REMEDIAL ACTION WORK PLAN

The NEST Site
333 1st Street
City of Niagara Falls, New York, 14303
NYSDEC Site No. C932183

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TABLE OF CONTENTS

Page No

TABLES

Remedial Investigation (RI) Tables

Phase II ESA Table (March 2023)

FIGURES

APPENDICES

1.0 INTRODUCTION

This document presents details of a Remedial Action Work Plan (RAWP) designed to support the implementation of a remedial action (RA) at The NEST Site (Brownfield Cleanup Program (BCP) Site No. C932183) located at 333 1st Street in the City of Niagara Falls, New York. The NEST Site (Site) subject to this RAWP encompasses approximately 0.985-acres and is composed of a portion of two parcels; SBL #159.09-1-2.11 and #159.09-1-2.12 located at 333 1st Street and 217 Old Falls Street respectively (refer to **Figure 1 -** Site Location Map and **Figure 12 -** Site Survey Map)**.**

Several environmental studies/investigations (refer to Section 2) completed at the Site have indicated the presence of impacted site soils due to releases and past uses of the property. Site soils have been impacted with semi-volatile organic compounds (SVOCs) primarily polycyclic aromatic hydrocarbons (PAHs), and metals. Also, soil vapor and groundwater have been impacted with chlorinated solvent compounds. The goal of the project is to complete the RA to remove the impacted soils to Track 1 Unrestricted SCOs to allow for the planned redevelopment of the property and intended uses for the Site, and to maintain a safe environment for the community. The RA includes:

- UST removal per regulations;
- Excavation/removal of existing concrete floor slabs/footings;
- Excavation and off-site landfill disposal of impacted fill/soils above bedrock to meet Part 375 Track 1 Unrestricted Use SCOs;
- Backfilling excavations with clean off-site fill material or hardscape all to meet Part 375 Unrestricted Use and new development requirements;
- Environmental Easement (EE) and Site Management Plan (SMP) for post remediation monitoring of natural attenuation of solvent related VOCs in the Site groundwater;
- Groundwater monitoring/sampling which will be conducted on a quarterly basis for the first year following remediation. At that time, an assessment will be conducted regarding the condition of the groundwater and the need for further monitoring and evaluation.

The remaining sections of the Work Plan discuss the following:

- Section 2.0: Current environmental conditions/past environmental investigations.
- Section 3.0: A summary of remedial objectives and remedy.
- Section 4.0: Remedial construction requirements/submittals.
- Section 5.0: Detailed description of the remedial approach.
- Section 6.0: Construction oversight and reporting requirements.
- Work Plan professional engineering (PE) certification.

- Appendix A: Provides a site-specific Health and Safety Plan (HASP).
- Appendix B: Community Air Monitoring Plan.
- Appendix C: Quality Assurance Quality Control (QA/QC) Plan.
- Appendix D: Field Sampling Plan.
- Appendix E: DER-10: Imported Fill Requirements.
- Appendix F: Project Schedule.
- Appendix G: Community and Environmental Response Plan.
- Appendix H: New Development-Civil Construction Plans

A Citizen Participation Plan (CPP) has been prepared for the Site as a stand-alone document

in accordance with the requirements outlined in NYSDEC's DER-23 Citizen Participation Handbook for Remedial Programs, issued January 2010, as amended. The CPP provides for issuance of fact sheets and public meetings at various stages in the investigation/remedial process. A fact sheet will be prepared by NYSDEC to announce the availability of the RAWP for review, followed by a 45-day comment period. A public meeting will be held, if requested, during the public comment period.

1.1 SITE HISTORY AND DESCRIPTION

1.1.1 Location

The Site is composed of a portion of the two parcels; SBL #159.09-1-2.11 and #159.09-1-2.12 located at 333 1st Street and 217 Old Falls Street respectively in the City of Niagara Falls. The portion of these two parcels that compose the BCP site is approximately 0.985 acres. The Site is bound by 1st Street to the west, Old Falls Street to the south, a commercial building to the east, and a large parking lot to the north. See **Figure 12** – Site Survey Map.

1.1.2 Site Features

The Site is relatively flat with approximately 95 percent of the Site currently covered by a concrete building slab from the recently demolished building and the remainder of the Site covered with miscellaneous asphalt and grassed areas.

1.1.3 Contemplated Use of The Site

Plans include construction of a 76 unit, six story, residential complex with commercial on the first floor. Additional development features will include asphalt parking, a playground area, plant bedding and sod lawn areas, and hardscape sidewalks throughout the site.

1.1.4 Site History and Description

Historical records including street directories and Sanborn Maps suggest that the site was mixed use residential and commercial. In 1892, the northern portion of the site was occupied by multiple independent residences, stables and shared dwellings including the American House and Temperance House. The southeastern portion of the site was occupied by Western Hotel and the northwestern portion by Hotel Nassau. In 1914, the northwestern portion of the site was occupied by stables, dwellings and the Converse House, the northeastern portion by Wayne Hotel and American Express Company, the eastern portion by Temperance Hotel, the southwestern portion by Hotel Imperial and the southwestern portion by Hotel Nassau. The site was occupied as follows in 1950: Converse Hotel, J.N. Adams and Co. staging floor and auto parking in the northwest, Wayne Hotel and auto parking in the northeast, Temperance Hotel in the east, New Imperial Hotel and J.N. Adams and Co., a department store, and multiple storefronts in the southeast, and various stores in the southwest. In 1955, the site remains relatively unchanged with the exception of the renaming of Temperance Hotel to Henry Hubbs Hotel. 1950 through 1970 Sanborn maps indicated the presence of two gas tanks of unknown size in the northwest corner of the site. These gas tanks are not identified on subsequent maps and no removal records were identified, thus presenting a potential vapor intrusion concern. In 1969, J.N. Adams and Co. department store was converted into a leather goods manufacturer. All storefronts located in the southwestern portion of the site were demolished between 1969

and 1970. In 1971, the one- and two-story masonry building, and garage were demolished. The site appears as vacant land from 1979 to 1985. The site was under the ownership of Niagara Heritage Group and Niagara County Industrial Development Agency (IDA) in 1995 and 1996, respectively. Since 1995, the site was occupied by a large, U-shaped structure which was demolished in September through November 2024 with the exception of the floor slab/foundations.

1.1.5 Site Geology and Hydrogeology

Shallow subsurface conditions generally consist of fill with some construction and demolition debris including brick, concrete and cinder material. Fill depths range from 0.5 to 10 feet bgs. Beneath the fill in some locations is stiff, tight, brown silty clay. Bedrock has been identified from 8 to 10 feet below ground surface (bgs) consisting of grey dolomite. Groundwater was not encountered in the fill/overburden in any of the RI soil borings nor in the one overburden groundwater monitoring well installed during the RI. Three bedrock monitoring wells were also installed during the RI with groundwater levels measured at 21+/- feet bgs with groundwater flow to the west/southwest.

2.0 ENVIRONMENTAL CONDITIONS/PAST INVESTIGATIONS

2.1 ENVIRONMENTAL ASSESSMENTS

The following environmental assessments or investigations were previously conducted at the Site:

- *Hazardous Materials Inspections by Stohl Environmental, Inc in September 2011 and by Watts Architecture and Engineering in October 2018.* Various materials were identified as asbestos containing material (ACM) including HVAC tar, curbs, vent pipes and access hatch. Lead-based paint (LBP) was identified on structural steel.
- *A Phase I Environmental Site Assessment (ESA) by LiRo Engineers Inc. in October 2018.* Identify the presence or likely presence of recognized environmental conditions (RECs). Two gasoline tanks historically located on-site in the northwest corner from 1950 to 1970 were identified as a REC.
- *A Phase II Environmental Site Assessment (ESA) by LiRo Engineers Inc. in February 2019*. Investigated potential impacts in soil and soil gas on the Site. The Phase II ESA focus was associated with the two gasoline tanks identified in the Phase1 and potential impacts from adjacent property history of commercial and railroad use. Phase II ESA observations indicated urban fill conditions from 0-8 feet below ground surface (bgs). Laboratory soil sample analytical results indicated metals and SVOCs above NYSDEC restricted residential and industrial SCOs.
- *A Phase II ESA by BE3/AMD in April 2023*. Completed for Brownfield application purposes. The assessment found that fill exists across the Site at depths up to 8+. Laboratory results of the fill showed elevated levels of metals and SVOCs, mostly polycyclic aromatic hydrocarbons (PAHs). Some VOCs were detected in the fill materials; however, none were above Unrestricted SCOs (see **Table 1and Figure 2**-Phase II ESA Soil Sample Results).
- *Geotechnical Evaluation by Foundation Design P.C. in March 2023*. Confirmed the fill depth ranging from 0-7 feet and depth to bedrock of approximately 11 feet below ground surface. It was also noted that the existing fill is not suitable structural material for the proposed structure.

- *Remedial Investigation by BE3/ADM in October-November 2024*. (see next section).

2.2 REMEDIAL INVESTIGATION (RI)

The RI tasks were completed in accordance with a defined scope of work and approved RIWP. The following provides a summary of the investigation activities:

- A geophysical survey was conducted in the area identified by past ESAs as UST locations;
- Assessment of fill/native soil material by installing 20 soil borings across the Site and one test trench in the UST area. A total of 24 soil samples were collected;
- Assessment of groundwater conditions by installing four (4) on-site groundwater monitoring wells in soil boring locations (three into bedrock and one in the overburden) and collecting a total of four (4) groundwater samples including a duplicate sample of RI MW-3;
- Performed laboratory analysis on all soil/water samples. Analysis included Part 375 metals (including hexavalent chromium), TCL VOCs plus TICs, TCL SVOCs plus TICs, pesticides/PCBs, herbicides (silvex), total cyanide, and 1,4-Dioxane/PFAS compounds;
- Assessment of sub-slab soil vapor intrusion by installing soil vapor probes and collecting four (4) subsurface soil vapor samples. Performed laboratory analysis on all air samples for TO-15 VOCs.

See **Figure 3** for the RI Investigation/Sample Location Plan.

Soil Results Summary

The results of the RI soils investigation indicated that several SVOCs compounds (primarily PAHs) and metal compounds (zinc, lead, mercury, barium, and cadmium) were detected throughout soil/fill material at variable concentrations above Restricted Residential and/or Unrestricted SCOs. VOCs (methylene chloride, PCE, and TCE) were detected in one sample above Unrestricted SCOs. One pesticide (4,4'-DDT) and one PFAS were detected above Unrestricted SCOs in single samples. No PCBs, herbicides or cyanide were detected in site soils. See **Table 2** and **Figure 4** for soil sample analytical results.

One empty, perforated steel UST was uncovered during the test trench excavation in the northwest corner of the Site. Based on the size, the UST is estimated to be of 1,000-gallon capacity. The UST was recovered with existing soil and will be removed during remediation.

Groundwater Results Summary

The groundwater analytical results indicate a concentration of the VOC PCE and one metal (sodium) above TOGS guidance values. PFOA and PFOS were also detected above guidance values as presented in NYSDEC – Sampling, Analysis, and Assessment of PFAS Under NYSDEC's Part 375 Remedial Programs – April 2023 guidance document. See **Table 4** and **Figure 5** for groundwater sample analytical results.

No SVOCs, PCBs, or herbicides were detected in site groundwater samples.

Soil Vapor Results Summary

The following provides a summary of the results of the RI soil vapor sample analytical program.

All soil vapor samples were collected in accordance with the *Guidance for Evaluating Soil Vapor Intrusion in the State of New York*-Amended May 2017. A total of four subsurface vapor samples were analyzed for TCL VOCs by EPA method TO-15. The results were compared to the three VOC guidance values referenced in the above guidance document. The analytical results compared to the three VOCs guidance values from the TO-15 list of VOCs are as follows:

- **Tetrachloroethylene** – Exceeded guidance value of 30 ug/m^3 in RI VP-1, RI VP-3, and RI VP-4, with the highest concentration of 184 ug/m^3.

- **Trichloroethene** – Exceeded guidance value of 2 ug/m^3 in RI VP-1, RI VP-3, and RI VP-4, with the highest concentration of 155 ug/m^3.

See **Table 3** and **Figure 5** for soil vapor sample analytical results.

3.0 REMEDIAL OBJECTIVES AND REMEDY

3.1 REMEDIAL ACTION OBJECTIVES

The final remedial measures for the site must satisfy Remedial Action Objectives (RAOs). Remedial Action Objectives are site-specific statements that convey the goals for minimizing or eliminating substantial risks to public health and the environment. The primary RAOs identified for the site are:

Soil

Human Health Protection RAOs

- Prevent ingestion or direct contact with contaminated soil exceeding cleanup objectives for the Site.
- Prevent inhalation of or exposure to contaminants volatilizing from contaminated site soil.

Environmental Protection RAOs

- Prevent migration of contaminants in Site soil to surrounding areas that could result in groundwater or surface water contamination.

Soil Vapor

Human Health Protection RAOs

- Prevent inhalation of or exposure to contaminants volatilizing from contaminated site soil.

Groundwater

Human Health Protection RAOs

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

Environmental Protection RAOs

- Remove the source of groundwater contamination

3.2 IDENTIFICATION OF STANDARDS, CRITERIA AND GUIDANCE

Standards, Criteria, and Guidance (SCG) are promulgated requirements (i.e., standards and criteria) and non-promulgated guidance that govern activities that may affect the environment and are used by the NYSDEC at various stages in the investigation and remediation of a site. The following are the primary SCGs for this project:

- NYSDEC 6 NYCRR Part 375 Environmental Remediation Programs, December 2006.
- NYSDEC DER-10 Technical Guidance for Site Investigations and Remediation, May 2010.
- NYSDEC Technical and Operational Guidance Series (1.1.1) Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations, June 1998.
- NYSDEC Policy CP-51 Soil Cleanup Guidance, October 2010.
- NYSDEC Sampling, Analysis, and Assessment of Per- and Polyfluoroalkyl Substances (PFAS), Under NYSDEC's Part 375 Remedial Programs, April 2023.
- NYSDEC 6 NYCRR 360 Solid Waste Management Facilities General Requirements, August 2020.
- NYSDOH Guidance for Evaluating Soil Vapor Intrusion, May 2017.

3.3 REMEDY

The remediation action (RA) includes:

1 – A Track 1 Unrestricted Use remedy including excavation and off-site disposal of all soil/fill across the Site above bedrock where soil concentrations exceed the Unrestricted Use SCOs. Based on RI data, it is estimated that this would require soil removal to a depth of approximately 7 to 8 feet across the entire Site and Backfill with clean soil or hardscape to meet new development requirements. The remedy is depicted in **Figure 11** - Track 1 Unrestricted Use remedy and new development civil construction plans are provided in **Appendix H.**

2 – Removal and proper closure of an abandoned empty UST uncovered during the RI. The UST is an approximate 4-foot diameter, 1000-gallon steel tank. Closure shall be completed in accordance with NYSDEC DER-10 Section 5.5. The location of the UST is shown on **Figure 11.**

3 – The remedy will include an Environmental Easement (EE) and Site Management Plan (SMP) for post remediation monitoring of natural attenuation of solvent related VOCs (above TOGs Guidance) in the Site groundwater. Groundwater monitoring/sampling will be conducted on a quarterly basis for the first year following remediation. At that time, an assessment will be conducted regarding the condition of the groundwater and the need for further monitoring and evaluation.

4 - No SSDS would be required in the new building under this remedy since VOCs noted in RI soil vapor samples will be eliminated by the removal of all impacted soil exceeding Unrestricted Use SCOs and replacement with clean soil. However, to meet radon requirements for new buildings, a radon SSDS will be installed by the owner/developer when the new building is constructed.

The remedial approach to implement the remedy is discussed in Section 5.0.

4.0 REMEDIAL CONSTRUCTION REQUIREMENTS/SUBMITTALS

Before initiating remedial activities, the selected contractor will complete the following tasks**:**

- Submit a site-specific Health and Safety Plan (HASP) to cover his workers and the public that complies with the HASP requirements provided in **Appendix A**.
- Submit a site-specific work plan of operations to complete the remedy.
- Submit an Erosion and sediment control plan.
- Contact the Underground Facilities Protection Organization and have all subsurface facilities marked.
- Establish contractor work limits within the staked property boundary.
- Install safety fencing around all work areas to restrict and control public access to the Site.
- Procure all work permits and off-site road permits required by law for the off-site removal/disposal soils and materials.

The contractor's work plan shall include, but not limited to, the following:

- Detailed construction schedule that meets the overall project schedule provided in the construction bid documents.
- A health and safety plan pertaining to the specific remedial work tasks for the protection of his workers and the general public.
- Sequence and methods to be used to accomplish the work.
- Off-site transport and end disposal destinations for contaminated soils.
- Method to handle groundwater if encountered during excavations.
- Procedure to handle Site drainage during construction to prevent contaminated water and/or sediment leaving the Site (silt fences, etc.) and rainwater from entering excavations.
- Locations of off-site fill sources and clean verification per DER-10 requirements.
- End use verification to meet NYSDEC tracking requirements (Bills of Lading, etc.).

Upon acceptance of the contractor's work plan by BE3, the Owner and NYSDEC, the contractor will commence implementation of the plan and complete all work within the approved project schedule.

4.1 Contractor Health and Safety Requirements

The remedial contractor will prepare a site-specific health and safety plan (HASP) pertaining to the remedial work for the protection of his site workers, the general public and the environment.

The contractor's HASP, at a minimum, must comply with all Federal and State regulations; requirements of the Community and Environmental Response Plan (CERP) provided in **Appendix G**, and the requirements of the HASP provided in **Appendix A** including, but not limited to, the following:

- Occupational Safety Health Administration (OSHA) Regulations 29 CFR 1910 120;
- OSHA Regulations 29 CFR 1926.
- All applicable laws and regulations regarding the handling and treatment of petroleum containing USTs (if uncovered) and excavation/handling of impacted soils.
- The contractor's HASP must also comply with the Community Air Monitoring Plan (CAMP) provided in **Appendix B** (CAMP).

The HASP shall, at a minimum address, the following subject areas, as deemed necessary by

the Contractor's health and safety personnel in accordance with OSHA Part 29 CFR 1910.120 and applicable New York State regulations:

- On-site health and safety organization.
- Hazard analysis of each site task and operation to be performed.
- Provisions for employee training to ensure compliance with 29 CFR 1910.120(e) and personal protective equipment (PPE) to be used by employees for each of the site tasks and operations being conducted to eliminate potential exposures, as required by the PPE programs in 1910.120(g)(5).
- Personnel and equipment decontamination procedures in accordance with 1910.120(k), as applicable.
- Standard Operating Safety Procedures, engineering controls and work practices.
- First aid requirement.
- Confined space entry requirements, if applicable, meeting requirements of 29 CFR1910.146.
- Dust control measures that comply with actions levels of the **Appendix B** CAMP.
- A spill containment program meeting the requirements of 1910.120(j).
- Heat/cold stress monitoring.
- Record keeping procedures.

The contractor will comply with the odor control requirements specified in the CERP in **Appendix G**.

5.0 REMEDIAL APPROACH

The remedial program will achieve a cleanup level that will allow the Site to be used for any purpose without any restrictions as described in 6 NYCRR Part 375-1.8(g)(1)(i). The Track 1 – Unrestricted Use Remedy is depicted on **Figure 11**.

5.1 Fill/Soils Removal and Replacement

5.1.1 Soil Sampling for Disposal Purposes

Prior to excavation of any soils the contractor will, at the request and direction of his approved landfill for soil disposal, collect soil samples from excavation areas for analysis as requested by the landfill to determine acceptability for disposal at their facility to meet their permit requirements. The number of soil samples will be based on excavated soil volume and landfill requirements.

5.1.2 Soil/Building Slab/Foundation Excavation

Prior to excavation activities at the Site, an underground utility location service will be contacted by the remediation contractor to obtain utility clearances.

The contractor's erosion and sediment controls shall be in place (silt fences/erosion soxx, berms, etc.) before any excavation begins to prevent contaminated water and/or sediment from leaving the Site and rainwater from entering excavations. If rainwater is encountered in any of the excavation areas the contractor will collect and pump the water into drums or a "Frac" tank depending on quantity. The contractor will have any collected water sampled for disposal

characterization for either disposal at an approved off-site facility or possible onsite treatment (carbon filtered, etc.) for disposal to the local municipal sewer system. For disposal to a municipal sewer system the contractor will perform all required testing by the municipality and secure appropriate permits for discharge.

Building concrete floor slabs/foundations will be removed and, after cleaning (as necessary), examination and testing (if required), will be sent to either an approved landfill or recycler. All soil above bedrock with concentrations exceeding Unrestricted Use SCOs will be excavated and transported off site to an approved disposal facility. A physical inspection (visual/olfactory) along with PID screening will be conducted of the excavation bottom and sidewalls during excavation operations to assess if there are hot spots below the proposed grade excavation limits that will need to be removed. If all soil above bedrock is excavated, no confirmatory bottom samples will be required. Side wall samples will be collected at the interface of the remedial boundary and neighboring parcels in accordance with DER-10 Section 5.4(b) to assess the surrounding soils. A vertical delineation barrier will be installed along this boundary and a delineation barrier installed at the excavation bottom that is not bedrock. Confirmatory soil samples will be collected for analysis as described in Section 5.1.4 Soil Confirmation Sampling. Confined space entry requirements for excavation areas, where applicable, will meet requirements of ASTM 29 CFR1910.146.

Geological profiles of the subsurface based on RI boring data are provided on **Figure 9** and **Figure 10**.

The excavations will be surveyed by the contractor for excavation and fill quantities which will also be required for the Final Engineering report. The excavation will be backfilled with clean soil and hardscape to match existing or new development requirements. Backfill for proposed hardscape areas will include approved clean stone/gravel base and asphalt/concrete. Backfill for proposed greenspace areas will be with approved clean soil/stone and topsoil all to meet Part 375-6.8(a) Unrestricted SCOs. In general, clean fill or hardscape will be placed over the site in areas where the site will be raised to meet final site grades or to backfill excavated areas where Unrestricted Use SCOs have been achieved.

Impacted soil will be directly loaded to trucks for off-site disposal at a NYSDEC approved landfill. If impacted soil needs to be stockpiled for any reason before off-site transport, the soil will be placed on minimum 6-mil plastic sheeting and covered with 6-mil plastic upon completion of stockpiling. All trucks for transport will be 9-A approved permitted trucks to haul non-hazardous waste.

Excavated clean fill from the Site identified through visual, olfactory and PID screening processes will be stockpiled on Site on 6-mil plastic sheeting for potential re-use as clean fill per the requirements set forth in DER-10 Table 5.4(e)4 Reuse of Soil. This material will be covered to prevent wind and rain erosion. The material will be sampled and analyzed to meet Unrestricted Use SCOs before reuse.

Dust, VOC and odor control measures along with air monitoring are discussed in Section 5.4 below.

5.1.3 Fill Material

All imported fill materials required to backfill excavations or to establish site grades shall be obtained from “virgin” sources and be tested to ensure that they meet imported soil

requirements of DER-10 Appendix 5 Allowable Constituent Levels for Imported Fill for "Unrestricted Use" requirements. DER-10 imported fill requirements are provided in **Appendix E**. NYSDEC and the owners representative will approve all backfill material and sources before brought to the site. Crushed stone to be used for backfilling from a NYSDEC/NYSDOT approved quarry will not require testing if approved by NYSDEC.

5.1.4 Confirmation Sampling

Confirmatory soil samples will be collected from the excavation base and sidewalls unless excavation is to bedrock. All confirmation soil samples from the excavations will be collected in conformance with DER-10 Section 5.4(b) 2 through 5 to determine final frequency and sample locations. Where the sidewalls of the excavation are at the property boundary and the inspection reveals possible impacts, confirmation soil samples will be collected as noted above and analyzed for TCL VOCs, TCL SVOCs, and TAL metals to assess if soils exceeding 6 NYCRR Part 375 Unrestricted Use SCOs extend off-site. Note that this will not affect the completion of the remedy but will be used by NYSDEC for information and future assessment purposes only.

The collection of soil samples for laboratory analysis will be performed pursuant to the **Appendix D** Field Sampling Plan and NYSDEC guidance. The sample locations will be flagged or staked so that the exact locations are known. Samples will be field global positioning system (GPS) located and the extent of the excavations will be surveyed by the contractor for as built conditions and inclusion in the Final Engineering report. All confirmation soil samples will be analyzed for chlorinated solvent VOCs, PAHs and TAL Metals. The results will be compared to 6 NYCRR Part 375 Unrestricted Use SCOs. All sample analysis will comply with the quality assurance/quality control (QA/QC) plan provided in **Appendix C**. The NYSDEC will be notified prior to the collection of confirmation samples.

5.2 UST Removal and Closure

The approximate location of the UST uncovered during the RI is shown on **Figure 11**. The UST is an approximate 4-foot diameter, 1000-gallon empty steel tank. Closure shall be completed in accordance with NYSDEC DER-10 Section 5.5 including assessment and sampling of adjacent soils deemed impacted during removal and field inspection. Any sampled soils that exceed Unrestricted SCOs will be removed for off-site disposal. If other USTs are encountered, the USTs, fuel dispensers, underground piping or other structures associated with a source of contamination will be excavated and properly disposed of at an approved off-site facility in accordance with DER-10 Section 5.5.

5.3 EE and SMP for Groundwater Monitoring

The remedy would include an EE and SMP for short term post remediation monitoring of contaminants in the Site groundwater. Monitoring wells RI-MW-1, RI-MW-2 and RI-MW-3 installed during the RI (see **Figure 11**) will be preserved during the remediation and sampled on a quarterly basis for the first year following remediation. The first sampling round will be conducted at the completion of the remediation. Four (4) addition sampling rounds (quarterly) will be conducted thereafter. At the completion of the final sampling round an assessment will be conducted regarding the natural attenuation of chlorinated solvent related VOCs in the groundwater and the need for further monitoring and evaluation. Groundwater samples will only be analyzed for chlorinated solvent VOCs. Sampling and analysis will conform to the

requirements of the Appendix C QA/QC Plan. Analytical results will be compared to Class GA Groundwater Quality Standards (NYSDEC TOGS 1.1.1 Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations - June 1998).

5.4 CAMP and CERP Requirements

Dust, VOC, and odor control measures with air monitoring will be implemented during all ground intrusive activities to minimize inhalation exposures and create a public record. Air monitoring will be in accordance with the **Appendix B** CAMP. CAMP data will be provided daily to the NYSDEC and NYSDOH and notification of any exceedances will be sent separately to NYSDEC and NYSDOH. The requirements of the CERP in **Appendix G** and the CAMP in **Appendix B** will be implemented for managing VOCs, odors and particulates during all work activities that involve the excavation and handling of Site soils.

6.0 OVERSIGHT AND REPORTING

As required by BCP regulations, the owner's engineer/consultant BE3 will provide construction oversight services during all construction activities detailed in this work plan and prepare a Final Engineering Report (FER) at the completion of construction in the NYSDEC template format. The FER will describe all details of the construction/remediation and include copies of contractor submittals, disposal records, daily inspection reports and a certification that all work was completed in conformance with the approved RAWP and be signed and stamp by a professional engineer licensed in the State of New York. All RA data will be submitted to the NYSDEC database. Once the approved lab has completed its sample analysis of a lab data sample batch it will be inserted by the lab into lab EDD forms (only lab data) and a CAT B is prepared and sent to the independent preparer of DUSRs. Once the DUSRs are completed, the final EDD is prepared for the sample batch incorporating the lab data plus the site-specific data called for in the EDD. Any data changes called for in the DUSRs are also incorporated in the final EDD (latest format). The latest NYSDEC EDD Valid values tables are also checked. The final EDDs are inserted in the Electronic Data Processors (EDP) which confirms if all the data has been correctly inserted and shows where data is incomplete. Corrections are then made until the EDP indicates the EDD data is correct. Once correct final EDDs are submitted to NYSDEC Albany for final check and acceptance.

Monthly progress reports will be prepared by BE3 in accordance with DER-10 Section 5.7 and submitted to DEC by the 10th of each month for the previous month's work. A project schedule is provided in **Appendix F**.

A Citizen Participation Plan (CPP) has been prepared for the Site in accordance with the requirements outlined in NYSDEC's DER-23 Citizen Participation Handbook for Remedial Programs, issued January 2010 (as amended) as a stand-alone document. The CPP provides for issuance of fact sheets and public meetings at various stages in the investigation/remedial process. A fact sheet will be prepared by NYSDEC to announce the availability of the RAWP for review, followed by a 45-day comment period. A public meeting will be held, if requested, during the public comment period.

The major components of the CPP are as follows:

- Names and addresses of the interested public as set forth on the Brownfield site contact list provided with the BCP application;

- Identification of major issues of public concern related to the site and that may be encountered during the remediation project;
- A description of citizens participation activities already performed and to be performed during remediation;
- Identification of document repositories for the project; and,
- A description and schedule of public participation activities that are either required by law or needed to address public concerns related to the Site.

WORK PLAN CERTIFICATION

I, Jason M. Brydges, certify that I am currently a NYS registered professional engineer as defined in 6 NYCRR Part 375 and that this Remedial Action Work Plan was prepared in accordance with all applicable statutes and regulations and in substantial conformance with the DER Technical Guidance for Site Investigation and Remediation (DER-10).

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Jason M. Brydges, P.E.

TABLES

BRYDGES ENGINEERING
IN ENVIRONMENT AND ENERGY, DPC

TABLE 1

TEST PIT, BORING, AND MONITORING WELL GPS COORDINATES

Number	Latitude	Longitude
Test Pits		
RI TT-1	43.087153	-79.061557
Soil Vapor		
RI VP-1	43.087121	-79.061375
RI VP-2	43.087146	-79.060904
RI VP-3	43.086995	-79.061369
RI VP-4	43.086995	-79.060891
Borings		
RI BH-1	43.087212	-79.06105
RI BH-2	43.087206	-79.061537
RI BH-3	43.087231	-79.060757
RI BH-4	43.086983	-79.061516
RI BH-5	43.08708	-79.060882
RI BH-6	43.08718	-79.060722
RI BH-7	43.086915	-79.06110
RI BH-8	43.086954	-79.060738
RI BH-9	43.087072	-79.061071
RI BH-10	43.086954	-79.060915
RI BH-11	43.087005	-79.060822
RI BH-12	43.086917	-79.060819
Monitoring Wells		
RI MW-1	43.08720	-79.0613
RI MW-2	43.08711	-79.06071
RI MW-3	43.08690	-79.06158
RI MW-4	43.087122	-79.061586

TABLE 2
SUMMARY OF SOIL ANALYTICAL RESULTS

Parameter Tested	Sample Identification, Approximate Sample Depth in Feet Below Ground Surface, and Sample Date									NYSDEC Soil Cleanup Objectives (SCOs)		
	RI-BH-4 2-4' 10/28/2024	RI BH-5 2-6' 11/1/2024	RI BH-6 2-4' 11/1/2024	RI BH-6 7-8' 11/1/2024	RI-BH-7 2-4' 10/28/2024	RI BH-8 2-6' 11/1/2024	RI BH-9 4-6' 11/1/2024	RI BH-10 2-4' 10/29/2024	RI BH-11 0-2' 10/31/2024	Unrestricted	Residential	Restricted Residential
METALS/INORGANICS												
Aluminum	5800	625	10200	16500	4540	7740	1880	3670	2360 F1 F1	-	-	-
Arsenic	4.00	ND	5.50	2.40	2.50	3.40	1.4 J	3.00	ND	16	16	16
Barium	119.0	3.6	85.5	38.9	41.7	415.0	12.2	82.3	12.9	350	400	400
Beryllium	0.260	ND	0.470	0.650	0.200	0.350	0.10 J	0.230	0.11 J	7.2	14	72
Cadmium	1.30	0.52	0.70	0.57	0.66	0.44	1.40	0.48	0.84	2.5	2.5	4.3
Calcium	77900	195000.00	39000.00	15000.00	10400.00	142000.00	181000.00	103000.00	192000.00	-	-	-
Chromium	8.7	1.8	14.6	18.6	5.9	9.6	3.5	7.5	4.5	30	30	110
Cobalt	2.8	0.33 J	6.4	9.9	2.2	3.4	0.69	2.7	1.0	-	-	-
Copper	14.5	1.3	35.3	7.7	102.0	14.5	3.7	15.5	4.0	50	270	270
Iron	12200	1670.0	13300.0	19200.0	5720.0	8740.0	3940.0	5370.0	4260 F2	-	-	-
Lead	155	5.8	484.0	14.8	95.9	188.0	21.5	89.3	16.4	63	400	400
Magnesium	39400.0	114000.0	24000.0	13500.0	56600.0	71100.0	105000.0	41600.0	115000.0	-	-	-
Manganese	382	368	472	262	464	428	417	284	768	1,600	2,000	2,000
Mercury	0.790	0.020	0.500	0.014	0.390	0.070	0.160	0.410	0.020	0.18	0.81	0.81
Nickel	6.8	0.92 J	14.9	24.2	5.9	8.2	2.1 J	7.2	2.8	30	140	310
Potassium	1610	230	2040	4380	1240	1790	688	922	460	-	-	-
Silver	ND	ND	0.46 J	ND	ND	ND	ND	ND	ND	2	36	180
Sodium	260	175	155 J	189	475	609	158 J	250	178	-	-	-
Thallium	0.90 J	1.3 J	ND	1.2 J	0.87 J	1.0 J	1.3 J	ND	0.91 J	-	-	-
Vanadium	12.2	1.4	20.6	25.8	8.5	13.4	4.0	9.8	4.6	-	-	-
Zinc	401	87.5	365.0	996.0	357.0	193.0	282.0	148.0	150 F1	109	2,200	10,000
METALS/INORGANICS												
Total Cyanide	ND	ND	ND	-	ND	ND	ND	ND	ND	27	27	27
SEMI-VOLATILE ORGANIC COMPOUNDS (SVOCs)												
2-Methylnaphthalene	ND	ND	ND	ND	ND	ND	ND	ND	ND	-	-	-
Acenaphthene	0.81 J	ND	ND	ND	0.73 J	ND	ND	ND	ND	20	100	100
Acenaphthylene	ND	ND	0.029 J	ND	1.9 J	ND	ND	ND	ND	100	100	100
Anthracene	2.1	ND	0.086 J	ND	3.6	ND	ND	ND	ND	100	100	100
Benzo[a]anthracene	3.9	ND	0.28	ND	8.2	0.92 J	ND	1.4 J	0.14 J	1	1	1
Benzo[a]pyrene	3	ND	0.18 J	ND	7.4	0.95 J	ND	1.5 J	0.15 J	1	1	1
Benzo[b]fluoranthene	3.3	ND	0.15 J	ND	8.4	1.1 J	ND	1.9 J	0.2 J	1	1	1
Benzo[g,h,i]perylene	1.7	ND	ND	ND	4.6	0.69 J	ND	1.2 J	0.1 J	100	100	100
Benzo[k]fluoranthene	1.9	ND	ND	ND	4.1	0.52 J	ND	0.71 J	ND	0.8	1	3.9
Bis(2-ethylhexyl) phthalate	ND	ND	ND	ND	ND	ND	ND	ND	ND	-	-	-
Butyl benzyl phthalate	ND	ND	ND	ND	ND	0.46 J	ND	ND	ND	-	-	-
Carbazole	0.92 J	ND	0.031 J	ND	0.78 J	ND	ND	ND	ND	-	-	-
Chrysene	3.3	ND	0.27	ND	8	0.9 J	ND	1.5 J	ND	1	1	3.9
Dibenz(a,h)anthracene	0.53 J	ND	0.05 J	ND	1.2 J	ND	ND	ND	ND	0.33	0.33	0.33
Dibenzofuran	0.44 J	ND	ND	ND	0.86 J	ND	ND	ND	ND	7	14	59
Fluoranthene	8.9	ND	0.55	ND	21	2	ND	3.1 J	0.26 J	100	100	100
Fluorene	0.86 J	ND	0.026 J	ND	1.5 J	ND	ND	ND	ND	30	100	100
Hexachlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	-	-	-
Hexachlorobutadiene	ND	ND	ND	ND	ND	ND	ND	ND	ND	-	-	-
Indeno[1,2,3-cd]pyrene	1.5	ND	0.14 J	ND	3.9	0.54 J	ND	0.98 J	ND	0.5	0.5	0.5
Naphthalene	0.19 J	ND	ND	ND	0.92 J	ND	ND	ND	ND	12	100	100
Phenanthrene	7.2	ND	0.4	ND	14	1.0 J	ND	2.3 J	ND	100	100	100
Pyrene	6.8	ND	0.53	ND	16	1.7	ND	2.5 J	0.23 J	100	100	100

Notes: All units in parts per million (ppm)
ND Analyte not detected
90.3 Analyte detected
118 Reported concentration greater than or equal to the NYSDEC Unrestricted SCO
3.75 Reported concentration greater than or equal to the NYSDEC Residential SCO
21.7 Reported concentration greater than or equal to the NYSDEC Restricted Residential SCO
J Estimated concentration
F1 MS and/or MSD recovery exceeds control limits
F2 MS/MSD RPD exceeds control limits

