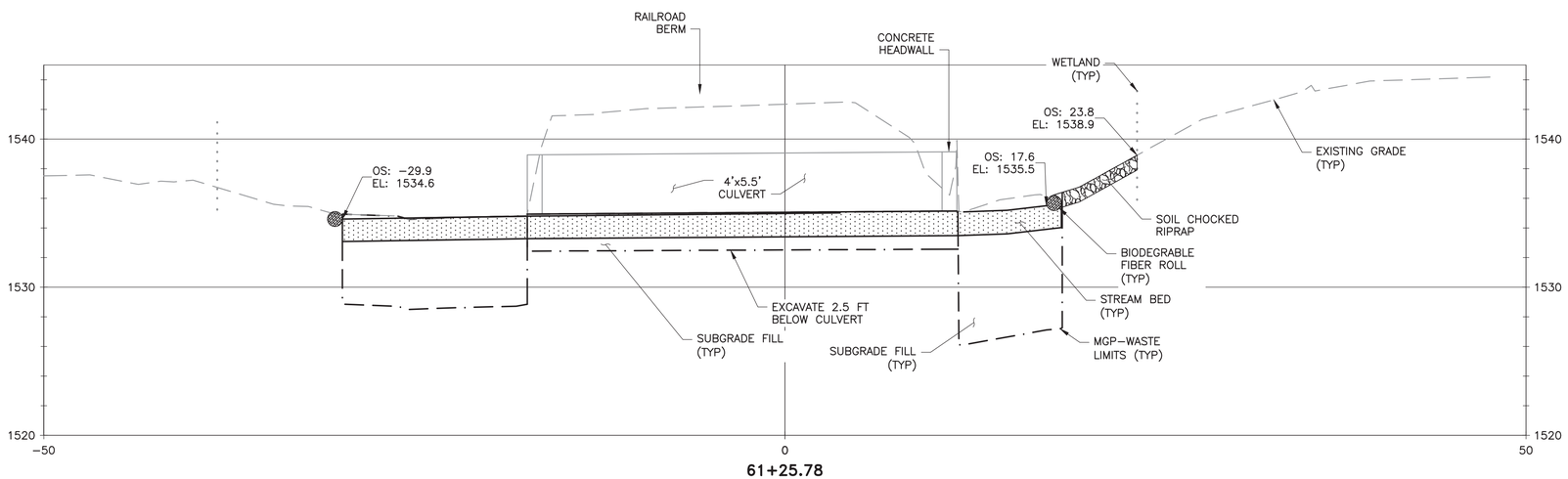
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62+00.00



62+50.00



61+25.78

0 2.5 5 10
SCALE IN FEET
HORIZONTAL

0 2.5 5 10
SCALE IN FEET
VERTICAL

NO.	DATE	DSGN	DR	CHK	APVD
B	8/22/17	MAP	WJW	MAP	MJS
A	4/20/17	MAP		MJS	MJS

PERMITTING
30% DESIGN
REVISION

BY	APVD
CHL	MJS
MAP	MJS

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(207) 775-5401

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CIVIL
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CROSS SECTIONS
OU02

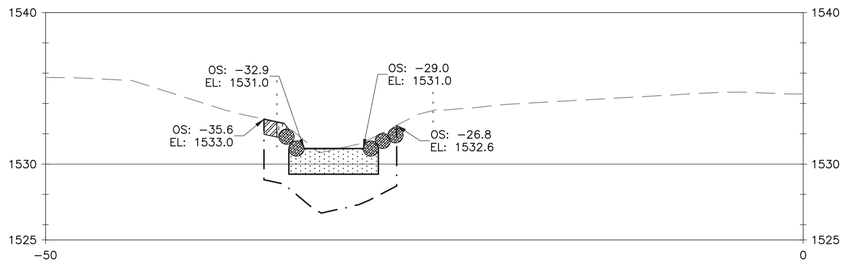
VERIFY SCALE

BAR IS ONE INCH ON ORIGINAL DRAWING.
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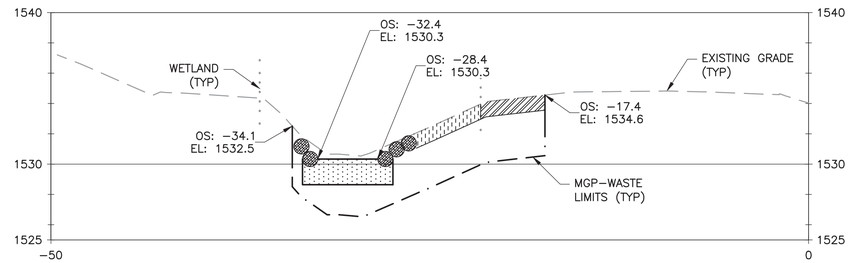
DATE	FEB 2017
PROJ	3611-16-1193
DWG	C-405
SHEET	21 OF 29

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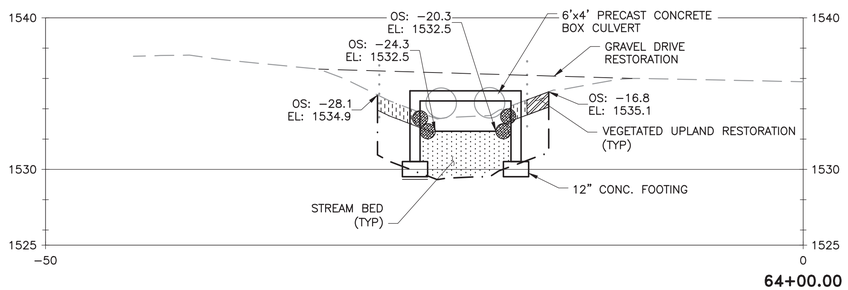
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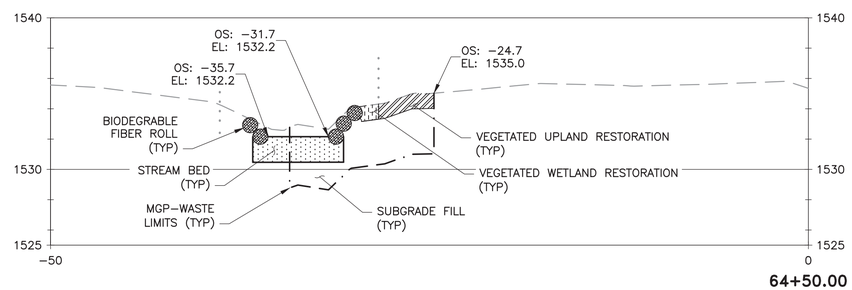
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65+50.00



64+00.00



64+50.00

0 2.5 5 10
SCALE IN FEET
HORIZONTAL

0 2.5 5 10
SCALE IN FEET
VERTICAL

NO.	DATE	DSGN	DR	CHK	APVD
B	8/22/17	MAP	WJW	MAP	APVD
A	4/20/17	CHL	MJS	MAP	MJS

PERMITTING
30% DESIGN
REVISION

BY	APVD
MJS	MJS

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MACTEC Engineering and Consulting, P.C.
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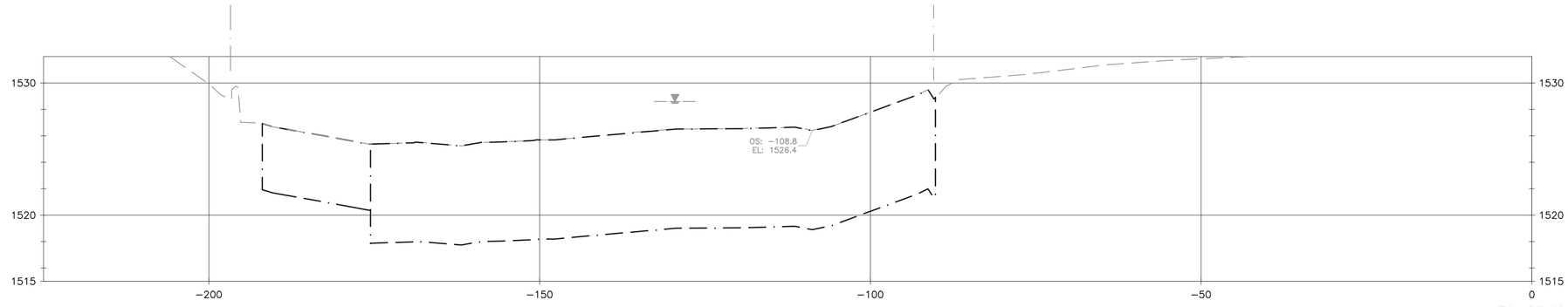
CIVIL
CONSTRUCTION BASELEINE
CROSS SECTIONS
OU02

VERIFY SCALE

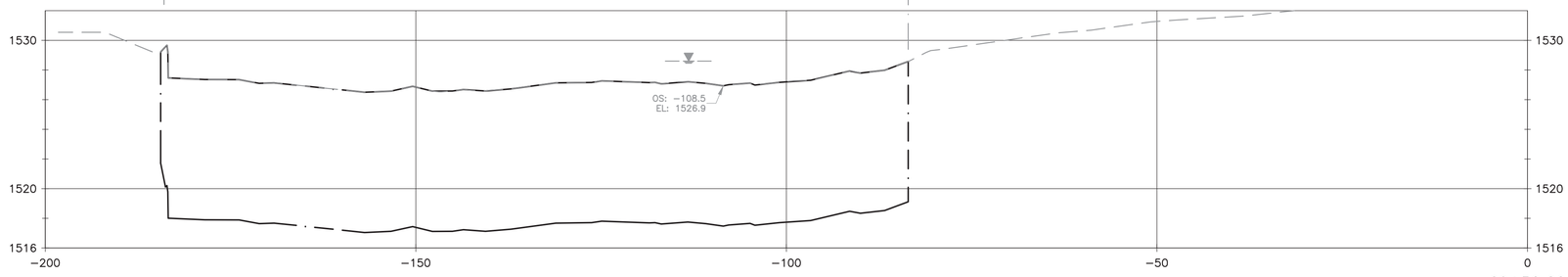
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DATE	FEB 2017
PROJ	3611-16-1193
DWG	C-406
SHEET	22 OF 29

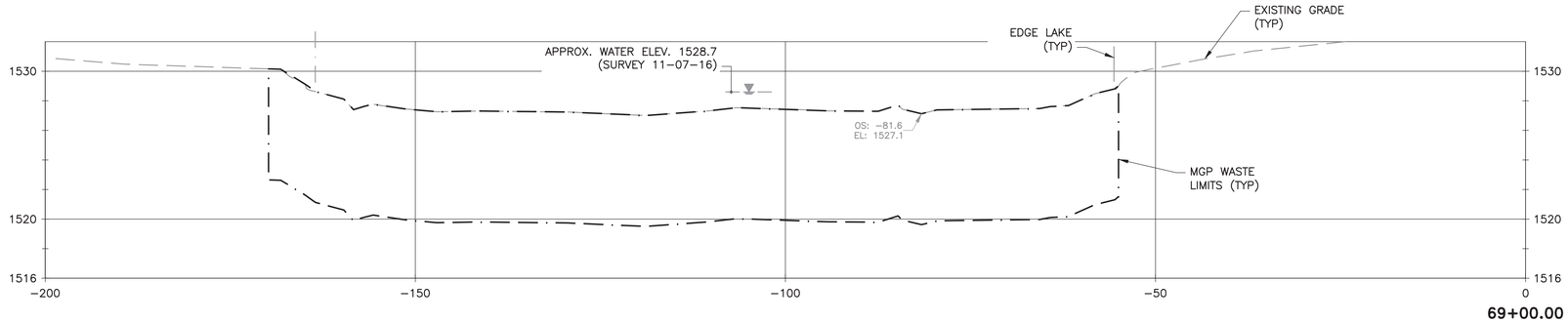
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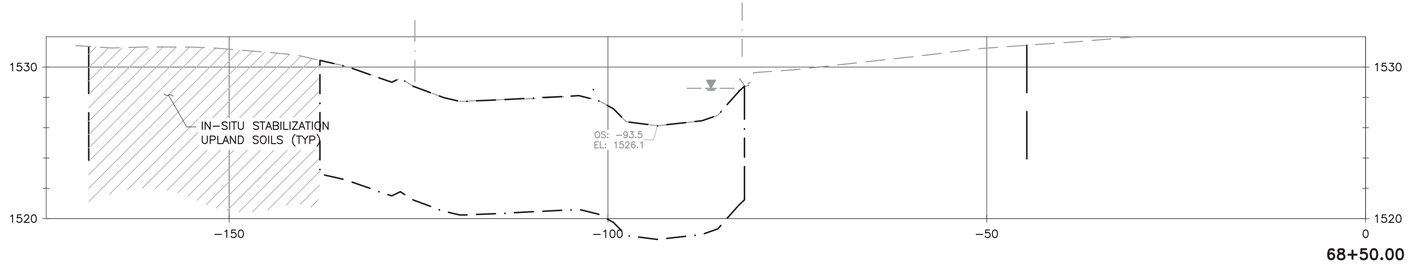
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69+50.00