TABLE 2
SUMMARY OF SOIL ANALYTICAL RESULTS

Parameter Tested	Sample Identification, Approximate Sample Depth in Feet Below Ground Surface, and Sample Date									NYSDEC Soil Cleanup Objectives (SCOs)		
	RI BH-4 2-4' 10/28/2024	RI BH-5 2-6' 11/1/2024	RI BH-6 2-4' 11/1/2024	RI BH-6 7-8' 11/1/2024	RI BH-7 2-4' 10/28/2024	RI BH-8 2-6' 11/1/2024	RI BH-9 4-6' 11/1/2024	RI BH-10 2-4' 10/29/2024	RI BH-11 4-6' 10/31/2024	Unrestricted	Residential	Restricted Residential
VOLATILE ORGANIC COMPOUNDS (VOCs)												
2-Butanone (MEK)	ND	ND	ND	-	ND	ND	ND	ND	ND	0.12	100	100
Acetone	0.014 J vs	ND	0.008 J*1 vs	-	ND	0.0059 J*1vs	0.007 J vs*1	ND	ND	0.05	100	100
Benzene	0.00036 J vs	0.0031 J vs	ND	-	ND	ND	0.00038 J vs	0.00029 J vs	ND	0.06	2.9	4.8
Chloroform	0.00076 J vs B	0.00067 J vs B	0.00078 JB	-	0.00059 J vs B	0.0007 JB vs	0.00062 J vs B	0.00055 J B	0.00056 J B vs	0.37	10	49
Ethylbenzene	ND	0.0015 J vs	ND	-	ND	ND	0.007 J vs	0.00062 J vs	ND	1	30	41
Methyl acetate	ND	ND	ND	-	ND	ND	0.0039 J vs	ND	ND	-	-	-
Methylcyclohexane	ND	ND	ND	-	ND	ND	0.00145 J vs	ND	ND	-	-	-
Methylene Chloride	0.011 vs B	0.013 vs B	0.023 B vs	-	0.0095 vs B	0.019 B vs	0.017 vs B	0.0026 J vs	ND	0.05	51	100
m-Xylene & p-Xylene	ND	0.012	ND	-	ND	0.0012 J	0.0027 J	0.0036 J	ND	0.26	100	100
o-Xylene	ND	0.0039 J	ND	-	ND	ND	0.0012 J	0.0016 J	ND	0.26	100	100
Tetrachloroethene	0.0015 J vs	ND	ND	-	ND	ND	ND	ND	ND	1.3	5.5	19
Toluene	0.00085 J vs	0.0035 J vs	0.00044 J vs	-	0.00049 J vs	0.00068 J vs	0.0021 J vs	0.0033 J vs	0.0012 J vs	0.7	100	100
Trichloroethene	ND	ND	ND	-	ND	ND	ND	ND	ND	0.47	10	21
Xylenes, Total	ND	0.016 vs	ND	-	ND	0.0012 J	0.0039 J vs	0.0052 J	0.001 J vs	0.26	100	100
ORGANOCHLORINE PESTICIDES												
4,4'-DDT	ND	ND	0.0044 J	ND	0.0086 J	0.02 J	0.00078 J	0.012 JB	ND	0.0033	1.7	7.9
alpha-BHC	0.0087 JB	ND	ND	ND	0.011 JB	ND	ND	0.0038 J	ND	0.02	0.097	0.48
delta-BHC	ND	ND	ND	ND	0.0086 JB	ND	ND	0.0046 J	ND	0.04	100	100
Lindane	0.0076 JB	ND	ND	ND	0.0085 JB	ND	ND	ND	ND	0.026	0.28	1.3
POLYCHLORINATED BIPHENYLS (PCBs)												
PCBs	ND	ND	ND	ND	ND	ND	ND	ND	ND			
HERBICIDES												
2,4,5-TP (Silvex)	ND	ND	ND	ND	ND	ND	ND	ND	ND	3.8	58	100
PER- AND POLYFLUOROALKYL SUBSTANCES (PFAS)												
D3-NMeFOSA	ND	ND	ND	ND	ND	ND	ND	ND	ND	-	-	-
d3-NMeFOSAA	ND	ND	ND	ND	ND	ND	ND	ND	ND	-	-	-
N-ethylperfluorooctanesulfonamidoacetic acid (	ND	ND	ND	ND	ND	ND	ND	ND	ND	-	-	-
Perfluorobutanoic acid (PFBA)	ND	ND	ND	ND	ND	ND	ND	ND	ND	-	-	-
Perfluorodecanoic acid (PFDA)	ND	ND	ND	ND	ND	ND	ND	ND	ND	-	-	-
Perfluoroheptanoic acid (PFHpA)	ND	ND	ND	ND	ND	ND	ND	ND	ND	-	-	-
Perfluorohexanesulfonic acid (PFHxS)	ND	ND	ND	ND	ND	ND	ND	ND	ND	-	-	-
Perfluorohexanoic acid (PFHxA)	ND	ND	ND	ND	ND	ND	ND	ND	ND	-	-	-
Perfluorononanoic acid (PFNA)	ND	ND	ND	ND	ND	ND	ND	ND	ND	-	-	-
Perfluorooctanesulfonamide (PFOSA)	ND	ND	ND	ND	ND	ND	ND	ND	ND	-	-	-
Perfluorooctanesulfonic acid (PFOS)	ND	ND	ND	0.00023	0.00026	0.00019	0.00025	0.00016 J	0.00014 J	0.00088	0.0088	0.044
Perfluorooctanoic acid (PFOA)	ND	ND	ND	ND	0.000093 J	ND	ND	ND	ND	0.00066	0.0066	0.033
Perfluoropentanoic acid (PFPeA)	ND	ND	ND	ND	0.00024 J	ND	ND	ND	ND	-	-	-
Total PFOA/PFOS	ND	ND	ND	0.00023	0.000353	0.00025	0.00025	0.00016 J	0.00014	0.0015	0.015	0.077

Notes: All units in parts per million (ppm)
ND Analyte not detected
90.3 Analyte detected
118 Reported concentration greater than or equal to the NYSDEC Unrestricted SCO
3.75 Reported concentration greater than or equal to the NYSDEC Residential SCO
vs Reported analyte concentrations are below 200 ug/kg and may be biased low due to the sample not being collected sccording to 5035A-L low-level specifications
- Not applicable or sample not tested for this analyte
21.7 Reported concentration greater than or equal to the NYSDEC Restricted Residential SCO
J Estimated concentration
F1 MS and/or MSD recovery exceeds control limits
F2 MS/MSD RPD exceeds control limits

TABLE 2
SUMMARY OF SOIL ANALYTICAL RESULTS

Parameter Tested	Sample Identification, Approximate Sample Depth in Feet Below Ground Surface, and Sample Date							NYSDEC Soil Cleanup Objectives (SCOs)		
	RI BH-12 2-4' 10-31/2024	RI VP-1 2-4' 10/29/2024	RI VP-2 2-4' 10/29/2024	RI VP-3 Native 8-9' 10/29/2024	RI VP-3 2-4' 10/29/2024	RI VP-4 QA/QC 2-4' 10/29/2024	RI VP-4 2-4' 10/29/2024	Unrestricted	Residential	Restricted Residential
METALS/INORGANICS										
Aluminum	6610	3480	1830	3390	9050	7150	5280	-	-	-
Arsenic	2.80	2.3 F1	1.1 J	1.9 J	4.00	2.60	1.8 J	16	16	16
Barium	91.3	44 F1	7.1	15.5	136 F F2	31.2	30.5	350	400	400
Beryllium	0.280	0.15 J F1	0.079	0.14 J	0.36 F1 F2	0.260	0.22 J	7.2	14	72
Cadmium	0.34	0.65 F1	0.49	0.72	0.546 F1 F2	1.20	0.99 J	2.5	2.5	4.3
Calcium	74000.00	131000.00	167000.00	133000.00	108000 F2	121000.00	111000.00	-	-	-
Chromium	8.2	4.6 F1	2.5	3.8	12.3	7.3	5.5	30	30	110
Cobalt	3.5	1.9 F1	0.5	1.7	4.3 F1 F2	3.0	2.2	-	-	-
Copper	14.2	37.3 F1 F2	2.6	9.3	21.5 F1 F2	5.1	9.0	50	270	270
Iron	8730.0	4740.0	2570.0	4920.0	12200 F2	8250.0	5990.0	-	-	-
Lead	118.0	68.9	7.2	47.2	176 F1 F2	33.1	46.9	63	400	400
Magnesium	285000.0	68800.0	104000.0	79000.0	45500 F2	71500.0	66900.0	-	-	-
Manganese	383	378	347	429	461 F1 F2	875	696	1,600	2,000	2,000
Mercury	0.470	0.120	0.062	0.039	4.500	0.089	0.170	0.18	0.81	0.81
Nickel	8.6	4.1 J F1	1.7 J	4.0 J	9.8 F1 F2	5.9	4.9 J	30	140	310
Potassium	1660	943	1	1100	2.3 F1 F2	1110	1070	-	-	-
Silver	ND	ND	ND	ND	ND	ND	ND	2	36	180
Sodium	283	186	180	166	547 F1 F2	238	197	-	-	-
Thallium	ND	ND	0.95 J	1.0 J	ND	0.99 J	0.93 J	-	-	-
Vanadium	12.9	7.5 F1	3.2	7.0	16.9 F1 F2	12.7	9.6	-	-	-
Zinc	148.0	205 F1	175.0	156.0	177 F1 F2	386.0	395.0	109	2,200	10,000
METALS/INORGANICS										
Total Cyanide	ND	ND	ND	ND	ND	ND	ND	27	27	27
SEMI-VOLATILE ORGANIC COMPOUNDS (SVOCs)										
2-Methylnaphthalene	ND	ND	ND	ND	ND	ND	ND	-	-	-
Acenaphthene	ND	ND	ND	ND	ND	ND	ND	20	100	100
Acenaphthylene	ND	ND	ND	ND	ND	ND	ND	100	100	100
Anthracene	ND	ND	ND	ND	ND	ND	ND	100	100	100
Benzo[a]anthracene	0.27 J	1.0 J F1 F1	ND	ND	2.5 J F1 F2	ND	ND	1	1	1
Benzo[a]pyrene	0.27 J	1.1 J F1 F2	ND	ND	ND	ND	ND	1	1	1
Benzo[b]fluoranthene	0.35 J	1.3 J F1 F2	ND	ND	ND	ND	ND	1	1	1
Benzo[g,h,i]perylene	0.21 J	0.72 J F1 F2	ND	ND	ND	ND	0.19 J	100	100	100
Benzo[k]fluoranthene	0.13 J	0.52 J F1 F2	ND	ND	ND	ND	ND	0.8	1	3.9
Bis(2-ethylhexyl) phthalate	ND	ND	ND	ND	ND	ND	0.51 J	-	-	-
Butyl benzyl phthalate	ND	ND	ND	ND	ND	ND	ND	-	-	-
Carbazole	ND	ND	ND	ND	ND	ND	ND	-	-	-
Chrysene	0.28 J	0.98 J F1 F2	ND	ND	ND	ND	ND	1	1	3.9
Dibenz(a,h)anthracene	ND	ND	ND	ND	ND	ND	ND	0.33	0.33	0.33
Dibenzofuran	ND	ND	ND	ND	ND	ND	ND	7	14	59
Fluoranthene	0.6 J	2.3 J F1 F2	ND	0.027 J	5.7 J F2	ND	0.13 J	100	100	100
Fluorene	ND	ND	ND	ND	ND	ND	ND	30	100	100
Hexachlorobenzene	ND	ND	ND	ND	ND	ND	ND	-	-	-
Hexachlorobutadiene	ND	ND	ND	ND	ND	ND	ND	-	-	-
Indeno[1,2,3-cd]pyrene	0.17 J	0.55 J F1 F2	ND	ND	ND	ND	ND	0.5	0.5	0.5
Naphthalene	ND	ND	ND	ND	ND	ND	ND	12	100	100
Phenanthrene	0.32 J	1.3 J F1 F2	ND	ND	4.0 J F1	ND	ND	100	100	100
Pyrene	0.46 J	1.8 J F1 F2	ND	0.022 J	4.3 J F1	ND	0.15 J	100	100	100

Notes:
All units in parts per million (ppm)
ND Analyte not detected
90.3 Analyte detected
118 Reported concentration greater than or equal to the NYSDEC Unrestricted SCO
3.75 Reported concentration greater than or equal to the NYSDEC Residential SCO
21.7 Reported concentration greater than or equal to the NYSDEC Restricted Residential SCO
J Estimated concentration
F1 MS and/or MSD recovery exceeds control limits
F2 MS/MSD RPD exceeds control limits

TABLE 2
SUMMARY OF SOIL ANALYTICAL RESULTS

Parameter Tested	Sample Identification, Approximate Sample Depth in Feet Below Ground Surface, and Sample Date							NYSDEC Soil Cleanup Objectives (SCOs)		
	RI BH-12 2-4' 10/31/2024	RI VP-1 2-4' 10/29/2024	RI VP-2 2-4' 10/29/2024	RI VP-3 Native 8-9' 10/29/2024	RI VP-3 2-4' 10/29/2024	RI VP-4 QA/QC 2-4' 10/29/2024	RI VP-4 2-4' 10/29/2024	Unrestricted	Residential	Restricted Residential
VOLATILE ORGANIC COMPOUNDS (VOCs)										
2-Butanone (MEK)	ND	ND	ND	ND	ND	ND	ND	0.12	100	100
Acetone	ND	0.009 J F1 vs	0.0065 J vs	ND	ND	0.005 J vs	0.0049 J vs	0.05	100	100
Benzene	ND	ND	ND	ND	ND	ND	ND	0.06	2.9	4.8
Chloroform	0.00065 JB vs	0.00051 J B vs	ND	0.00059 J vs	0.00062 J B F1	0.00058 J B vs	0.00055 JB vs	0.37	10	49
Ethylbenzene	ND	ND	ND	ND	ND	ND	ND	1	30	41
Methyl acetate	ND	ND	ND	ND	ND	ND	ND	-	-	-
Methylcyclohexane	ND	ND	ND	ND	ND	ND	ND	-	-	-
Methylene Chloride	ND	0.0024 J vs	ND	ND	ND	0.0028 J vs	ND	0.05	51	100
m-Xylene & p-Xylene	ND	0.0014	0.00097	ND	ND	0.0015 J	0.0026 J	0.26	100	100
o-Xylene	ND	0.00072	ND	ND	ND	ND	0.00072 J	0.26	100	100
Tetrachloroethene	ND	0.0039 J vs	ND	ND	ND	ND	ND	1.3	5.5	19
Toluene	ND	0.002 J vs	0.0013 J vs	ND	0.00077 J vs	0.0019 J vs	0.0021 J vs	0.7	100	100
Trichloroethene	ND	ND	ND	ND	ND	ND	ND	0.47	10	21
Xylenes, Total	ND	0.0021 J	0.00097 J	ND	ND	0.0015 J vs	0.00332	0.26	100	100
ORGANOCHLORINE PESTICIDES										
4,4'-DDT	0.0032 J	0.0058 J B	0.00077 JB	0.00095 JB	0.04 J B	0.0087 JB	ND	0.0033	1.7	7.9
alpha-BHC	ND	ND	ND	ND	ND	ND	ND	0.02	0.097	0.48
delta-BHC	ND	0.002 J vs	ND	ND	ND	ND	ND	0.04	100	100
Lindane	ND	ND	0.00058 J	ND	ND	ND	ND	0.026	0.28	1.3
POLYCHLORINATED BIPHENYLS (PCBs)										
PCBs	ND	ND	ND	ND	ND	ND	ND			
HERBICIDES										
2,4,5-TP (Silvex)	ND	ND	ND	ND	ND	ND	ND	3.8	58	100
PER- AND POLYFLUOROALKYL SUBSTANCES (PFAS)										
D3-NMeFOSA	ND	ND	ND	ND	ND	ND	ND	-	-	-
d3-NMeFOSAA	ND	ND	ND	ND	ND	ND	ND	-	-	-
N-ethylperfluorooctanesulfonamidoacetic acid (	ND	ND	ND	ND	ND	ND	ND	-	-	-
Perfluorobutanoic acid (PFBA)	ND	ND	ND	ND	ND	ND	ND	-	-	-
Perfluorodecanoic acid (PFDA)	ND	ND	ND	ND	ND	ND	ND	-	-	-
Perfluoroheptanoic acid (PFHpA)	ND	ND	ND	ND	ND	ND	ND	-	-	-
Perfluorohexanesulfonic acid (PFHxS)	ND	ND	ND	ND	ND	ND	ND	-	-	-
Perfluorohexanoic acid (PFHxA)	ND	ND	ND	ND	ND	ND	ND	-	-	-
Perfluorononanoic acid (PFNA)	ND	ND	ND	ND	ND	ND	ND	-	-	-
Perfluorooctanesulfonamide (PFOSA)	0.000074 J	ND	ND	ND	ND	ND	ND	-	-	-
Perfluorooctanesulfonic acid (PFOS)	0.000089 J	0.00011 J	ND	ND	ND	ND	0.00008 J	0.00088	0.0088	0.044
Perfluorooctanoic acid (PFOA)	ND	ND	ND	ND	ND	ND	0.000066 J	0.00066	0.0066	0.033
Perfluoropentanoic acid (PFPeA)	ND	ND	ND	ND	ND	ND	ND	-	-	-
Total PFOA/PFOS	0.000163	0.00011	ND	ND	ND	ND	0.000154	0.0015	0.015	0.077

Notes:
All units in parts per million (ppm)
ND Analyte not detected
90.3 Analyte detected
118 Reported concentration greater than or equal to the NYSDEC Unrestricted SCO
3.75 Reported concentration greater than or equal to the NYSDEC Residential SCO
21.7 Reported concentration greater than or equal to the NYSDEC Restricted Residential SCO
vs Reported analyte
J Estimated concentration
F1 MS and/or MSD recovery exceeds control limits
F2 MS/MSD RPD exceeds control limits
- Not applicable or sample not tested for this analyte

TABLE 2
SUMMARY OF SOIL ANALYTICAL RESULTS

Parameter Tested	Sample Identification, Approximate Sample Depth in Feet Below Ground Surface, and Sample Date									NYSDEC Soil Cleanup Objectives (SCOs)		
	RI TT-1 (TANK LOCATION) 6-7' 11/13/2024	RI MW-3 2-4' 10/15/2024	RI MW-1 2-4' 10/17/2024	RI MW-4 1-3' 10/18/2024	RI MW-4 8-10' 10/18/2024	RI MW-2 2-4' 10/18/2024	RI BH-1 4-6' 10/31/2024	RI BH-2 2-4' 10/28/2024	RI BH-3 2-4' 11/1/2024	Unrestricted	Residential	Restricted Residential
METALS/INORGANICS												
Aluminum	7580	8190 F2	6520	3220	4830	5260	1970	6600	5430.0	-	-	-
Arsenic	2.1 J	4.9	2.4 J	2.3	2.7	4.3 F1	ND	3.00	4.9	16	16	16
Barium	25	161 F1 F2	21.1	15.6	31.0	25.8 F1	11	41.2	154	350	400	400
Beryllium	0.35	0.390	0.270	0.17 J	0.21 J	0.23 F1	0.094 J	0.28	0.280	7.2	14	72
Cadmium	1.3 B	0.79	1.50	0.51	0.72	2.9 F1	0.55	0.860	3	2.5	2.5	4.3
Calcium	104000	68800	149000	178000	160000.00	140000.00	197000.00	90700	147000.00	-	-	-
Chromium	8.5	11.4	7.2	5.2	10.1	7.1 F1	4.0	9.2	9.7	30	30	110
Cobalt	4.7	4.6	3.6	1.5	2.4	2.7 F1	0.8	3.5	9.3	-	-	-
Copper	9.5	31	15.4	5.4	9.6	8.3 F1	4.0	16.1	38.4	50	270	270
Iron	9980	11600	7930	4960	6520	9090.0	3530.0	8140	8390.0	-	-	-
Lead	29.1	144	105	66.4	76.9	47.9 F1	8.9	119	291.0	63	400	400
Magnesium	62900	23200	85300	99100	75600.0	64900.0	119000	41100	69500.0	-	-	-
Manganese	434	405	585	372	470	444	590.00	448	449	1,600	2,000	2,000
Mercury	0.024	0.087	0.015 J	0.014 J	0.041	0.03	0.027	0.1300	0.68	0.18	0.81	0.81
Nickel	9.8	13.3	8.3	5.1 J	7.0	7.9 F1	3.0	8.80	11.00	30	140	310
Potassium	2110	1890	2270	1710	1970.0	1910 F1	704.0	1810	1360.00	-	-	-
Silver	ND	ND	ND	ND	ND	0.21 J F1	ND	ND	ND	2	36	180
Sodium	164 J	467	204	256	340	241 F1	187	315	224.000	-	-	-
Thallium	ND	ND	ND	ND	ND	ND	ND	ND	ND	-	-	-
Vanadium	13.7	17.4	12.9	6.7	8.1	8.0 F1	3.7	12.40	10.800	-	-	-
Zinc	521	229 F1 F2	335	147	175	643.0	149.0	303	1020	109	2,200	10,000
INORGANICS												
Total Cyanide	ND	ND	ND	ND	ND	ND	ND	ND	ND	27	27	27
SEMI-VOLATILE ORGANIC COMPOUNDS (SVOCs)												
2-Methylnaphthalene	ND	ND	0.23 J	ND	ND	ND	ND	ND	ND	-	-	-
Acenaphthene	ND	ND	0.79 J	ND	ND	ND	ND	ND	0.48 J	20	100	100
Acenaphthylene	ND	ND	ND	ND	ND	ND	ND	ND	0.32 J	100	100	100
Anthracene	ND	ND	1.7	ND	ND	ND	ND	ND	1.7 J	100	100	100
Benzo[a]anthracene	ND	ND	2.2	ND	ND	ND	ND	0.44 J F1	7.3	1	1	1
Benzo[a]pyrene	0.045 J	ND	2.2	ND	ND	ND	ND	ND	8.3	1	1	1
Benzo[b]fluoranthene	0.056 J	ND	2.5	ND	ND	ND	ND	0.64 J	9.8	1	1	1
Benzo[g,h,i]perylene	0.041 J	ND	1.6	ND	ND	ND	ND	0.4 J	4.9	100	100	100
Benzo[k]fluoranthene	ND	ND	0.94 J	ND	ND	ND	ND	ND	3.4	0.8	1	3.9
Bis(2-ethylhexyl) phthalate	ND	ND	ND	ND	ND	ND	ND	ND	ND	-	-	-
Butyl benzyl phthalate	ND	ND	0.19 J	0.32 J	5.2	1.8	ND	ND	ND	-	-	-
Carbazole	ND	ND	0.64 J	ND	ND	ND	ND	ND	0.77 J	-	-	-
Chrysene	ND	ND	2.3	ND	ND	ND	ND	ND	6.4	1	1	3.9
Dibenz(a,h)anthracene	ND	ND	0.39 J	ND	ND	ND	ND	ND	1.9	0.33	0.33	0.33
Dibenzofuran	ND	ND	0.46 J	ND	ND	ND	ND	ND	0.37 J	7	14	59
Fluoranthene	ND	ND	6.3	ND	0.15 J	ND	ND	1.1 J F1	10	100	100	100
Fluorene	ND	ND	0.72	ND	ND	ND	ND	ND	0.48 J	30	100	100
Hexachlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	-	-	-
Hexachlorobutadiene	0.047 J	ND	0.39 J	ND	ND	ND	ND	ND	ND	-	-	-
Indeno[1,2,3-cd]pyrene	0.058 J	ND	1.2	ND	ND	ND	ND	ND	4.1	0.5	0.5	0.5
Naphthalene	ND	ND	0.32 J	ND	ND	ND	ND	ND	0.35 J	12	100	100
Phenanthrene	ND	ND	6.1	ND	ND	ND	ND	0.63 J F1	6.8	100	100	100
Pyrene	ND	ND	5.1	ND	0.14 J	ND	ND	0.89 J F1	8.5	100	100	100

Notes: All units in parts per million (ppm)

ND Analyte not detected

90.3 Analyte detected

118 Reported concentration greater than or equal to the NYSDEC Unrestricted SCO

3.75 Reported concentration greater than or equal to the NYSDEC Residential SCO

21.7 Reported concentration greater than or equal to the NYSDEC Restricted Residential SCO

J Estimated concentration

F1 MS and/or MSD recovery exceeds control limits

F2 MS/MSD RPD exceeds control limits

TABLE 2
SUMMARY OF SOIL ANALYTICAL RESULTS

Parameter Tested	RI TT-1 (TANK LCOATION 6-7' 11/13/2024	RI MW-3 2-4' 10/15/2024	RI MW-1 2-4' 10/17/2024	RI MW-4 1-3' 10/18/2024	RI MW-4 8-10' 10/18/2024	RI MW-2 2-4' 10/18/2024	RI BH-1 4-6' 10-31-2024	RI BH-2 2-4' 10/28/2024	RI BH-3 2-4' 11/1/2024	NYSDEC Soil Cleanup Objectives (SCOs) Unrestricted	Residential	Restricted Residential
VOLATILE ORGANIC COMPOUNDS (VOCs)												
2-Butanone (MEK)	ND	0.0064 J F1 F2 vs	ND	ND	0.0042 J vs	ND	ND	ND	ND	0.12	100	100
Acetone	0.0084 J vs	ND	ND	0.0066 J vs	0.022 J vs	ND	ND	0.0051 J vs	0.0091 J*1vs	0.05	100	100
Benzene	ND	ND	ND	0.00039 J vs	0.00047 J vs	ND	ND	ND	0.00027 Jvs	0.06	2.9	4.8
Chloroform	0.00065 J B vs	0.00047 J vs	ND	0.00050 J vs B	0.00049 J vs B	0.00053 J vs	0.00057 JB vs	0.00072 J vs B	0.00064 JB	0.37	10	49
Ethylbenzene	ND	0.0005 J vs	ND	ND	0.0021 J vs	ND	ND	ND	ND	1	30	41
Methyl acetate	ND	ND	0.41 J	ND	ND	ND	ND	ND	ND	-	-	-
Methylcyclohexane	ND	ND	ND	ND	ND	ND	ND	ND	ND	-	-	-
Methylene Chloride	ND	ND	0.073 JB	ND	ND	ND	ND	0.013 vs B	0.019 JB vs	0.05	51	100
m-Xylene & p-Xylene	ND	0.0023	ND	ND	ND	ND	ND	ND	0.00089 J	0.26	100	100
o-Xylene	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.26	100	100
Tetrachloroethene	0.0038 J vs	ND	1.8	ND	ND	ND	ND	0.0025 J vs	ND	1.3	5.5	19
Toluene	ND	0.0014 J vs	0.06 J	0.0016 J vs	0.006 vs	ND	0.0012 J vs	0.00092 J vs	0.0011 J vs	0.7	100	100
Trichloroethene	ND	ND	1.7	ND	ND	ND	ND	0.0019 J vs	ND	0.47	10	21
Xylenes, Total	ND	0.0031 J vs	ND	0.0013 J vs	0.02 vs	ND	0.0011 J vs	ND	0.00089 J vs	0.26	100	100
ORGANOCHLORINE PESTICIDES												
4,4'-DDT	0.0012 J B	ND	ND	ND	ND	0.011 JB	ND	ND	0.016 J	0.0033	1.7	7.9
alpha-BHC	ND	ND	0.0091 JB	ND	ND	ND	ND	0.0078 J B	ND	0.02	0.097	0.48
delta-BHC	ND	ND	ND	0.00064 J	ND	ND	ND	ND	ND	0.04	100	100
Lindane	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.026	0.28	1.3
POLYCHLORINATED BIPHENYLS (PCBs)												
PCBs	ND	ND	ND	ND	ND	ND	ND	ND	ND			
HERBICIDES												
2,4,5-TP (Silvex)	ND	ND	ND	ND	ND	ND	ND	ND	ND	3.8	58	100
PER- AND POLYFLUOROALKYL SUBSTANCES (PFAS)												
D3-NMeFOSA	ND	ND	0.00015 J	ND	-	ND	ND	ND	ND	-	-	-
d3-NMeFOSAA	ND	ND	0.00056	ND	-	ND	ND	ND	ND	-	-	-
N-ethylperfluorooctanesulfonamidoacetic acid (	ND	ND	ND	ND	-	0.000082 J	ND	ND	ND	-	-	-
Perfluorobutanoic acid (PFBA)	ND	0.00019 J	ND	ND	-	ND	0.00019 J	ND	ND	-	-	-
Perfluorodecanoic acid (PFDA)	ND	ND	0.00012 J	ND	-	ND	ND	ND	ND	-	-	-
Perfluoroheptanoic acid (PFHpA)	ND	ND	0.000088 J	ND	-	ND	ND	ND	ND	-	-	-
Perfluorohexanesulfonic acid (PFHxS)	ND	ND	0.000052 J	ND	-	ND	ND	ND	ND	-	-	-
Perfluorohexanoic acid (PFHxA)	ND	ND	0.00033	ND	-	ND	ND	ND	ND	-	-	-
Perfluorononanoic acid (PFNA)	ND	ND	0.0001 J	ND	-	ND	ND	ND	ND	-	-	-
Perfluorooctanesulfonamide (PFOSA)	ND	ND	0.00052	ND	-	ND	ND	ND	ND	-	-	-
Perfluorooctanesulfonic acid (PFOS)	ND	0.00011	0.00077	0.000078 J	-	0.000045 J	0.0009	0.00011 J	0.000096 J	0.00088	0.0088	0.044
Perfluorooctanoic acid (PFOA)	ND	ND	0.00034	0.000058 J	-	ND	0.000059 J	ND	ND	0.00066	0.0066	0.033
Perfluoropentanoic acid (PFPeA)	ND	ND	0.00022 J	ND	-	ND	ND	ND	ND	-	-	-
Total PFOA/PFOS	ND	0.00011	0.00111	0.000136	-	0.000045	0.000959	0.00011	0.000096	0.0015	0.015	0.077

Notes: All units in parts per million (ppm)

ND Analyte not detected

90.3 Analyte detected

118 Reported concentration greater than or equal to the NYSDEC Unrestricted SCO

3.75 Reported concentration greater than or equal to the NYSDEC Residential SCO

21.7 Reported concentration greater than or equal to the NYSDEC Restricted Residential SCO

J Estimated concentration

F1 MS and/or MSD recovery exceeds control limits

F2 MS/MSD RPD exceeds control limits

Reported analyte

vs concentrations are

- Not applicable or sample not tested for this analyte

TABLE 3 - SUMMARY OF SOIL VAPOR ANALYTICAL RESULTS

BRYDGES ENGINEERING IN ENVIRONMENT AND ENERGY, DPC

aminants	dentification, Type of Sample, and Date Analyzed				Table 3.1 NYSDOH Indoor Air Guideline Values ($\mu g/m^3$)
	VP-1 Soil Vapor	VP-2 Soil Vapor	VP-3 Soil Vapor	VP-4 Soil Vapor	
	11/6/2024				
	Volatile Organic Compounds (TO-15)				
1,2,4-Trimethylbenzene	ND	ND	ND	2.36	-
1,2-Dichloroethane	ND	ND	ND	0.579 J	-
1,3,5-Trimethylbenzene	ND	ND	ND	2.43	-
1,3-Butadiene	0.164 J	ND	ND	4.25	-
2-Butanone	0.672 J	0.764 J	0.448 J	ND	-
4-Ethyltoluene	ND	ND	ND	1.67	-
Acetone	4.13	4.35	3.75	2.95	-
Benzene	0.668	ND	ND	37.1	-
Carbon disulfide	0.906	1.27	ND	14.4	-
Carbon tetrachloride	0.673 J	ND	1.47	2.54	-
Chloroform	8.01	0.488 J	3.69	2.17	-
Chloromethane	0.182 J	0.248 J	0.312 J	0.324 J	-
cis-1,2-Dichloroethene	0.642 J	ND	ND	ND	-
Cyclohexane	0.854	ND	ND	198	-
Dichlorodifluoromethane	2.57	8.75	4.94	15.1	-
Ethylbenzene	ND	ND	ND	1.43	-
Freon-113	ND	ND	0.399 J	0.429 J	-
Heptane	ND	0.697 J	ND	39.2	-
Hexachlorobutadiene	2.31	ND	ND	16.3	-
Isopropanol	3.15	ND	6.32	ND	-
Methylene chloride	0.855 J	ND	0.459 J	4.93	60
n-Hexane	1.03	0.730 J	ND	258	-
o-Xylene	ND	ND	ND	1.94	-
p/m-Xylene	ND	ND	ND	4.6	-
Tetrachloroethene	184	5.71	46.5	132	30
Tetrahydrofuran	0.490 J	ND	0.970 J	ND	-
Toluene	ND	ND	ND	14	-
trans-1,2-Dichloroethene	0.515 J	ND	ND	ND	
Trichloroethene	155	ND	23	6.56	2
Trichlorofluoromethane	82	22.5	389	1360	-

NO FURTHER ACTION No further action is required.

MITIGATE Above guidline values as compared to Table 3.1 Indoor Air derived by NYSDOH

ND Not detected

\- Not applicable

J Estimated concentration

TABLE 4
SUMMARY OF GROUNDWATER ANALYTICAL RESULTS

Parameter Tested	Sample Identification and Sample Date				NYSDEC TOGS 1.1.1 GA
	RI MW-3	RI MW-3 DUP	RI MW-2	RI MW-1	
	10/30/2024				
METALS					
Barium	50	48	37	39	1000
Cadmium	4.4	4.3	ND	2.5	5
Calcium	120000	117,000	89,800	115,000	-
Chromium, Trivalent	1.9 J	1.5	ND	2.7 J	50
Cobalt	0.89 J	0.63 J	0.75 J	0.76 J	-
Copper	ND	ND	ND	1.8 J	200
Iron	ND	33 J	ND	ND	600
Lead	ND	4.4 J	ND	ND	25
Magnesium	33,100	32,200	20,300	22,300	35,000
Manganese	2.5 JB	2.7 JB	53 B	12 B	600
Nickel	2.7 J	3.0 J	3.4 J	2.6 J	100
Potassium	19,100	18.8	18,200	22,800	-
Sodium	267,000	263,000	345,000	297,000	20,000
Zinc	1,400 B F1	1,400 B	340 B	520 B	2000
TOTAL CYANIDE					
Total Cyanide	**4.1 J**	**ND**	**ND**	**5.7 J**	200
SEMI-VOLATILE ORGANIC COMPOUNDS (SVOCs)					
SVOCs	ND	ND	ND	ND	Various
VOLATILE ORGANIC COMPOUNDS (VOCs)					
Carbon tetrachloride	ND	0.29 J	ND	ND	5
Chloroform	2.3	1.9	0.39 J	1.9	7
sec-Butylbenzene	ND	ND	0.81 J	ND	5
Tetrachloroethene	12 F1	11	2.3	7.0	5
Trichloroethene	3.5	3.2	1.1	2.2	5
CHLORINATED PESTICIDES					
4,4'-DDE	ND	ND	ND	0.013 J	0.2
4,4'-DDT	0.024 JB	0.022 JB	0.018 JB	0.041 JB	0.2
delta-BHC	ND	ND	ND	0.011 JB	0.04
Endosulfan II	0.013 JB	ND	0.026 JB	0.014 JB	-
Lindane	ND	ND	0.010 JB	ND	-
POLYCHLORINATED BIPHENYLS (PCBs)					
PCBs	ND	ND	ND	ND	Various
HERBICIDES					
Silvex (2,4,5-TP)	ND	ND	ND	ND	0.26

Notes: All units in microgams per liter (µg/L)
NYSDEC New York State Department of Environmental Conservation
TOGS Technical and Operational Guidance Series
ND Analyte not detected
9.58 Analyte detected
128 Analyte exceeds NYSDEC TOGS guidance value
J Estimated concentration
B Compound was found in the blank and sample
F1 MS and/or MSD recovery exceeds control limits
I Value is EMPC (Estimate Maximum Possible Concentration)
- Not applicable or sample not tested for this analyte
~ Duplicate of Sample MW2

TABLE 4
SUMMARY OF GROUNDWATER ANALYTICAL RESULTS

Parameter Tested	Sample Identification and Sample Date				NYSDEC Sampling, Analysis, and Assessment of PFAS Guidance
	MW-3	MW-3 DUP~	RI MW-2	RI MW-1	
	10/30/2024				
PER- AND POLYFLUOROALKYL SUBSTANCES (PFAS)					
Perfluorobutanoic acid (PFBA)	**17**	**17**	**11**	**17**	100
Perfluoropentanoic acid (PFPeA)	**19**	**19**	**12**	**37**	100
Perfluorohexanoic acid (PFHxA)	**18**	**18**	**16**	**38**	100
Perfluoroheptanoic acid (PFHpA)	**9.3**	**10**	**8.9**	**27**	100
Perfluorooctanoic acid (PFOA)	**16**	**16**	**21**	**42**	6.7
Perfluorononanoic acid (PFNA)	**1.5 J**	**1.4 J**	**3.3**	**4.3**	100
Perfluorodecanoic acid (PFDA)	**0.81 J**	**0.84 J**	**2.8**	**2.9**	100
Perfluorobutanesulfonic acid (PFBS)	**3.1**	**3.3**	**4.4**	**4.8**	100
Perfluoropentanesulfonic acid (PFPeS	**0.5 J**	**0.54 J**	**0.74 J**	**1.3**	100
Perfluorohexanesulfonic acid (PFHxS)	**2**	**1.9**	**2.1 J**	**4.4**	100
Perfluorooctanesulfonic acid (PFOS)	**5.2**	**5.2**	**8.8**	**13**	2.7
Total PFOA/PFOS	**21.2**	**21.2**	**29.8**	**55**	-

Notes: All units in micrograms per liter (µg/L)
NYSDEC New York State Department of Environmental Conservation
TOGS Technical and Operational Guidance Series
ND Analyte not detected
9.58 Analyte detected
128 Analyte exceeds NYSDEC Sampling, Analysis and Assessment of PFAS Guidance
J Estimated concentration
B Compound was found in the blank and sample
F1 MS and/or MSD recovery exceeds control limits
I Value is EMPC (Estimate Maximum Possible Concentration)
- Not applicable or sample not tested for this analyte
~ Duplicate of Sample RI MW-3

TABLE 1
PHASE II ESA - SUMMARY OF SOIL
ANALYTICAL RESULTS

Parameter Tested	BE3 Phase II Report April 2023 - Sample Identification, Sample Depth in feet below ground surface (bgs), and Sample Date								NYSDEC Soil Cleanup Objectives (SCOs)				
	BH1 3-6	BH4 1-2	BH5 3-6	BH6 2-4	BH7 1-4	BH8 2-4	BH9 2-4	BH10 2-4	Unrestricted	Residential	Restricted Residential	Commerical	Industrial
	3/9/2023	4/3/2023											
METALS/INORGANICS													
Arsenic	1.8	5.1	4.5	4.9	4.0	4.7	6.0	3.6	13	16	16	16	16
Barium	20.9	**885**	**827**	**4950**	63	87.7	73	128	410	410	410	410	10,000
Beryllium	0.5	0.40	0.17 J	0.43	0.31	0.45	0.45	0.24	4.4	8.8	43	670	750
Cadmium	1.1	0.66	0.58	0.98	0.56	0.87	1.40	0.67	2.5	2.5	2.5	3.7	4.4
Chromium	4.9	13.7	14.6	18.4	9.8	16.0	13.2	15.8	30	30	110	1,700	2,000
Copper	8.9	18.7	16.1	25.6	16.8	22.8	19.0	17.7	50	280	280	280	10,000
Lead	**65**	**490**	**100**	**904**	**115**	**154**	**134**	**185**	63	400	400	1,000	3,900
Manganese	647	495 B	464 B	585 B	425 B	556 B	589 B	505 B	1,600	2,000	2,000	10,000	10,000
Mercury	**0.43**	0.13	0.33	**0.58**	0.24	**0.46**	**0.53**	**0.76**	0.18	0.26	0.26	1.1	1.1
Nickel	3.6 J	10.0	7.7	9.5	8.7	12.8	13.5	7.3	30	44	210	320	3,400
Selenium	1.2 J	ND	ND	ND	ND	ND	0.61 J	ND	4	22	110	1,700	2,000
Silver	ND	ND	0.27 J	0.34	ND	0.35 J	0.42 J	ND	2	22	110	1,700	2,000
Zinc	**324**	**394**	**476**	**638**	**241**	**331**	**441**	**241**	109	1,300	6,600	10,000	10,000
SEMI-VOLATILE ORGANIC COMPOUNDS (SVOCs)													
Acenaphthene	ND	ND	ND	ND	ND	ND	ND	ND	20	100	100	500	1,000
Acenaphthylene	ND	0.42 J	ND	2.7 J	0.27 J	ND	ND	ND	100	100	100	500	1,000
Anthracene	ND	1.1 J	ND	2.8 J	0.57 J	ND	0.93 J	ND	100	100	100	500	1,000
Benzo(a)anthracene	ND	**3**	ND	**9.8**	**1.9**	0.89 J	**1.8 J**	ND	1	1	1.4	37	37
Benzo(a)pyrene	ND	**2.8**	ND	**8.2**	**2.0**	0.79 J	**1.7 J**	0.41 J	1	1	1	3.7	3.7
Benzo(b)fluoranthene	ND	2.8	ND	11.0	2.3	0.9 J	**1.7 J**	0.46 J	1	1	1.4	37	37
Benzo(g,h,i)perylene	ND	**2**	ND	**5.40**	**1.30**	0.53 J	**0.82 J**	0.23 J	0.64	1.2	4.9	47	78
Benzo(k)fluoranthene	ND	**1.7 J**	ND	**4.70**	**0.88**	0.5 J	**1.0 J**	0.28 J	0.8	1.2	4.9	47	78
Chrysene	ND	**2.6**	ND	**10**	**1.8**	0.81 J	**1.6 J**	0.44 J	1	1.2	4.9	47	78
Dibenz(a,h)anthracene	ND	**0.47 J**	ND	**2.1 J**	**0.38 J**	ND	ND	ND	0.33	0.33	0.33	3.7	3.7
Dibenzofuran	ND	0.24 J	ND	0.48 J	ND	ND	ND	ND	2.1	4.2	18	180	290
Fluoranthene	0.31 J	7.1	ND	22.0	4.0	1.8 J	4.1	1.1 J	85	100	100	500	1,000
Fluorene	ND	0.3 J	ND	ND	ND	ND	0.29 J	ND	30	100	100	500	1,000
Indeno(1,2,3-cd)pyrene	ND	**1.8**	ND	**5.3**	**1.1 J**	0.45 J	**0.76 J**	ND	0.5	0.5	1.4	37	37
Naphthalene	ND	ND	ND	ND	ND	ND	ND	ND	12	84	100	500	1,000
Phenanthrene	ND	**4.7**	ND	**13.0**	**1.9**	0.77 J	**3.0**	0.56 J	1.1	1.2	4.9	47	78
Pyrene	0.26 J	4.6	ND	14.0	2.7	1.3 J	2.9	0.7 J	64	100	100	500	1,000
VOLATILE ORGANIC COMPOUNDS (VOCs)													
1,2,4-Trimethylbenzene	-	-	-	-	-	ND	ND	-	0.51	0.51	0.52	2.2	2.2
1,3,5-Trimethylbenzene	-	-	-	-	-	ND	ND	-	0.51	0.51	0.52	2.2	2.2
2-Butanone (MEK)	-	-	-	-	-	ND	0.0059 J	-	0.1	100	100	500	1,000
Acetone	-	-	-	-	-	0.009 J	0.052	-	0.03	100	100	500	1,000
Benzene	-	-	-	-	-	ND	0.00027 J	-	0.06	1.2	3.7	20	20
Chloroform	-	-	-	-	-	0.00051	0.00049 J	-	0.37	4.8	24	180	180
Ethylbenzene	-	-	-	-	-	ND	ND	-	1	32	76	390	390
Toluene	-	-	-	-	-	ND	ND	-	0.7	100	100	500	1,000
Xylenes, Total	-	-	-	-	-	ND	ND	-	0.26	100	100	500	1,000