69+00.00



68+50.00

0 5 10 20
SCALE IN FEET
HORIZONTAL

0 2.5 5 10
SCALE IN FEET
VERTICAL

NO.	DATE	DSGN	DR	CHK	APVD
B	8/22/17	MAP	WJW	MAP	MJS
A	4/20/17	PERMITTING			
		30% DESIGN			
		REVISION			

BY	APVD
CHL	MJS
MAP	MJS

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CROSS SECTIONS
OU03

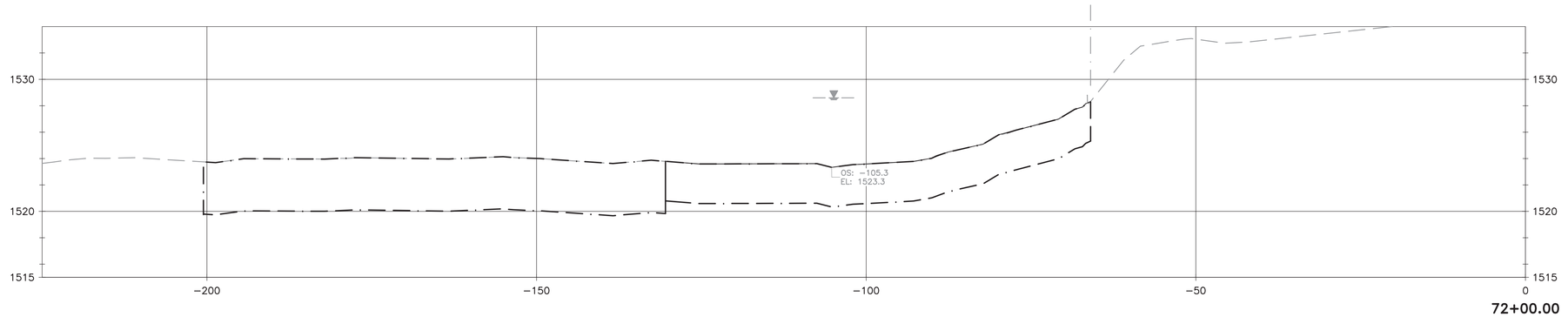
VERIFY SCALE

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0 1"

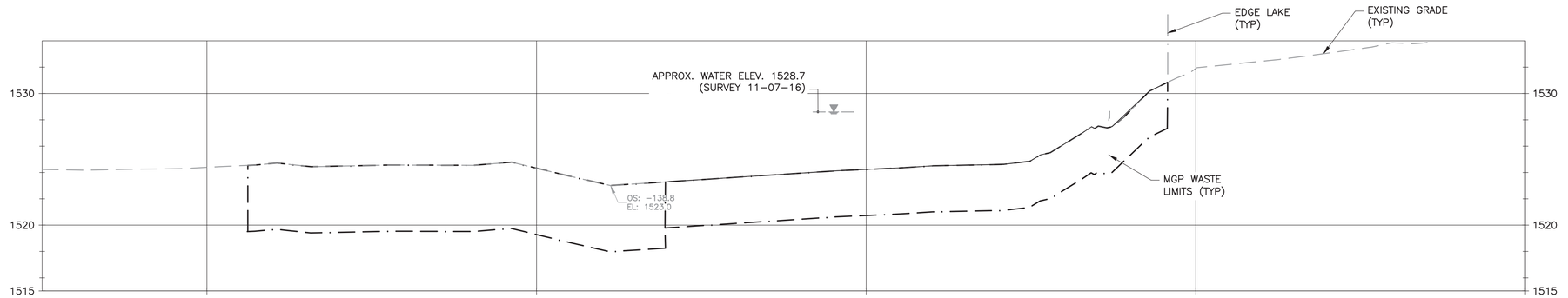
DATE	FEB 2017
PROJ	3611-16-1193
DWG	C-407
SHEET	23 OF 29