ND Analyte not detected
\- Not Applicable or sample not tested for this analyte
J Estimated Concentration
B Analyte detected in method blank
K Result is reported as Benzo(b)fluoranthene
E Results exceeded calibration range
T Result is Tentatively Identifies Compound and an estimated value

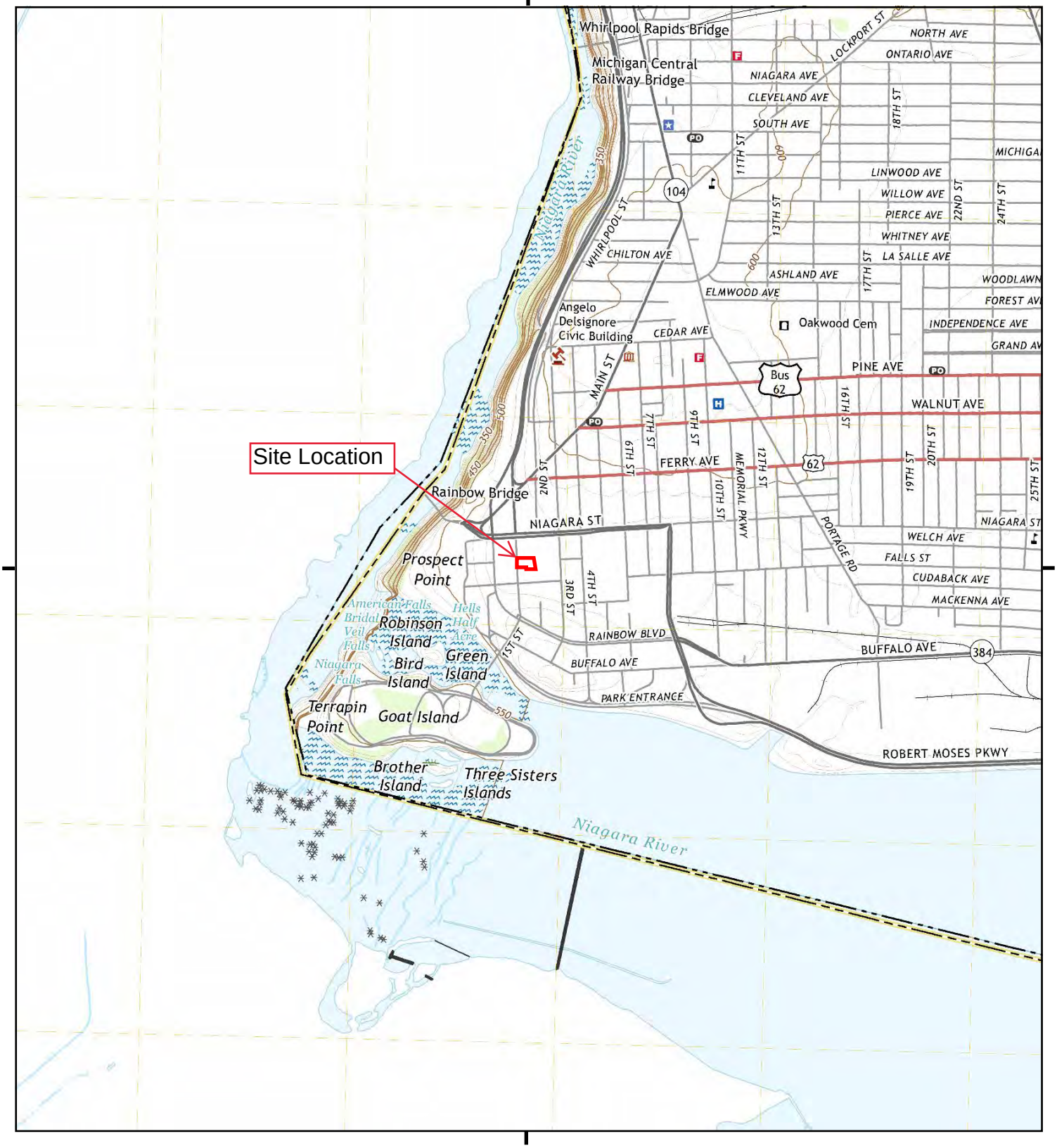
Analyte detected
Reported concentration greater than or equal to the NYSDEC Unrestricted SCO
Reported concentration greater than or equal to the NYSDEC Residential SCO
Reported concentration greater than or equal to the NYSDEC Restricted Residential SCO
Reported concentration greater than or equal to the NYSDEC Commercial SCO
Reported concentration greater than or equal to the NYSDEC Industrial SCO

FIGURES

BRYDGES ENGINEERING
IN ENVIRONMENT AND ENERGY, DPC

Figure 1 - Historical Topo Map

2019



This report includes information from the following map sheet(s).

0 Miles 0.25 0.5 1 1.5

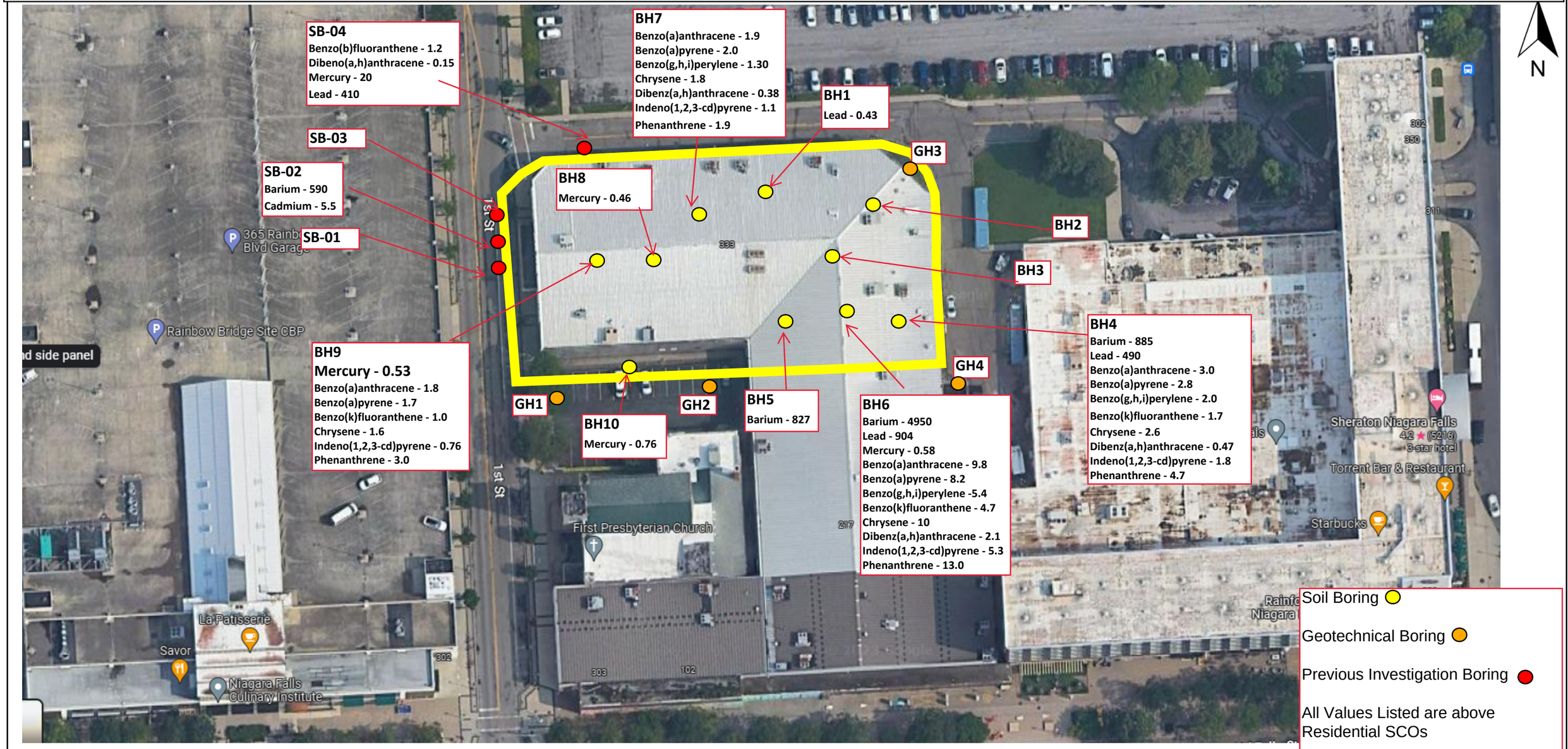
NW N NE
W E
SW S SE

TP, Niagara Falls, 2019, 7.5-minute

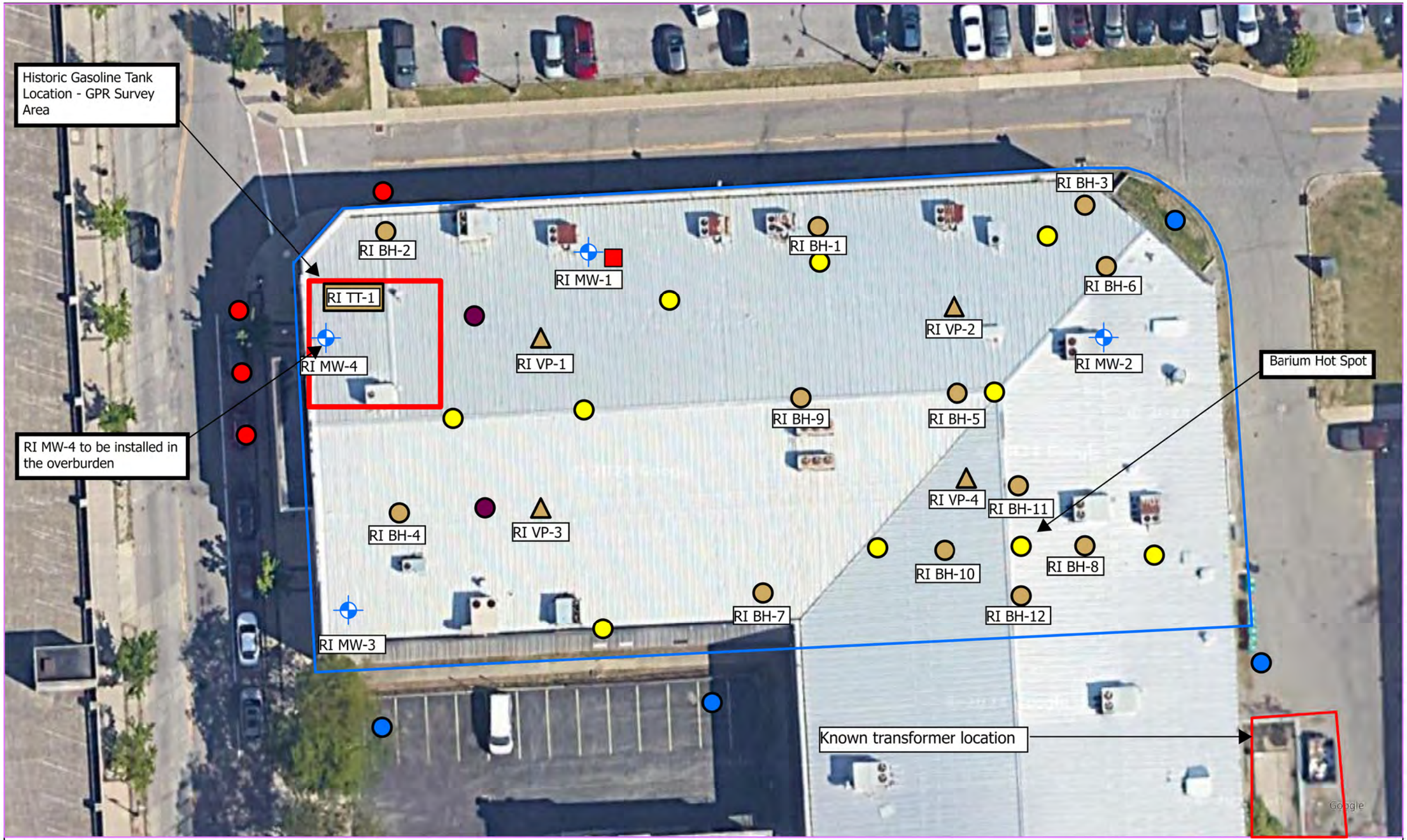
SITE NAME: Old Falls
ADDRESS: 333 1st Street
NIAGARA FALLS, NY 14303
CLIENT: BE3

N

Figure 2: Phase II ESA Sample Analytical Data



BRYDGES ENGINEERING IN ENVIRONMENT AND ENERGY, DPC	Figure 2: Old Falls Street Boring Locations	
	Old Falls Street	4/3/2023
	Niagara Falls, New York	Edgemere



LEGEND

- LiRo 2019 Phase II Soil Boring
- BE3 2023 Soil Boring
- LiRo 2019 Phase II Vapor
- Project Boundary
- Foundation Design 2023 Geotechnical Boring
- Proposed RI Bedrock Monitoring Well
- Proposed RI Soil Boring
- Proposed RI Vapor Point
- Proposed RI Test Trench/Pit
- Existing Floor Drain

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Figure 3 - RI Sampling Plan With Previous Investigation Locations

The Nest Site
333 1st Street,
Buffalo, NY 14203

N

DATE ISSUED:
May 3, 2024

Scale: 1" = 46'

RI BH-2 (2-4')	Result (ppm)	Unrestricted (ppm)	Restricted Residential (ppm)
Lead	119	63	400
Zinc	303	109	10000

RI VP-1	Result (ppm)	Unrestricted (ppm)	Restricted Residential (ppm)
Benzo[a]anthracene	1.0 J F1 F1	1	1
Benzo[a]pyrene	1.1 J F1 F2	1	1
Benzo[b]fluoranthe	1.3 J F1 F2	1	1
Indeno[1,2,3-cd]pyr	0.55 J F1 F2	0.5	0.5
Lead	68.9	63	400
Zinc	205 F1	109	10000

RI TT-1 (6-7')	Result (ppm)	Unrestricted (ppm)	Restricted Residential (ppm)
Zinc	521	109	10000

RI MW-4 (1-3')	Result (ppm)	Unrestricted (ppm)
Lead	66.4	63
Zinc	147	109
RI MW-4 (8-10')		
Lead	76.9	63
Zinc	175	109

RI BH-4 (2-4')	Result (ppm)	Unrestricted (ppm)	Restricted Residential (ppm)
Lead	155	63	400
Mercury	0.79	0.18	0.81
Zinc	401	109	10000
Benzo[a]anthracene	3.9	1	1
Benzo[a]pyrene	3	1	1
Benzo[b]fluoranthene	3.3	1	1
Benzo[k]fluoranthene	1.9	0.8	3.9
Chrysene	3.3	1	3.9
Dibenz(a,h)anthracene	0.53 J	0.33	0.33
Indeno[1,2,3-cd]pyrene	1.5	0.5	0.5

RI VP-3 (2-4')	Result (ppm)	Unrestricted SCO (ppm)	Restricted Residential (ppm)
Benzo(a)anthracene	2.5 J F1 F2	1	1
Lead	176 F1 F2	63	400
Mercury	4.5	0.18	0.81
Zinc	177 F1 F2	109	10000

RI MW-3 (2-4')	Result (ppm)	Unrestricted (ppm)
Lead	144	63
Zinc	229 F1 F2	109

RI MW-1 (2-4')	Result (ppm)	Unrestricted (ppm)	Restricted Residential (ppm)
Lead	105	63	400
Zinc	335	109	10000
Benzo[a]anthracene	2.2	1	1
Benzo[a]pyrene	2.2	1	1
Benzo[b]fluoranthe	2.5	1	1
Benzo[k]fluoranthe	0.94 J	0.8	3.9
Chrysene	2.3	1	3.9
Dibenz(a,h)anthrac	0.39 J	0.33	0.33
Indeno[1,2,3-cd]py	1.2	0.5	0.5
Methylene Chloride	0.073 JB	0.05	100
Tetrachloroethene	1.8	1.3	19
Trichloroethene	1.7	0.47	21

RI BH-7 (2-4')	Result (ppm)	Unrestricted (ppm)	Restricted Residential (ppm)
Copper	102	50	270
Lead	95.9	63	400
Mercury	0.39	0.18	0.81
Zinc	357	109	10000
Benzo[a]anthracene	8.2	1	1
Benzo[a]pyrene	7.4	1	1
Benzo[b]fluoranthene	8.4	1	1
Benzo[k]fluoranthene	4.1	0.8	3.9
Chrysene	8	1	3.9
Dibenz(a,h)anthracene	1.2 J	0.33	0.33
Indeno[1,2,3-cd]pyrene	3.9	0.5	0.5
4,4'-DDT	0.0086 J	0.0033	7.9

RI BH-1 (4-6')	Result (ppm)	Unrestricted (ppm)	Restricted Residential (ppm)
Zinc	149	109	10000
4,4'-DDT	0.0009	0.00388	0.044

RI VP-2 (2-4')	Result (ppm)	Unrestricted (ppm)
Zinc	175	109

RI BH-9 (4-6')	Result (ppm)	Unrestricted (ppm)
Zinc	282	109

RI VP-4 (2-4')	Result (ppm)	Unrestricted (ppm)
Zinc	395	109
RI VP-4 QA/QC (2-		
Zinc	386	109

RI BH-10 (2-4')	Result (ppm)	Unrestricted (ppm)	Restricted Residential (ppm)
Mercury	0.41	0.18	0.81
Zinc	148	109	10000
Benzo[a]anthracene	1.4 J	1	1
Benzo[a]pyrene	1.5 J	1	1
Benzo[b]fluoranthene	1.9 J	1	1
Chrysene	1.5 J	1	3.9
Indeno[1,2,3-cd]pyrene	0.98 J	0.5	0.5

RI BH-3 (2-4')	Result (ppm)	Unrestricted (ppm)	Restricted Residential (ppm)
Cadmium	3	2.5	4.3
Lead	291	63	400
Mercury	0.68	0.18	0.81
Zinc	1020	109	10000
Benzo[a]anthracene	7.3	1	1
Benzo[a]pyrene	8.3	1	1
Benzo[b]fluoranthene	9.8	1	1
Benzo[k]fluoranthene	3.4	0.8	3.9
Chrysene	6.4	1	3.9
Dibenz(a,h)anthracene	1.9	0.33	0.33
Indeno[1,2,3-cd]pyrene	4.1	0.5	0.5

RI BH-6 (2-4')	Result (ppm)	Unrestricted (ppm)	Restricted Residential (ppm)
Lead	484	63	400
Zinc	365	109	10000
RI BH-6 (7-8')			
Zinc	996	109	10000

RI MW-2 (2-4')	Result (ppm)	Unrestricted (ppm)	Restricted Residential (ppm)
Cadmium	2.9	2.5	4.3
Zinc	643	109	10000
4,4'-DDT	0.011 JB	0.0033	7.9

RI BH-11 (0-2')	Result (ppm)	Unrestricted (ppm)
Zinc	150 F1	109

RI BH-8 (2-6')	Result (ppm)	Unrestricted (ppm)	Restricted Residential (ppm)
Barium	415	350	400
Lead	188	63	400
Zinc	193	109	10000
Benzo[b]fluoranthene	1.1 J	1	1
Indeno[1,2,3-cd]pyrene	0.54 J	0.5	0.5

RI BH-12 (2-4')	Result (ppm)	Unrestricted (ppm)
Lead	118	63
Mercury	0.47	0.18
Zinc	148	109

RI BH-2 RI MW-1 RI BH-1 RI BH-3 RI TT-1 RI VP-1 RI VP-2 RI BH-6 RI MW-4 RI BH-9 RI BH-5 RI MW-2 RI BH-4 RI VP-3 RI VP-4 RI BH-11 RI BH-10 RI BH-8 RI MW-3 RI BH-7 RI BH-12

oogle

LEGEND

- LiRo 2019 Phase II Soil Boring
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Figure 4 - RI Soil Analytical Results Summary

The Nest Site
333 1st Street,
Buffalo, NY 14203

N

DATE ISSUED:
Dec 15, 2024

Scale: 1" = 46'

RI MW-1	Result (ppb)	TOGS Guidance
Tetrachloroethylene	7	5
Sodium	297000	20000
	Result (ppt)	**NYSDEC PFAS Guidance**
PFOA	42	6.7
PFOS	13	2.7

RI MW-2	Result (ppb)	TOGS Guidance
Sodium	345000	20000
	Result (ppt)	**NYSDEC PFAS Guidance**
PFOA	21	6.7
PFOS	8.8	2.7

RI VP-1	Result (ppb)	NYSDOH Indoor Air Guidance
Tetrachloroethene	184	30
Trichloroethylene	155	2

RI VP-3	Result (ppb)	NYSDOH Indoor Air Guidance
Tetrachloroethene	46.5	30
Trichloroethylene	23	2

RI MW-3 DUP	Result (ppm)	TOGS Guidance (ppm)
PFOA	16	6.7
PFOS	5.2	2.7

RI MW-3	Result (ppm)	TOGS Guidance (ppm)
PFOA	16	6.7
PFOS	5.2	2.7

RI MW-3 DUP	Result (ppm)	TOGS Guidance (ppm)
Sodium	263000	20000
Tetrachloroethylene	11	5

RI MW-3	Result (ppm)	TOGS Guidance (ppm)
Sodium	267000	20000
Tetrachloroethylene	12 F1	5

RI VP-4	Result (ppb)	NYSDOH Indoor Air Guidance
Tetrachloroethylene	132	30
Trichloroethylene	6.56	2

RI BH-1
RI BH-2
RI BH-3
RI BH-4
RI BH-5
RI BH-6
RI BH-7
RI BH-8
RI BH-9
RI BH-10
RI BH-11
RI BH-12
RI MW-1
RI MW-2
RI MW-3
RI MW-4
RI TT-1
RI VP-1
RI VP-2
RI VP-3
RI VP-4

Google

LEGEND

- LiRo 2019 Phase II Soil Boring
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- Proposed RI Test Trench/Pit
- Existing Floor Drain

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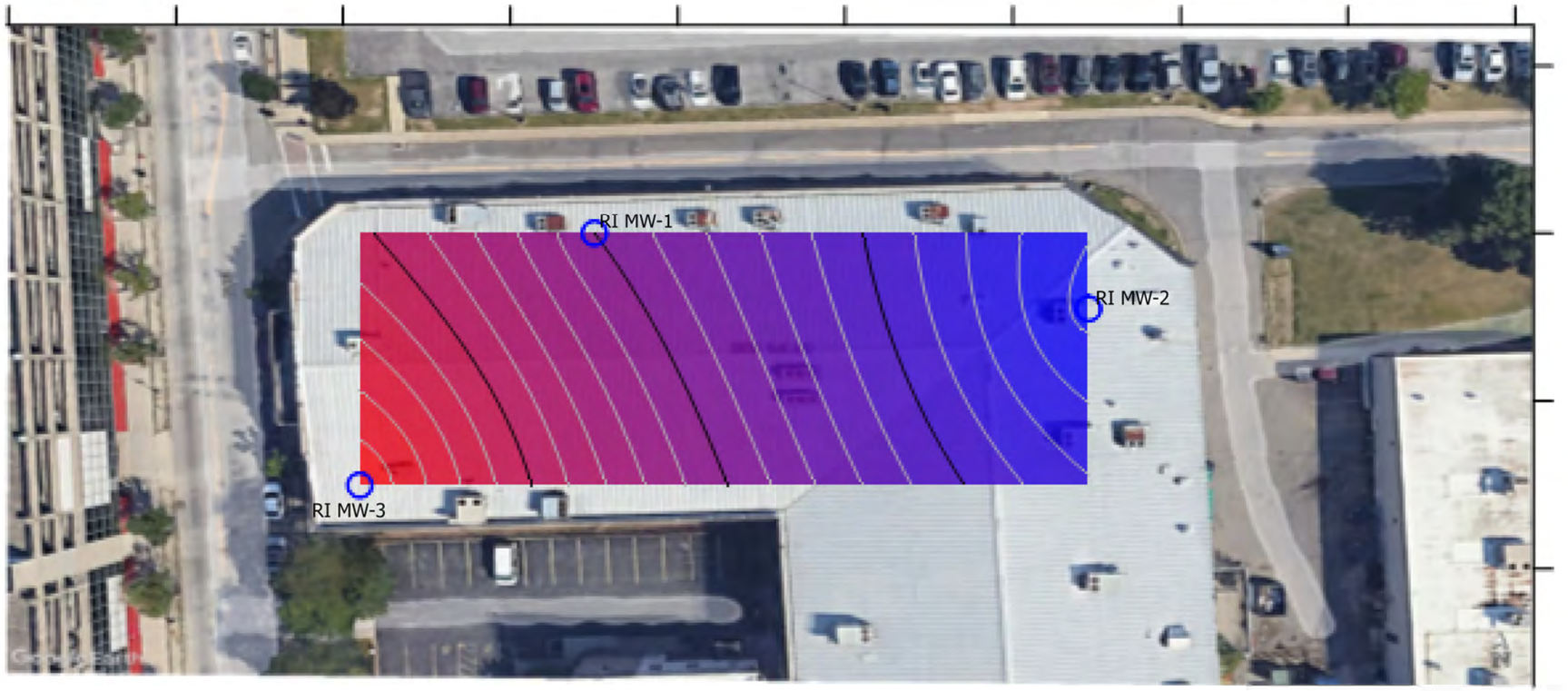
Figure 5 - RI Soil Vapor and Groundwater Analytical Results Summary

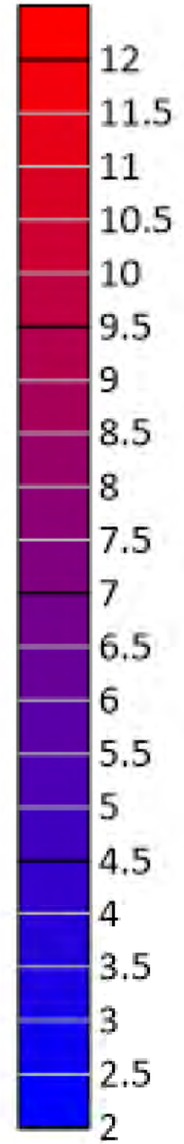
The Nest Site
333 1st Street,
Buffalo, NY 14203

N

DATE ISSUED:
Dec 15, 2024

Scale: 1" = 46'





Units: parts per billion (ppb)

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Figure 6 - RI PCE Contour

The Nest Site
333 1st Street,
Buffalo, NY 14203

DATE ISSUED:
Dec 12, 2024

△
△
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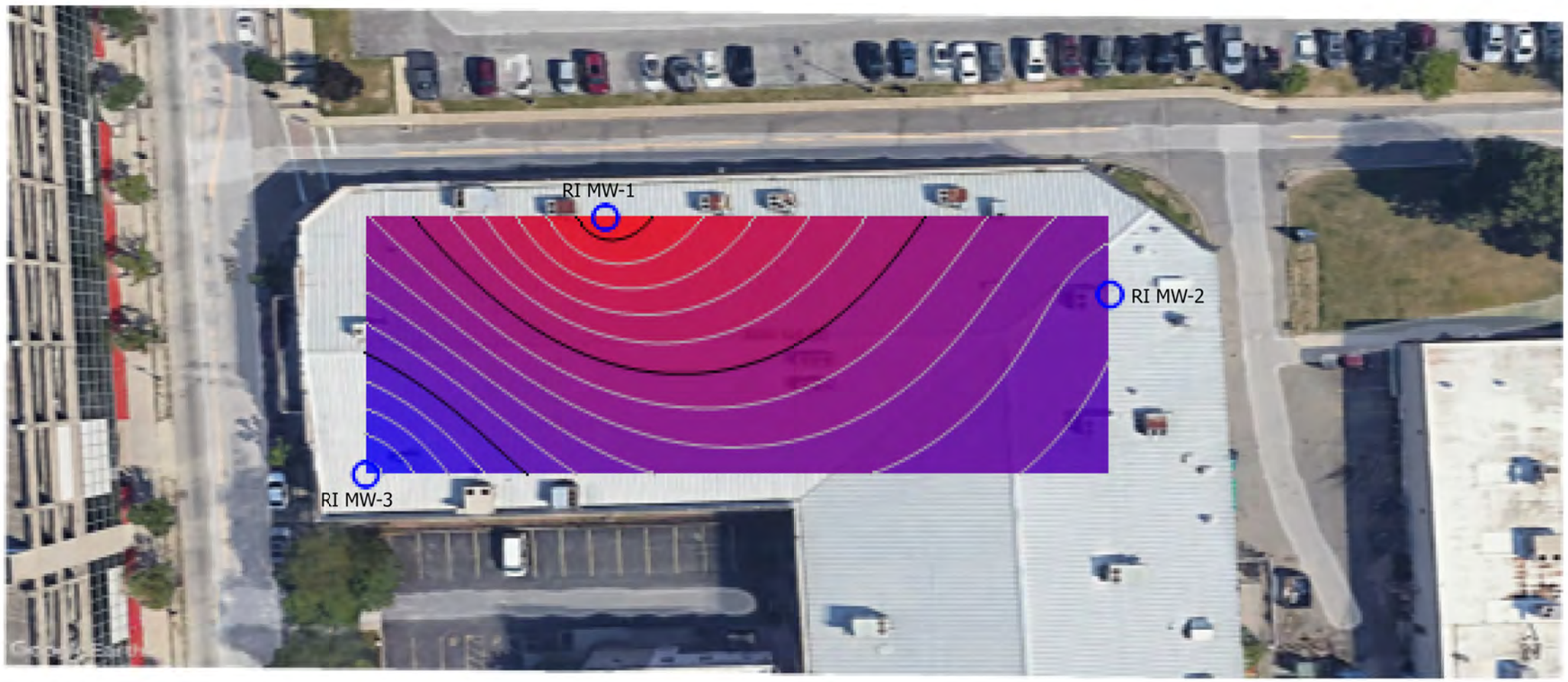
△

Scale: 1" = 41'



13
12.5
12
11.5
11
10.5
10
9.5
9
8.5
8
7.5
7
6.5
6
5.5
5

Units: parts per trillion (ppt)

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Figure 7 - RI PFOS Contour

The Nest Site
333 1st Street,
Buffalo, NY 14203

DATE ISSUED:
Dec 12, 2024

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△
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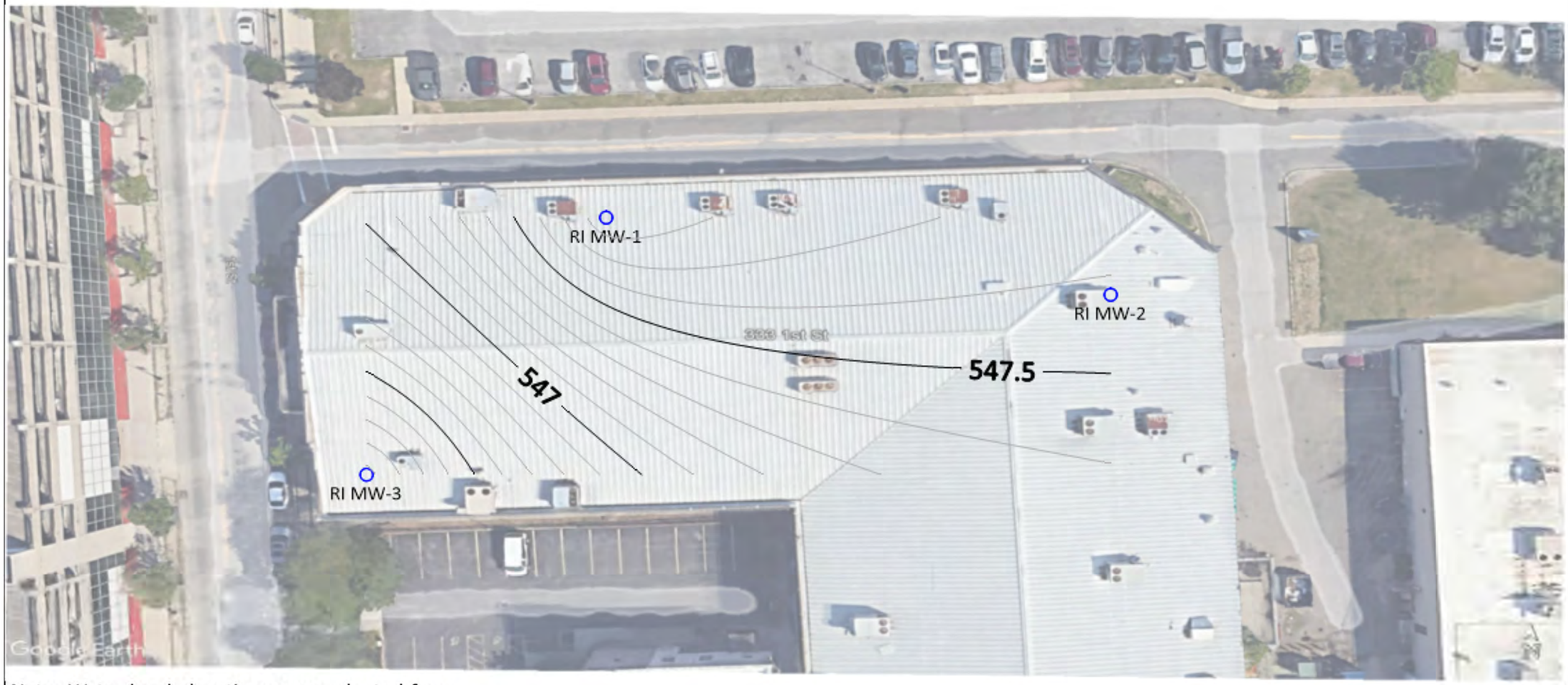
△

Scale: 1" = 40'



Note: Water level elevations were adapted from
Site survey and field measurement data

RI Monitoring Well Survey Elevations:	Water Level Elevations:
RI MW-1: 569.18' ASL (above sea level)	RI MW-1: 547.88' ASL (above sea level)
RI MW-2: 569.48' ASL	RI MW-2: 547.58' ASL
RI MW-3: 569.26' ASL	RI MW-3: 546.08' ASL

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Figure 8 - RI Groundwater Elevation Contour

The Nest Site
333 1st Street,
Buffalo, NY 14203

DATE ISSUED:
Dec 12, 2024

△
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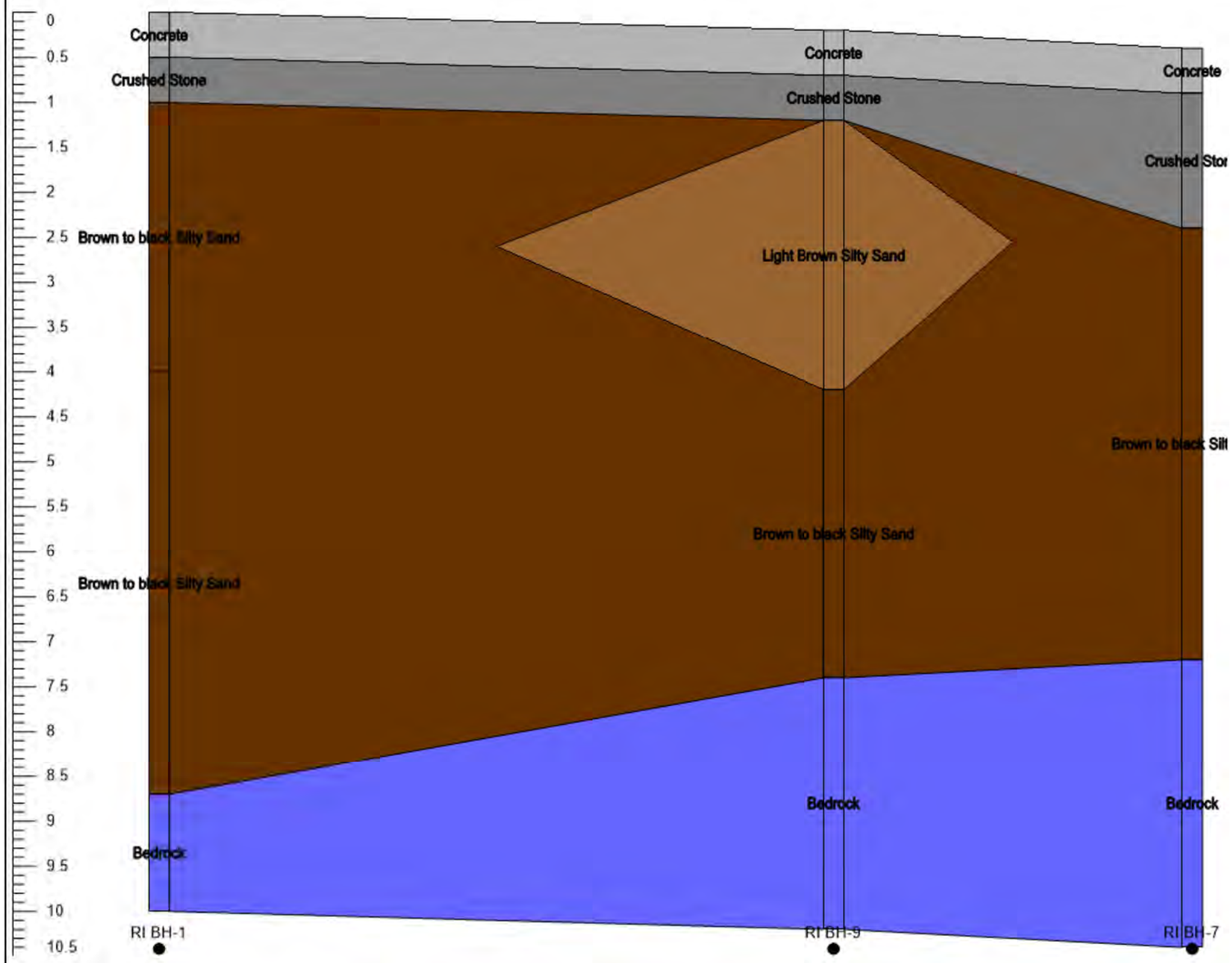
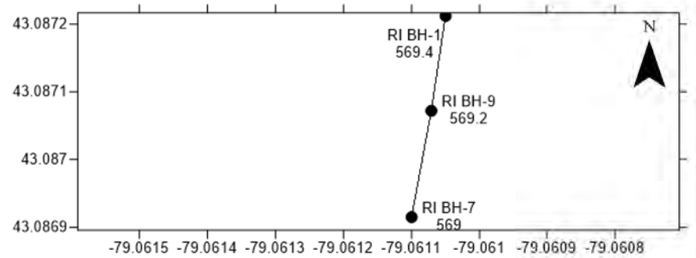
△

Scale: 1" = 31'



Note: Depth Units are in feet



Note:
1. Depth Units are in feet
2. Fill materials consist of primarily light brown to brown to black silty sands with some clay and various debris (brick, concrete, and glass, etc.)