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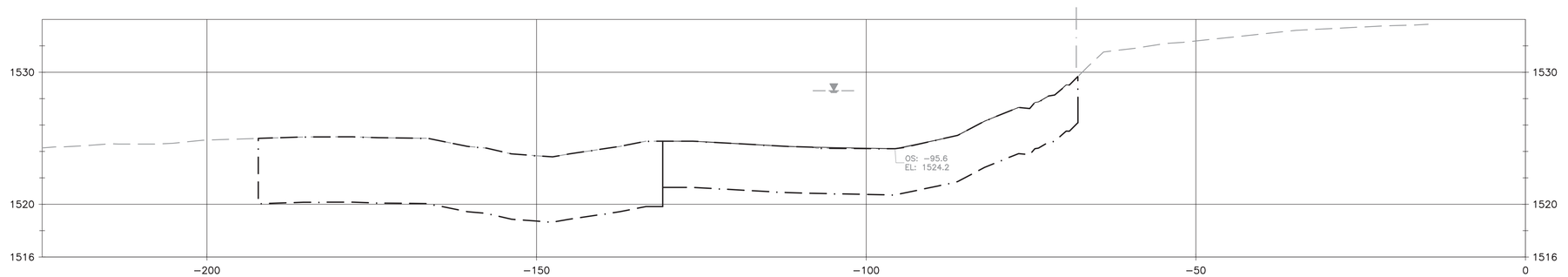
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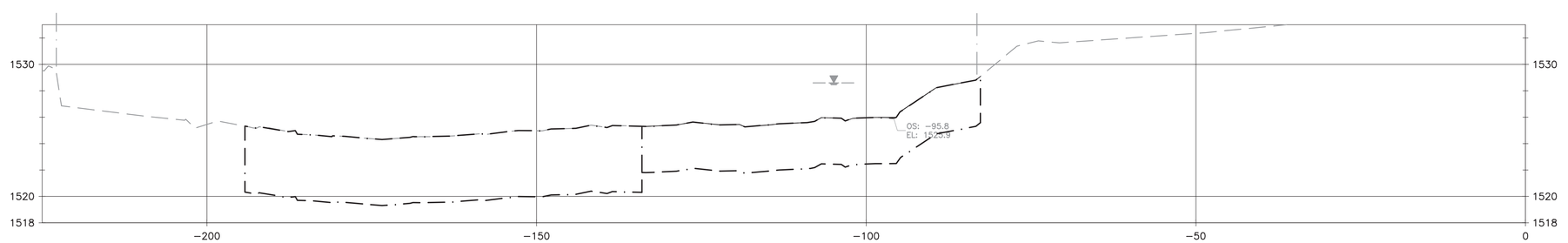
72+00.00



71+50.00



71+00.00



70+50.00

0 5 10 20
SCALE IN FEET
HORIZONTAL

0 2.5 5 10
SCALE IN FEET
VERTICAL

NO.	DATE	DSGN
B	8/22/17	MAP
A	4/20/17	DR

PERMITTING
30% DESIGN
REVISION

BY	APVD
CL	MJS
MAP	MJS
MAP	APVD
CHK	MJS
WJW	

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0 1"

DATE	FEB 2017
PROJ	3611-16-1193
DWG	C-408
SHEET	25 OF 29

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0 5 10 20
SCALE IN FEET
HORIZONTAL

NO.	DATE	DSGN	DR	CHK	APVD
B	8/22/17	MAP	WJW	MAP	MJS
A	4/20/17	PERMITTING		CHL	MJS
		30% DESIGN		MAP	MJS
		REVISION		BY	APVD

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CROSS SECTIONS
OU03

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0 1"

DATE	FEB 2017
PROJ	3611-16-1193
DWG	C-409
SHEET	26 OF 29

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FILE NAME: Z:\Projects\nysdec1\Saranac Lake\C-409-Sections OU3.dwg PLOT DATE: Fri, 18 Aug 2017 PLOT TIME: 1:17 PM

NOTES:

1. SEE NOTES, LEGEND AND ABBREVIATIONS DRAWING G-002.
2. COARSE WOODY DEBRIS (CWD) CONSISTS OF LOGS 6-IN DIA TO 24-IN DIA (+-) CUT FROM SITE DURING SITE PREPARATION ACTIVITIES. LENGTHS SHALL RANGE FROM 6=FT TO 12-FT. LOGS SHALL BE STAKED IN-PLACE WITH 3-FT ¾" REBAR AS REQUIRED. ROCK/BOULDERS SHALL BE USED TO ANCHOR CWD. LOGS SHALL ALSO BE USED TO CONSTRUCT LOG DEFLECTORS AND TWO-LOG DROP STRUCTURES.

MATCH LINE - SEE DWG. C-502

INSTREAM BOULDERS AND WING DEFLECTORS (CENTER WING DEFLECTOR STA. 62+00) — II C-501|C-602

ROCK WITH SOIL AND VEGETATION — AA C-501|C-601

TWO-LOG DROP STRUCTURE STA. 63+25 — JJ C-501|C-602

6FT-MGP WASTE AREA

9FT-MGP WASTE AREA

INSTREAM BOULDERS (MINUS WING DEFLECTORS) STA. 59+75 THRU 60+75 — II C-501|C-602

REMEDIATION CENTERLINE (SEE PROFILES) (TYP)

TWO-LOG DROP STRUCTURE STA. 58+75 — JJ C-501|C-602

4FT-MGP WASTE AREA

CONSTRUCTION BASELINE (SEE SECTIONS) (TYP)

LOG DEFLECTOR (RIPRAP BANK ABOVE LOG DEFLECTOR TO TOP OF BANK) — EE C-501|C-601

INSTREAM BOULDERS AND WING DEFLECTORS (CENTER WING DEFLECTOR STA. 62+00) — II C-501|C-602

COARSE WOODY DEBRIS AND SHRUB PLANTING AREAS — CC C-501|C-601, GG C-501|C-602

MGP WASTE LIMIT (TYP)

MAPPED WETLANDS (TYP)

LOG DEFLECTOR STA. 55+35 (MATCH TO EXISTING UNDISTRUBED BROOK CHANNEL) — EE C-501|C-601

LOG DEFLECTOR STA. 54+00 (MATCH TO EXISTING UNDISTRUBED BROOK CHANNEL) — EE C-501|C-601

9.5FT-MGP WASTE AREA

4FT-MGP WASTE AREA

MATCH LINE - SEE INSET

INSET MATCH LINE

TWO-LOG DROP STRUCTURE STA. 52+00 AND STA 52+75 — JJ C-501|C-602

LOG DEFLECTOR STA. 51+50 — EE C-501|C-601

INSET

0 20 40 80
SCALE IN FEET

		CHL	MJS	APVD MJS
		MAP	MJS	BY APVD
	PERMITTING			MAP
	30% DESIGN			CHK WJW
	REVISION			DR MAP
B	9/22/17			
A	4/20/17			
NO.	DATE			DSGN