Legend Title

- Bedrock
- Brown to Black Clay
- Brown to black Silty Sand
- Concrete
- Crushed Stone
- Light Brown Silty Sand

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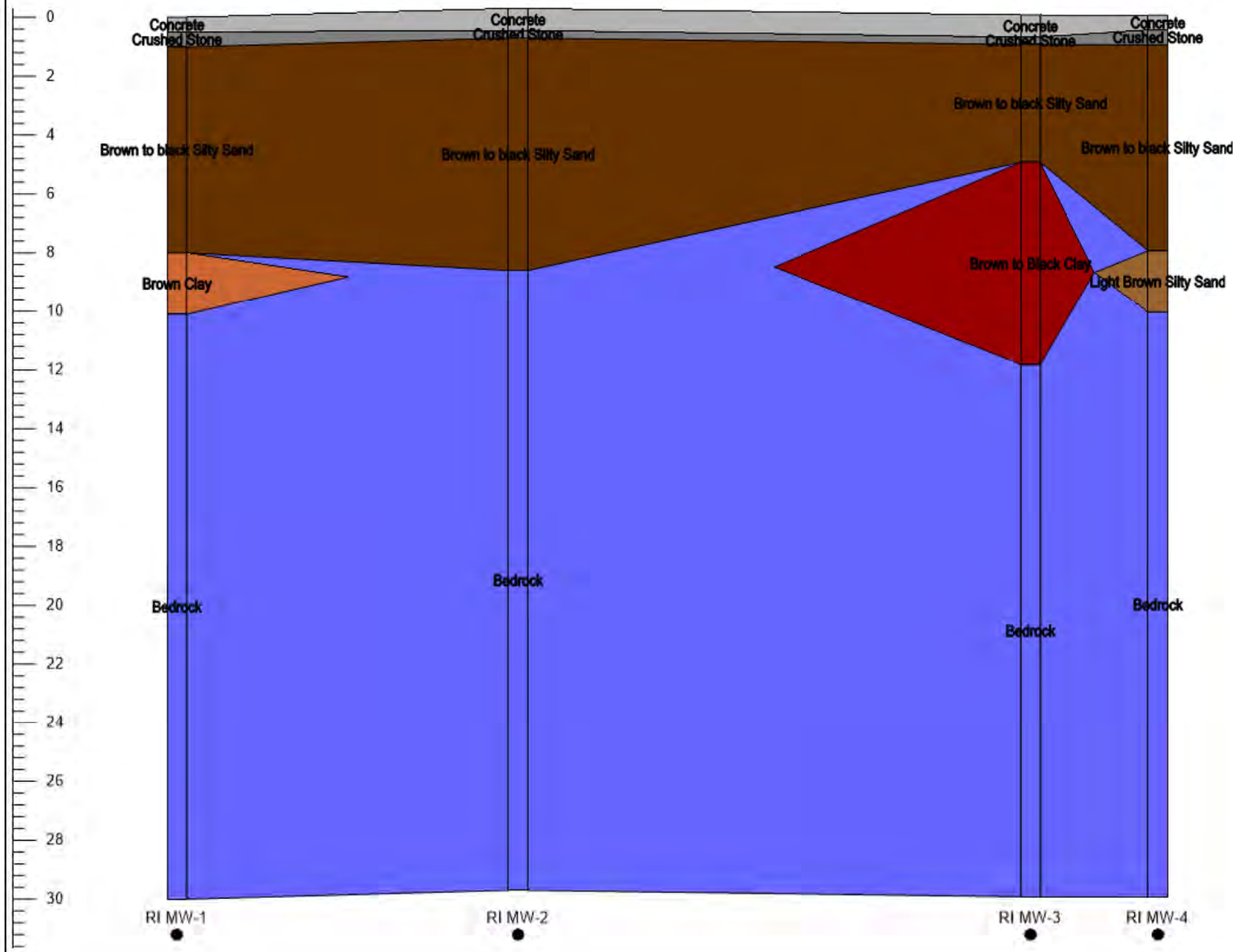
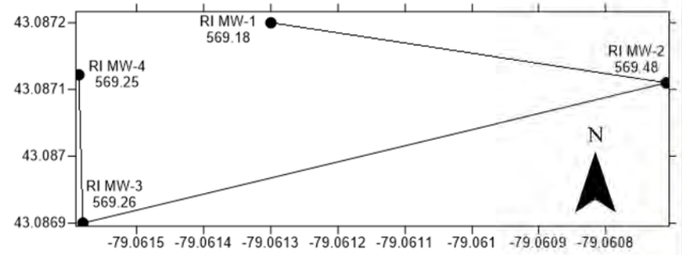
Figure 9 - Geological Cross Section A

The Nest Site
333 1st Street,
Buffalo, NY 14203

DATE ISSUED:
Dec 27, 2024

△
△
△
△





Legend Title

- Bedrock
- Brown Clay
- Brown to Black Clay
- Brown to black Silty Sand
- Concrete
- Crushed Stone
- Light Brown Silty Sand

Note:

1. Depth Units are in feet
2. Fill materials consist of primarily light brown to brown to black silty sands with some clay

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CLIENT - COMMUNITY SERVICES SEVENTH HOUSING

Figure 10 - Geological Cross Section B

The Nest Site
333 1st Street,
Buffalo, NY 14203

DATE ISSUED:
Dec 27, 2024

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△
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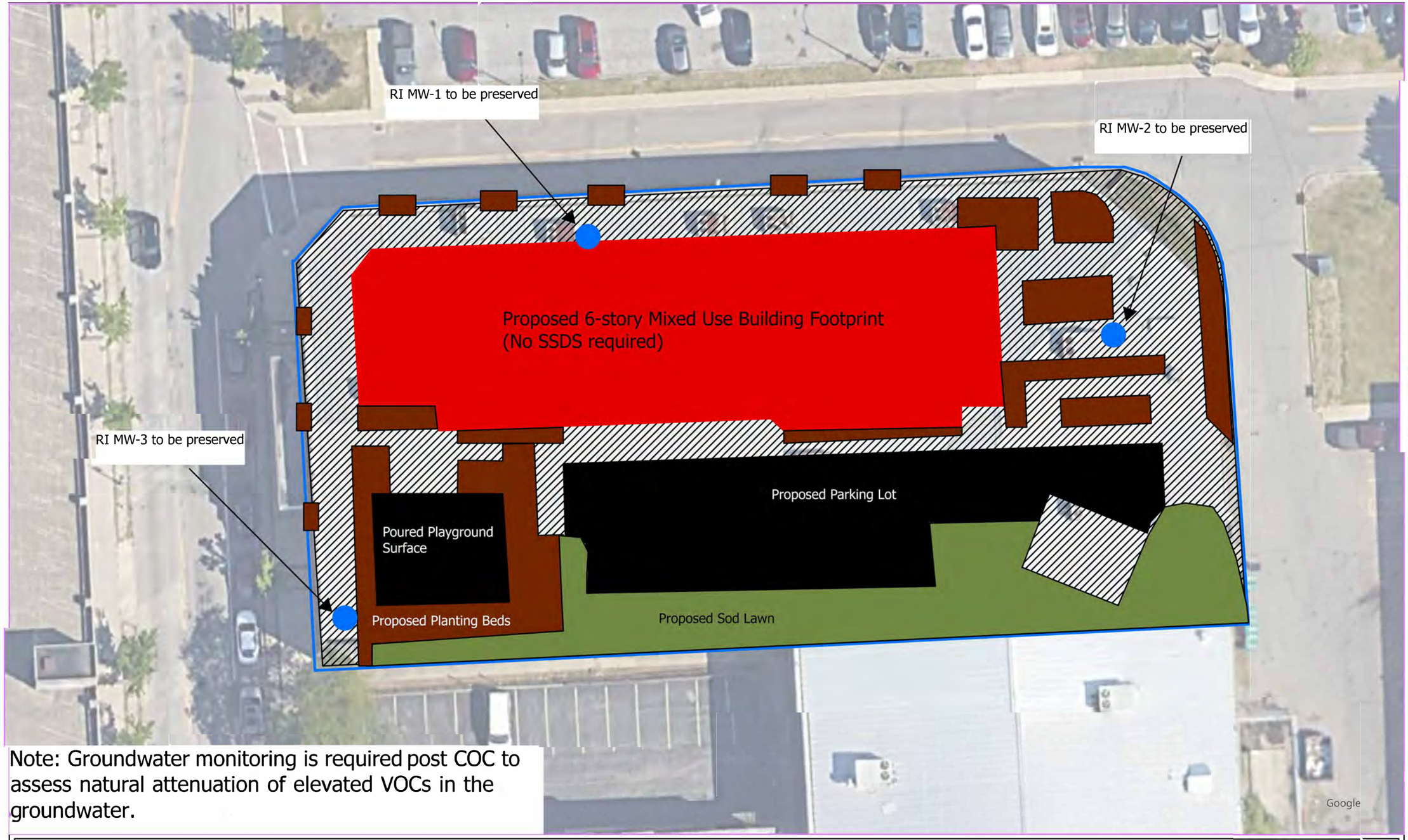
△



Note: Groundwater monitoring is required post COC to assess natural attenuation of elevated VOCs in the groundwater.

LEGEND

- Project Boundary
- Proposed Planting Beds
- Proposed Sod Lawn
- Proposed Concrete/Aggregate Hardscape
- Proposed Building Footprint
- Proposed Asphalt Hardscape

New Building Footprint - 13,635 sq ft.
Asphalt - 10,000 sq ft.
Concrete - 9,500 sq ft.
Playground - 1462 sq ft.
Sod Lawn and Planting - 7,500 sq ft.
-Remove approximately 1 feet of hardscape and underlying subbase
-Remove approximately 7 feet of soil fill to meet Unrestricted Use SCOs or bedrock.
-Replace with clean soil or hardscape

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CLIENT - COMMUNITY SERVICES SEVENTH HOUSING

Figure 11 - Track 1 Unrestricted Use Remedy

The Nest Site
333 1st Street,
Buffalo, NY 14203

N

DATE ISSUED:
Dec 12, 2024
△
△
△
△

Scale: 1" = 46'

Old Falls Street Site Boundary
Old Falls Street & 1st Street

Access Road

220.31' Deed & Measure

18.50' Deed & Measure

Ex "X" Cut (0.16' E)

Ex "X" Cut (0.45' W)

Ex Pin

R= 36.00'
L= 56.55'
Angle = 90°00'00"

Wooden Planter Wall

Lands N/F
City of Niagara Falls
Tax Map Parcel 159.09-1-1.2

Lot 60

Lot 27

Formal 16.5' Wide Alley

Easement For Hydraulic Tunnel or Sewer
To Niagara River Hydraulic Tunnel Power & Sewer Company
Liber 193, Pages 555, 566, 557, 568, 580, 583 And 587

Adams Station Tunnel

Parcel: 159.09-1-2.11

New North Lot
42898± Sq. Ft
0.985± Acres

Lot 62

Lot 25

125.16' Deed & Measure

Covered Entrance

101.15' Measure

Second Secret Amendment
Liber 1552, Pages 701 & 702.
(See Reservations Re: Utilities)

Parcel: 159.09-1-2.12

Parcel: 159.09-1-2.11

Lot 64

Ex "X" Cut (2.2' S) (3.6' W)

271.15' Measure

140.0'

Ex "X" Cut

140.25' Deed & Measure

130.90' Measure

Parcel: 159.09-1-2.11

163.65' Deed & Measure

62.50' Measure

Formerly Little Fourth Street (Public Roadway) 159.09-1-2.12

Parcel Formerly Dedicated To City Of Niagara Falls Released To N.C.I.D.A. (Source Unknown)

Lot 21

Ex Pin (0.14' S) (0.33' W)

17.08' Deed & Meas.

Ex Pin (0.20' S) (0.14' W)

27.00' Deed & Measure

16.00' Deed & Measure

Ex. Pin & Cap (0.24' W) (0.10' S)

27.0'

Ex 1/4" Pin (0.11' N) ±1.0' Above Ground

Conc. Loading Dock

Deor 0.38'

1st Street (66' Wide)
(Formerly Rainbow Boulevard North)
(Public Roadway)

Eastern Side 1st Street

Parallel

Lands N/F
First Presbyterian Society
Of Niagara Falls
Tax Map Parcel 159.09-1-14

Lot 66

153.50' Deed & Measure

Parcel: 159.09-1-14

Lot 68

Wood Deck

Lot 19

New South Lot
42898± Sq. Ft
0.985± Acres

Lands Now or Formerly
NFNY Hotel Management LLC
Instrument No. 2011-02983
Tax Parcel Id: 159.09-1-3

140.25' Deed & Measure

Wall Not Directly Measurable

Bldg. Cor (0.8' W)

Ex "X" Cut

Bldg. Cor (0.16' S) (1.80' E)

66.00' Deed & Measure

65.9'

Centerline

130.00' Deed & Measure

Hotel

6.35'

Bldg. Cor (2.13' E)

Ex "X" Cut

Wall Not Measurable

305.63' Deed & Measure

Enclosed Walkway
Owned By City of Niagara Falls

Corner Not Set
No Access

Northerly Side Old Falls Street
North Line of Old Falls Street (Formerly Rainbow Mall)
Walls of Two Structures Abut Along Property Line

Old Falls Street (99' Wide)

Formerly Rainbow Mall (99' Wide)
Formerly Old Falls Street)
(Public Roadway)
Pedestrian Traffic Only

Map Reference:
Map By J.C. Haines Dated 12/20/1861 -
Filed N.C.C.O. In Cover 389.

30' 0 30' 60'

SCALE BAR
IN FEET

FIGURE 12 - SITE SURVEY MAP

Owners Signatures: _____

_____

Approved in accordance with Article V of the Niagara Falls Subdivision Regulations

City Engineer: _____ Date: _____

City Assessor: _____ Date: _____

Director of planning: _____ Date: _____

"Pursuant to chapter 605 of the laws of 1985, I certify that this Subdivision map was prepared under my direction and the outbounds survey of the premises contained within said subdivision was prepared under my direction and is shown on my map dated January 18, 2023."

Niagara Boundary
And Mapping Services

PO Box 1120
Lewiston, NY 14092
(716) 297-9584

E-Mail:
lee@niagaraboundary.com

Map Showing Subdivision of Property Owned by

USA Niagara Development Corporation

Deed Reference: Instrument No. 2019-04063
Tax ID: 159.09-1-2.11 & 159.09-1-2.12

LOT	SECTION	TOWNSHIP	RANGE
43 Mile Reserve			

City	Niagara Falls
COUNTY	Niagara
STATE	New York
DATE	January 18, 2023
SCALE	1" = 30'
JOB NO.	4551-23
REVISIONS	

"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."

THIS SURVEY WAS PREPARED FOR THE PARTIES AND PURPOSE INDICATED HEREON. ANY EXTENSION OF THE USE BEYOND THE PARTIES OR PURPOSE INDICATED IS EXPRESSLY FORBIDDEN WITHOUT WRITTEN RELEASE OR PERMISSION OF THE UNDERSIGNED.

USE OF THIS SURVEY IN CONJUCTION WITH AN AFFIDAVIT OF NO CHANGE IS FORBIDDEN

Kenneth L. Slaugenhoupt Lic. No. 50349

FILE: Z:*nbms (Ndsvr01) (Z)*Active Projects*4551 1St Street Apartments*4551 January 20 2023.dgn

APPENDIX A

HEALTH AND SAFETY PLAN

BRYDGES ENGINEERING
IN ENVIRONMENT AND ENERGY, DPC

HEALTH AND SAFETY PLAN
for
SITE INVESTIGATIONS & REMEDIAL OVERSIGHT

The NEST Site
333 1st Street
City of Niagara Falls, New York, 14303
NYSDEC Site No. C932183

Prepared for:

Community Services Seventh Housing LLC
180 Oak Street Buffalo, NY 14203

Prepared by:

BRYDGES ENGINEERING
IN ENVIRONMENT AND ENERGY, DPC
960 Busti Avenue, Suite B-150
Buffalo, New York 14213

December 2024

Table of Contents

ATTACHMENTS

1.0 INTRODUCTION

The following health and safety procedures apply to Brownfield Cleanup Program (BCP) project personnel, including subcontractors, performing activities described in the Remedial Investigation Work Plan (RIWP) and the Remedial Action Work Plan (RAWP). Please note, however, that contractors performing investigation/remedial work are required to either develop their own Health and Safety Plans (HASPs) meeting these requirements at a minimum or adopt this plan.

1.1 PURPOSE

Directed at protecting the health and safety of the field personnel during field activities, the following HASP was prepared to provide safe procedures and practices for personnel engaged in conducting the field activities associated with this project. The plan has been developed using the Occupational Safety and Health Administration (OSHA) 1910 and 1926 regulations and New York State Department of Environmental Conservation (NYSDEC) Brownfields Department of Environmental Remediation (DER)-10 as guidance. The purpose of this HASP is to establish personnel protection standards and mandatory safety practices and procedures for this task specific effort. This plan assigns responsibilities, establishes standard operating procedures, and provides for contingencies that may arise during the field efforts.

1.2 APPLICABILITY

The provisions of the plan are mandatory for all personnel engaged in field activities. All personnel who engage in these activities must be familiar with this plan and comply with its requirements. The plan is based on available information concerning the project area and planned tasks. If more data concerning the project area becomes available that constitute safety concerns, the plan will be modified accordingly. A member of each contractor on the BCP project will be designated as Field Safety Officer and will be responsible for field safety. Any modifications to the plan will be made by the Field Safety Officer after discussion with the Project Manager and Health and Safety Officer. All modifications will be documented and provided to the Project Manager and the Health and Safety Officer for approval. A copy of this plan will be available to all on-site personnel, including subcontractors, prior to their initial entry onto the site.

Before field activities begin, all personnel will be required to read the plan. All personnel must agree to comply with the minimum requirements of this plan, be responsible for health and safety, and sign the Statement of Compliance before site work begins.

1.3 FIELD ACTIVITIES

The work addressed by this HASP includes remedial investigation (RI) and remedial action (RA) activities such as assessment of subsurface conditions related to soil, groundwater and vapor and oversight activities related to remediation. Field work will be conducted that can include soil borings, monitoring well installation, groundwater, vapor sampling and soil sampling, soil excavation/removal etc.

1.4 PERSONNEL REQUIREMENTS

Key personnel are as follows:

Health and Safety Officer – Jason Brydges
Engineer and Project Managers – Jason M Brydges, P.E, Jacob Cox, EIT, Paul Staub, EIT
Geologist – John Boyd, PG
Technicians – Alexis Palumbo, Joe Gambino
QA/QC – John Berry, P.E.

Responsibilities of some of the key personnel are as follows:

Project Manager:

- Assuring that personnel are aware of the provisions of the HASP and are proficient in work practices necessary to ensure safety and in emergencies;
- Verifying that the provisions of this plan are implemented;
- Assuring that appropriate personnel protective equipment (PPE), if necessary, is available and properly utilized by all personnel;
- Assuring that personnel are aware of the potential hazards associated with Site operations;
- Supervising the monitoring of safety performance by all personnel and ensuring that required work practices are employed; and,
- Maintaining sign-off forms and safety briefing forms.

Health and Safety Officer:

- Monitoring work practices to determine if potential hazards are present, such as heat/cold stress, safety rules near heavy equipment, etc.;
- Determining changes to work efforts or equipment to ensure the safety of personnel;
- Evaluating on-site conditions and recommend to the Project Manager modifications to work plans needed to maintain personnel safety;
- Determining that appropriate safety equipment is readily available and monitor its proper use;
- Stopping work if unsafe conditions occur or if work is not being performed in compliance with this plan:
- Monitoring personnel performance to ensure that the required safety procedures are followed.
- Documenting incident and reporting to Project Manager within 48 hours of occurrence if established safety rules and practices are violated; and,
- Conducting safety meetings as necessary.

Field Personnel, including geologists and technicians:

- Understanding the procedures outlined in this plan;
- Taking precautions to prevent injury to themselves and co-workers;
- Performing only those tasks believed to be safe;

- Reporting accidents or unsafe conditions to the Health and Safety Officer and Project Manager;
- Notifying the Health and Safety Officer and Project Manager of special medical problems (e.g., allergies, medical restrictions, etc.);
- Thinking about safety first while conducting field work; and,
- Not eating, drinking or smoking in work areas.

All Site personnel have the authority to stop work if conditions are deemed to be unsafe. Visitors will be required to report to the overall Site Project Manager or designee and follow the requirements of this plan and the Contractor's HASP (if different).

2.0 SITE DESCRIPTION AND SAFETY CONCERNS

2.1 SITE BACKGROUND AND DESCRIPTION

Approximately 95 percent of the Site contained a vacant two-story commercial building known as the Smokin' Joe's Native Center and was formerly used as a retail store and graphics center. This structure has now been demolished/removed with the exception of the floor slab and foundations. The Site is generally flat and gently sloping towards city streets and the Niagara River to the west. Groundwater flow has most likely been impacted over time by the various developments and fills as well as foundations, street beds, and utility lines. Surface water is directed to adjacent streets and storm drains within the building. In general, groundwater most likely flows west towards the Niagara River.

Historical records including street directories and Sanborn Maps suggest that the site was mixed use residential and commercial. Some of these uses include hotels, storefronts, a furniture store, a department store, auto parking, and leather good manufacturing. Two gas tanks were located on the northwest corner of the subject property from 1950-1970.

2.2 HAZARD EVALUATION

Specific health and safety concerns to the project tasks include working around low levels of heavy metals, semi-volatile organic compounds (SVOCs), and volatile organic compounds (VOCs) in soil and groundwater. Physical hazards include those associated with working near open excavations and adjacent to field equipment and heavy equipment such as back hoes and drill rigs. Contractors will have separate detailed health and safety procedures/requirements for excavations and the transportation and disposal of impacted material that will meet or exceed requirements in this plan. A table of potential hazards and OSHA Standards for consideration during investigation and remedial activities is provided in **Attachment 1**.

2.2.1 Chemical Hazards

Chemical hazards detected at the site include metals and organic compounds that were detected in soil samples and groundwater at concentrations that exceed NYSDEC Part 375 soil cleanup objectives or groundwater standards. These compounds could be encountered during the RI and remedial activities and potential routes of exposure include:

- Skin contact;
- Inhalation of vapors or particles;

- Ingestion; and,
- Entry of contaminants through cuts, abrasions or punctures.

The anticipated levels of personnel protection will include Level D PPE that includes the following:

1. Long sleeve shirt and long pants
2. Work boots with steel toe
3. Hard hats when heavy equipment or overhead hazards are present
4. Safety glasses
5. Work gloves and chemical resistant gloves when sampling potentially contaminated materials
6. High visibility vests or outer gear when Site traffic is significant

Modifications may include booties, overalls, hearing protection, or respiratory protection if air monitoring levels indicate sustained photoionization detector (PID) readings greater than 5 ppm above established background levels. If these levels are reached, work will be halted pending discussions with field and office management. If any readings are recorded above background, work will proceed with caution and breathing zone monitoring will be conducted.

2.2.2 Other Physical Hazards

Depending on the time of year, weather conditions or work activity, some of the following physical hazards could result from project activities:

- Noise
- Heat Stress
- Cold Stress
- Slips, trips, and falls
- Exposure to moving machinery during drilling and excavation activities
- Physical eye hazards
- Lacerations and skin punctures
- Back strain from lifting equipment
- Electrical storms and high winds
- Contact with overhead or underground utilities

Slips, Trips, and Falls. Field personnel shall become familiar with the general terrain and potential physical hazards that are associated with the risk of slips, trips, and falls. Special care shall be taken when working near demolition and excavation operations and material stockpiles. Workers will observe all pedestrian and vehicle rules and regulations. Extra caution will be observed while working near roadways and while driving in reverse to ensure safety.

Noise. All personnel shall wear hearing protection devices, such as earmuffs or ear plugs, if work conditions warrant. These conditions would include difficulty hearing while speaking to one another at a normal tone within three feet. If normal speech is interfered with due to work noise, the Health and Safety Officer or designee will mandate the use of hearing protection or other noise-producing equipment or events.

Heat/Cold Stress. Heat stress work modification may be necessary during ambient temperatures

of greater than 29 degrees Celsius (°C) (85 degrees Fahrenheit [°F]) while wearing normal clothing or exceeding 21°C (70°F) while wearing PPE. Because heat stress is one of the most common and potentially serious illnesses at work sites, regular monitoring and preventive measures will be utilized such as additional rest periods, supplemental fluids, restricted consumption of drinks containing caffeine, use of cooling vests, or modification of work practices. Most of the work to be conducted during the oversight and monitoring operations is expected to consist of light manual labor and visual observation. Given the nature of the work and probable temperatures, heat stress hazards are not anticipated. See **Attachment 2** for heat stress management procedures.

If work is to be conducted during winter conditions, cold stress may be a concern to the health and safety of personnel. Wet clothes combined with cold temperatures can lead to hypothermia. If the air temperature is less than 4°C (40°F) and a worker perspires, the worker should change to dry clothes. The following summary of the signs and symptoms of cold stress is provided as a guide for field personnel.

1. Incipient frostbite is a mild form of cold stress characterized by sudden blanching or whitening of the skin.
2. Chilblain is an inflammation of the hands and feet caused by exposure to cold moisture. It is characterized by a recurrent localized itching, swelling, and painful inflammation of the fingers, toes, or ears. Such a sequence produces severe spasms, accompanied by pain.
3. Second-degree frostbite is manifested by skin with a white, waxy appearance and the skin is firm to the touch. Individuals with this condition are generally not aware of its seriousness because the underlying nerves are frozen and unable to transmit signals to warn the body. Immediate first aid and medical treatment are required.
4. Third-degree frostbite will appear as blue blotchy skin. The tissue is cold, pale, and solid. Immediate medical attention is required.
5. Hypothermia develops when body temperature falls below a critical level. In extreme cases, cardiac failure and death may occur. Immediate medical attention is warranted when the following symptoms are observed:

    - Involuntary shivering
    - Irrational behavior
    - Slurred speech
    - Sluggishness

Fire and Explosion. These hazards will be minimal for activities associated with this project. All heavy equipment will be equipped with a fire extinguisher.

Trenching and Excavations. There are a variety of potential health and safety hazards associated with excavations. These include:

- Surface encumbrances, such as structures, fencing, stored materials, etc.;
- Below- and above-ground utilities, such as water and sewer lines, gas lines, telephone lines, and optical cable lines, etc.;
- Overhead power lines and other utilities;
- Vehicle and heavy equipment traffic around the excavations;
- Falling loads from lifting or digging equipment;

- Water accumulation within excavations;
- Hazardous atmospheres, such as oxygen deficiency, flammable gases, and toxic gases;
- Falling into or driving equipment into unprotected or unmarked excavations; and,
- Cave-in of loose rocks and soil at the excavation face.

OSHA requirements for trenching and excavations are contained in 29 Code of Federal Regulations (CFR), Subpart P, 1926:650 through 1926.652. See **Attachment 3** for details on excavation and trenching safety requirements, which include the following basic minimum excavation requirements:

- Personnel entry into excavations should be minimized whenever possible and no entry will occur in pits greater than 4 feet below ground surface (bgs). Sloping, shoring or equivalent means should be utilized.
- Surface encumbrances such as structures, fencing, piping, stored material etc. that may interfere with safe excavations should be avoided, removed or adequately supported prior to the start of excavations. Support systems should be inspected daily.
- Underground utility locations should be checked and determined, and permits should be obtained prior to initiating excavations. Local utility companies will be contacted at least two days in advance, advised of proposed work, and requested to locate underground installations. When excavations approach the estimated location of utilities, the exact location should be determined by careful probing or hand digging and when it is uncovered, proper supports should be provided.
- A minimum safe distance of 15 feet should be maintained when working around overhead high-voltage lines or the line should be de-energized following appropriate lock-out and tag- out procedures by qualified utility personnel.
- Excavations five feet or more, if entered, will require an adequate means of exit, such as a ladder, ramp, or steps and located to require no more than 25 feet of lateral travel. Under no circumstances should personnel exit/enter an excavation using heavy equipment.
- Personnel working around heavy equipment, or who may be exposed to public vehicular traffic should wear high visibility clothes, especially at night.
- Heavy equipment or other vehicles operating next to or approaching the edge of an excavation will require that the operator have a clear view of the edge of the excavation, or that warning systems such as barricades, hand or mechanical signals, or stop logs be used. If possible, the surface grade should slope away from the excavation.
- Personnel should be safely located in and around the trench/excavation face and should not work underneath loads handled by lifting or digging equipment.
- Hazardous atmospheres, such as oxygen deficiency (atmospheres containing less than 19.5% oxygen), flammable gases (airborne concentrations greater than 20% of the lower explosive limit), and toxic gases (airborne concentrations above the OSHA Permissible Exposure Limit or other exposure limits) may occur in excavations. Monitoring should be conducted for hazardous atmospheres prior to entry and at regular intervals. Ventilation or respiratory protection may be provided to prevent personnel exposures to oxygen deficient or toxic atmospheres. Periodic retesting (at least each shift) of the excavation will be conducted to verify that the atmosphere is acceptable. A log or field book records should be maintained.
- Personnel should not work in excavations that have accumulated water or where water is accumulating unless adequate precautions have been taken. These precautions can include shield systems, water removal systems, or safety harnesses and lifelines.

Groundwater entering the excavation should be properly directed away and down gradient from the excavation.

- Safety harnesses and lifelines should be worn by personnel entering excavations that qualify as confined spaces.
- Excavations near structures should include support systems such as shoring, bracing, or underpinning to maintain the stability of adjoining buildings, walls, sidewalks, or other structures endangered by the excavation operations.
- Loose rock, soil, and spoils should be piled at least two and preferably 5 feet or more from the edge of the excavation. Barriers or other effective retaining devices may be used to prevent spoils or other materials from falling into the excavation.
- Walkways or bridges with standard guardrails that meet OSHA specifications will be provided where employees, the public, or equipment are required to cross over excavations.
- Adequate barrier physical protection should be provided, and excavations should be barricaded or covered when not in use or left unattended. Excavations should be backfilled as soon as possible when completed.
- Safety personnel should conduct inspections prior to the start of work and as needed throughout the work shift and after occurrence that increases the hazard of collapse (i.e., heavy rain, vibration from heavy equipment, freezing and thawing, etc.).
- Personnel working in excavations should be protected from cave-ins by sloping or benching of excavation walls, a shoring system or some other equivalent means in accordance with OSHA regulations. Soil type is important in the determination of the angle of repose for sloping and benching, and the design of shoring systems.

2.2.3 Biological Hazards

Biological hazards can result from encounters with mammals, insects, snakes, spiders, ticks, plants, parasites, and pathogens. Mammals can bite or scratch when cornered or surprised. The bite or scratch can result in local infection with systemic pathogens or parasites. Insect and spider bites can result in severe allergic reactions in sensitive individuals. Exposure to poison ivy, poison oak or poison sumac results in skin rash. Ticks are a vector for several serious diseases. Dead animals, organic wastes, and contaminated soil and water can harbor parasites and pathogens. These hazards are reduced if work is conducted during the late fall and winter months. The following are highlighted because they represent more likely concerns for the site-specific tasks and location:

Bees, Ants, Wasps and Hornets. Sensitization by the victim to the venom from repeated stings can result in anaphylactic reactions. If a stinger remains in the skin, it should be removed by teasing or scraping, rather than pulling. An ice cube placed over the sting will reduce pain. An analgesic corticosteroid lotion is often useful. People with known hypersensitivity to such stings should consult with their doctor about carrying a kit containing an antihistamine and aqueous epinephrine in a pre-filled syringe when in endemic areas. Nests and hives for bees, wasps, hornets and yellow jackets often occur in the ground, trees and brush. Before any nests or hives are disturbed, an alternate sampling location should be selected. If the sample location cannot be relocated, site personnel who may have allergic reactions shall not work in these areas.

Ticks. The incidence of Lyme disease is correlated to outdoor workers in areas where the disease is widespread and heightened risk of encountering ticks infected with B. burgdorferi,

which varies from state to state, within states, and even within counties. Preventing tick bites is of utmost importance in preventing Lyme disease and other tickborne illnesses. Tick bite prevention strategies include avoidance or clearing of tick-infested habitats and use of personal protective measures (e.g., repellents and protective clothing). Tick checks should be done regularly, and ticks should be removed promptly. If a worker in a high-risk area develops flu-like symptoms (fever, chills, muscle aches, joint pains, neck stiffness, headache) or a bulls-eye rash, they should seek medical attention even if there is no recall of a tick bite. Workers who have experienced a tick bite should remove the tick and seek medical attention if signs and symptoms of tick-borne diseases occur.

Storm Conditions. When lightning is within 10 miles of the work site, all personnel should evacuate to a safe area.

Sun. When working in the sun, personnel should apply appropriate sun screening lotions (30 sunscreen or above), and/or wear long sieve clothing and hats.

2.2.4 Activity Hazard Analysis

Table 1 presents a completed activity hazard analysis for the performance of an RI.

Table 1. Activity Hazard Analysis

PRINCIPAL STEPS	POTENTIAL SAFETY/HEALTH HAZARDS	RECOMMENDED CONTROLS
RI soil/groundwater investigation	Potential exposure to low levels of metals, PAHs, petroleum products and solvents	1. Use of administrative controls (site control and general safety rules), work cloths, dust suppression 2. Use of real-time monitoring and action levels 3. Use Physical Hazards SOPs 4. Wear gloves when handling soil and groundwater 5. Actions levels for dust and vapors
EQUIPMENT TO BE USED	INSPECTION REQUIREMENTS	TRAINING REQUIREMENTS
Excavation and other heavy equipment, Backhoe or Geoprobe	1. Daily inspection of equipment 2. Continuous safety oversight	1. Safety plan review 2. Routine safety briefings 3. PID and Dust Monitor

3.0 MONITORING

The purpose of air monitoring for potential airborne contaminants is to verify that protection levels are suitable. Monitoring will be performed for dust/particulates and volatile organic

compounds during excavation activities. Daily background and calibration readings will be recorded prior to the start of field activities. All monitoring equipment used during this investigation will be maintained and calibrated and records of calibration and maintenance will be kept in accordance with 29 CFR 1910.120(b)4(11)E.

3.1 PARTICULATE MONITORING

Real-time air monitoring readings are obtained from upwind and downwind locations in accordance with DER-10 for community air-monitoring. Daily field reports will be completed that document activities performed, equipment and manpower onsite, screening and monitoring results, general Site conditions, and weather conditions.

3.2 AIR MONITORING FOR WORKER PROTECTION

Real time air monitoring will be conducted whenever site soil is disturbed during sampling, excavation, grading, etc. A real time personal aerosol monitor (i.e., TSI SidePak AM5 10 Personal Aerosol monitor or equivalent) will be used. This monitor is a laser photometer that measures data as both real-time aerosol mass-concentration and 8-hour time weighted average (TWA). The monitor will be used to measure real-time concentrations in milligrams per meter cubed (mg/m^3). Action levels are based on potential exposure to calcium carbonate and will be as follows:

- 15 mg/m^3 total dust
- 5 mg/m^3 respirable fraction for nuisance dusts

Dust suppression techniques should be employed prior to exceeding the action levels. However, if these levels are exceeded, then work will be halted, and additional dust suppression techniques employed until safe levels are reached.

3.3 TOTAL VOLATILE ORGANICS MONITORING

Monitoring of VOCs will be conducted using a PID. If a sustained reading of 5 ppm above background occurs, then work will be halted, and personnel will evacuate the work area. Levels will be allowed to stabilize, and another reading will be taken in the breathing zone. If background levels continue to be exceeded, then work will not continue at that location and the project manager will be notified of the situation. Action levels will remain the same.

4.0 SAFE WORKING PRACTICES

The following general safe work practices always apply to a construction site:

- Eating, drinking, chewing gum or tobacco and smoking are prohibited within the work area.
- Contact with potentially contaminated substances should be avoided.
- Puddles, pools, mud, etc. should be avoided if possible.
- Kneeling, leaning, or sitting on equipment or on the ground should be avoided if possible.
- Upon leaving the work area, hands, face and other exposed skin surfaces should be thoroughly washed.

- Unusual site conditions shall be promptly conveyed to the project manager, health and safety officer, or site superintendent for resolution.
- A first-aid kit shall be available at the site.
- Field personnel should use all their senses to alert themselves to potentially dangerous situations (i.e., presence of strong, irritating, or nauseating odors).
- If severe dusty conditions are present, then the soil will be dampened to mitigate dust.
- All equipment will be cleaned before leaving the work area.
- Field personnel must attend safety briefings and should be familiar with the physical characteristics of the investigation, including:
    - Accessibility to personnel, equipment, and vehicles.
    - Areas of known or suspected contamination.
    - Site access.
    - Routes and procedures to be used during emergencies.
- Personnel will perform all investigation activities with a “buddy” who is able to:
    - Provide his or her partner with assistance.
    - Notify management or emergency personnel if needed.
- Excavation activities shall be terminated immediately in the event of thunder or electrical storm.
- The use of alcohol or drugs at the site is strictly prohibited.