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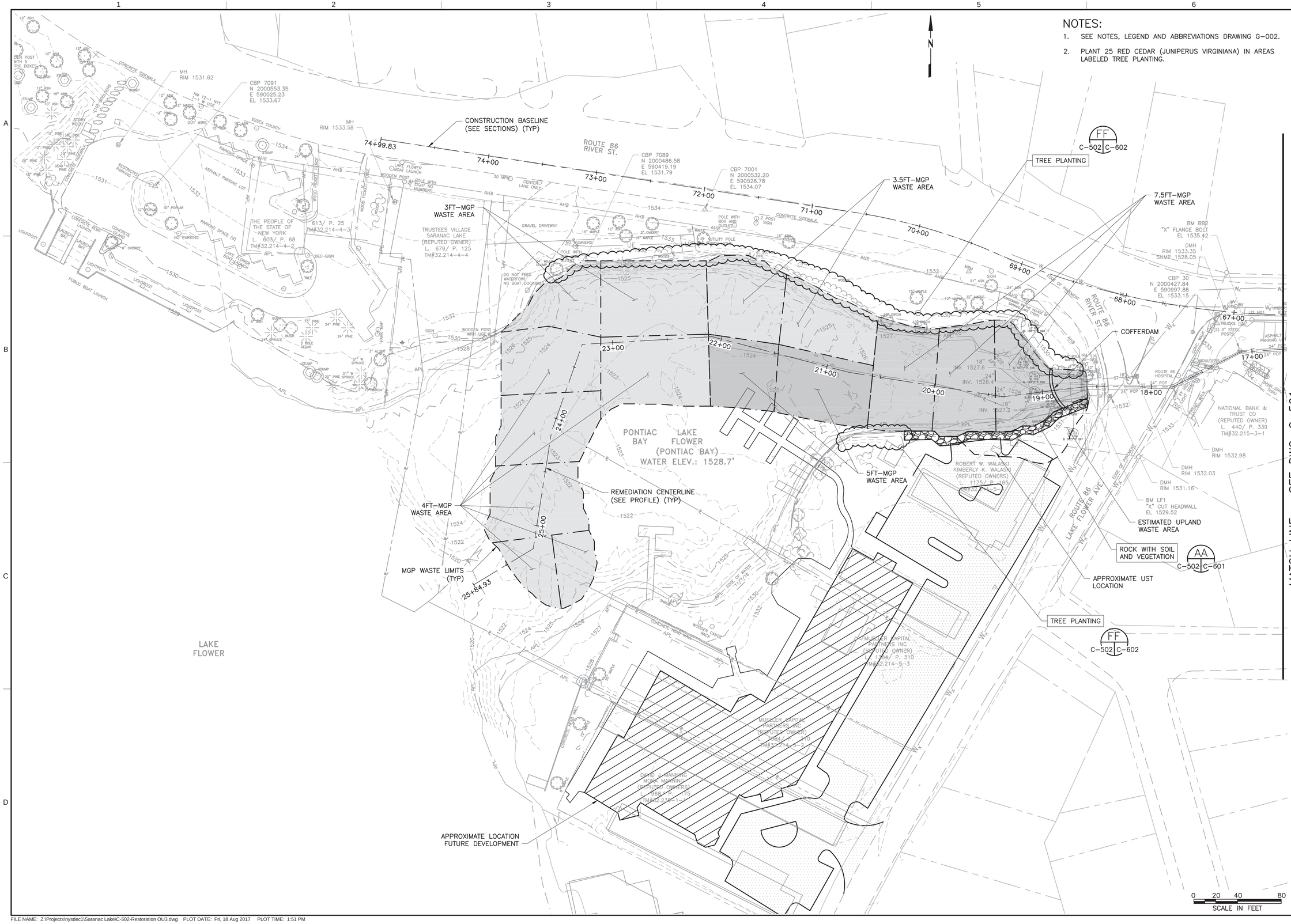
CIVIL
BRANDY BROOK
RESTORATION/LANDSCAPING PLAN
OU02

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	JULY 2017
PROJ	3611-16-1193
DWG	C-501
SHEET	26 OF 29

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NO.	DATE	DSGN	MAP	DR	MAP	CHK	WJW	APVD	MAP	BY	APVD	MJS
B	8/22/17					PERMITTING				CHL	MJS	
A	4/20/17					30% DESIGN				MAP	MJS	
						REVISION						

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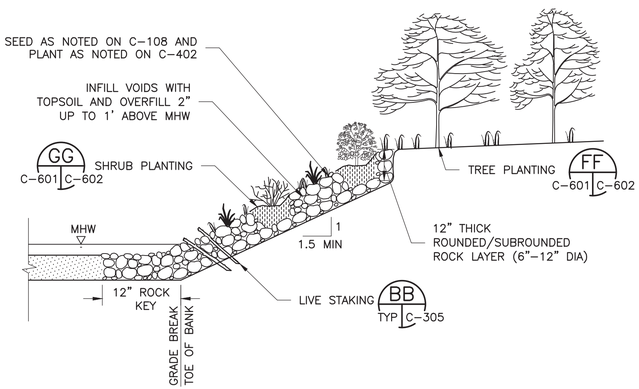
CIVIL
PONTIAC BAY
RESTORATION/LANDSCAPING PLAN
OU03

VERIFY SCALE

BAR IS ONE INCH ON ORIGINAL DRAWING.
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DATE	JULY 2017
PROJ	3611-16-1193
DWG	C-502
SHEET	27 OF 29