5.0 PERSONAL SAFETY EQUIPMENT AND SITE CONTROL

5.1 PERSONAL SAFETY EQUIPMENT

As required by OSHA in 29 CFR 1920.132, this plan constitutes a workplace hazard assessment to select PPE to perform the site investigation. The PPE to be donned by on-site personnel during this investigation are those associated with the industry standard of Level D. Protective clothing and equipment to initiate the project will include:

- Work clothes, pants and long sleeves
- Work boots with steel toe
- Work gloves as necessary
- Hard hat if work is conducted near equipment
- Safety glasses
- Hearing protection as necessary

Modifications may include chemically resistant gloves, booties, and overalls. If air monitoring indicates levels are encountered that require respiratory protection (sustained readings at or above action levels above a daily established background), then work will be halted, and an adequate resolution of PPE will be made by the health and safety manager, field manager, and project manager.

5.2 SITE CONTROL

Site control will be established near each work zone by the Contractor. The purpose is to control access to the immediate work areas from individuals not associated with the project. All work zones will be fenced off with controlled access and appropriately designated as an exclusion area.

Each excavation or drilling area where heavy equipment is being utilized will be set up as a work zone and include an exclusion area and support zone. The exact configuration of each zone is dependent upon location, weather conditions, wind direction and topography. The Contractor's safety manager will establish the control areas daily at each excavation.

An area of 10 feet (as practical) around each excavation will be designated as the exclusion area. This is the area where potential physical hazards are most likely to be encountered by field personnel. The size of the exclusion area may be altered to accommodate site conditions and the drilling/excavation location. If levels of protection higher than Level D are used, this plan will be modified to include decontamination procedure. The Site excavation contractor will be required to have eye/face wash equipment/means available on-site.

A support area will be defined for each field activity where support equipment will be located. Normal work clothes are appropriate within this area. The location of this area depends on factors such as accessibility, wind direction (upwind of the operation.), and resources (i.e., roads, shelter, utilities). The location of this zone will be established daily. Excavation areas will be filled or secured (fencing) to prevent access from the public.

6.0 EMERGENCY INFORMATION

In the event of an emergency, the field personnel or the health and safety manager will employ emergency procedures. A copy of emergency information will be kept in the field and will be reviewed during the initial site briefing. Copies of emergency telephone numbers and directions to the nearest hospital will be prominently posted in the field.

6.1 MEDICAL TREATMENT AND FIRST AID

A first aid kit adequate for anticipated emergencies will be maintained in the field. If any injury should require advanced medical assistance, emergency personnel will be notified, and the victim will be transported to the hospital. The Contractor will establish his own first aid station and details will be provided in his HASP.

In the event of an injury or illness, work will cease until the field safety and oversight inspector has examined the cause of the incident and taken appropriate corrective action. Any injury or illness, regardless of extent, is to be reported to the project manager and health and safety officer.

6.2 EMERGENCY CONTACTS

Emergency telephone numbers will be posted in the field and are listed below:

- Ambulance, Fire, Police 911
- Poison Control Center 800-222-1222
- NYSDEC Spills Hotline 800-457-7362
- Jason M. Brydges, BE3 716-830-8636
- Michael Keller, EIT, NYSDEC PM 716 851-7220
- TBD, NYSDOH 518-402-7860
- Niagara Falls Memorial 621 10th Street, Niagara Falls - **(716) 278-4000** See **Attachment 4**.

Verbal communications between workers or use of a vehicle horn repeatedly at intervals of three short beeps shall be used to signal all on-site personnel to immediately evacuate the area and report to the vehicle parking area.

6.3 Emergency Standard Operating Procedures

The following standard operating procedures are to be implemented by on-site personnel in the event of an emergency. The health and safety manager and Contractor's field manager shall manage response actions.

1. Upon notification of injury to personnel, the designated emergency signal shall be sounded. All personnel are to terminate their work activities and assemble in a safe location. The emergency facility listed above shall be notified. If the injury is minor, but requires medical attention, the Contractor's field manager or the health and safety manager shall accompany the victim to the hospital and help in describing the circumstances of the accident to the attending physician.
2. Upon notification of an equipment failure or accident, the Contractor's field manager or the health and safety manager shall determine the effect of the failure or accident on site operations. If the failure or accident affects the safety of personnel or prevents completion of the scheduled operations, all personnel are to leave the area until the situation is evaluated, and appropriate actions taken.
3. Upon notification of a natural disaster, such as tornado, high winds, flood, thunderstorm or earthquake, on-site work activities are to be terminated and all personnel are to evacuate the area.

6.4 Emergency Response Follow-Up Actions

Following activation of an emergency response, the health and safety officer shall notify the project manager, and the Contractor's field manager shall submit a written report documenting the incident to the project manager.

6.5 Medical Treatment

The Contractor's field manager shall be informed of any site-related injury, exposure or medical condition resulting from work activities. All personnel are entitled to medical evaluation and treatment in the event of a site accident or incident.

6.6 Site Medical Supplies and Services

The Contractor's field manager or a trained first aid crew member shall evaluate all injuries at the site and render emergency first-aid treatment, as appropriate. If an injury is minor but requires professional medical evaluation, the field manager shall escort the employee to the appropriate emergency room. For major injuries occurring at the site, emergency services shall be requested. A first-aid kit shall be readily accessible, fully supplied, and maintained at specified locations used for on-site operations.

6.7 Precautions

Universal precautions shall be followed on-site that consist of treating all human blood and

certain body fluids as being infected with Human Immune Deficiency Virus (HIV), Hepatitis B virus (HBV), or other blood borne pathogens. Clothing and first-aid materials visibly contaminated with blood or other body fluids will be collected and placed into a biohazard bag. Individuals providing first aid or cleanup of blood- or body-fluid contaminated items should wear latex gloves. If providing CPR, a one-way valve CPR device should be used. Biohazard bags, latex gloves, and CPR devices will be included in the site first-aid kits.

Work areas visibly contaminated with blood or body fluids shall be cleaned using a 1:10 dilution of household bleach. If equipment becomes contaminated with blood or body fluids, and cannot be sufficiently cleaned, the equipment shall be placed in a plastic bag and sealed. Any personnel servicing the equipment shall be made aware of the contamination, so that proper precautions can be taken.

7.0 RECORDKEEPING

The Contractor's field manager and health and safety officer are responsible for site record keeping. Prior to the start of work, they will review this Plan along with the Contractor's HASP. A Site safety briefing will be completed prior to the initiation of field activities. This shall be recorded in the field logbook. An accident report should be completed by the Field Manager if an accident occurs and forwarded to the project manager.

8.0 PERSONNEL TRAINING REQUIREMENTS

8.1 INITIAL SITE BRIEFING

Prior to site entry, the Contractor's health and safety manager shall provide all personnel (including site visitors) with site-specific health and safety training. A record of this training shall be maintained. This training shall consist of the following:

- Discussion of the elements contained within this plan
- Discussion of responsibilities and duties of key site personnel
- Discussion of physical, biological and chemical hazards present at the site
- Discussion of work assignments and responsibilities
- Discussion of the correct use and limitations of the required PPE
- Discussion of the emergency procedures to be followed at the site
- Safe work practices to minimize risk
- Communication procedures and equipment
- Emergency notification procedures

8.2 DAILY SAFETY BRIEFINGS

The Contractor's health and safety manager will determine if a daily safety briefing is required. The briefing shall discuss the specific tasks scheduled for that day and the following topics:

- Specific work plans
- Physical, chemical or biological hazards anticipated
- Fire or explosion hazards
- PPE required

- Emergency procedures, including emergency escape routes, emergency medical treatment, and medical evacuation from the site
- Weather forecast for the day
- Buddy system
- Communication requirements
- Site control requirements
- Material handling requirements

9.0 COMMUNITY AIR MONITORING PROGRAM (CAMP)

A Community Air Monitoring Program (CAMP) requires real-time monitoring for VOCs and particulates (i.e., dust) at the upwind and downwind perimeter of each designated work area when certain activities are in progress at contaminated sites. The program is not intended for use in establishing action levels for worker respiratory protection. Rather, its intent is to provide a measure of protection for the downwind community (i.e., off-site receptors and on-site workers not directly involved with work activities) from potential airborne contaminant releases as a direct result of investigative and remedial work activities. A New York State Department of Health (NYSDOH) generic CAMP obtained from NYSDEC DER-10 is presented in the **Appendix B** of the RIWP that will be followed and adhered to for work activities that could generate dust from an impacted area.

A program for suppressing fugitive dust and particulate matter monitoring will also be conducted in accordance *NYSDEC DER-10* titled *Appendix 1B Fugitive Dust and Particulate Monitoring,* which is also provided in **Appendix B**. The fugitive dust suppression and particulate monitoring program will be employed at the site during building demolition, IRM site remediation and other intrusive activities which warrant its use.

Both the CAMP and the fugitive dust and particulate monitoring program will be administered by the environmental engineer/consultant. Monitoring results of the CAMP will be reported to the NYSDEC and New York State Department of Health daily for review.

ATTACHMENT 1

Table of Potential Hazards and OSHA Standards

Potential Hazards and OSHA Standards for Consideration during IRMs

Site Exposure/Control	Potentially Applicable OSHA Standard*	
	1910 General Industry	1926 Construction
Hazard Assessmen & Employee Training	29 CFR 1910.132(d)	29 CFR 1926.21(b)
Chemical Exposure	29 CFR 1910.1000	29 CFR 1926.55
Noise Exposure	29 CFR 1910.95	29 CFR 1926.52
Sanitation	29 CFR 1910.141	29 CFR 1926.51
Wiring Methods (temporary wiring)	29 CFR 1910.305(a)(2) 29 CFR 1910.333	29 CFR 1926.405(a)(2)
Electrical Hazards		29 CFR 1926.416
Emergency Action Planning	29 CFR 1910.38	29 CFR 1926.35
Excavation	covered by 1926	29 CFR 1926 Subpart P
Confined Space Entry	29 CFR 1910.146	29 CFR 1926.21(b)(6)29 CFR 1926.353(b)
Material Handling	29 CFR Subpart N	29 CFR Subpart N29 CFR 1926.600-60229 CFR 1926.604
Building Demolition	covered by 1926	29 CFR 1926 Subpart T
Site ContaminantAbatement	29 CFR 1910.1000-1029 29 CFR 1910.1043-1052	29 CFR 1926.5529 CFR 1926.6229 CFR 1926.1101-1152
Elevated Work Surfaces	29 CFR 1910 Subpart D 29 CFR 1910 Subpart F	29 CFR 1926 Subpart L29 CFR 1926 Subpart M29 CFR 1926.552
Chemical Storage	29 CFR 1910 Subpart H29 CFR 1910.1200	29 CFR 1926.5929 CFR 1926 Subpar t F
Personal Protective Equipment	29 CFR 1910 Subpart I	29 CFR 1926 Subpart E
Heavy Equipment Operation	29 CFR 1910.9529 CFR 1910 Subpart N	29 CFR 1926.5229 CFR 1926 Subpart O
Tasks-Long Duration	29 CFR 1910.141-142	29 CFR 1926.51

The Federal General Industry and Construction citations are provided above

ATTACHMENT 2

Heat Stress Management Program and Procedures

INTRODUCTION

Panamerican employees engage in a variety of activities with potential exposure to excessive ambient temperatures and humidity, with the overall result being Aheat stress@. This procedure establishes the Panamerican Heat Stress Management Program. It establishes responsibilities and basic requirements for personnel who may be required to work in situations where the ambient temperature exceeds 21° C (70° F) while wearing protective equipment (e.g., hazardous waste site investigations) or when the ambient temperature exceeds 29° (85° F) while wearing normal clothing. Because heart stress is one of the most common and potentially serious illnesses at job sites and particularly hazardous waste sites, regular monitoring and other preventive measures are warranted.

There are no regulations addressing heat stress. However, it should be noted that OSHA does recognize heat stress as a potentially serious health hazard and can site employers under the Ageneral duty clause@ of the Occupational Safety Health Act if heat-related illness is occurring or likely to occur.

PROGRAM ADMINISTRATION AND RESPONSIBILITIES

The Heat Stress Management Program is administered by Panamerican Managers and Health and Safety personnel.

These Individuals:

- Oversee the implementation of the Heat Stress Management Program;
- Periodically audit and evaluate program implementation;
- Evaluate this procedure on an ongoing basis to see that it reflects current practice and regulations;
- Assist field crews in their implementation of this procedure.

Project Managers (PM) and Safety Personnel are responsible for:

- Implementing this Procedure in all field operations:
- Providing guidance to staff regarding heat stress management as described in the Procedure; and
- Providing feedback to management regarding program effectiveness.

Staff Members are responsible for:

- Complying with this Procedure as it applies to their activities; and
- Providing feed back to their supervisor regarding program effectiveness.

HEAT STRESS HAZARDS AND RISK FACTORS

Heat Stress is defined as the total net load on the body with contributions from both exposure to external sources, such as sunshine and hot surfaces, and from internal metabolic heat production. A person=s

exposure to the increased ambient temperatures and humidity produces physiological responses referred to as heat stress which are characterized by an increase in the: a) Acore@ or Adeep body temperature@. b) heart rate, c) blood flow to the skin, and d) water and salt loss due to sweating. Conditions of excessive heat stress may occur either when the physical work is too heavy or the environment is too hot in relation to the work being performed. If work is performed under hot environmental conditions, the work load effort must be reviewed and the heat exposure limit maintained at or below the levels to protect the worker from the risk of acute heat illness.

In general, there are four types of physiological disorders associated with heat stress. They include:

- Heat Rash - a skin reaction occurring as a result of obstructed sweat glands, often associated with impermeable clothing.

- Heat Cramps - painful muscle spasms of extremities and abdomen, resulting from inadequate balance of electrolytes which are lost from sweating.

- Heat Exhaustion - a mild form of heat stroke due to depletion of body fluids and electrolytes. Blood vessels dilate despite decreased volume of blood. Symptoms include weakness, dizziness, nausea, rapid pulse, and a small increase in body temperature.

- Heatstroke - a potentially fatal disorder resulting from failure of the body=s thermoregulatory system. The classical description of heatstroke includes (1) a major disruption of central nervous function (unconsciousness of convulsions), (2) a lack of sweating (3) hot, dry, red or mottled skin, and (4) a core temperature in excess of 41^{o}C (105.8^{o} F). Heatstroke is a serious medical condition which calls for emergency medical action.

Seven factors play significant roles in the development of or predisposition to, heat stress disorders. These factors include:

- Acclimatization - Heat acclimatization leads to increased and quicker sweating, cooler skin due to an increase in evaporative cooling and a lower, more stable core body temperature. Maximal sweating rates in unacclimatized persons are lower, but salt concentrations in their perspiration are higher, requiring a higher rate of salt replacement.

- Age - Older individuals are generally more susceptible to heat stress than younger individuals. However, older healthy workers are able to perform well in hot jobs if permitted to proceed at a self-regulated pace.

- Gender - The average woman has a lower aerobic capacity than a similar-sized man. Nevertheless, when working at similar proportions of their maximum aerobic capacity, women perform similarly or only slightly less well than men.

- Body Fat - The lower level of physical fitness, decreased maximum work capacity and decreased cardiovascular capacity frequently associated with obesity predispose individuals to heat disorders.

- Water and Electrolyte Balance - Sustained, effective work performance in heat requires a

replacement of body water and electrolytes lost through sweating. If this water is not replaced by drinking, continued sweating will draw on water reserves from both tissues and body cells leading to dehydration.

- Use of Alcohol and Medication - Not withstanding the potential hazards from impaired coordination and judgment, the ingestion of alcohol before or during work in the heat should not be permitted because it reduces heat tolerance and increases the risk of heat illness, Many drugs, including diuretics and antihypertensives, can interfere with the body=s thermoregulation.

- Physical Fitness - Physical conditioning enhances heat tolerance by increasing the functional capacity of the cardiovasculatory system, and reduces the time required to develop heat acclimatization by about 50% over those not physically fit.

The factors listed above are to be taken into account by all project personnel when planning or executing a project subject to heat stress conditions. The factors should be taken into consideration for:

- the development of the project schedule;
- the ordering of supplies/equipment;
- the support facilities to be made available at the site;
- the execution of work tasks; and
- the after work hours activities.

The following is a summary of signs and symptoms of heat stress:

Heat Rash may result from continuous exposure to heat or humid air .

Heat cramps are caused by heavy sweating with inadequate electrolyte replacement. Signs and symptoms include:

- Muscle Spasms
- Pain in the hands, feet and abdomen.

Heat Exhaustion occurs from increased stress on various body organs, including inadequate blood circulation due to cardiovascular insufficiency or dehydration. Signs and symptoms include:

- Pale, cool and moist skin
- Heavy sweating
- Dizziness, fainting and nausea

Heat stroke is the most serious form of heat stress. Temperature regulation fails, and the body temperature rises to critical levels. Immediate action must be taken to cool the body before serious injury or death occurs. Competent medical help must be obtained. Signs and symptoms are:

- Red, hot and unusually dry skin
- Lack of or reduced perspiration
- Dizziness and confusion

- Strong, rapid pulse and coma.

HEAT AND STRESS PREVENTION

Preventive measures should be taken to prevent personnel from experiencing heat stress illness. Prevention of heat stress is also important because if an individual has experienced a heat illness incident, he has an increased likelihood of future occurrences. Preventive measures include: favorable work scheduling, acclimatization of workers to hot environments, drinking sufficient quantities of fluids, providing cool, sheltered work and rest areas, and utilizing cooling devices as appropriate of feasible. Heat stress monitoring/work rest regimens are discussed below.

Work Schedules and Activity

If possible, work should be scheduled during the coolest part of the day. Early morning and evening work can be considerably more effective than working midday when the additional time for breaks and heat stress monitoring are taken into account.

Employees should also be encourages to maintain a certain level of activity during the work shift. Prolonged standing in hot environments can lead to heat illness because the blood pools in the lower extremities. Workers should periodically walk about to encourage blood circulation from the feet and legs.

Acclimatization of Workers

A properly designed and applied heat acclimatization program will dramatically increase the ability of workers to work at a hot job and will decrease the risk of heat-related illnesses and unsafe acts. Heat acclimatization can usually be induced in 5 to 7 days of exposure to the hot job. For workers who have had previous experience with the job, the acclimatization regimen should be exposure for 50% on day 1, 60% on day 2, 80% on day 3 and 100% on day 4. For workers new to job the schedule should be 20% on day 1 with a 20% increase in each additional day.
Acclimatization can be induced by sustained elevations of the skin and core body temperatures above levels for the same work in cool environments for an hour or more per day. Acclimatization needs periodic reinforcement such as occurs daily during the work week. Persons may show some loss of acclimatization on the first day of the new shift after being idle for two days or over a weekend. After vacations of two weeks or longer he loss of acclimatization is substantial, several days at work will be needed before heat tolerance is fully restored.

Drinking Sufficient Quantities of Fluids

Under hot conditions where sweat production may reach 6 to 8 liters per day, voluntary replacement of the water lost is usually incomplete. The normal thirst mechanism is not sensitive enough to urge us to drink enough water to prevent dehydration. Individuals are seldom aware of the exact amount of seat they produce of how much water is needed to replace that lost in sweat; 1 liter/hour is not an uncommon rate of water loss. Every effort should be made to encourage individuals to drink water, low-sodium noncarbonated beverages or electrolyte replacement fluids (e.g., Gatorade). Lightly salted water (1 gram/liter of water (0.1%) or one level teaspoon per 15 quarts of water), should be provided to unacclimated workers. The salt should be dissolved completely and the water kept cool. Salt tablets as dietary supplements are not generally recommended.

Workers should drink at least 500 ml (one pint) of water before beginning work. The fluid should be maintained at temperatures of 10° to 15° (50 to 59° F). If possible, small quantities of fluids should be consumed at frequent intervals (e.g., 150 to 250 milliliters (ml), or at least a quarter pint, every 20 minutes) rather than the intake of 750 ml (3 cups) or more once per hour. Individuals vary, but water intake should total 4 to 8 liters (quarts) per day. When heat stress is considered a potential problem, a minimum of 1 liter/hour/person of water are to be maintained onsite. Individual paper or plastic cups will be provided in order to prevent the spread of communicable disease.

Alcohol and diuretics such as caffeine (contained in coffee, tea and soft drinks) can increase dehydration. Therefore employees with potential exposure to heat stress should be discouraged from the consumption of these types of fluids during and after working hours.

Cool, sheltered Work and Rest Areas

Exposure to direct sunlight significantly increases the overall thermal loading of the body, thereby increasing an individuals susceptibility to heat stress illnesses. Whenever possible work should be conducted under suspended tarps, in shady areas or in other sheltered areas in order to reduce thermal loading caused by the sun. Cool sheltered areas should be provided also for rest breaks. A rest area should be situated so that part of it is in the contamination reduction area so that workers can take breaks without being required to undertake a full decontamination procedure. Canopies or tarps and open air tents, are types of cool shelters which can provide shaded rest areas.

Cooling Devices

Auxiliary cooling devices can be successfully used to provide body cooling, especially to workers wearing protective garments at hazardous waste sites. Vortex coolers utilize high velocity air which is directed inside the protective clothing. Vortex coolers have been used successfully in some operations. Cooling vests utilizing Ablue ice@ type packs can provide some cooling to the torso, but add weight for the wearer and can inhibit body movements.

Newer, more sophisticated tube and refrigerant systems woven into undergarments are also available. However, some of these systems ,,may not be effective in situations where the work involves considerable motion, since bending and lifting can crimp the tubes, impending the flow of refrigerant.

Heat Stress Monitoring

Several heat stress monitoring systems have been devised to help manage heat stress in hot work environments. Panamerican performs heat stress monitoring when: 1) employees are wearing normal work clothing in ambient temperatures exceeding 29° C, (85° F) and 2) employees wearing chemical protective clothing (including paper coveralls) working in ambient temperatures exceeding 21° C (70° F). The temperature differential is related to the reduced ability of a person to maintain a core temperature of $\pm$ 37° C (98.6° F) when wearing chemical protective clothing.

It should be noted by personnel that there are no Afast and true@ methods of heat stress monitoring; likewise there are no regulations concerning heat stress monitoring. Individual susceptibility to heat stress is highly variable. Some individuals are highly susceptible to any increase in their internal body temperature while other individuals can work very well with internal body temperatures of 39°C (102.2° F) or higher.

The heat stress monitoring systems should be used by Site Safety Officers as guidelines and not necessarily as hard, fast rules. Individuals working in elevated temperatures should be queried on a regular basis regarding their perceived state of heat stress. If the calculated heat stress index value indicates that work can continue but a person states that they believe they are experiencing heat stress, the work effect should be discontinued and a rest break taken.

Likewise, if the calculated heat stress index value indicates that a rest break should be taken but the workers believe they can work longer, they should be permitted to work longer providing that their heart rates do not exceed 110 beats per minute. If the individual's heart rate rates exceed 110 beats per minute a rest break will be taken. In all cases, individual workers should not be permitted or expected to perform excessive work which could result in heat stress. If a SSO has any concerns that an individual may be pushing himself/herself past the Abreaking point@ the calculated work/rest regimen will be followed.

For strenuous field activities that are part of ongoing site work activities in hot weather, the following procedures shall be used to monitor the body=s physiological response to heat, and to monitor the work cycle of each site worker. There are two phases to this monitoring: the initial work/rest cycle is used to estimate how long the first work shifts of the day should be. Heart rate monitoring of each worker will establish the length of the successive work periods. Both phases are to be used are to be used for heat stress monitoring. Failure to use either one could place workers at risk of heat-related disorders.

Phase 1 - Determination of the Initial Work - Rest Regimen

The determination of the initial work - rest regimen can be performed using either of two methods:

-The Modified Dry Bulb Index; or
-The Wet Bulb Globe Thermometer (WBGT) Index

After the initial work - rest regimen has been determined, environmental conditions must be monitored for changes which would require a modification to the work - rest regimen. This, coupled with the heart rate monitoring, determines the work cycles to be followed on a site.

The Modified Dry Bulb Index accounts for the effects caused by solar, load, air temperature, and chemical protective clothing, under a light work load (walking at approximately 3 mph). A mercury thermometer, shielded from direct sunlight, is used to measure ambient temperature. The percentages of (of time) of sunlight and cloud cover are then estimated to determine a sunshine quality factor (e.g., 100% sunshine - no cloud cover = 1.0; 50% sunshine - 50% cloud cover = 0.5; 0% sunshine - 100% cloud cover = 0.0). When these two sets of values have been obtained, they are inserted into the following equation to calculate the adjusted temperature:

$$T\,(^{o}C, \text{adjusted}) = T\,(^{o}C, \text{actual}) + (7.2 \times \text{sunshine quality factor})$$

-OR-

$$T\,(^{o}F, \text{adjusted}) = T\,(^{o}F, \text{actual}) + (13 \times \text{sunshine quality factor})$$

After the adjusted temperature has been calculated, the length of the first work shift can be determined using the following table:

Initial Break and Physiological Monitoring Cycles

ADJUSTED TEMPERATURE	NORMAL WORK CLOTHES	PROTECTIVE CLOTHING
90^0F (32.2^0 C) or above	After each 45 minutes of work	After each 15 minutes of work
87.5^0-90^0 F (30.8^0-32.2^0 C)	After each 60 minutes of work	After each 30 minutes of work
82.5^0-87.5^0 F (28.1^0-30.8^0 C)	After each 90 minutes of work	After each 60 minutes of work
77.5^0-82.5^0 F (25.3^0-28.1^0 C)	After each 120 minutes of work	After each 90 minutes of work
72.5^0-77.5^0 F (22.5^0-25.3^0 C)	After each 150 minutes of work	After each 120 minutes of work

NOTE: The standard rest period is 15 minutes

WET BULB GLOBE THERMOMETER INDEX

The Wet Bulb Globe Thermometer (WBGT) Index was developed by the U.S. Army in the 1950s to prevent heat stress in army recruits. The WBGT Index accounts for the effects caused by humidity, air movement, evaporation, air temperature and work rate. It does not, however, account for the effects of chemical protective clothing, non-acclimatized workers, age, or other factors which may affect the likelihood of heat stress. Because of this, it is necessary to make adjustments to the index and conduct Heart Rate Monitoring.

WBGT measurements are usually obtained through the use of are-contained electronic devices. Such devices are easy to set up and can provide the user with the capabilities to store data and download to print out a hard copy.

Heat produced by the body and the environmental heat together determine the total heat load. Therefore, after the WBGT Index has been obtained, the anticipated work load category of each job shall be determined and the initial-rest regimen established using the table below.

The work load category may be determined by ranking each job into light, medium and heavy categories on the basis of type of operation. Examples of each category are:

Light work:	sitting or standing to control machines, performing light hand work
Moderate work:	walking about with moderate lifting and pushing; and
Heavy work:	pick and shovel work.

PERMISSIBLE HEAT EXPOSURE			
WORK-REST REGIMEN	WORK LOAD		
	LIGHT	MODERATE	HEAVY
	30.0^0 C/86^0 F	26.7^0 C/80.1^0 F	25^0C/77^0F
75% Work-25% Rest Each Hour	30.6^0 C/87.1^0 F	28^0 C/82.4^0 F	25.9^0 C/78.6^0 F
50% Work-50% Rest Each Hour	31.4^0 C/88.5^0 F	29.4^0 C/85.0^0 F	27.9^0 C/82.2^0 F
25%Work-75 % Rest Each Hour	32.2^0 C/90.0^0 F	31.1^0 C/88.0^0 F	30.0^0 C/86.0^0 F

The table reads as follows:

Light, continuous work is possible at any WBGT reading up to 30^0 C (86^0F) but above that limit work breaks

are needed to recover from the heat; light work at temperatures of between 30.0 and 30.6^{0}C (86 to 87^{0}F) can be conducted, but 15 minute breaks must be taken every hour, etc. It is important to note that this table is applicable primarily to healthy, acclimatized personnel; wearing standard work clothing.

NOTE: An additional 6 to 11^{0}C (42.8 to 51.8^{0}F) must be added to the calculated WBGT temperature for personnel wearing chemical protective clothing prior to determining the initial work - rest regimen from this table. Because the WBGT Index does not take into account unacclimatized workers, or individual susceptibilities, the addition to the WBGT value does not eliminate the requirement for Heart Rate Monitoring after work has begun.

Phase 2 - Heart Rate Monitoring

An increase in the heart rate is a significant indication of stress, whether induced by exposure to heat or through physical labor. Although baseline heart rates can vary significantly between individuals and during the day for an individual, a heart rate of 110 beats per minute or greater is an indication of physiological stress. To prevent heat stress illnesses, the heart rate (HR) should be measured by radial (wrist) or carotid (neck) pulse for 30 seconds as early as possible in the rest period. The HR at the beginning of the rest period should not exceed 110 beats/minute. If the HR is higher, the next work period should be shortened by 33 percent while the length of the rest period stays the same. If the pulse rate still exceeds 110 beats/minute at the beginning of the next rest period, the following work period should be further shortened by 33 percent while the length of the rest period stays the same.

ATTACHMENT 3

Trenching and Excavation
Health and Safety Requirements

REGULATORY AUTHORITY

Excavations will be performed in accordance with OSHA 29 CFR, subpart P, 1926:650-1926.652 and USACOE EM 385-1-1 section 25 requirements as they apply to project activities.

GENERAL

- **At all times the need for personnel to enter excavations will be minimized. Inspections or sample removal will be done from above the excavation, whenever possible.**
- **Personnel will only enter excavations after the requirements of this plan have been met.**
- **Personnel protective equipment including hard hat, safety glasses and steel-toe work boots may be required.**

SURFACE ENCUMBRANCES

Surface encumbrances such as structures, fencing, piping, stored material etc. which may interfere with safe excavations will be avoided, removed or adequately supported prior to the start of excavations. Support systems will be inspected daily.

UNDERGROUND UTILITIES

Underground utility locations will be checked and determined and permits as necessary will be in place prior to initiating excavations. Local utility companies will be contacted at least two days in advance, advised of proposed work, and requested to locate underground installations. When excavations approach the estimated location of utilities, the exact location will be determined by careful probing or hand digging and when it is uncovered, proper supports will be provided.

OVERHEAD OBSTACLES

A minimum safe distance of 20 feet will be maintained when working around overhead high-voltage lines or the line will be de-energized following appropriate lock-out and tag-out procedures by qualified utility personnel.

ENTRY/EXIT ROUTES

Excavations five feet or more deep will require an adequate means of exit, such as a ladder, ramp, or steps and located so as to require no more than 25 feet of lateral travel. Under no circumstances will

personnel be raised.

VEHICLE CONTROL/SAFETY

Personnel working around heavy equipment, or who may be exposed to public vehicular traffic will wear a traffic warning vest consisting of at least 400 square inches of red or orange material. At night, at least 400 square inches of florescent or other reflective material will be worn.

For excavation work on or adjacent to highways or streets, signs, signals, and barricades tat conform to the requirements of the current American National Standards Institute (ANSI) D6.1, Manual on Uniform Traffic Control Devices for Streets and Highways will be used to protect work areas. Signs, signals, and barricades will be adequately lighted at night. Flagmen will be provided when signs, signals and barricades do not provide adequate protection. Flagmen will use signals and procedures contained in the current issue of ANSI D6.1. At night, flagmen will be clearly illuminated so as to be easily seen by approaching traffic.

For mobile equipment operating next to or approaching the edge of an excavation, the operator will have a clear view of the edge of the excavation, or a warning system such as barricades, hand or mechanical signals, or stop logs will be used. If possible the surface grade will slope away from the excavation.

Personnel will be safely located in and around the trench and will not be permitted to work underneath loads handled by lifting or digging equipment. Personnel are required to stand away from vehicles being loaded and unloaded. Operators can remain in the cabs of vehicles being loaded or unloaded provided the vehicles are equipped to provide adequate protection to the operator.

HAZARDOUS ATMOSPHERES

Hazardous atmospheres, such as oxygen deficiency (atmospheres containing less than 19.5% oxygen), flammable gases or vapors (airborne concentrations greater than 20% of the lower explosive limit), and toxic gases or vapors (airborne concentrations above the OSHA Permissible Exposure Limit or other exposure limits) may occur in excavations, especially around landfills and hazardous waste sites.

In locations where oxygen deficiency or hazardous gaseous conditions are possible, the air in the excavation will be tested before personnel are permitted to enter an excavation deeper than 4 feet. When flammable gases are present, adequate ventilation will be provided and sources of ignition will be eliminated. Ventilation or respiratory protection will be provided to prevent personnel exposures to oxygen deficient or toxic atmospheres. Periodic retesting (at least each shift) of the excavation will be conducted to verify that the atmosphere is acceptable. A log or field book records will be maintained of all test results.

WATER ACCUMULATION HAZARDS

Personnel will not work in excavations that have accumulated water or where water is accumulating unless adequate precautions have been taken. These precautions can include special support or shield systems, water removal systems such as pumps, or safety harnesses and lifelines. Water removal systems will be operated and monitored by experienced personnel. Diversion ditches or dikes will be used to prevent surface water from entering the excavation and to provide adequate drainage of the area around the excavation. Adequate precautions, as described above, will be taken for excavating

subject to heavy rains.

STABILITY OF ADJACENT STRUCTURES

Support systems such as shoring, bracing, or underpinning will be provided to maintain the stability of adjoining buildings, walls, or other structures endangered by the excavation operations. Excavations below a foundation or retaining wall that could be reasonably expected to pose a hazard to personnel will not be permitted unless:

- **a support system is provided**
- **The excavation is in stable rock; or**
- **A Registered Professional Engineer has determined that the structure will not be effected by the excavation activity or that the excavation work will pose a hazard to employees. The Professional Engineer is required to demonstrate how the above determination was made on the basis of appropriate calculations.**

Sidewalks will not be undermined unless shored to protect from possible collapse.

PROTECTION FROM LOOSE ROCK, MATERIALS OR SPOILS

In excavations and trenches that personnel may be required to enter, loose rock, excavated or other material, and spoils will be effectively stored and retained at least two feet or more from the edge of the excavation.

As an alternative to the clearance prescribed above, barriers or other effective retaining devices may be used in order to prevent spoils or other materials from falling into the excavation.

Walkways, runways, and sidewalks will be kept clear of excavated material from other obstructions.

Scaling operations may be used to remove loose material and will be performed only by experienced crews under the direct supervision of a competent supervisor. The scalers will be provided with scaler=s lifelines, safety belts, boatswain chair, and other safety equipment necessary for their protection.

FALL PROTECTION

Walkways or bridges with standard guardrails that meet OSHA specifications will be provided where employees, the public, or equipment are required to cross over excavations.

Adequate barrier physical protection will be provided at all remotely located excavations. All excavations will be barricaded or covered.

EMERGENCY RESCUE

In the event of a cave-in, the Emergency Rescue Squad will be immediately notified. The caller should provide his name, location, nature of the accident (an excavation collapse), the dimensions of the excavation, and number of people trapped in the excavation. Personnel are not to enter a collapsed trench to attempt rescue. This may cause a further collapse of the trench. Under no circumstance is heavy equipment to be used to attempt rescue of personnel in a collapsed excavation; injury or decapitation could be the result. All heavy equipment and traffic in the area is to be shut down and

stopped to reduce vibration. Pumps should be started if water ensues.

INSPECTION PROGRAM

Safety personnel will conduct daily inspections of the excavation, the adjacent areas, and protective systems. Inspections will be conducted prior to the start of work and as needed throughout the work shift. Inspections will also be made after every rainstorm or other occurrence that increases the hazard of collapse (i.e., vibration from heavy equipment, freezing and thawing, etc.).

The excavation inspection will include a check for the following:

- **Evidence if situations that could result in possible cave-in (i.e. soil crumbling or sloughing, water saturated soils, freezing and thawing, unusual vibrations such as from heavy equipment, heavy rains, surface run off entering trench, etc.);**
- **Indications of failure of protective systems;**
- **Hazardous atmosphere (oxygen deficiency, flammable and toxic gases and vapors);**
- **Condition and support of exposed underground installations;**
- **Adequate means of egress;**
- **Signs, signals, and barricades for work area protection;**
- **Precautionary measures to control water accumulation;**
- **Stability and support of adjacent structures; and**
- **Adequate protection from loose rock and soil.**

PROTECTIVE SYSTEMS

Personnel working in excavations will be protected from cave-ins by sloping and/or benching of excavation walls, a shoring system or some other equivalent means except when:

- **The excavation is made entirely in stable rock; or**
- **Excavations are less than five feet deep and safety personnel have determined that there is no indication of potential cave-in. Depending on site and soil conditions protective measures may be taken for the excavations less than five feet in depth.**

The most important factor influencing the choice of protective systems is the soil type classification. Once the soil type has been classified, selection of the protective system, the determination of the angle of repose for sloping and benching, and the design of shoring systems will be made. Decisions will be based on careful evaluation of pertinent factors such as depth of cut; possible variation in water content of the material while the excavation is open; anticipated changes in materials from exposure to air, sun, water, or freezing; loading imposed structures equipment, overlying material, or stored material; and vibration from equipment, blasting traffic or other sources.

Soil Classification

Appendix A of the OSHA Excavation Standard describes a methjod to classify soils into four types:

1. Stable Rock - Solid mineral matter that can be excavated with vertical sides.

2. Type A - cohesive soils with an unconfined compressive strength of 1.5 ton per square foot (tsf) or greater. Examples include: clay; silty clay; sandy clay; clayey loam; and cemented soils such as caliche and hardpan. No soil is considered to be Type A if it is fissured, subject to vibration, previously disturbed, or part of a sloped, layered system.

3. Type B - cohesive soils with an unconfined compressive strength of greater than 0.5 tsf but less than 1.5 tsf. Examples include: angular gravel similar to crushed rock; silt; silty loam; and sandy loam; Type B soils also include : previously disturbed soils that are not type C; Type A soils that are fissured or subject to vibration; and dry rock that is not stable.

4. Type C - cohesive soils with an unconfined compressive strength of 0.5 tsf or less. Examples include: gravel; sand; loamy sand; submerged soil or soil from which water is seeping; submerged rock that is not stable.

The engineer, geologist, or safety personnel will conduct at least one visual and at least one manual test as described in the OSHA excavation standard in order to classify soils. Visual tests include looking for : particle size and soil cohesiveness (clumping); cracking in the excavation sides which suggests fissured material; underground installations ans previously disturbed soils; layered soil systems that slope toward the excavation; evidence of surface water and water seeping from the sides of the excavation; and sources of vibration that may affect the excavation stability. Manual tests include: plascticity; dry strength; tumb penetration; drying test; and strength tests using a pocket penetrometer or hand-operated shearvane.

<u>Sloping and Benching</u>

One of the following options for sloping and benching systems described in section 1926.652(b) of the OSHA Excavation Standard will be used in excavations of .5 foot or deeper or at the discretion of the safety personnel:

- **The walls of excavation will be sloped at an angle not steeper than 0ne-and one-half horizontal to one vertical. Sloping configurations will follow the slopes shown for Type C soils in Appendix B of the OSHA Excavation Standard.**

- **Maximum allowable slopes and sloping and benching configurations will be determined according to soil type as described in Appendices A and B of the OSHA Excavation Standard.**

- **Use of other written tabulated data and designs, such as tables and charts, to design sloping and benching systems. A copy of the tabulated data must be approved by a registered Professional Engineer. A copy of the tabulated data must be kept at the job site.**

Personnel are not allowed to work on the faces of sloped or benched excavations above other workers unless the workers at the lower levels are protected from falling material or equipment. Similar protection will be provided for personnel working in excavations below other workers.