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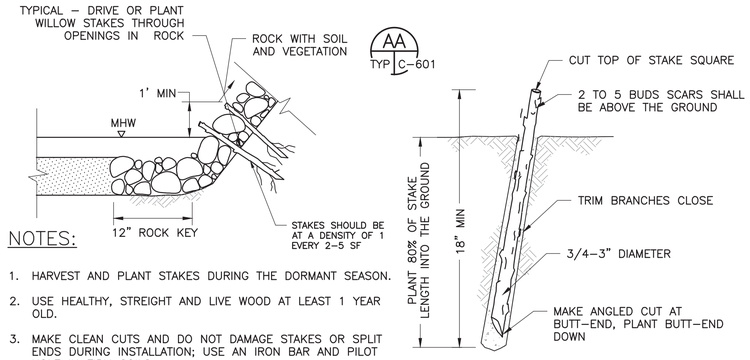


ROCK WITH SOIL AND VEGETATION

AA TYP C–601

NTS

DETAIL ADAPTED FROM REPORT 544, "ENVIRONMENTALLY SENSITIVE CHANNEL– AND BANK–PROTECTION MEASURES" BY THE NATIONAL COOPERATIVE HIGHWAY RESEARCH PROGRAM (NCHRP), TRANSPORTATION RESEARCH BOARD, 2004.



NOTES:

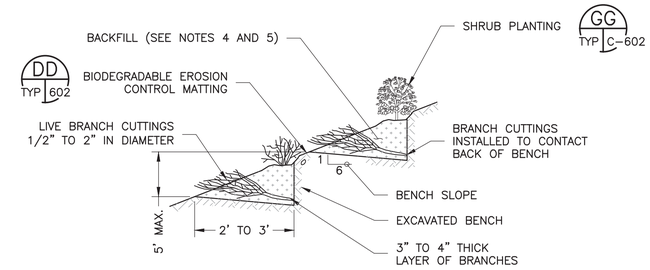
1. HARVEST AND PLANT STAKES DURING THE DORMANT SEASON.
2. USE HEALTHY, STREIGHT AND LIVE WOOD AT LEAST 1 YEAR OLD.
3. MAKE CLEAN CUTS AND DO NOT DAMAGE STAKES OR SPLIT ENDS DURING INSTALLATION; USE AN IRON BAR AND PILOT HOLE IN FIRM SOILS.
4. SOAK CUTTINGS FOR AT LEAST 24 HOURS PRIOR TO INSTALLATION. SOAK FOR 5–7 DAYS FOR BEST RESULTS.
5. TAMP THE SOIL AROUND THE STAKE.

LIVE STAKING

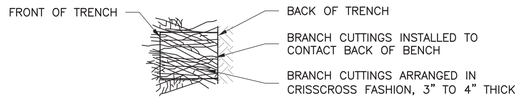
BB TYP C–601

NTS

DETAIL ADAPTED FROM REPORT 544, "ENVIRONMENTALLY SENSITIVE CHANNEL– AND BANK–PROTECTION MEASURES" BY THE NATIONAL COOPERATIVE HIGHWAY RESEARCH PROGRAM (NCHRP), TRANSPORTATION RESEARCH BOARD, 2004.



SECTION



PLAN

NOTES:

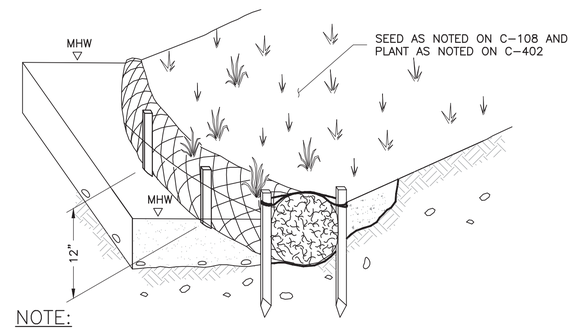
1. BENCH SHALL BE ANGLED SO OUTSIDE EDGE IS HIGHER THAN BACK OF BENCH.
2. LIVE BRANCH CUTTINGS SHALL BE PLACED ON THE BENCH IN A CRISSCROSS OR OVERLAP CONFIGURATION, 3" TO 4" THICK.
3. GROWING TIPS SHALL BE ALIGNED OUT OF THE SLOPE FACE AND SHALL EXTEND SLIGHTLY BEYOND THE FILL AREA.
4. FILL EACH LOWER BENCH WITH SOIL EXCAVATED FROM THE BENCH ABOVE. TOP BENCH TO BE BACKFILLED WITH INITIAL EXCAVATION.
5. PLACE BACKFILL ON TOP OF BRANCHES AND HAND TAMP IN 6" LIFTS TO REDUCE AIR POCKETS.
6. SEED AS NOTED ON C–108 OR PLANT AS NOTED ON C–403 BETWEEN THE BRUSH LAYER ROWS.
7. BRUSH LAYER BENCHES SHALL BE FROM 3' TO 5' VERTICAL APART, DEPENDING ON SLOPE, AS MEASURED BETWEEN FRONT EDGE OF BENCHES.

BRUSH LAYER

CC TYP C–601

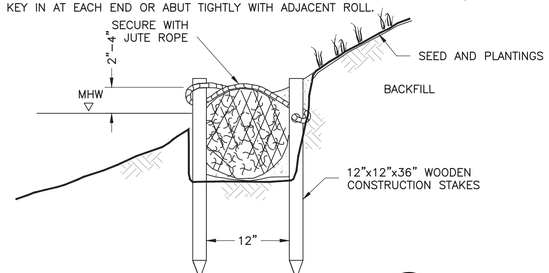
NTS

DETAIL ADAPTED FROM THE NEW YORK STANDARDS AND SPECIFICATIONS FOR EROSION AND SEDIMENT CONTROL BY THE NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION, AUGUST 2005.



NOTE:

PLACE FIBER ROLLS PARALLEL TO THE BANK ALONG A HORIZONTAL CONTOUR, AND KEY IN AT EACH END OR ABUT TIGHTLY WITH ADJACENT ROLL.