<u>Support Systems, Shield Systems, and Other Protective Devices</u>

One of the following options described in OSHA (1926.652 (c)) will be followed.

- **Timber shoring, designed according to the conditions and requirements of Appendix C of the OSHA Excavation Standard or aluminum hydraulic shoring designed according to manufacturers tabulated data or Appendix D of the OSHA Excavation Standard. In order to use the information in Appendices C or D, the soil type must first be determined using the classification system in Appendix A. For each soil type the size and spacing of the cross braces, uprights, and walls that comprise the shoring system are then selected based on the depth and width of the trench.**

- **Use of the manufacturer=s written tabulated to design support systems, shielded systems, and other protective devices. Any deviation from this tabulated data must be approved by the manufacturer. A copy of the tabulated data as well as any approvals to deviate from the tabulated data must be kept at the job site.**

- **Use of other written tabulated data to design support systems, shield systems, and other protective devices. The tabulated data must be approved by a Registered Professional Engineer. A copy of the tabulated data must be kept at the job site.**

- **Use of a written support system, shield system, and other protective device design that has been approved by a Registered Professional Engineer. A copy of the written design must be kept at the job site.**

<u>Installation and Removal of Support</u>

Cross braces or trench jacks, uprights, and walls will be secured together to prevent sliding, falling or kickouts.

Additional precautions by way of shoring and bracing will be taken to prevent slides or cave-ins when excavations or trenches are made in locations adjacent to backfilled excavations, or where excavations are subjected to vibrations from railroad or highway traffic, the operation of machinery, or any other source.

If it is necessary to place or operate power shovels, derricks, trucks, materials, or other heavy objects on a level above or near any excavation, the side of the excavation will be sheetpiled, shored, and braced as necessary to resist the extra pressure due to such superimposed loads.

Backfilling and removal of trench supports will progress together from the bottom of the trench. Jacks or braces will be released slowly and , in unstable soil, ropes will be used to pull out the jacks or braces from above after employees have cleared the trench.

<u>Shield Systems</u>

Portable trench boxes or sliding trench shields may be used for protection of personnel in lieu of a shoring system or sloping. Where such trench boxes or shields are used, they will be designed, constructed and maintained in a manner which will provide protection equal to or greater than the sheeting or shoring required for the trench. Shields will be installed so as to restrict lateral or other hazardous movement. Personnel are not allowed inside shields when shields are being moved.

EXCAVATION SAFETY LIST

To be completed prior to each work shift, or prior to personnel entering a new trench for the first time, by the Site Safety Officer/Competent Person:

Project_____Location_____

Job Number_____

Competent Person(CP)*_____Date_____

		Yes	No	N/A
1.	**Has the site been cleared for utilities and other underground obstructions?**	____	____	____
2.	**If on public property, has the regional utility locating service been notified?**	____	____	____
3.	**Has the excavation equipment been safety checked by the operator?**	____	____	____
4.	**Are copies of relevant OSHA excavation regulations available on site?**	____	____	____
5.	**Will the excavation be 5 feet or more in depth?**	____	____	____
6.	**If 4 is yes, will personnel enter the excavation at any time?**	____	____	____
7.	**If 4a is yes, have provisions been made for shoring, sloping, or benching the excavation? Describe:** _____ _____ _____	____	____	____
8.	**Has an inspection of the site and excavation been conducted by the SSO?**	____	____	____
9.	**Has the Competent Person conducted visual and manual tests to classify the soil?**	____	____	____

*** According to Federal OSHA, A Competent Person is a person who is capable of identifying existing and predictable hazards in the surroundings; or working conditions which are unsanitary, hazardous, or dangerous to employees; and who has the authority to take prompt corrective measures to eliminate them.**

10.	**G**	**Visual Test _____(type)** **Manual Test_____(type)** **Soil Classification_____(type)**			
11.		**Are there any conditions that might expose employees to injury from possible moving ground?**	____	_____	____
12.		**Is excavated material being placed at least 2 feet from the edge of the excavation?**	____	____	____
13.		**Is work in the excavation at all times under the immediate supervision of the SSO or other competent person?**	____	____	____
14.		**Is there a stairway, ladder, or ramp securely fastened in place to provide ingress and egress from the excavation?**	____	____	____
15.		**If the excavation is 4 feet or more in depth, are safe means of access (see 8) provided so as to require no more than 25 feet of lateral travel to reach them?**	____	____	____
16.		**If structural ramps are installed that are used for access/egress: were they designed by a qualified engineer?**	____	____	____
17.		**Do the structural ramps have appropriate means to prevent slipping and are the ramps uniform in thickness?**	____	____	____
18.		**Are walkways or bridges provided across the excavation to safe crossing?**	____	____	____
19.		**If excavations are 71/2 or more feet in depth, do the walkways have guardrails and toeboards?**	____	____	____
20.		**Are undermined structures adequately supported to safely carry all anticipated loads and protect workers?**	____	____	____
21.		**Are there adequate means provided to prevent mobile equipment from inadvertently entering the excavation?**	____	____	____
22.		**Is the excavation well marked and barricaded to prevent personnel from falling IN?**	____	____	____
23.		**Are means available to prevent surface water from entering the excavation and to provide**	____	____	____

	adequate drainage of the area adjacent to the trench?			
24.	**Where it is reasonable to expect hazardous atmospheres, including oxygen deficiency, to exist in the excavation, is appropriate atmosphere testing equipment available.**	____	____	____
25.	**Has the testing equipment been calibrated, and the calibrations recorded, today?**	____	____	____
26.	**Are employees trained in proper use of this equipment?**	____	____	____
27.	**Has a harness and lifeline been provided whenever an employee is required to enter a confined footing excavation?**	____	____	____
28.	**Is appropriate personal protective equipment (hardhat, safety boots, eye protection, etc.) available and in use?**	____	____	____

Notes:_____

_____

_____

_____

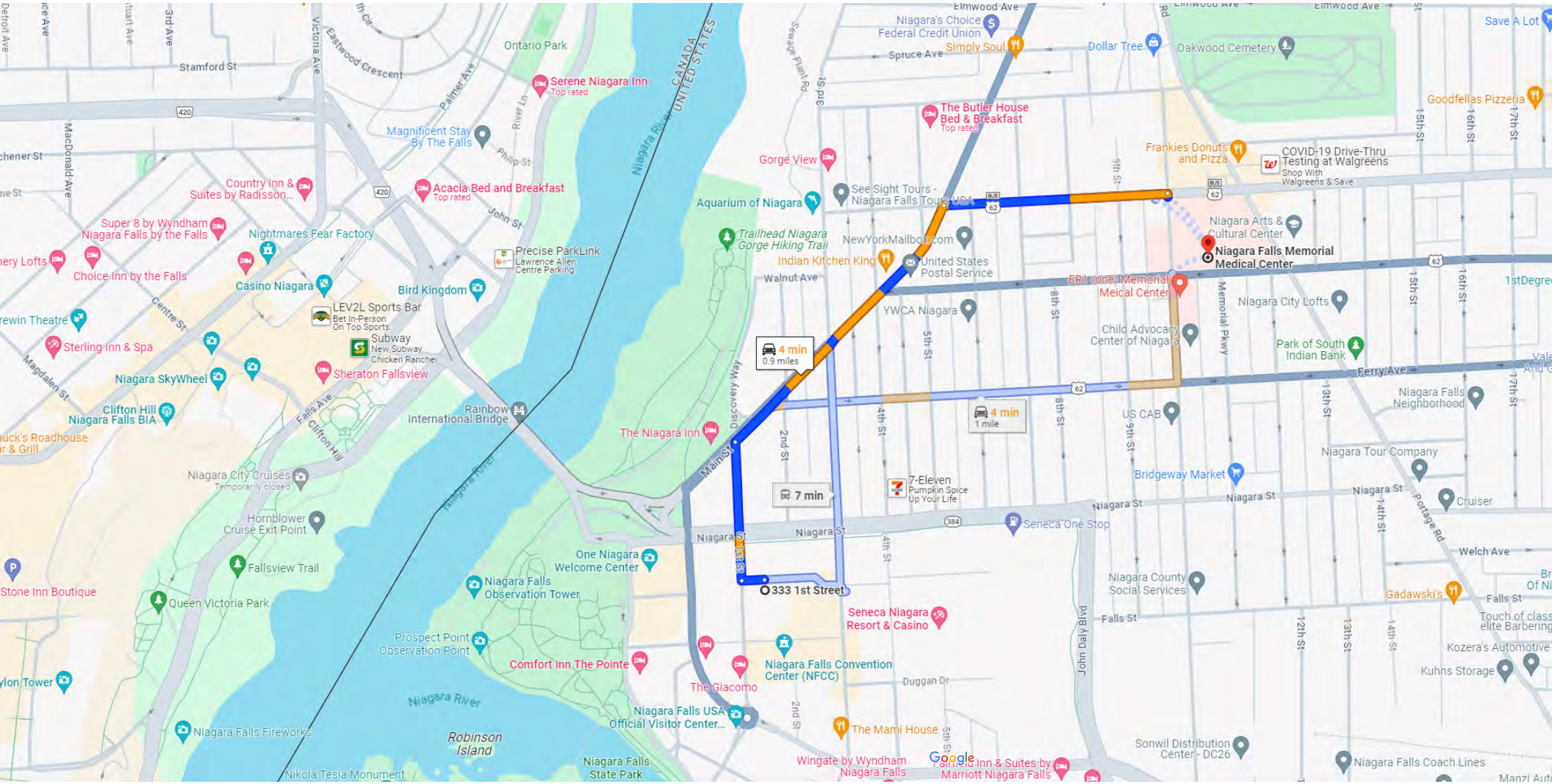
_____ _____

CPs Name (Print) **Signature**

ATTACHMENT 4

Map to Hospital

Google Maps 333 1st St, Niagara Falls, NY 14303 to Niagara Falls Mem Medical Ctr, 621 10th St, Niagara Falls, NY 14301 Drive 0.9 mile, 4 min



via Main St and Pine Ave — 4 min
Fastest route now due to traffic conditions — 0.9 mile

via Ferry Ave — 4 min
Some traffic, as usual — 1.0 mile

12:33 PM—12:40 PM — 7 min
40 / 50 / 77

Explore nearby Niagara Falls Mem Medical Ctr

Restaurants Hotels Gas stations Parking Lots More

APPENDIX B

COMMUNITY AIR MONITORING PLAN

BRYDGES ENGINEERING
IN ENVIRONMENT AND ENERGY, DPC

COMMUNITY AIR MONITORING PLAN (CAMP)

The NEST Site
333 1st Street
City of Niagara Falls, New York, 14303
NYSDEC Site No. C932183

Prepared for:

Community Services Seventh Housing LLC
180 Oak Street Buffalo, NY 14203

Prepared by:

960 Busti Avenue, Suite B-150
Buffalo, New York 14213

December 2024

Table of Contents

Attachments

1.0 COMMUNITY AIR MONITORING PROGRAM (CAMP)

A Community Air Monitoring Program (CAMP) requires real-time monitoring for volatile organic compounds (VOCs) and particulates (i.e., dust) at the upwind and downwind perimeter of each designated work area when certain activities are in progress at contaminated sites. The program is not intended for use in establishing action levels for worker respiratory protection. Rather, its intent is to provide a measure of protection for the downwind community (i.e., off-site receptors and on-site workers not directly involved with work activities) from potential airborne contaminant releases as a direct result of investigative and remedial work activities. A NYSDOH generic CAMP obtained from NYSDEC DER-10 is presented in Attachment 1 that will be followed and adhered to for work activities that could release potential contaminants from an impacted area.

A program for suppressing fugitive dust and particulate matter monitoring will also be conducted in accordance NYSDEC DER-10 titled Appendix 1B Fugitive Dust and Particulate Monitoring, which is also provided in Attachment 1. The fugitive dust suppression and particulate monitoring program will be employed at the site during building demolition, site investigations/remediation and other intrusive activities which warrant its use.

Both the CAMP and the fugitive dust and particulate monitoring program will be administered by the environmental engineer/consultant. Monitoring results of the CAMP will be reported to the New York State Department of Health daily for review.

NYSDEC and NYSDOH are to be provided CAMP data on a daily basis when collected. When sample excursions occur, identify the reason for the excursions and measures to address the excursions.

ATTACHMENT 1

NYSDOH Generic CAMP
and
Fugitive Dust and Particulate Monitoring

Appendix 1A
New York State Department of Health
Generic Community Air Monitoring Plan

Overview

A Community Air Monitoring Plan (CAMP) requires real-time monitoring for volatile organic compounds (VOCs) and particulates (i.e., dust) at the downwind perimeter of each designated work area when certain activities are in progress at contaminated sites. The CAMP is not intended for use in establishing action levels for worker respiratory protection. Rather, its intent is to provide a measure of protection for the downwind community (i.e., off-site receptors including residences and businesses and on-site workers not directly involved with the subject work activities) from potential airborne contaminant releases as a direct result of investigative and remedial work activities. The action levels specified herein require increased monitoring, corrective actions to abate emissions, and/or work shutdown. Additionally, the CAMP helps to confirm that work activities did not spread contamination off-site through the air.

The generic CAMP presented below will be sufficient to cover many, if not most, sites. Specific requirements should be reviewed for each situation in consultation with NYSDOH to ensure proper applicability. In some cases, a separate site-specific CAMP or supplement may be required. Depending upon the nature of contamination, chemical- specific monitoring with appropriately-sensitive methods may be required. Depending upon the proximity of potentially exposed individuals, more stringent monitoring or response levels than those presented below may be required. Special requirements will be necessary for work within 20 feet of potentially exposed individuals or structures and for indoor work with co-located residences or facilities. These requirements should be determined in consultation with NYSDOH.

Reliance on the CAMP should not preclude simple, common-sense measures to keep VOCs, dust, and odors at a minimum around the work areas.

Community Air Monitoring Plan

Depending upon the nature of known or potential contaminants at each site, real-time air monitoring for VOCs and/or particulate levels at the perimeter of the exclusion zone or work area will be necessary. Most sites will involve VOC and particulate monitoring; sites known to be contaminated with heavy metals alone may only require particulate monitoring. If radiological contamination is a concern, additional monitoring requirements may be necessary per consultation with appropriate DEC/NYSDOH staff.

Continuous monitoring will be required for all ground intrusive activities and during the demolition of contaminated or potentially contaminated structures. Ground intrusive activities include, but are not limited to, soil/waste excavation and handling, test pitting or trenching, and the installation of soil borings or monitoring wells.

Periodic monitoring for VOCs will be required during non-intrusive activities such as the collection of soil and sediment samples or the collection of groundwater samples from existing monitoring wells. "Periodic" monitoring during sample collection might reasonably consist of taking a reading upon arrival at a sample location, monitoring while opening a well cap or

overturning soil, monitoring during well baling/purging, and taking a reading prior to leaving a sample location. In some instances, depending upon the proximity of potentially exposed individuals, continuous monitoring may be required during sampling activities. Examples of such situations include groundwater sampling at wells on the curb of a busy urban street, in the midst of a public park, or adjacent to a school or residence.

VOC Monitoring, Response Levels, and Actions

Volatile organic compounds (VOCs) must be monitored at the downwind perimeter of the immediate work area (i.e., the exclusion zone) on a continuous basis or as otherwise specified. Upwind concentrations should be measured at the start of each workday and periodically thereafter to establish background conditions, particularly if wind direction changes. The monitoring work should be performed using equipment appropriate to measure the types of contaminants known or suspected to be present. The equipment should be calibrated at least daily for the contaminant(s) of concern or for an appropriate surrogate. The equipment should be capable of calculating 15-minute running average concentrations, which will be compared to the levels specified below.

1. If the ambient air concentration of total organic vapors at the downwind perimeter of the work area or exclusion zone exceeds 5 parts per million (ppm) above background for the 15-minute average, work activities must be temporarily halted and monitoring continued. If the total organic vapor level readily decreases (per instantaneous readings) below 5 ppm over background, work activities can resume with continued monitoring.

2. If total organic vapor levels at the downwind perimeter of the work area or exclusion zone persist at levels in excess of 5 ppm over background but less than 25 ppm, work activities must be halted, the source of vapors identified, corrective actions taken to abate emissions, and monitoring continued. After these steps, work activities can resume provided that the total organic vapor level 200 feet downwind of the exclusion zone or half the distance to the nearest potential receptor or residential/commercial structure, whichever is less - but in no case less than 20 feet, is below 5 ppm over background for the 15-minute average.

3. If the organic vapor level is above 25 ppm at the perimeter of the work area, activities must be shutdown.

4. All 15-minute readings must be recorded and be available for State (DEC and NYSDOH) personnel to review. Instantaneous readings, if any, used for decision purposes should also be recorded.

Particulate Monitoring, Response Levels, and Actions

Particulate concentrations should be monitored continuously at the upwind and downwind perimeters of the exclusion zone at temporary particulate monitoring stations. The particulate monitoring should be performed using real-time monitoring equipment capable of measuring particulate matter less than 10 micrometers in size (PM-10) and capable of integrating over a period of 15 minutes (or less) for comparison to the airborne particulate action level. The equipment must be equipped with an audible alarm to indicate exceedance of the action level. In addition, fugitive dust migration should be visually assessed during all work activities.

1. If the downwind PM-10 particulate level is 100 micrograms per cubic meter (mcg/m^3) greater than background (upwind perimeter) for the 15-minute period or if airborne dust is observed leaving the work area, then dust suppression techniques must be employed. Work may continue with dust suppression techniques provided that downwind PM-10 particulate levels do not exceed 150 mcg/m^3 above the upwind level and provided that no visible dust is migrating from the work area.

2. If, after implementation of dust suppression techniques, downwind PM-10 particulate levels are greater than 150 mcg/m^3 above the upwind level, work must be stopped and a re-evaluation of activities initiated. Work can resume provided that dust suppression measures and other controls are successful in reducing the downwind PM-10 particulate concentration to within 150 mcg/m^3 of the upwind level and in preventing visible dust migration.

3. All readings must be recorded and be available for State (DEC and NYSDOH) and County Health personnel to review.

December 2009

Appendix 1B
Fugitive Dust and Particulate Monitoring

A program for suppressing fugitive dust and particulate matter monitoring at hazardous waste sites is a responsibility on the remedial party performing the work. These procedures must be incorporated into appropriate intrusive work plans. The following fugitive dust suppression and particulate monitoring program should be employed at sites during construction and other intrusive activities which warrant its use:

1. Reasonable fugitive dust suppression techniques must be employed during all site activities which may generate fugitive dust.

2. Particulate monitoring must be employed during the handling of waste or contaminated soil or when activities on site may generate fugitive dust from exposed waste or contaminated soil. Remedial activities may also include the excavation, grading, or placement of clean fill. These control measures should not be considered necessary for these activities.

3. Particulate monitoring must be performed using real-time particulate monitors and shall monitor particulate matter less than ten microns (PM10) with the following minimum performance standards:

(a) Objects to be measured: Dust, mists or aerosols;
(b) Measurement Ranges: 0.001 to 400 mg/m3 (1 to 400,000 :ug/m3);
(c) Precision (2-sigma) at constant temperature: +/- 10 :g/m3 for one second averaging; and +/- 1.5 g/m3 for sixty second averaging;
(d) Accuracy: +/- 5% of reading +/- precision (Referred to gravimetric calibration with SAE fine test dust (mmd= 2 to 3 :m, g= 2.5, as aerosolized);
(e) Resolution: 0.1% of reading or 1g/m3, whichever is larger;
(f) Particle Size Range of Maximum Response: 0.1-10;
(g) Total Number of Data Points in Memory: 10,000;
(h) Logged Data: Each data point with average concentration, time/date and data point number
(i) Run Summary: overall average, maximum concentrations, time/date of maximum, total number of logged points, start time/date, total elapsed time (run duration), STEL concentration and time/date occurrence, averaging (logging) period, calibration factor, and tag number;
(j) Alarm Averaging Time (user selectable): real-time (1-60 seconds) or STEL (15 minutes), alarms required;
(k) Operating Time: 48 hours (fully charged NiCd battery); continuously with charger;
(l) Operating Temperature: -10 to 50° C (14 to 122° F);
(m) Particulate levels will be monitored upwind and immediately downwind at the working site and integrated over a period not to exceed 15 minutes.

4. In order to ensure the validity of the fugitive dust measurements performed, there must be appropriate Quality Assurance/Quality Control (QA/QC). It is the responsibility of the remedial party to adequately supplement QA/QC Plans to include the following critical features: periodic instrument calibration, operator training, daily instrument performance (span) checks, and a record keeping plan.

5. The action level will be established at 150 ug/m3 (15 minutes average). While conservative,

this short-term interval will provide a real-time assessment of on-site air quality to assure both health and safety. If particulate levels are detected in excess of 150 ug/m3, the upwind background level must be confirmed immediately. If the working site particulate measurement is greater than 100 ug/m3 above the background level, additional dust suppression techniques must be implemented to reduce the generation of fugitive dust and corrective action taken to protect site personnel and reduce the potential for contaminant migration. Corrective measures may include increasing the level of personal protection for on-site personnel and implementing additional dust suppression techniques (see paragraph 7). Should the action level of 150 ug/m3 continue to be exceeded work must stop and DER must be notified as provided in the site design or remedial work plan. The notification shall include a description of the control measures implemented to prevent further exceedances.

6. It must be recognized that the generation of dust from waste or contaminated soil that migrates off-site, has the potential for transporting contaminants off-site. There may be situations when dust is being generated and leaving the site and the monitoring equipment does not measure PM10 at or above the action level. Since this situation has the potential to allow for the migration of contaminants off-site, it is unacceptable. While it is not practical to quantify total suspended particulates on a real-time basis, it is appropriate to rely on visual observation. If dust is observed leaving the working site, additional dust suppression techniques must be employed. Activities that have a high dusting potential--such as solidification and treatment involving materials like kiln dust and lime--will require the need for special measures to be considered.

7. The following techniques have been shown to be effective for the controlling of the generation and migration of dust during construction activities:

(a) Applying water on haul roads;
(b) Wetting equipment and excavation faces;
(c) Spraying water on buckets during excavation and dumping;
(d) Hauling materials in properly tarped or watertight containers;
(e) Restricting vehicle speeds to 10 mph;
(f) Covering excavated areas and material after excavation activity ceases; and
(g) Reducing the excavation size and/or number of excavations.

Experience has shown that the chance of exceeding the 150ug/m3 action level is remote when the above-mentioned techniques are used. When techniques involving water application are used, care must be taken not to use excess water, which can result in unacceptably wet conditions. Using atomizing sprays will prevent overly wet conditions, conserve water, and provide an effective means of suppressing the fugitive dust.

8. The evaluation of weather conditions is necessary for proper fugitive dust control. When extreme wind conditions make dust control ineffective, as a last resort remedial actions may need to be suspended. There may be situations that require fugitive dust suppression and particulate monitoring requirements with action levels more stringent than those provided above. Under some circumstances, the contaminant concentration and/or toxicity may require additional monitoring to protect site personnel and the public. Additional integrated sampling and chemical analysis of the dust may also be in order. This must be evaluated when a health and safety plan is developed and when appropriate suppression and monitoring requirements are established for protection of health and the environment.

Special Requirements for Work Within 20 Feet of Potentially Exposed Individuals or Structures

When work areas are within 20 feet of potentially exposed populations or occupied structures, the continuous monitoring locations for VOCs and particulates must reflect the nearest potentially exposed individuals and the location of ventilation system intakes for nearby structures. The use of engineering controls such as vapor/dust barriers, temporary negative-pressure enclosures, or special ventilation devices should be considered to prevent exposures related to the work activities and to control dust and odors. Consideration should be given to implementing the planned activities when potentially exposed populations are at a minimum, such as during weekends or evening hours in non-residential settings.

- If total VOC concentrations opposite the walls of occupied structures or next to intake vents exceed 1 ppm, monitoring should occur within the occupied structure(s). Depending upon the nature of contamination, chemical-specific colorimetric tubes of sufficient sensitivity may be necessary for comparing the exposure point concentrations with appropriate pre-determined response levels (response actions should also be pre-determined). Background readings in the occupied spaces must be taken prior to commencement of the planned work. Any unusual background readings should be discussed with NYSDOH prior to commencement of the work.

- If total particulate concentrations opposite the walls of occupied structures or next to intake vents exceed 150 mcg/m^3, work activities should be suspended until controls are implemented and are successful in reducing the total particulate concentration to 150 mcg/m^3 or less at the monitoring point.

- Depending upon the nature of contamination and remedial activities, other parameters (e.g., explosivity, oxygen, hydrogen sulfide, carbon monoxide) may also need to be monitored. Response levels and actions should be pre-determined, as necessary, for each site.

Special Requirements for Indoor Work With Co-Located Residences or Facilities

Unless a self-contained, negative-pressure enclosure with proper emission controls will encompass the work area, all individuals not directly involved with the planned work must be absent from the room in which the work will occur. Monitoring requirements shall be as stated above under "Special Requirements for Work Within 20 Feet of Potentially Exposed Individuals or Structures" except that in this instance "nearby/occupied structures" would be adjacent occupied rooms. Additionally, the location of all exhaust vents in the room and their discharge points, as well as potential vapor pathways (openings, conduits, etc.) relative to adjoining rooms, should be understood and the monitoring locations established accordingly. In these situations, it is strongly recommended that exhaust fans or other engineering controls be used to create negative air pressure within the work area during remedial activities. Additionally, it is strongly recommended that the planned work be implemented during hours (e.g. weekends or evenings) when building occupancy is at a minimum.

APPENDIX C

QUALITY ASSURANCE/ QUALITY CONTROL PLAN

BE3 BRYDGES ENGINEERING IN ENVIRONMENT AND ENERGY, DPC

QUALITY ASSURANCE/QUALITY CONTROL PLAN

The NEST Site
333 1st Street
City of Niagara Falls, New York, 14303
NYSDEC Site No. C932183

Prepared for:

Community Services Seventh Housing LLC
180 Oak Street Buffalo, NY 14203

Prepared by:

BRYDGES ENGINEERING
IN ENVIRONMENT AND ENERGY, DPC
960 Busti Avenue, Suite B-150
Buffalo, New York, 14213

DECEMBER 2024

TABLE OF CONTENTS

Page No

TABLES

1.0 INTRODUCTION

This Quality Assurance/Quality Control (QA/QC) Plan provides an overview of QA/QC procedures required for the project. It also provides methods for laboratory testing of environmental samples obtained from the Site, which helps to ensure the quality of the data produced. The project manager is responsible for verifying that QA procedures are followed in the field so that quality, representative samples are collected. The Project Manager is in contact with the analytical laboratory to monitor laboratory activities so that holding times and other QA/QC requirements are met. The anticipated quantity of field samples collected, and corresponding analytical parameters/methods will be specified during remediation.

TABLE 1: ANALYTICAL SUMMARY TABLE

PARAMETER	ANALYTICAL METHOD
Part 375 VOCs	8260
Part 375 SVOCs	8270
Part 375 Metals	6010/7470/7471
Part 375 PCBs	8082
Part 375 Pesticides	8081
Air	TO-15
Emerging Contaminants	1633
1,4 Dioxane	8270 SIM

Holding Times: 8260-14 days and 8270, 8081, and 8082-7 days

A complete analyte list is provided in Table 2 and analytical methods and procedures are provided in Table 3. Both tables are located at the end of this document.

The analytical laboratory proposed for use for the analysis of samples will be a certified NYSDOH ELAP laboratory. The QA Manager of the laboratory will be responsible for performing project-specific audits and for overseeing the quality control data generated. The field geologist/technician coordinates all personnel involved with field sampling, verifies that all sampling is conducted per the FSP, and communicates regularly with the Project Manager. The ultimate responsibility for maintaining quality throughout the project rests with the Project Manager, including field and laboratory QA/QC.

2.0 DATA QUALITY OBJECTIVES

2.1 BACKGROUND

Data quality objectives (DQOs) are qualitative and quantitative statements, which specify the quality of data required supporting the investigation for the site. DQOs focus on the identification of the end use of the data to be collected. The project DQOs are achieved utilizing the definitive data category as outlined in *Guidance for the Data Quality Objectives Process,* EPA QA/G-4 (September 1994). All sample analyses will provide definitive data, which are generated using rigorous analytical methods such as reference methods approved by the United States

Environmental Protection Agency (USEPA). The purpose of this investigation is to determine the nature and extent of contamination at the site.

Within the context of the purpose stated above, the project DQOs for data collected during this investigation are:

- To assess the nature and extent of surrounding soil contamination (i.e., on adjacent/bordering properties).
- To maintain the highest possible scientific/professional standards for each procedure.
- To develop sufficient data to assess whether the levels of contaminates identified in the media sampled exceed regulatory guidelines.

2.2 QA Objectives for Chemical Data Measurement

Sample analytical methodology for the media sampled and data deliverables are required to adhere to the requirements in NYSDEC Analytical Services Protocol. Laboratories are instructed to complete Sample Preparation and Analysis Summary forms and submit with the data packages. The laboratory is instructed that matrix interferences must be fixed to the extent practicable. To achieve the definitive data category described above, the data quality indicators of precision, accuracy, representativeness, comparability, and completeness are measured during analysis.

2.2.1 Precision

Precision examines the distribution of the reported values about their mean. The distribution of reported values refers to how different the individual reported values are from the average reported value. Precision may be affected by the natural variation of the matrix or contamination within that matrix and by errors made in field or laboratory handling procedures. Precision is evaluated using analyses of a laboratory matrix spike/matrix spike duplicate (for organics) and matrix duplicates (for inorganics), which indicate analytical precision through the reproducibility of the analytical results. Relative Percent Difference (RPD) is used to evaluate precision and it must meet the method requirements.

2.2.2 Accuracy

Accuracy measures the analytical bias in a measurement system. Sources of error are the sampling process, field contamination, preservation, handling, sample matrix, sample preparation, and analysis techniques. These data help to assess the potential concentration contribution from various outside sources. The laboratory objective for accuracy is to equal or exceed the accuracy demonstrated for the applied analytical methods on samples of the same matrix. The percent recovery criterion is used to estimate accuracy based on recovery in the matrix spike/matrix spike duplicate and matrix spike blank samples. The spike and spike duplicate, which will give an indication of matrix effects that may be affecting target compounds is also a good gauge of method efficiency.

2.2.3 Representativeness

Representativeness expresses the degree to which the sample data accurately and precisely represent the characteristics of a population of samples, parameter variations at a sampling point, or environmental conditions. Representativeness is a qualitative parameter, which is most concerned with the proper design of the sampling program or sub-sampling of a given sample. Objectives for representativeness are defined for sampling and analysis tasks and are a function of the

investigative objectives. The sampling procedures described in the Field Sampling Plan have been selected with the goal of obtaining representative samples for the media of concern.

2.2.4 Comparability

Comparability is a qualitative parameter expressing the confidence with which one data set can be compared with another. A DQO for this program is to produce data with the greatest possible degree of comparability. This goal is achieved through using standard techniques to collect and analyze representative samples and reporting analytical results in appropriate units. Complete field documentation will support the assessment of comparability. Comparability is limited by the other parameters (e.g., precision, accuracy, representativeness, completeness, comparability), because only when precision and accuracy are known can data sets be compared with confidence. For data sets to be comparable, it is imperative that contract-required methods and procedures be explicitly followed.

2.2.5 Completeness

Completeness is defined as a measure of the amount of valid data obtainable from a measurement system compared to the amount that was expected to be obtained under normal conditions. It is important that appropriate QA procedures be maintained to verify that valid data are obtained to meet project needs. For the data generated, a goal of 90% is required for completeness (or usability) of the analytical data. If this goal is not met, then project personnel will determine whether the deviations might cause the data to be rejected.

3.0 SAMPLING LOCATIONS, CUSTODY, AND HOLDING TIMES

Sampling locations are discussed in the Remedial Action Work Plan (RAWP). Procedures addressing field and laboratory sample chain-of-custody and holding times details are presented in the Field Sampling Plan. The laboratory must meet the method required detection limits which are referenced within the methods.

4.0 CALIBRATION PROCEDURES AND FREQUENCY

To obtain a high level of precision and accuracy during sample processing procedures, laboratory instruments must be calibrated properly. Several analytical support areas must be considered so the integrity of standards and reagents is upheld prior to instrument calibration. The following sections describe the analytical support areas and laboratory instrument calibration procedures.

4.1 ANALYTICAL SUPPORT AREAS

Prior to generating quality data, several analytical support areas must be considered; these are detailed in the following paragraphs.

Standard/Reagent Preparation - Primary reference standards and secondary standard solutions shall be obtained from National Institute of Standards and Technology (NIST), or other reliable commercial sources to verify the highest purity possible. The preparation and maintenance of standards and reagents will be accomplished according to the methods referenced. All standards and standard solutions are to be formally documented (i.e., in a logbook) and should

identify the supplier, lot number, purity/concentration, receipt/preparation date, preparers name, method of preparation, expiration date, and any other pertinent information. All standard solutions shall be validated prior to use. Care shall be exercised in the proper storage and handling of standard solutions (e.g., separating volatile standards from nonvolatile standards). The laboratory shall continually monitor the quality of the standards and reagents through well documented procedures.

Balances - The analytical balances shall be calibrated and maintained in accordance with manufacturer specifications. Calibration is conducted with two Class AS" weights that bracket the expected balance use range. The laboratory shall check the accuracy of the balances daily and they must be properly documented in permanently bound logbooks.

Refrigerators/Freezers - The temperature of the refrigerators and freezers within the laboratory shall be monitored and recorded daily. This will verify that the quality of the standards and reagents is not compromised, and the integrity of the analytical samples is upheld. Appropriate acceptance ranges (2 to 6°C for refrigerators) shall be clearly posted on each unit in service.

Water Supply System - The laboratory must maintain a sufficient water supply for all project needs. The grade of the water must be of the highest quality (analyte-free) to eliminate false-positives from the analytical results. Ultraviolet cartridges or carbon absorption treatments are recommended for organic analyses and ion-exchange treatment is recommended for inorganic tests. Appropriate documentation of the quality of the water supply system(s) will be performed on a regular basis.

4.2 LABORATORY INSTRUMENTS

Calibration of instruments is required to verify that the analytical system is operating properly and at the sensitivity necessary to meet established quantitation limits. Each instrument for organic and inorganic analyses shall be calibrated with standards appropriate to the type of instrument and linear range established within the analytical method(s). Calibration of laboratory instruments will be performed according to specified methods.

In addition to the requirements stated within the analytical methods, the contract laboratory will be required to analyze an additional low-level standard at or near the detection limits. In general, standards will be used that bracket the expected concentration of the samples. This will require the use of different concentration levels, which are used to demonstrate the instrument's linear range of calibration.

Calibration of an instrument must be performed prior to the analysis of any samples and then at periodic intervals (continuing calibration) during the sample analysis to verify that the instrument is still calibrated. If the contract laboratory cannot meet the method required calibration requirements, corrective action shall be taken. All corrective action procedures taken by the contract laboratory are to be documented, summarized within the case narrative, and submitted with the analytical results.

5.0 INTERNAL QUALITY CONTROL CHECKS

Internal QC checks are used to determine if analytical operations at the laboratory are in control, as well as determining the effect sample matrix may have on data being generated. Two types of internal checks are performed and are described as batch QC and matrix-specific QC

procedures. The type and frequency of specific QC samples performed by the contract laboratory will be according to the specified analytical method and project specific requirements. Acceptable criteria and target ranges for these QC samples are presented within the referenced analytical methods.

QC results which vary from acceptable ranges shall result in the implementation of appropriate corrective measures, potential application of qualifiers, and/or an assessment of the impact these corrective measures have on the established data quality objectives. Quality control samples including any project-specific QC will be analyzed are discussed below.

5.1 BATCH QC

Method Blanks - A method blank is defined as laboratory-distilled or deionized water that is carried through the entire analytical procedure. The method blank is used to determine the level of laboratory background contamination. Method blanks are analyzed at a frequency of one per analytical batch.

Matrix Spike Blank Samples - A matrix spike blank (MSB) sample is an aliquot of water spiked (fortified) with all the elements being analyzed for calculation of precision and accuracy to verify that the analysis that is being performed is in control. An MSB will be performed for each matrix and organic parameter only.

5.2 MATRIX-SPECIFIC QC

Matrix Spike Samples - An aliquot of a matrix is spiked with known concentrations of specific compounds as stipulated by the methodology. The matrix spike (MS) and matrix spike duplicate (MSD) are subjected to the entire analytical procedure to assess both accuracy and precision of the method for the matrix by measuring the percent recovery and relative percent difference of the two spiked samples. The samples are used to assess matrix interference effects on the method, as well as to evaluate instrument performance. MS/MSDs are analyzed at a frequency of one each per 20 samples per matrix.

Matrix Duplicates - The matrix duplicate (MD) is two representative aliquots of the same sample which are prepared and analyzed identically. Collection of duplicate samples provides for the evaluation of precision both in the field and at the laboratory by comparing the analytical results of two samples taken from the same location. Obtaining duplicate samples from a soil matrix requires homogenization (except for volatile organic compounds) of the sample aliquot prior to filling sample containers, to best achieve representative samples. Every effort will be made to obtain replicate samples; however, due to interferences, lack of homogeneity, and the nature of the soil samples, the analytical results are not always reproducible.

Rinsate (Equipment) Blanks - A rinsate blank is a sample of laboratory demonstrated analyte-free water passed through and over the cleaned sampling equipment. A rinsate blank is used to indicate potential contamination from ambient air and from sample instruments used to collect and transfer samples. This water must originate from one common source within the laboratory and must be the same water used by the laboratory performing the analysis. The rinsate blank should be collected, transported, and analyzed in the same manner as the samples acquired that day. Rinsate blanks for nonaqueous matrices should be performed at a rate of 10 percent of the total number of samples collected throughout the sampling event. Rinse blanks will not be performed on samples (i.e., groundwater) where dedicated disposable equipment is used.

Trip Blanks - Trip blanks are not required for nonaqueous matrices. Trip blanks are required for aqueous sampling events. They consist of a set of sample bottles filled at the laboratory with laboratory demonstrated analyte free water. These samples then accompany the bottles that are prepared at the lab into the field and back to the laboratory, along with the collected samples for analysis. These bottles are never opened in the field. Trip blanks must return to the lab with the same set of bottles they accompanied to the field. Trip blanks will be analyzed for volatile organic parameters. Trip blanks must be included at a rate of one per volatile sample shipment.

6.0 CALCULATION OF DATA QUALITY INDICATORS

6.1 PRECISION

Precision is evaluated using analyses of a field duplicate or a laboratory MS/MSD that indicate analytical precision through the reproducibility of the analytical results. RPD is used to evaluate precision by the following formula:

$$RPD = \frac{(X_1 - X_2)}{[(X_1 + X_2)/2]} \times 100\%$$

where:

X_1 = Measured value of sample or matrix spike
X_2 = Measured value of duplicate or matrix spike duplicate

Precision will be determined using MS/MSD (for organics) and matrix duplicates (for inorganics) analyses.