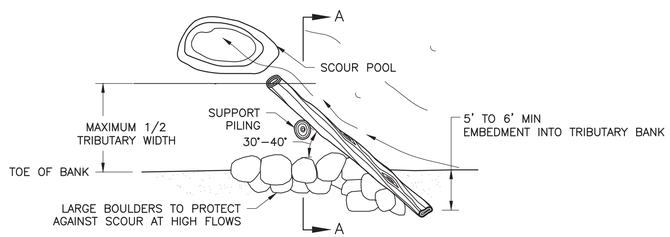


BIODEGRADABLE FIBER ROLL

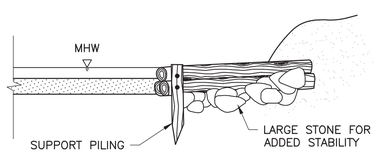
DD TYP C–601

NTS

DETAIL ADAPTED FROM REPORT 544, "ENVIRONMENTALLY SENSITIVE CHANNEL– AND BANK–PROTECTION MEASURES" BY THE NATIONAL COOPERATIVE HIGHWAY RESEARCH PROGRAM (NCHRP), TRANSPORTATION RESEARCH BOARD, 2004.



PLAN



SECTION A–A

NOTES:

1. A SINGLE LARGE LOG OR MULTIPLE SMALLER LOGS CAN BE USED FOR DEFLECTORS; SMALLER LOGS SHALL BE SECURELY ANCHORED TO EACH OTHER WITH METAL RODS/REBAR
2. NOTE THAT SCOUR POOL WILL DEVELOP NATURALLY OVER TIME AND IS NOT TO BE CONSTRUCTED BY THE CONTRACTOR.

LOG DEFLECTOR

EE TYP C–601

NTS

DETAIL ADAPTED FROM "MARYLAND'S GUIDELINES TO WATERWAY CONSTRUCTION" DETAIL 3.5(A), REVISED NOVEMBER 2000.

NO.	DATE	DSGN
B	8/22/17	MAP
A	4/20/17	MAP

PERMITTING — CHL MJS
30% DESIGN — MAP MJS
REVISION — BY APVD

DR MAP | CHK WJW | APVD MJS

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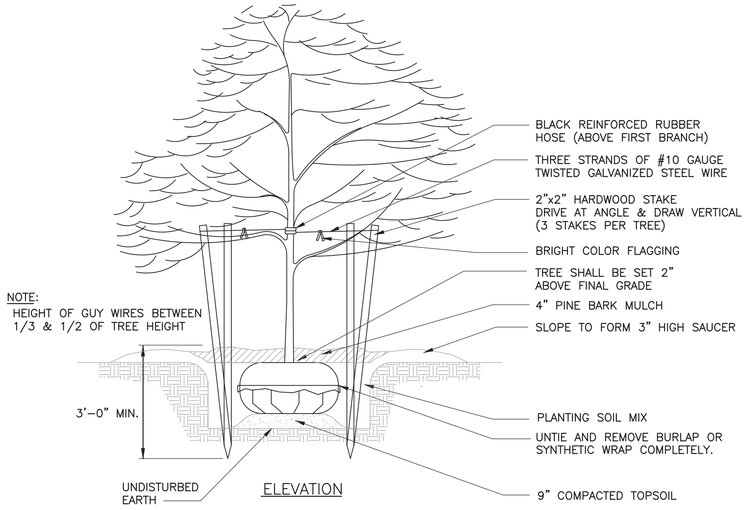
CIVIL

RESTORATION DETAILS -1

VERIFY SCALE

BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

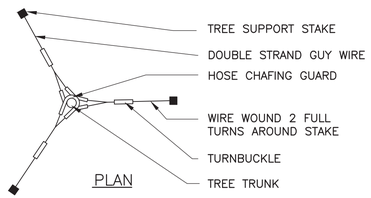
DATE	FEB 2017
PROJ	3611-16-1193
DWG	C-601
SHEET	28 OF 29



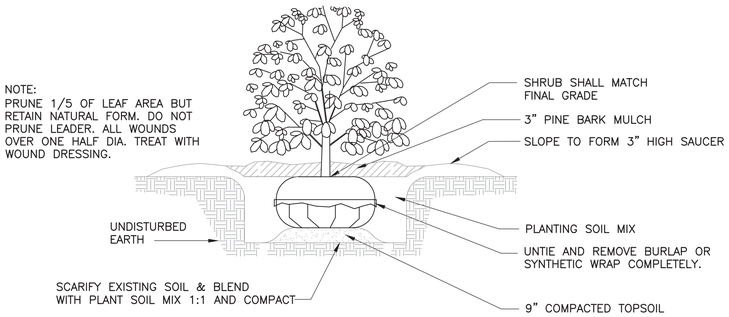
ELEVATION

TREE PLANTING

NTS — TYP FF | C-602



PLAN

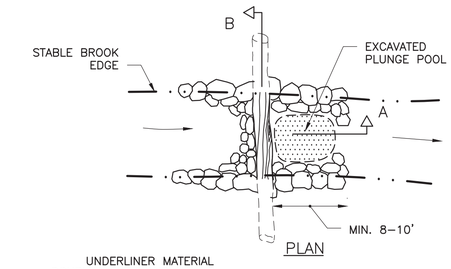


SHRUB PLANTING

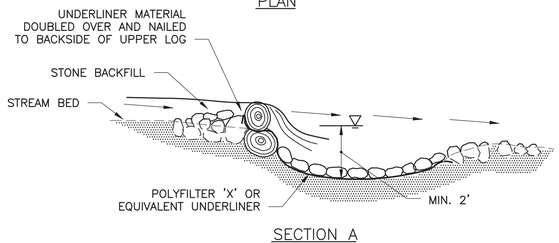
NTS — TYP GG | C-602

NOTES:

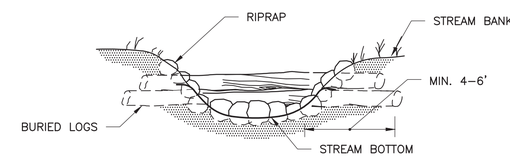
1. BOULDERS SHALL BE ANGULAR AND OBLONG IN SHAPE AND SHALL BE COMPOSED OF THE HARDEST MATERIAL AVAILABLE. THE LONG AXIS OF EACH BOULDER SHALL BE AT LEAST 3-FT AND THE WEIGHT SHALL EXCEED 750 POUNDS. BOULDERS SHALL BE EMBEDDED APPROXIMATELY 1-FT INTO THE STREAM BED TO PROVIDE STABILITY.
2. BOULDER WING DEFLECTORS SHALL BE TIED INTO THE BANK A MINIMUM OF 3 TO 4-FT.
3. BOULDER WING DEFLECTORS MAY BE USED SINGLY OR IN PAIRS (AS SHOWN).



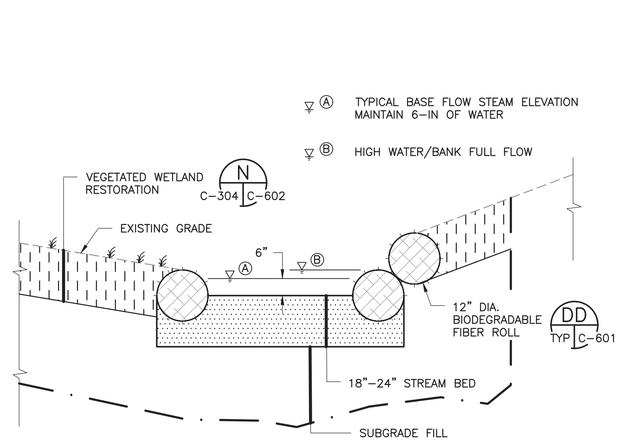
PLAN



SECTION A



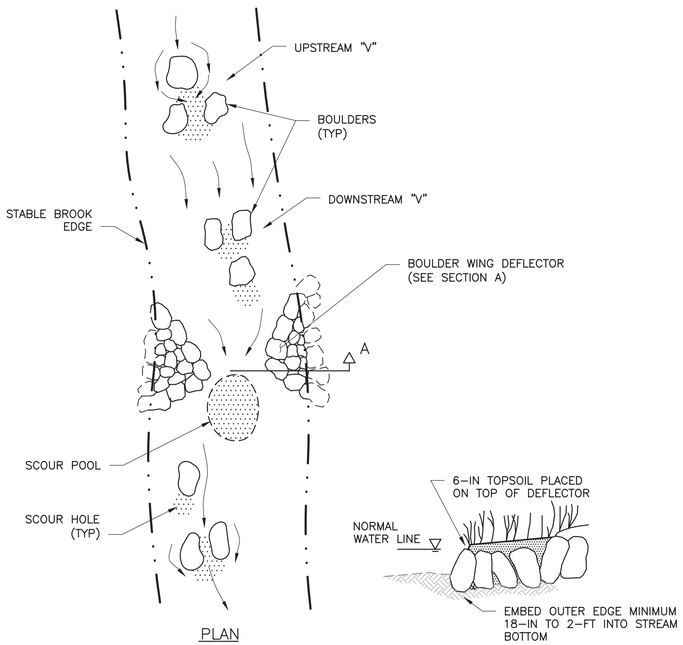
SECTION B



STREAM BED

NTS — TYP HH | C-602

NOTE:
BIODEGRADABLE FIBER ROLL TO BE USED TO CREATE STREAM CHANNEL ALONG REACH OF BROOK IN AREAS OF REMEDIATION.



PLAN

SECTION A

IN-STREAM BOULDER PLACEMENT

NTS — TYP II | C-602

NOTES:

1. DROP STRUCTURE TO BE LOCATED IN NON-RIFFLE AREAS OF STREAM.
2. MINIMUM 12-IN DIAMETER LOGS SHALL BE USED (SYCAMORE IS BEST).
3. LOGS TO EXTEND MINIMUM 4-FT INTO EACH BANK.
4. STRUCTURE SHALL BE ADEQUATELY ARMORED TO WITHSTAND BANK FULL VELOCITIES. CARE MUST BE TAKEN TO AVOID CREATING A FISH BARRIER. THEREFORE, THE DOWNSTREAM FACE OF THE LOG WEIR SHALL NOT BE ARMORED. IN ADDITION, THE VERTICAL DISTANCE BETWEEN PLUNGE POOL AND LOG WEIR CREST SHALL NOT EXCEED 24-IN.
5. LOG DROP STRUCTURES SHALL NOT BE USED WHERE BANK HEIGHT IS LESS THAN 18-IN.
6. PLUNGE POOL SHALL BE A MINIMUM 2-FT DEEP SO AS TO PROVIDE FISH HABITAT.

TWO-LOG DROP STRUCTURE

NTS — TYP JJ | C-602

NO.	DATE	DSGN	DR	CHK	APVD
B	8/22/17		MAP	WJW	MJS
A	4/20/17	CHL	MAP	MJS	MJS
				REVISION	BY

PERMITTING
30% DESIGN

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NEW YORK STATE OF OPPORTUNITY. Department of Environmental Conservation

REMEDIAL ACTION
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SARANAC LAKE, NEW YORK
NYSDEC SITE NUMBER - 516008

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P.O. Box 1062, 2 Commercial Street
Portland, Maine 04112-7050
(207) 775-5401

MACTEC

CIVIL

RESTORATION DETAILS - 2

VERIFY SCALE

BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	FEB 2017
PROJ	3611-16-1193
DWG	C-602
SHEET	29 OF 29

ATTACHMENT F
PRE DESIGN INVESTIGATION FIELD ACTIVITIES REPORT

(NOT INCLUDED IN THIS SMP)

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