6.2 ACCURACY

Accuracy is defined as the degree of difference between the measured or calculated value and the true value. The closer the numerical value of the measurement comes to the true value or actual concentration, the more accurate the measurement is. Analytical accuracy is expressed as the percent recovery of a compound or element that has been added to the environmental sample at known concentrations before analysis. Analytical accuracy may be assessed using known and unknown QC samples and spiked samples. It is presented as percent recovery. Accuracy will be determined from matrix spike, matrix spike duplicate, and matrix spike blank samples, as well as from surrogate compounds added to organic fractions (i.e., volatiles, semivolatiles, PCB), and is calculated as follows:

$$Accuracy\ (\%R) = \frac{(X_s - X_u)}{K} \times 100\%$$

where:

X_s - Measured value of the spike sample
X_u - Measured value of the unspiked sample
K - Known amount of spike in the sample

6.3 COMPLETENESS

Completeness is calculated on a per matrix basis for the project and is calculated as follows:

$$Completeness\ (\%C) = \frac{(X_v - X_n)}{N} \quad x\ 100\%$$

where:
X_v - Number of valid measurements
X_n - Number of invalid measurements
N - Number of valid measurements expected to be obtained

7.0 CORRECTIVE ACTIONS

Laboratory corrective actions shall be implemented to resolve problems and restore proper functioning to the analytical system when errors, deficiencies, or out-of-control situations exist at the laboratory. Full documentation of the corrective action procedure needed to resolve the problem shall be filed in the project records, and the information summarized in the case narrative. A discussion of the corrective actions to be taken is presented in the following sections.

7.1 INCOMING SAMPLES

Problems noted during sample receipt shall be documented by the laboratory. The Project Manager shall be contacted immediately for problem resolution. All corrective actions shall be documented thoroughly.

7.2 SAMPLE HOLDING TIMES

If any sample extraction or analyses exceed method holding time requirements, the Project Manager shall be notified immediately for problem resolution. All corrective actions shall be documented thoroughly.

7.3 INSTRUMENT CALIBRATION

Sample analysis shall not be allowed until all initial calibrations meet the appropriate requirements. All laboratory instrumentation must be calibrated in accordance with method requirements. If any initial/continuing calibration standards exceed method QC limits, recalibration must be performed and, if necessary, reanalysis of all samples affected back to the previous acceptable calibration check.

7.4 REPORTING LIMITS

The laboratory must meet the method required detection limits listed in NYSDEC ASP, 10/95 criteria. If difficulties arise in achieving these limits due to a sample matrix, the laboratory must notify BE3 project personnel for problem resolution. To achieve those detection limits, the laboratory must utilize all appropriate cleanup procedures to retain the project required detection limits. When any sample requires a secondary dilution due to high levels of target analytes, the laboratory must document all initial analyses and secondary dilution results. Secondary dilution will be permitted only to bring target analytes within the linear range of calibration. If samples are analyzed at a secondary dilution with no target analytes detected, the Project Manager will be immediately notified so that appropriate corrective actions can be initiated.

7.5 METHOD QC

All QC method-specified QC samples shall meet the method requirements referenced in the analytical methods. Failure of method-required QC will result in the review and possible qualification of all affected data. If the laboratory cannot find any errors, the affected sample(s) shall be reanalyzed or re-extracted/redigested, then reanalyzed within method-required holding times to verify the presence or absence of matrix effects. If matrix effect is confirmed, the corresponding data shall be flagged accordingly using the flagging symbols and criteria. If matrix effect is not confirmed, then the entire batch of samples may have to be reanalyzed or re-extracted/redigested, then reanalyzed at no cost. Project Manager shall be notified as soon as possible to discuss possible corrective actions should unusually difficult sample matrices be encountered.

7.6 CALCULATION ERRORS

All analytical results must be reviewed systematically for accuracy prior to submittal. If upon data review calculation or reporting errors exist, the laboratory will be required to reissue the analytical data report with the corrective actions appropriately documented in the case narrative.

8.0 DATA REDUCTION, VALIDATION, AND USABILITY

8.1 DATA REDUCTION

Laboratory analytical data are first generated in raw form at the instrument. These data may be either in a graphic or printed tabular format. Specific data generation procedures and calculations are found in each of the referenced methods. Analytical results must be reported consistently. Identification of all analytes must be accomplished with an authentic standard of the analyte traceable to NIST or USEPA sources. Individuals experienced with an analysis and knowledgeable of requirements will perform data reduction.

8.2 DATA VALIDATION

Data validation is a systematic procedure of reviewing a body of data against a set of established criteria to provide a specified level of assurance of validity prior to its intended use. All analytical results from soil and groundwater samples will have ASP Category B deliverables and DUSRs. The data validation will be in accordance with DER-10 Section 2.2 with ASP - Category B data deliverables provided by the laboratory and a DUSR provided for validation. Where possible, discrepancies will be resolved by the project manager.

- Technical holding times will be in accordance with NYSDEC ASP, 7/2005 edition.
- Organic calibration and QC criteria will be in accordance with NYSDEC ASP, 7/2005 edition. Data will be qualified if it does not meet NYSDEC ASP, 7/2005 criteria.

9.0 REFERENCES

Comprehensive Environmental Response Compensation and Liability Act (CERCLA) Quality Assurance Manual, Final Copy, Revision I, October 1989.

National Enforcement Investigations Center of USEPA Office of Enforcement. *NEIC Policies and Procedures.* Washington: USEPA.

New York State Department of Environmental Conservation (NYSDEC) 2005. *Analytical Services Protocol*, (ASP) 7/2005 Edition. Albany: NYSDEC.

NYSDEC "DER-10 Technical Guidance for Site Investigation and Remediation (DER-10)," dated May 3, 2010, Appendix 2B.

TABLE 2
ANALYTE LIST

Part 375 Metals (ICP)
EPA 6010C

Analyte

Arsenic
Barium
Beryllium
Cadmium
Chromium
Copper
Lead
Manganese
Nickel
Selenium
Silver
Zinc
Mercury EPA 7471B
Cyanide, Total EPA 9014

PCBs **EPA 7471B**

PCB-1016
PCB-1221
PCB-1232
PCB-1242
PCB-1248

Chlorinated Pesticides
EPA 8081B

4,4-DDD
4,4-DDE
4,4-DDT
Aldrin
alpha-BHC
beta-BHC
cis-Chlordane
delta-BHC
Dieldrin
Endosulfan I
Endosulfan II
Endosulfan Sulfate
Endrin
Endrin Aldehyde
Endrin Ketone
gamma-BHC (Lindane)
Heptachlor
Heptachlor Epoxide
Methoxychlor
Toxaphene
trans-Chlordane

Semi-Volatile Organics (Acid/Base Neutrals)
EPA 8270D

1,1-Biphenyl
1,2,4,5-Tetrachlorobenzene
1,2,4-Trichlorobenzene
1,2-Dichlorobenzene
1,3-Dichlorobenzene
1,4-Dichlorobenzene
2,2-Oxybis (1-chloropropane)
2,3,4,6-Tetrachlorophenol
2,4,5-Trichlorophenol
2,4,6-Trichlorophenol
2,4-Dichlorophenol
2,4-Dimethylphenol
2,4-Dinitrophenol
2,4-Dinitrotoluene
2,6-Dinitrotoluene
2-Chloronaphthalene
2-Chlorophenol
2-Methylnapthalene
2-Methylphenol
2-Nitroaniline
2-Nitrophenol
3&4-Methylphenol
3,3'-Dichlorobenzidine
3-Nitroaniline
4,6-Dinitro-2-methylphenol
4-Bromophenyl phenyl
4-Chloro-3-methylphenol
4-Chloroaniline
4-Chlorophenyl phenyl ether
4-Nitroaniline
4-Nitrophenol
Acenaphthene
Acenaphthylene
Acetophenone
Anthracene
Atrazine
Benzaldehyde
Benzo (a) anthracene
Benzo (a) pyrene
Benzo (b) fluoranthene
Benzo (g,h,i) perylene
Benzo (k) fluoranthene
Bis (2-chloroethoxy) methane
Bis (2-chloroethyl) ether
Bis (2-ethylhexyl) phthalate
Butylbenzylphthalate
Caprolactam
Carbazole
Chrysene
Dibenz (a,h) anthracene
Dibenzofuran
Diethyl phthalate
Dimethyl phthalate
Di-n-butyl phthalate
Di-n-octylphthalate
Fluoranthene
Fluorene
Hexachlorobenzene
Hexachlorobutadiene
Hexachlorocyclopentadiene
Hexachloroethane
Indeno (1,2,3-cd) pyrene
Isophorone
Naphthalene
Nitrobenzene
N-Nitroso-di-n-propylamine
N-Nitrosodiphenylamine
Pentachlorophenol
Phenanthrene
Phenol
Pyrene

Volatile Organics
EPA 8260C

1,1,1-Trichloroethane
1,1,2,2-Tetrachloroethane
1,1,2-Trichloroethane
1,1-Dichloroethane
1,1-Dichloroethene
1,2,3-Trichlorobenzene
1,2,4-Trichlorobenzene
1,2,4-Trimethylbenzene
1,2-Dibromo-3-Chloropropane
1,2-Dibromoethane
1,2-Dichlorobenzene
1,2-Dichloroethane
1,2-Dichloropropane
1,3,5-Trimethylbenzene
1,3-Dichlorobenzene
1,4-Dichlorobenzene
1,4-dioxane
2-Butanone
2-Hexanone
4-Methyl-2-pentanone
Acetone
Benzene
Bromochloromethane
Bromodichloromethane

TABLE 2 (Continued)

Volatile Organics
(Continued)

Bromomethane
Carbon disulfide
Carbon Tetrachloride
Chlorobenzene
Chloroethane
Chloroform
Chloromethane
cis-1,2-Dichloroethene
cis-1,3-Dichloropropene
Cyclohexane
Dibromochloromethane
Dichlorodifluoromethane
Ethylbenzene
Freon 113
Isopropylbenzene
m,p-Xylene
Methyl acetate
Methyl tert-butyl Ether
Methylcyclohexane
Methylene chloride
Naphthalene
n-Butylbenzene
n-Propylbenzene
o-Xylene
p-Isopropyltoluene
sec-Butylbenzene
Styrene
tert-Butylbenzene
Tetrachloroethene
Toluene
trans-1,2-Dichloroethene
trans-1,3-Dichloropropene
Trichloroethene
Trichlorofluoromethane
Vinyl chloride

Volatiles-Air - TO-15

Acetone
Benzene
Carbon disulfide
Chloromethane
Dichlorodifluoromethane
Ethanol
Ethylbenzene
Ethyl Acetate
4-Ethyltoluene
Heptane
Hexane
Isopropyl Alcohol
Methylene chloride
Methyl ethyl ketone
Propylene
1,1,1-Trichloroethane
1,2,4-Trimethylbenzene
1,3,5-Trimethylbenzene
2,2,4-Trimethylpentane
Tertiary Butyl Alcohol
Tetrachloroethylene
Toluene
Trichloroethylene
Trichlorofluoromethane
m,p-Xylene
o-Xylene
Xylenes (total)
Acetone
Benzene
Carbon disulfide
Chloromethane
Dichlorodifluoromethane
Ethanol
Ethylbenzene
Ethyl Acetate
4-Ethyltoluene
Heptane
Hexane
Isopropyl Alcohol
Methylene
Methyl ethyl ketone
Propylene
1,1,1-Trichloroethane

PFAS ANALYTE LIST

Group	Chemical Name	Abbreviation	CAS Number
Perfluoroalkyl sulfonates	Perfluorobutanesulfonic acid	PFBS	375-73-5
	Perfluorohexanesulfonic acid	PFHxS	355-46-4
	Perfluoroheptanesulfonic acid	PFHpS	375-92-8
	Perfluorooctanessulfonic acid	PFOS	1763-23-1
	Perfluorodecanesulfonic acid	PFDS	335-77-3
Perfluoroalkyl carboxylates	Perfluorobutanoic acid	PFBA	375-22-4
	Perfluoropentanoic acid	PFPeA	2706-90-3
	Perfluorohexanoic acid	PFHxA	307-24-4
	Perfluoroheptanoic acid	PFHpA	375-85-9
	Perfluorooctanoic acid	PFOA	335-67-1
	Perfluorononanoic acid	PFNA	375-95-1
	Perfluorodecanoic acid	PFDA	335-76-2
	Perfluoroundecanoic acid	PFUA/PFUdA	2058-94-8
	Perfluorododecanoic acid	PFDoA	307-55-1
	Perfluorotridecanoic acid	PFTriA/PFTrDA	72629-94-8
	Perfluorotetradecanoic acid	PFTA/PFTeDA	376-06-7
Fluorinated Telomer Sulfonates	6:2 Fluorotelomer sulfonate	6:2 FTS	27619-97-2
	8:2 Fluorotelomer sulfonate	8:2 FTS	39108-34-4
Perfluorooctane-sulfonamides	Perfluroroctanesulfonamide	FOSA	754-91-6
Perfluorooctane-sulfonamidoacetic acids	N-methyl perfluorooctanesulfonamidoacetic acid	N-MeFOSAA	2355-31-9
	N-ethyl perfluorooctanesulfonamidoacetic acid	N-EtFOSAA	2991-50-6

TABLE 3 - ANALYTICAL METHODS & PROCEDURES SUMMARY

Groundwaters

Analyte(s)	Method	Preservation	Holding Time	Container
Volatile Organics	8260	HCl to pH <2, cool to ≤6°C	14 days	2 - 40 ml septum sealed vials
Semivolatile Organics	8270	cool to ≤6°C	Samples extracted within 7 days and extracts analyzed within 40 days following extraction	1 liter amber with Teflon lined cap
Organochlorine Pesticides	8081	cool to ≤6°C		1 liter amber with Teflon lined cap
Chlorinated Herbicides (silvex)	8151	cool to ≤6°C		1 liter amber with Teflon lined cap
PCBs	8082	cool to ≤6°C	none	1 liter amber with Teflon lined cap
ICP Metals	6010	HNO3 to pH <2	6 months	250 ml. plastic
Mercury	7470	HNO3 to pH <2	28 days	250 ml. plastic
Hexavalent Chromium	7196	cool to ≤6°C	24 hours	125 ml. plastic
Cyanide, Total	9010	NaOH to pH >12, cool to ≤6°C	14 days	250 ml. plastic
PFAS	537M	cool to ≤6°C	Samples extracted within 14 days and extracts analyzed within 28 days following extraction	250 ml. HDPE
1,4-Dioxane	8270 SIM	cool to ≤6°C	Samples extracted within 7 days and extracts analyzed within 40 days following extraction	1 liter amber with Teflon lined cap

Soils

Analyte(s)	Method	Preservation	Holding Time	Container
Volatile Organics	8260	cool to ≤6°C	14 days	4 oz. widemouth glass with Teflon lined cap
Semivolatile Organics	8270	cool to ≤6°C	Samples extracted within 14 days and extracts analyzed within 40 days following extraction	4 oz. widemouth glass with Teflon lined cap
Organochlorine Pesticides	8081	cool to ≤6°C		4 oz. widemouth glass with Teflon lined cap
Chlorinated Herbicides (silvex)	8151	cool to ≤6°C		4 oz. widemouth glass with Teflon lined cap
PCBs	8082	cool to ≤6°C	none	4 oz. widemouth glass with Teflon lined cap
ICP Metals	6010	none	6 months	4 oz. widemouth glass with Teflon lined cap
Mercury	7471	cool to ≤6°C	28 days	4 oz. widemouth glass with Teflon lined cap
Hexavalent Chromium	3060/7196	cool to ≤6°C	30 days to extraction 7 days from extraction to analysis	4 oz. widemouth glass with Teflon lined cap
Cyanide, Total	9012	cool to ≤6°C	14 days	4 oz. widemouth glass with Teflon lined cap
PFAS	537M	cool to ≤6°C	Samples extracted within 14 days and extracts analyzed within 40 days following extraction	250 ml.HDPE
1,4-Dioxane	8270 SIM	cool to ≤6°C	Samples extracted within 7 days and extracts analyzed within 40 days following extraction	4 oz. widemouth glass with Teflon lined cap

APPENDIX D

FIELD SAMPLING PLAN

BRYDGES ENGINEERING
IN ENVIRONMENT AND ENERGY, DPC

FIELD SAMPLING PLAN

The NEST Site
333 1st Street
City of Niagara Falls, New York, 14303
NYSDEC Site No. C932183

Prepared for:

Community Services Seventh Housing LLC
180 Oak Street Buffalo, NY 14203

Prepared by:

BRYDGES ENGINEERING
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Buffalo, New York 14213

DECEMBER 2024

Table of Contents

1.0 INTRODUCTION

This Field Sampling Plan (FSP) provides procedures for the field activities designed in the Work Plan where soil, groundwater, and vapor sampling are required at the Site. The field procedures presented in this manual should be followed by all field personnel, as adherence can help to ensure the quality and usability of the data collected. The FSP should be used collectively with and comply with the following documents:

- The HASP.
- The QA/QC Plan.
- The RI Work Plan.

PFAS sampling and analysis should be done in accordance with the NYSDEC document: "Sampling, Analysis, and Assessment of PFAS under NYSDEC's Part 375 Remedial Programs document, dated April 2023]." This document is to be used with both soil and groundwater samples.

All field equipment requiring calibration will be calibrated per, and at the frequency, recommended by the equipment manufacturer.

2.0 SOIL SAMPLING

Soil samples are obtained as outlined in the Work Plan, considering the following general protocol:

1. Inspect newly created test pit or boring core stratigraphy once obtained in/from the subsurface.
2. Quickly place the calibrated PID into the exposed soil and record the instrument readings in the logbook.
3. Sample soil, and record depth and any physical characteristics (e.g., contamination, odor, discoloration, debris, etc.) in the logbook.
4. Samples should be collected at locations and frequency per the Work Plan and QA/QC Plan.
5. Decontaminate sampling implements after use and between sample locations. In most cases, dedicated sampling equipment is utilized thereby eliminating equipment decontamination. If dedicated equipment is not used, "dry" decontamination will be applied and "wet" as necessary.
6. Label each sample container with the appropriate sample identification and place samples in a cooler (cooled to 4 degrees C.) for shipment to the laboratory.
7. Initiate chain-of-custody procedures.

2.1 TEST PIT PROCEDURES

Test pit sampling is a standard method of soil sampling to obtain representative samples for identification as well as to serve as a means of obtaining significant information about the subsurface. The following steps describe the procedures for test pit operations.

2.1.1 Field Preparation

1. Verify underground utilities have been found.
2. Review scope of work, safety procedures and communication signals with site personnel.

3. Pre-clean the sampling equipment prior to use, as necessary.
4. Mark and review trench locations. Specific locations are determined in the field and are selected based on areas of visible or potential surface contamination or debris, pre-determined locations representing specific Site areas, and field obstructions.

2.1.2 Excavation and Sample Collection

1. Position backhoe/equipment into appropriate area considering direction of excavation, obstructions, safety concerns, etc.
2. Commence excavation with the backhoe upwind of the excavation, as possible.
3. Ensure continuous air monitoring has been activated.
4. Screen soil regularly for VOCs as excavation progresses and soil is stockpiled.
5. As directed by field technician for each test trench, topsoil, or cover soil (if any) is excavated and placed on poly/plastic sheeting.
6. Soil/material below the topsoil is excavated to the depth as directed by field technician and placed on poly/plastic sheeting separate from the topsoil/cover soil.
7. Segregate 'clean' material from impacted material, as possible, using visual observations and PID screening.
8. Record geologic log as trenches are excavated visually inspecting subsurface material for discoloration or staining and documenting pit/trench with photos. The following information will be recorded for each test pit log:
   - Depth, length, and width of the excavation.
   - Description of each lithological unit including depth and thickness of distinct soil, fill, or rock layers.
   - Description of any man-made impacts or apparent contamination.
   - Depth to groundwater and bedrock, if encountered.
9. Collect soil samples using dedicated stainless-steel spoons directly from the bucket of the backhoe at ground surface. No personnel shall enter the excavation to collect samples unless provisions in the HASP have been addressed for entering an excavation.
10. Place each soil sample directly into appropriate sample bottles/jars.
11. Clearly label the sample bottles and jars.
12. Place each jar in an ice-filled cooler.
13. Ship samples to the laboratory as soon as possible, but no later than 24 hours after collection.
14. Document the types and numbers of samples collected on Chain-of-Custody.
15. Record time and date of sample collection and a description of the sample and any associated air monitoring measurements in the field logbook.
16. After sampling, backfill and compact (e.g., bucket and equipment tracks/wheels) the excavated material from each trench or pit prior to moving to the next location.
17. Backfill with indigenous soil in the order in which the material was removed with the topsoil/cover soil placed last to cover the trench, placing impacted material at bottom of pit/trench and covering with 'clean' material.
18. Decontaminate sampling and excavation equipment between sampling locations (i.e., if not dedicated) and at completion over top of excavation area using dry methods initially and steam cleaning, as needed.

2.2 GEOPROBE PROCEDURES

Geoprobe direct push sampling is a standard method of soil sampling to obtain representative samples from the subsurface. Field preparation, sample collection, and data logging activities for Geoprobe sampling are identical to that of test pitting/trenching listed above. The following procedures detail activities, as directed by the field technician, for the execution of Macro Core drilling operations:

1. Startup drill rig and raise mast.
2. Use star bit with rig in rotary setting to penetrate pavement (if applicable).
3. Excavate a hole large enough to set a road box before you advance the borehole (if applicable).
4. Unthread the shoe from the bottom of the sample tube and inset a sample liner and rethread the shoe on the bottom of the sample tube.
5. Thread the drive cap on the top of the sample tube.
6. Align the sample tube so it is plumb in both directions to ensure a straight borehole is drilled.
7. Drive the top of the sample tube into ground surface to a depth of 4-feet for the first 4-foot sample.
8. Unthread the drive cap from the top of the sample tube and thread the pull cap in its place.
9. Pull the sample tube from the ground using caution to not pinch your hand between the drill rods, pull cap, or rig.
10. Unthread the cutting shoe and pull the sample liner from the bottom of the sample tube. Use pliers to reach in the sample tube and grab the liner, if needed.
11. Cut the sample liner lengthwise in two places and present the sample on a table or plastic sheeting (or similar) to ensure all sample material is contained. Quickly screen the soil for volatile organic vapors using a PID. Describe the soil and collect any necessary samples into appropriate containers and label the containers.
12. Insert a new liner and thread on the cutting shoe and repeat steps from #4 to #11 with the addition of a 4-foot-long drill rod onto the top of the sample tube to advance a second 4-foot interval.
13. Proceed with this procedure until the desired depth or refusal is reached.
14. Upon completion of probing, decontaminate all equipment in contact with the soil/fill in a decontamination area using Alcon ox and water.
15. Backfill borings with indigenous soil in the order in which the material was removed with the topsoil/sand/cover soil placed last to cover the hole. Soil samples that exhibit detectable vapors or exhibit grossly other contaminated characteristics shall not be placed back into the borehole but shall be containerized for proper disposal.

Reference: American Society for Testing Material (ASTM), 1992, ASTM D1586-84, Standard Method for Penetration Test and Split Barrel Sampling of Soils.

2.3 Hollow-Stem Auger Drilling and Sampling Procedures

Drilling with Hollow Stem Augers (HSAs) is a standard method for collecting undisturbed soil samples at depths that can exceed 100 feet below ground surface (bgs). This drilling and sampling method uses auger flights with a hollow center that can be used for sample collection during the drilling program. For environmental soil investigations, augers are typically 5-feet in length with a 4 1/4-inch hollow center section.

While drilling with HSAs, a plug is placed at the base of the auger string to prevent soil from entering the augers. When the sampling depth is reached, the center plug is removed and replaced with a 2-foot-long split-spoon soil sampler. A 140-pound hammer, mounted on the drill rig, is then used to drive the soil sampler and connect drill rods 2 feet into the undisturbed soil at the base of the augers. Removal of the soil sampler from the augers allows description and sampling of the collected soil. To sample the next lower 2-foot soil sample, the center plug is again placed at the base of the auger string and drilling and then sampling is continued. Continuous soil samples can be collected using HSAs to any drillable depths.

Field procedures.

1. HSAs, drill rods and the drilling rig will be thoroughly decontaminated prior to initial borehole installation, and between each borehole, at the centralized decontamination area. All decontamination liquids and solids will be collected and placed in DOT approved 55-gallon drums.
2. The drill rig will be inspected for oil leaks and any other leaks prior to starting drilling operations.
3. Lower the center plug to the bottom of the augers. Advance the boring by rotating and advancing the HSAs to the desired depth. The boring will be advanced incrementally to permit continuous or intermittent subsurface soil sampling, as required.
4. Remove the center plug from the HSAs and lower the 2-foot-long split-spoon sampler to the base of the augers. Use the rigs 140 hammer to drive the split-spoon sampler 2-feet into the undisturbed soil. Record the number of hammer blows (blow counts) for each 6-inches of sampler penetration.
5. Remove the split-spoon sampler from the borehole, open the split-spoon and quickly scan the soil for VOCs with a PID or FID. Describe the soil, collect the project required samples, place them in the proper containers, label the containers and place on ice.
6. Continue the above drilling and sampling steps until the final desired depth is reached.
7. If a monitoring well will not be constructed in the borehole, backfill the borehole with either uncontaminated soil cuttings or grout, as specified by the project work plan.

Reference: American Society for Testing Material (ASTM), ASTM D5784, Standard Guide for Use of Hollow-Stem Augers for Geoenvironmental Exploration and the Installation of Subsurface Water Quality Monitoring Devices

3.0 GROUNDWATER SAMPLING

3.1 WELL INSTALLATION PROCEDURES

The following procedure outlines a NYSDEC-approved method of constructing groundwater wells within unconsolidated material to monitor groundwater elevation and acquiring groundwater samples for laboratory testing. The well screen is 4” Schedule 40 pipe with 0.010 slot size. The following is a step-by-step method for the open-hole method of installing a groundwater well once a boring or augured hole has been drilled to a desired depth within the subsurface:

1. Thread a cap on the bottom section of the well screen. If more than one section of the well screen is required, thread the last section.

2. Lower the screen into the borehole with the riser section ready.
3. Add the riser sections to the screen. Do not drop the screen in the borehole.
4. Add riser sections as required until the bottom screen section touches the bottom of the borehole.
5. If completing the well with a road box, mark the riser two inches below the lid of the road box and then cut the riser.
6. Place a slip cap over the top of the rise section.
7. Place sand in the space between the borehole and the PVC screen and riser to the required depth. Place the sand in very slowly so it does not bridge in the well bore.
8. Place bentonite and cement above the sand-pack.
9. Grout in the road box with concrete mix.

3.2 Well Development Procedures

At least 24 hours after completion of drilling and installation, well development is completed through pumping or bailing until the discharged water is relatively sediment free and the indicator parameters (e.g., pH, temperature, specific conductivity, etc.) have reached steady state. Development removes sediment and can improve the hydraulic properties of the sand pack. The effectiveness of this process is monitored to minimize the volume of discharged waters to obtain sediment-free samples. Well development water will be containerized upon generation and will not be discharged or disposed of without prior department approval.

1. Select an appropriate well development method based upon water depth, well productivity, and sediment content of the water. Well development options include: (a) bailing; (b) manual pumping; and (c) submersible pumps. These options are utilized with surging of the well screen using an appropriately sized surge block.
2. Decontaminate, as needed, and assemble equipment in the monitoring well based upon the method selected. Care should be taken not to introduce contaminants into the equipment or well during installation.
3. Proceed with development by repeated removal of water from the well until the discharged water is relatively sediment-free (i.e., < 50 NTUs). Volume of water removed pH, temperature and conductivity measurements are recorded on the Well Development/Purging Logs.

3.3 Well Purging Procedures

To collect representative samples, groundwater wells must be adequately purged prior to sampling. Purging will require removing three to five volumes of standing water in rapidly recharging wells and at least one volume from wells with slow recharge rate. In addition to the required well volumes, water quality parameters (pH, temperature, specific conductivity and turbidity) should have stabilized prior to sampling. Sampling should commence as soon as adequate recharge has occurred. Although not required, it is recommended that purging and sampling occur at least 7 days after development. Well development water will be containerized upon generation and will not be discharged or disposed of without prior department approval.

1. Remove well cover ensuring no foreign material enters the well.
2. Monitor the interior of the riser pipe for organic vapors using a PID. If a reading of greater than 5 ppm is recorded, the well will be vented until levels are below 5 ppm before pumping is started.

3. Measure the water level below top of casing using an electronic water level indicator.
4. Determine the volume of water within the well by knowing the total depth of the well.
5. Wash the end of the probe with soap and rinse with deionized water between wells.
6. Calibrate field instruments for measuring water quality parameters (e.g., pH, specific conductance, turbidity, etc.)
7. In all wells, a peristaltic pump will be used to purge the required water volume (i.e., until stabilization of pH, temperature specific conductivity and turbidity). If depths to water exceed about 25 feet below ground, bailers and/or submersible pumps may be used.
8. Utilize dedicated, new polyethylene bailers and tubing for sampling. If sampling for emerging contaminants such as PFAS, HDPE bailers and tubing must be used.
9. Purge until the required volume is removed. If the well purges to dryness and recharges within 15 minutes, purging can continue as it recharges. If the well purges to dryness and the recharge is greater than 15 minutes, purging is terminated, and sampling can occur as soon as the well recharges.
10. Calculate the well volumes and record measurements for pH, temperature, turbidity, and conductivity during the purging along with physical observations.

3.4 WELL SAMPLING PROCEDURES

1. Perform well sampling within 24 hours of purging if well has recovered sufficiently to sample. If sufficient volume for analytical testing cannot be obtained from a well or if recharge exceeds 24 hours, then DEC should be consulted on analytical priorities and validity of the sample.
2. Collect samples using appropriate containers.
3. Label sample bottles using a waterproof permanent marker per procedures outlined below.
4. Use verifiably clean sample bottles (containing required preservatives) and place samples on ice in coolers for transport to the analytical laboratory, who will certify bottles are analyte-free.
5. Initiate chain-of-custody.
6. Record well sampling data field notebook and on the Well Development/Purging Log.

4.0 SAMPLE DOCUMENTATION

Each soil and groundwater sample are logged in a bound field notebook by the technician or geologist. Field notes should include, but are not limited to the following:

- descriptions of subsurface material encountered during sampling,
- sample numbers and types of samples recovered, and
- date and time of sampling event.

The technician or geologist also completes a daily drilling or sampling record and chains-of-custody for all samples collected that are being transported to the laboratory. Once the sampling program is complete, the geologist or technician transfers field notes/logs onto standard forms (e.g., boring logs, sampling logs, daily reports, etc.) to be included with the formal investigation report.

5.0 SAMPLING CONTAINER SELECTION

The selection of sample containers is based on the media being sampled and the required analysis. Container selection should be completed in advance of mobilizing into the field with close communications with the laboratory.

6.0 SAMPLE LABELING

The following procedure helps to prevent misidentification of samples and to clarify the location and purpose of environmental samples collected during the investigation:

1. Fix a non-removable (when wet) label to each container.
2. Wrap each sample bottle with 2-inch cellophane tape.
3. Write the following information with permanent marker on each label:
    A. Site name
    B. Sample identification
    C. Project number
    D. Date/time
    E. Sampler's initials
    F. Sample preservation
    G. Analysis required

Each sample is assigned a unique identification alpha-numeric code, such as RR-ss1 or WS-TP1 (2-3'), where the abbreviations represent RR – River Road (site), surface sample 1 and Waste Site, test pit 1, obtained at 2-3' bgs. Other common abbreviations include the following:

- BH = Geoprobe Borehole
- SW = Surface Water
- SED = Sediment
- SB = Soil Boring
- MSB = Matrix Spike Blank
- NSS = Near Surface Soil (1' - 2' depth)
- EB = Equipment Rinse Blank
- HW = Hydrant Water (Decon/Drilling Water)
- GW = Groundwater
- TB = Trip Blank
- RB = Rinse Blank
- MS/MSD =Matrix Spike/Matrix Spike Duplicate

7.0 SAMPLE SHIPPING

Proper documentation of sample collection and the methods used to control these documents are referred to as chain-of-custody procedures. Chain-of-custody procedures are essential for (1) presenting analytical results in a legal or regulatory forum (e.g., evidence in litigation or administrative hearings), (2) minimizing loss or misidentification of samples, and (3) ensuring that unauthorized persons do not tamper with collected samples.

The following chain-of-custody guidelines should be utilized during sample collection as outlined in and prepared by the National Enforcement Investigations Center (NEIC) Policies and Procedures of the USEPA Office of Enforcement:

1) Complete chain-of-custody record with all relevant information.

2) Send original chain with the samples in a sealed, waterproof bag taped inside the sample cooler.
3) Place adequate inert cushioning material (e.g., corrugated plastic, polypropylene foam wrap, etc.) in bottom of cooler.
4) Place bottles in cooler so they do not touch (use cushioning material for dividers).
5) Place VOA vials in sealed/waterproof bags in the center of the cooler.
6) Pack cooler with ice in sealed/waterproof plastic bags.
7) Pack the cooler with cushioning material.
8) Place any additional paperwork in sealed bag with original chain.
9) Tape cooler drain shut.
10) Wrap cooler with packing tape at two locations to secure lid. Do not cover labels.
11) Place lab address on top of cooler.
12) Ship samples via overnight carrier the same day that they are collected.
13) Label cooler with "This side up" on all sides and "Fragile" on at least two sides.
14) Fix custody seals on front right and left of cooler and cover with packaging tape.

8.0 SOIL VAPOR SAMPLING

Soil vapor investigation consists of sampling contaminant vapors that may exist beneath the building slabs, inside the buildings, and outside the building. Sample collection includes the following procedures per New York State Department of Health *Guidance for Evaluating Soil Vapor Intrusion in the State of New York*.

8.1 SUB-SLAB AIR SAMPLING PROCEDURES

8.1.1 Sampling Locations

Select the sub-slab sample collection points by observing the condition of the building floor slab for apparent penetrations such as concrete floor cracks, floor drains, or sump holes. The floor conditions will be noted, and potential locations of subsurface probes will be selected. The locations will ideally be away from the foundation walls, apparent penetrations, and buried pipes.

8.1.2 Sampling Probes

Drill a 5/8-inch diameter hole approximately one inch deep into the concrete floor using a 5/8-inch diameter drill bit and a hammer drill. Extend the hole through the remaining thickness of the slab and about three inches below the base of the slab using a ½-inch diameter drill bit. Remove the concrete cuttings using the ½-inch drill bit in an up-down motion. Clean out the shallow 5/8-inch drilled hole using a round steel wire brush. Carefully clean the surface of the concrete adjacent to the 5/8-inch hole using a flat wire brush to remove any residual concrete dust from the floor's surface. Dabbing the surface with clay can also remove the dust. These steps will allow the clay seal (see below) to better adhere to the concrete surface.

Insert one end of a 1.5-foot length of ¼-inch diameter (OD) Teflon or HDPE tubing through the center hole of a 5/8-inch diameter rubber stopper. About two inches of the tubing should extend beyond and below the narrow end of the stopper. Insert the tubing into the 5/8-inch diameter borehole so that the bottom of the stopper rests on top of the 1/2-inch diameter drilled hole. Pack the annulus of the 5/8-inch diameter hole with Sculpy modeling clay and extend the clay

about 1.5-inches above the floor adhering tightly to the tubing. The clay should be in a volcano-like shape with a wide base adhering to the concrete floor and narrowing at the upper end of contact with the tubing. This shape allows the tubing to move without disturbing the contact of the clay with the floor and the tubing. The clay should cover and adhere to a minimum of one-half inch of the concrete surface beyond the borehole.

8.1.3 Helium Tracer Gas Testing

Place a 1-quart (or similar size) container over the sample probe after threading the sample tube through a hole in the top of the bucket. Seal the tube to the bucket with clay. The bucket should also have another hole drilled in the top for the injection of helium, and a hole in the side near the floor for the measurement of helium gas concentrations.

Connect a helium (99.999% pure) cylinder tubing to the top port of bucket enclosure and seal with clay or other sealing material. Insert a helium detector probe in the bottom port of the bucket. Release enough helium to displace any ambient air in the bucket until the concentration of helium reaches a minimum of 90%. Maintain this minimum concentration by testing with a helium detector. The Helium cylinder should be open during the purge time to cause a slight positive pressure within the enclosure.

Connect the sample tubing to a GilAir vacuum pump or equivalent using 3/8-inch O.D. silicone tubing. Connect a 1-liter Tedlar bag to the outlet of the pump using silicone tubing and collect a 1-liter sample. Purging flow rates must not exceed 0.2 liters per minute (L/min). Analyze the Tedlar bag for helium using a helium detector and record the results on the Summa Canister Data Sheet. A concentration of helium 10% or greater indicates a poor seal of the sample probe and it must be reinstalled and retested. After purging, remove the bucket enclosure from over the sample probe.

8.1.4 Sample Collection

Assign sample identification to the Summa Canister sample identification tag and record on chain of custody (COC), and the Summa Canister Data Sheet. Also record the Summa canister and flow controller (regulator) serial numbers on the COC and Summa Canister Data Sheet. Attach a pre-calibrated/certified 8-hour or 24-hour flow controller, and particulate filter to the Summa canister. Attach the sample tube to the Summa canister using a ¼-inch Swagelok nut with appropriate ferrules, to the end of the flow controller/particulate filter assembly. The sampling period will be 8 hours for most commercial facilities and 24 hours for mixed use residential/commercial.

Open canister valve to initiate sample collection and record sample start time, date, and initial canister vacuum on the canister identification tag and on the Summa Canister Data Sheet. If the canister does not show sufficient vacuum (generally less than 25“Hg), do not use. Take a digital photograph of canister setup and surrounding area. Include in the photograph a dry erase board or similar display which presents sample ID, location, and date.

After 8 or 24 hours, record sample end time and canister pressure on the Summa Canister Data Sheet, and close valve. Disconnect the Teflon tubing and remove flow controller/particulate filter assembly from canister. Seal canister with laboratory supplied brass plug. Ship the samples, with COCs, overnight, to the selected laboratory for standard TO-15 analysis.

8.2 INDOOR/OUTDOOR AIR SAMPLING PROCEDURES

Place the indoor air Summa canister/flow controller inlet at breathing height in the approximate center of the space being sampled, or, for the outdoor air sample, elevated on a table or other object in a location upwind of the building being sampled. The breathing height is defined as four to six feet above the floor or ground. As an option, a length of Teflon tubing can be attached to the Summa canister/flow controller inlet and raised to breathing zone height.

Record the canister and flow controller serial numbers on the canister identification tag, COC and the Summa Canister Data Sheet. Assign sample identification to the canister identification tag, and record on the COC and the Summa Canister Data Sheet. Remove brass plug from canister fitting and save.

Attach a pre-calibrated/certified 8 or 24-hour flow controller and particulate filter to the Summa canister. For the outside air sample, also connect the laboratory supplied “candy cane” fitting to the flow controller. Open canister valve to initiate sample collection and record start time, date, and gauge vacuum reading on the canister identification tag and on the Summa Canister Data Sheet. Take a photograph of canister setup and surrounding area.

After 8 or 24 hours, record the gauge vacuum reading, close the Summa canister valve completely and record the end time on the Summa Canister Data Sheet. There should still be a slight vacuum in the Summa canister. If no vacuum remains in the canister, or the canister does not show a significant net loss in vacuum after sampling, the sample should be re-collected using a new Summa canister and flow controller. Disconnect any tubing and candy cane fittings from the Summa canister and remove the flow controller. Replace the brass plug on the canister. Ship canister, with COCs, overnight, to the selected laboratory

8.3 QUALITY CONTROL

The number of Quality Control samples (duplicates) to be taken during sub-slab sampling may be found in the QA/QC Plan. The duplicate sample rate is usually 10 percent. Field duplicates for sub-slab, indoor air and outdoor air samples will be collected by attaching the T-fitting supplied by the laboratory to two Summa canisters with attached regulators. For sub-slab samples, the inlet of the T-fitting will then be attached to the sub-slab sample tubing using a Swagelok fitting. For indoor and outdoor air samples, any tubing used to raise the sampling height will also be attached to the inlet of the T fitting. For sampling, both Summa canister valves are opened and closed simultaneously.

8.4 SAMPLE LABELING

Each sub-slab sample should have the following information at a minimum placed on the laboratory supplied sample label:

- Site name
- Sample identification – see below
- Date/time
- Sampler's initials
- Analysis required – TO-15

The serial number of the canister and regulator used during sampling is also noted on the Summa canister identification tag and on the COC. Each sub-slab, indoor air and outdoor air

sample will be assigned a unique alpha-numeric code. An example of this code and a description of its components are presented below. Field duplicate samples will be assigned a unique identification alphanumeric code that specifies the date of collection, the letters FD (for field duplicate) and an ascending number that records the number of duplicate samples collected that day. For example, the first field duplicate collected on February 22, 2023, would be assigned the sample number in the format YYYYMMDD-FD-1 = 20230222-FD-1.

Subsequent duplicates collected on the same day will be assigned FD-2, FD-3 etc. Field sampling crew will record the duplicate sample information on the Summa Canister Data Sheets and in the field book.

8.5 FIELD DOCUMENTATION

Field notebooks are used during all on-site work. A dedicated field notebook is maintained by the field technician overseeing the site activities. Sub-slab sampling procedures should be photo-documented. The field sampling team will maintain sampling records that include the following data:

- Sample Identification
- Date and time of sample collection
- Identity of samplers
- Sampling methods and devices
- Purge volumes (soil vapor)
- Volume of soil vapor sample extracted
- The Summa canister vacuum before and after samples collected
- Chain of Custody and shipping information

The proper completion of the following forms/logs is considered correct procedure for documentation during the indoor air-sampling program:

1. Field Logbook - weather-proof hand-bound field book
2. Summa Canister Data Sheet
3. Chain of Custody Form

8.6 SAMPLE SHIPPING

Proper documentation of sample collection and the methods used to control these documents are referred to as chain-of-custody procedures. Chain-of-custody procedures are essential for presentation of sample analytical chemistry results as evidence in litigation or at administrative hearings held by regulatory agencies. Chain-of-custody procedures also serve to minimize loss or misidentification of samples and to ensure that unauthorized persons do not tamper with collected samples.

The following chain-of-custody guidelines should be utilized during sample collection as outlined in and prepared by the National Enforcement Investigations Center (NEIC) Policies and Procedures of the USEPA Office of Enforcement:

- Complete the chain-of-custody (COC) record with all relevant information.
- Ship original COC with the samples in a sealed waterproof plastic bag and place inside the box containing a Summa canister.
- Retain a copy of the COC for field records.
- Ship Summa canisters in the same boxes the laboratory used for shipping.

- Place the lab address on top of sample box/cooler.
- Fix numbered custody seals across box lid flaps and cooler lid.
- Cover seals with wide, clear tape.
- Ship samples via overnight carrier within three days of sample collection if possible.

APPENDIX E

DER-10 IMPORTED FILL REQUIREMENTS

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IN ENVIRONMENT AND ENERGY, DPC

site-specific exemption for one or more of the requirements set forth in this section, based upon site-specific conditions, such as:

i. use and redevelopment of the site;

ii. depth of the placement of the backfill material relative to the surface or subsurface structures;

iii. depth of the placement of the backfill material relative to groundwater;

iv. volume of backfill material;

v. potential for odor from the backfill material;

vi. presence of historic fill in the vicinity of the site;

vii. DEC-issued beneficial use determination, pursuant to 6 NYCRR Part 360; or

viii. background levels of contamination in areas surrounding the site.

9. For remedial programs pursuant to the BCP, DEC can only provide a site-specific exemption for backfill consistent with the provisions of paragraph 8 above as follows:

i. for Track 2 and Track 3 cleanups, for soils greater than 15 feet below ground surface; or

ii. for Track 4 cleanups, for soils beneath buildings, pavement and other improvements or for soils beneath the soil cover system or soil cap over exposed surface soils.

10. Sampling fill imported to or exported from a site. The remedial party will sample and analyze the fill being imported to the site in accordance with this subdivision and Table 5.4(e)10. Samples of the fill will be collected based on the soil quantity and type of constituents identified in the table and will be a combination of discrete and composite samples, handled as follows:

i. for VOCs only, grab samples are allowed. These grab samples are one or more discrete samples taken from the fill, with the number as specified in the volatile column of Table 5.4(e)10 for the soil quantity in question, and analyzed for the VOCs identified in Appendix 5; or

ii. for SVOCs, inorganics and PCBs/pesticides:

(1) one or more composite samples are collected from the volume of soil identified in Table 5.4(e)10 for analysis, with each composite from a different location in the fill volume;

(2) each composite is prepared by collecting discrete samples from 3 to 5 random locations from the volume of soil to be tested; and

(3) the discrete samples are mixed, and after mixing, a sample of the mixture is analyzed for the SVOCs, inorganic and PCBs/pesticide constituents identified in Appendix 5.

Table 5.4(e)10 Recommended Number of Soil Samples for Soil Imported To or Exported From a Site			
Contaminant	**VOCs**	**SVOCs, Inorganics & PCBs/Pesticides**	
Soil Quantity (cubic yards)	**Discrete Samples**	**Composite**	**Discrete Samples/Composite**
0-50	1	1	3-5 discrete samples from different locations in the fill being provided will comprise a composite sample for analysis
50-100	2	1	
100-200	3	1	
200-300	4	1	
300-400	4	2	
400-500	5	2	
500-800	6	2	
800-1000	7	2	
➢ 1000	Add an additional 2 VOC and 1 composite for each additional 1000 Cubic yards or consult with DER		

(f) Compliance for soil exported from a site for reuse. For soil that is being exported from a site to locations other than permitted disposal facilities, the handling requirements are set forth in this subdivision and in paragraph 5.4(e)4.

1. Levels of contamination must not exceed the lower of the groundwater and residential use levels as shown in Appendix 5, absent a beneficial use determination issued by DEC. DER will coordinate with the Division of Solid & Hazardous Materials (DSHM), prior to the start of the remedial action, relative to whether the exported soil can be used beneficially in accordance with 6 NYCRR 360-1. The sampling and analysis requirements are set forth in paragraph 5.4(e)10.

2. The number of required samples are specified in Table 5.4(e)10 and paragraph (e)10 above, which may be modified by the DER project manager based on various factors, including the location of the site receiving the soil.

(g) Compliance for the decommissioning of monitoring wells. All monitoring wells not required for site management should be decommissioned in accordance with paragraph (d)6 above prior to DER approval of the FER.

5.5 Underground Storage Tank Closure

(a) The first step for underground storage tank (UST) closure is the identification, removal, treatment, containment and/or stabilization of the contents to prevent contaminant exposure to receptors and to prevent further movement of contaminants through any pathway as set forth herein.

1. A health and safety plan for the site is developed, as described in section 1.9, by a qualified individual in accordance with subparagraph 1.5(a)3.i.

2. Underground tank closures not performed in accordance with this section will require a certification of the closure report by a professional engineer, as described in section 1.5.

Appendix 5
Allowable Constituent Levels for Imported Fill or Soil
Subdivision 5.4(e)

Source: This table is derived from soil cleanup objective (SCO) tables in 6 NYCRR 375. Table 375-6.8(a) is the source for unrestricted use and Table 375-6.8(b) is the source for restricted use.

Note: For constituents not included in this table, refer to the contaminant for supplemental soil cleanup objectives (SSCOs) in the Commissioner Policy on *Soil Cleanup Guidance*. If an SSCO is not provided for a constituent, contact the DER PM to determine a site-specific level.

Constituent	Unrestricted Use	Residential Use	Restricted Residential Use	Commercial or Industrial Use	If Ecological Resources are Present
Metals					
Arsenic	13	16	16	16	13
Barium	350	350	400	400	433
Beryllium	7.2	14	47	47	10
Cadmium	2.5	2.5	4.3	7.5	4
Chromium, Hexavalent[1]	1 [3]	19	19	19	1 [3]
Chromium, Trivalent[1]	30	36	180	1500	41
Copper	50	270	270	270	50
Cyanide	27	27	27	27	NS
Lead	63	400	400	450	63
Manganese	1600	2000	2000	2000	1600
Mercury (total)	0.18	0.73	0.73	0.73	0.18
Nickel	30	130	130	130	30
Selenium	3.9	4	4	4	3.9
Silver	2	8.3	8.3	8.3	2
Zinc	109	2200	2480	2480	109
PCBs/Pesticides					
2,4,5-TP Acid (Silvex)	3.8	3.8	3.8	3.8	NS
4,4'-DDE	0.0033 [3]	1.8	8.9	17	0.0033 [3]
4,4'-DDT	0.0033 [3]	1.7	7.9	47	0.0033 [3]
4,4'-DDD	0.0033 [3]	2.6	13	14	0.0033 [3]
Aldrin	0.005	0.019	0.097	0.19	0.14
Alpha-BHC	0.02	0.02	0.02	0.02	0.04 [4]
Beta-BHC	0.036	0.072	0.09	0.09	0.6
Chlordane (alpha)	0.094	0.91	2.9	2.9	1.3
Delta-BHC	0.04	0.25	0.25	0.25	0.04 [4]
Dibenzofuran	7	14	59	210	NS
Dieldrin	0.005	0.039	0.1	0.1	0.006
Endosulfan I	2.4[2]	4.8	24	102	NS
Endosulfan II	2.4[2]	4.8	24	102	NS
Endosulfan sulfate	2.4[2]	4.8	24	200	NS
Endrin	0.014	0.06	0.06	0.06	0.014
Heptachlor	0.042	0.38	0.38	0.38	0.14
Lindane	0.1	0.1	0.1	0.1	6
Polychlorinated biphenyls	0.1	1	1	1	1

Constituent	Unrestricted Use	Residential Use	Restricted Residential Use	Commercial or Industrial Use	If Ecological Resources are Present
Semi-volatile Organic Compounds					
Acenaphthene	20	98	98	98	20
Acenaphthylene	100	100	100	107	NS
Anthracene	100	100	100	500	NS
Benzo(a)anthracene	1	1	1	1	NS
Benzo(a)pyrene	1	1	1	1	2.6
Benzo(b)fluoranthene	1	1	1	1.7	NS
Benzo(g,h,i)perylene	100	100	100	500	NS
Benzo(k)fluoranthene	0.8	1	1.7	1.7	NS
Chrysene	1	1	1	1	NS
Dibenz(a,h)anthracene	0.33 [3]	0.33 [3]	0.33 [3]	0.56	NS
Fluoranthene	100	100	100	500	NS
Fluorene	30	100	100	386	30
Indeno(1,2,3-cd)pyrene	0.5	0.5	0.5	5.6	NS
m-Cresol(s)	0.33 [3]	0.33 [3]	0.33 [3]	0.33 [3]	NS
Naphthalene	12	12	12	12	NS
o-Cresol(s)	0.33 [3]	0.33 [3]	0.33 [3]	0.33 [3]	NS
p-Cresol(s)	0.33	0.33	0.33	0.33	NS
Pentachlorophenol	0.8 [3]	0.8 [3]	0.8 [3]	0.8 [3]	0.8 [3]
Phenanthrene	100	100	100	500	NS
Phenol	0.33 [3]	0.33 [3]	0.33 [3]	0.33 [3]	30
Pyrene	100	100	100	500	NS
Volatile Organic Compounds					
1,1,1-Trichloroethane	0.68	0.68	0.68	0.68	NS
1,1-Dichloroethane	0.27	0.27	0.27	0.27	NS
1,1-Dichloroethene	0.33	0.33	0.33	0.33	NS
1,2-Dichlorobenzene	1.1	1.1	1.1	1.1	NS
1,2-Dichloroethane	0.02	0.02	0.02	0.02	10
1,2-Dichloroethene(cis)	0.25	0.25	0.25	0.25	NS
1,2-Dichloroethene(trans)	0.19	0.19	0.19	0.19	NS
1,3-Dichlorobenzene	2.4	2.4	2.4	2.4	NS
1,4-Dichlorobenzene	1.8	1.8	1.8	1.8	20
1,4-Dioxane	0.1 [3]	0.1 [3]	0.1 [3]	0.1 [3]	0.1
Acetone	0.05	0.05	0.05	0.05	2.2
Benzene	0.06	0.06	0.06	0.06	70
Butylbenzene	12	12	12	12	NS
Carbon tetrachloride	0.76	0.76	0.76	0.76	NS
Chlorobenzene	1.1	1.1	1.1	1.1	40
Chloroform	0.37	0.37	0.37	0.37	12
Ethylbenzene	1	1	1	1	NS
Hexachlorobenzene	0.33 [3]	0.33 [3]	1.2	3.2	NS
Methyl ethyl ketone	0.12	0.12	0.12	0.12	100
Methyl tert-butyl ether	0.93	0.93	0.93	0.93	NS
Methylene chloride	0.05	0.05	0.05	0.05	12

Volatile Organic Compounds (continued)					
Propylbenzene-n	3.9	3.9	3.9	3.9	NS
Sec-Butylbenzene	11	11	11	11	NS
Tert-Butylbenzene	5.9	5.9	5.9	5.9	NS
Tetrachloroethene	1.3	1.3	1.3	1.3	2
Toluene	0.7	0.7	0.7	0.7	36
Trichloroethene	0.47	0.47	0.47	0.47	2
Trimethylbenzene-1,2,4	3.6	3.6	3.6	3.6	NS
Trimethylbenzene-1,3,5	8.4	8.4	8.4	8.4	NS
Vinyl chloride	0.02	0.02	0.02	0.02	NS
Xylene (mixed)	0.26	1.6	1.6	1.6	0.26

All concentrations are in parts per million (ppm)
NS = Not Specified

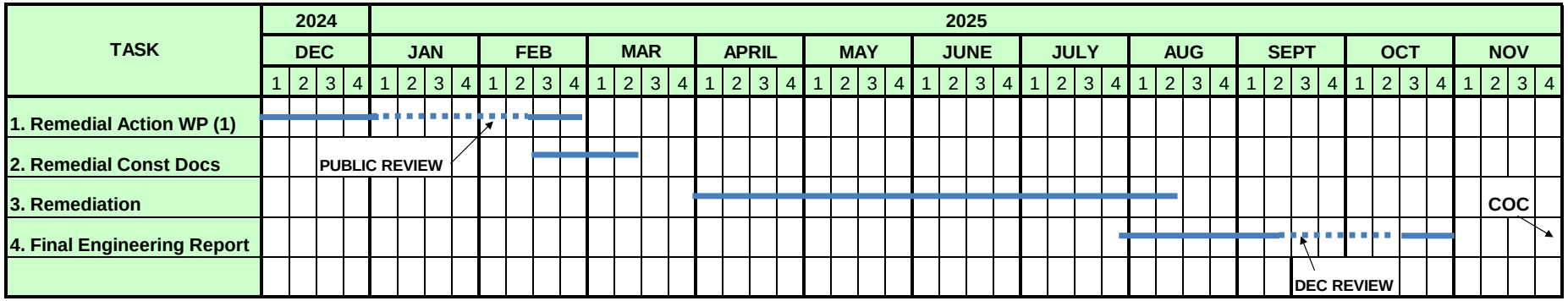
Footnotes:
[1] The SCO for Hexavalent or Trivalent Chromium is considered to be met if the analysis for the total species of this contaminant is below the specific SCO for Hexavalent Chromium.
[2] The SCO is the sum of endosulfan I, endosulfan II and endosulfan sulfate.
[3] For constituents where the calculated SCO was lower than the contract required quantitation limit (CRQL), the CRQL is used as the Track 1 SCO value.
[4] This SCO is derived from data on mixed isomers of BHC.

APPENDIX F

PROJECT SCHEDULE

BRYDGES ENGINEERING
IN ENVIRONMENT AND ENERGY, DPC

BCP PROJECT SCHEDULE DECEMBER 2024
THE NEST SITE - BCP #C932183



(1) - Track 1 Unrestricted Use

APPENDIX G

COMMUNITY AND ENVIRONMENTAL RESPONSE PLAN

BRYDGES ENGINEERING
IN ENVIRONMENT AND ENERGY, DPC

COMMUNITY & ENVIRONMENTAL RESPONSE PLAN

The NEST Site
333 1st Street
City of Niagara Falls, New York, 14303
NYSDEC Site No. C932183

Prepared for:

Community Services Seventh Housing LLC
180 Oak Street Buffalo, NY 14203

Prepared by:

BRYDGES ENGINEERING
IN ENVIRONMENT AND ENERGY, DPC

960 Busti Avenue, Suite B-150
Buffalo, New York, 14213

DECEMBER 2024

TABLE OF CONTENTS

Page No

1.0 INTRODUCTION

This Community and Environmental Response Plan (CERP) has been prepared to summarize the controls, monitoring and/or work practices that will be implemented during the site remediation at the NEST Site to address the potential for short-term impacts to the surrounding community or environmental resources. The Site is depicted on **Figure 2**-Site Survey. The remediation will include the following:

- Remove all impacted soils exceeding Unrestricted SCOs to meet Track 1 requirements.
- Import clean material to backfill excavations.

The CERP is a concise summary of the controls, monitoring, and work practices and how they combine to provide the necessary protection of the community and ecological resources. Additional details regarding how this will be implemented are contained in various sections of the Work Plan. The purpose of the CERP is to provide members of the community with information on the steps and programs that have been put in place in order to protect their health and minimize the disturbance caused by construction activity. This effort will be performed under the approval and oversight of the New York State Department of Environmental Conservation (NYSDEC) and the New York State Department of Health (NYSDOH).

This CERP has been prepared in accordance Section 5.1(f) NYSDEC *Final DER-1 0 Technical Guidance for Site Investigation and Remediation,* dated May 2010.

1.1 CERP ORGANIZATION

This CERP has been organized in general accordance with the Section 5.1(f) NYSDEC *DER-10* as follows:

- Section 1 – Introduction, describes the purpose and objectives of the CERP
- Section 2 – Community Air Monitoring Plan (CAMP)
- Section 3 – Public Protection Measures
- Section 4 – Vapor/Odor Management
- Section 5 – Noise Reduction Plan
- Section 6 – Vibration Monitoring
- Section 7 – Site Security Plan
- Section 8 – Storm Water and Erosion Control Plan
- Section 9 – Waste Management
- Section 10 – Traffic Management Plan

2.0 COMMUNITY AIR MONITORING PLAN (CAMP)

A site-specific CAMP has been prepared for the site and shall be in force during the course of the site remediation. The intent of the CAMP is to provide a measure of protection for the downwind community (i.e., off-Site receptors including residences and businesses and on-Site workers not directly involved with the work activities) from volatile organic compounds (VOCs) and particulates (i.e., dust) carried in the air as a direct result of remedial work activities on the Site. The CAMP provides air monitoring procedures, contamination concentration limits, and procedures to reduce VOCs and dust generation if the limits are approached. See **Appendix B** for further information.

The generic CAMP presented in *NYSDEC DER-10* titled *Appendix 1A-New York State Department of Health Generic Community Air Monitoring Plan* and included in **Appendix B**, will be followed and adhered to for the site remediation.

A program for suppressing fugitive dust and particulate matter monitoring will also be conducted in accordance *NYSDEC DER-10* titled *Appendix 1B Fugitive Dust and Particulate Monitoring* which is also provided in **Appendix B** noted above. The fugitive dust suppression and particulate monitoring program will be employed at the site during site remediation and other intrusive activities which warrant its use.

3.0 PUBLIC PROTECTION MEASURES

A number of plans to protect the public from physical hazards at the Site will be implemented. Each of these measures is designed to make the area surrounding the remediation safe for the general public.

3.1 WARNING SIGNS

The contractor will place signs at the Site entrance that the Site is being remediated by Community Services Seventh Housing LLC under the oversight of the NYSDEC. In addition, signs will be placed at entrances stating this is an active construction site and only authorized personnel are allowed onto the Site.

3.2 SITE FENCING

Fencing will be placed around the Site where none exist and entrance gates locked during non-work hours.

4.0 VAPOR/ODOR MANAGEMENT PLAN

If significant nuisance odors are noted, the Owner, the BE3 site inspector, and the contractor will consult to determine what type of emission control action is appropriate. Actions that may be taken to reduce contaminant or odor levels include the following:

- Covering working areas of exposed impacted soils, trucks loaded with impacted soils, or stockpiles of impacted soils with tarpaulin covers, vapor reducing foam, or other vapor control agents.
- Reduce the production rate or change the sequence of work activities.
- Change the work methods or equipment to alternatives that reduce the potential to create dust or release contaminants into the air.
- Using specialized odor suppressing foams to cover the contaminated soils. The foam is a product which reduces the ability of vapors and dust to enter the air.
- Misting water onto soil in order to prevent dust that may carry odors.

Corrective measures may also include halting work and implementing additional dust suppression techniques which may include:

- Applying water on haul roads
- Wetting equipment and excavation faces

- Spraying water on truck buckets during excavation and dumping
- Restricting heavy equipment traffic use or areas of operation
- Restricting vehicle speeds
- Covering excavated areas and materials after excavation activity ceases or completing site excavation, grading, and filling in small area sequences to reduce leaving large surface areas exposed

In practice, these actions will typically be used proactively to prevent alert levels from being reached at the Site perimeter.

5.0 NOISE REDUCTION PLAN

The remedial activities conducted on Site will conform to the noise codes/ordinances for the City of Niagara Falls during the work.

To be in compliance, construction activities on the Site will be prohibited between the hours of 6:00 PM and 7:00 AM Monday through Friday, Saturdays, Sundays, and on all legal holidays. In the event of an emergency that requires work to be conducted during the aforementioned times, the contractor will seek a variance from the Building Department Administrator of the City of Niagara Falls to permit such activities.

It is not anticipated that the activities at the Site will create excess levels of noise to a degree that would cause concern to nearby residents. If noise issues do become a concern the following steps may be taken to reduce the noise level caused by construction:

- Locating pieces of machinery on the Site to maximize the distance from potential receptors.
- Developing a design for a site perimeter sound barrier.
- Specifying the use of low noise emission construction equipment.

The work that will be completed does not currently require the contractor to perform tasks which are commonly associated with high levels of noise. The periodic use of back up alarms on vehicles will in all likelihood be the noise that is commonly heard from the Site, and the contractor will make every effort to minimize the need for vehicles to use them.

6.0 VIBRATION MONITORING

It is not anticipated that the remedial activities at the Site will generate high levels of vibrations for nearby residents. The remedial work that will be completed does not currently require the contractor to perform tasks that are commonly associated with high levels of vibration such as blasting, or pile driving.

The most common source of vibrations from the Site will be from compaction equipment, which will be used to compact clean soil as it is used to replace impacted soil that has been excavated. Compaction equipment will create vibrations over a very small area and not nearly powerful enough to cause damage to nearby structures.

7.0 SITE SECURITY PLAN

The objectives of the Site security plan are to prevent the vandalism/destruction of construction equipment, prevent access, and minimize health and safety concerns for the surrounding property owners.

7.1 Perimeter Security

The site will be completely fenced and have locked gates.

7.2 Equipment Security

All vehicles and/or equipment left on the site will be secured at the end of each working day and during non-workdays. No vehicles or equipment will be left overnight in an unsecured location. The contractor will ensure that all non-essential equipment is de-energized when left on site and not in use to prevent any malfunctions from occurring while workers are not present.

8.0 STORMWATER AND EROSION CONTROL PLAN

The stormwater and erosion control plan is intended to minimize soil erosion, and control stormwater on the Site.

8.1 Implementation of Erosion Control Measures

Filtrexx erosion control Soxx or silt fences will be installed around the perimeter of the support zones and all areas to be excavated and/ or backfilled.

The contractor shall install and maintain the erosion control measures for the duration of the excavation/backfill work.

8.2 Stormwater Runoff Control

The contractor will be required to utilize appropriate control measures to direct stormwater to flow around an excavation area and to a discharge point. Appropriate controls may include digging a small ditch to direct the water flow, or building barriers out of clean soil to collect the stormwater so it can be pumped to a suitable discharge point

9.0 WASTE MANAGEMENT

The waste management plan identifies the procedures for managing, treatment, and disposal of waste materials generated as a result of the Site remediation. All wastes removed from the Site will be transported by properly permitted and/or licensed waste haulers directly to approved disposal facilities. All trucks will be inspected to ensure the proper placards, decals and permits are displayed. Trucks will utilize the most direct hauling route to the disposal facility.

9.1 Soil Management and Treatment

Impacted soils removed from excavation areas will be loaded into trucks for transport to the approved disposal facility. Trucks will not be allowed to stage on local roadways. The Contractor will schedule trucks in a manner that will minimize the wait time for loading.

Vehicles containing impacted soils will be covered with a solid plastic tarp. If necessary, spray-on odor suppressing materials may be used to reduce potential VOC emissions or odors during transit.

9.2 CONSTRUCTION DEWATERING AND TREATMENT

Stormwater encountered during excavation that has been impacted by contaminated soils will be pumped to a temporary storage/Frac tank. The water will be sampled and tested to determine if it can be discharged to the City of Niagara Falls sewer system or required to be sent to a disposal facility.

10. TRAFFIC MANAGEMENT PLAN

The objectives of the traffic plan at the Site are to describe the objectives for traffic control and address any potential concerns. The traffic control plan outlines traffic management at the site for:

- Trucking materials on and off site
- Contractor access and parking
- Equipment access and storage
- Traffic control at the site entrance
- Requirements for truck flagmen at site access gates.

Trucking of materials and equipment to and from the site will be through an established entrance gate. Contractor employees will also enter and leave the site trough this same gate. The contractor's traffic control personnel will direct traffic as needed upon delivery of equipment, trailers, excavation support materials, etc. To maintain access and lines of sight, the contractor will arrange for and coordinate with the appropriate local authorities to ensure that on-street parking nearest to the entrance/exit gate is limited throughout the duration of the work. Trucks will not be allowed to queue on local streets; however, the contractor may negotiate with a third party to obtain off-site parking where vehicles can wait to be loaded. All the roadways utilized by the contractor during the work will be checked daily for spillage and seepage, and cleaned to the satisfaction of Owner's representative, as necessary. All trucking on local roadways will meet the requirements of all local regulatory agencies.

10.1 TRUCK CONTROLS

Upon arrival to the site, each truck will be visually inspected to ensure appropriate permits are in place. Trucks hauling impacted soil will be initially lined with polypropylene plastic tarp along their beds to prevent water from seeping out of the soil onto local streets. When applicable, odorous truckloads of soil will be foamed to control odors (refer to Sections 4 and 9). The trucks will also utilize a heavy tarp which will be extended over the cargo area and overlap the sides and rear of the cargo area to prevent soil being removed from the truck by wind. Trucks, before exiting the site, will pass through an inspection area and be inspected to ensure tires and undercarriages are clean and that tarps are secured. Excessive mud and loose dirt observed on the truck tires will be removed by installing a truck wash station or equivalent at the exit gate. Additional excess mud and soil on truck carriages will be manually removed with brooms and brushes as necessary. The proper cleaning of trucks exiting the site will aid in minimizing/eliminating dust and soil leaving the site.

APPENDIX H

NEW DEVELOPMENT

CIVIL CONSTRUCTION PLANS

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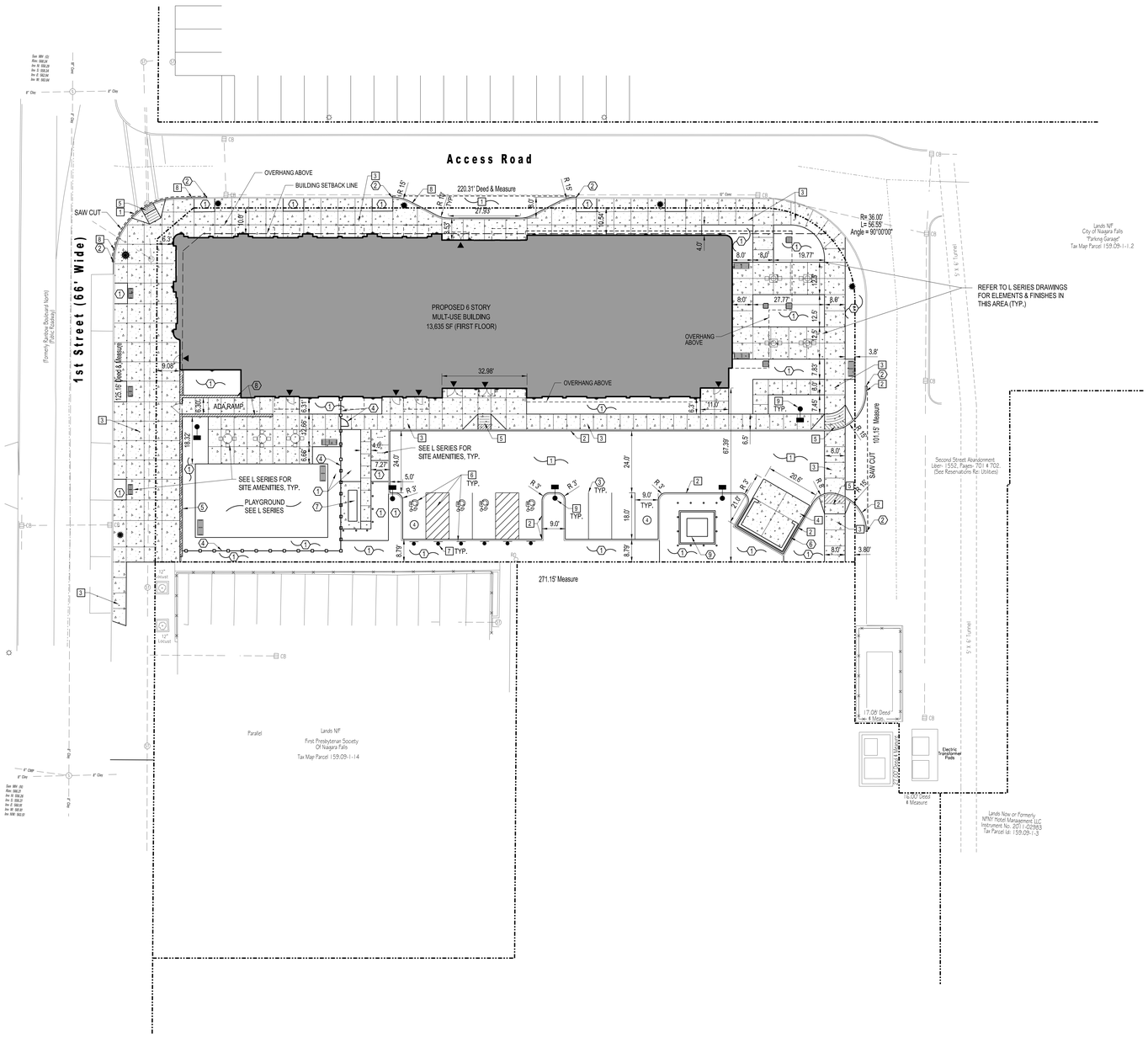

SITE PLAN NOTES

1. SURVEY INFORMATION WAS PROVIDED BY NIAGARA BOUNDARY AND MAPPING SERVICES DATED 1-18-23 . C&S ENGINEERS, INC. ASSUMES NO RESPONSIBILITY FOR ITS ACCURACY.

2. CONTRACTOR TO VERIFY ALL FIELD CONDITIONS AND UTILITY LOCATIONS PRIOR TO THE START OF CONSTRUCTION. CONTACT THE ENGINEER WITH ANY DISCREPANCIES FOUND IN THE FIELD.

3. ALL DIMENSIONS FROM PROPERTY LINES ARE 90° FROM PROPERTY LINE UNLESS OTHERWISE NOTED.

4. ALL DIMENSIONS ARE FROM FACE OF CURB UNLESS OTHERWISE NOTED.

5. COORDINATE EXACT LOCATION OF SIDEWALKS AT DOORWAYS WITH ARCHITECTURAL PLANS.

6. REFER TO ARCHITECTURAL PLANS FOR BUILDING DIMENSIONS AND LAYOUT.

SITE PLAN DETAIL LEGEND

1. ASPHALT PAVEMENT SECTION - SEE DETAIL 1 ON C-501
2. CONCRETE CURB - SEE DETAIL 2 ON C-501
3. CONCRETE SIDEWALK - SEE DETAIL 3 ON C-501
4. EXTERIOR CONCRETE SLAB-ON-GRADE - SEE DETAIL 4 ON C-501
5. ACCESSIBLE CURB RAMP - SEE DETAIL 5 ON C-501
6. ACCESSIBLE SIGNS & MARKINGS - SEE DETAIL 6 ON C-501
7. SIGN POST - SEE DETAIL 7 ON C-501
8. GRANITE CURB - SEE DETAIL 8 ON C-501
9. LIGHT POLE FOUNDATION - SEE DETAIL 9 ON C-501

SITE PLAN SHEET KEYNOTES

1. LANDSCAPED/LAWN AREA - REFER TO L SERIES DRAWINGS
2. MATCH EXISTING CURB OR RUN OUT IN 2'-0"
3. 4" WIDE PAINTED YELLOW PAVEMENT STRIPES
4. DECORATIVE METAL FENCE - REFER TO L SERIES DRAWINGS
5. MASONRY WALL - REFER TO L SERIES DRAWINGS
6. DUMPSTER ENCLOSURE - REFER TO L SERIES DRAWINGS
7. GENERATOR - REFER TO ELECTRICAL DRAWINGS
8. RETAINING WALL - REFER TO L SERIES DRAWINGS
9. TRANSFORMER - REFER TO ELECTRICAL DRWINGS

SITE PLAN PROPOSED LEGEND

- PROPERTY LINE
- PROPOSED SIGN
- PROPOSED CONCRETE PAVEMENT/SIDEWALK
- PROPOSED CURB
- (5) NUMBER OF PARKING SPACES
- DOOR LOCATION
- E.P. EDGE OF PAVEMENT
- LIGHTING FIXTURES
- SAW CUT LINE
- DETECTABLE WARNING SURFACE

20' 20 0 20 40FL

PLAN NORTH

FILE PATH:

SWBR

387 East Main Street Rochester NY 14604
585 232 8300 | rochester@swbr.com

SWBR NYS Certificate of Authorization #: 233221

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Fax: 716-847-1454
www.cscos.com

HCR SHARS NO. 20230391

Drawn By:	S.S.
Checked By:	V.O.
Project Manager:	V.O.

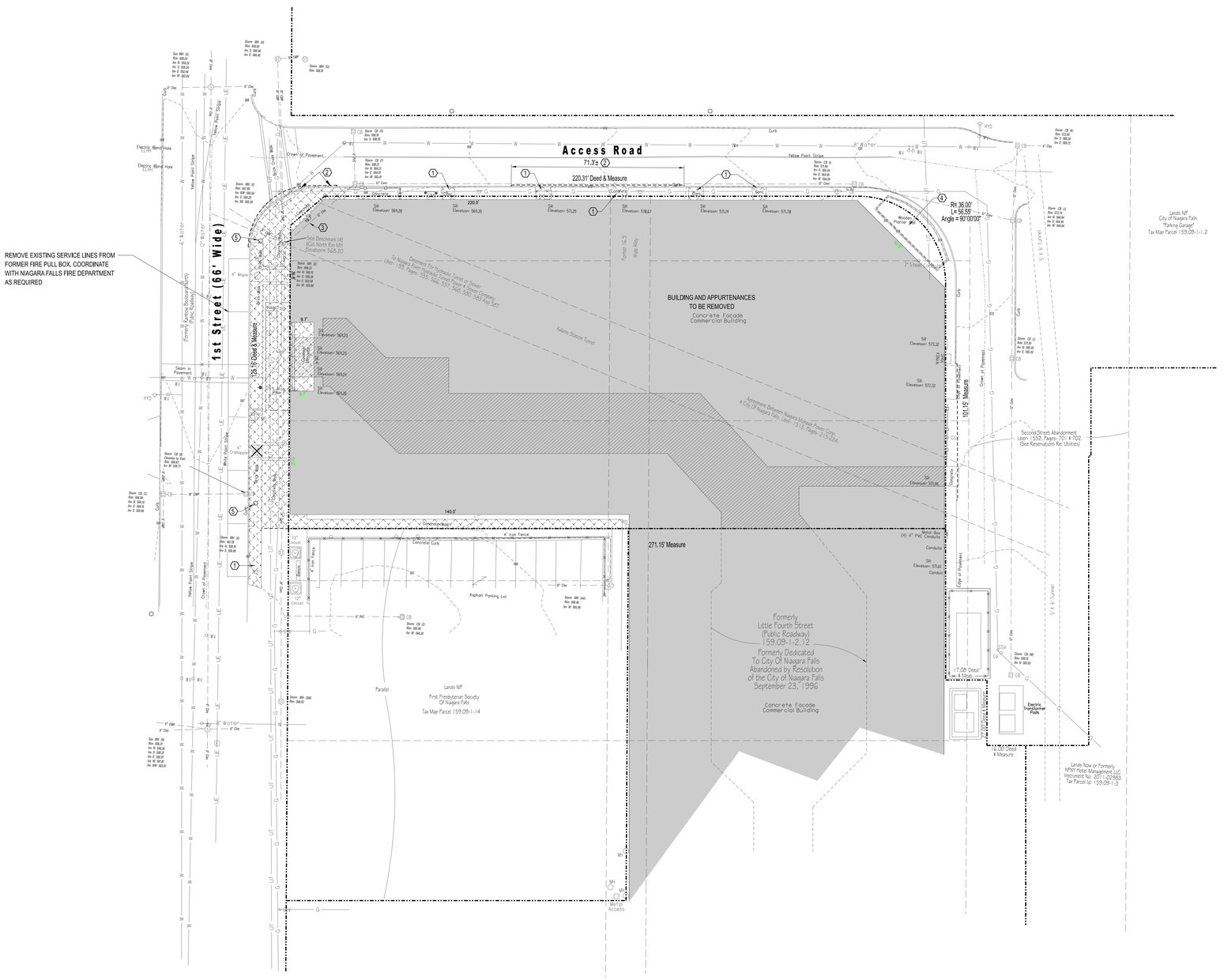
Revisions

The Nest
333 1st Street
Niagara Falls, NY 14303
SWBR Project Number 22234.00

Community Services for Every1
180 Oak Street
Buffalo, NY 14203

C-101
SITE PLAN

DECEMBER 6TH, 2024
CONSTRUCTION DOCUMENTS



DEMOLITION PLAN NOTES

1. CONTRACTOR TO REMOVE & DISPOSE OF ALL ITEMS INDICATED & ANY ITEMS INCIDENTAL TO THE CONSTRUCTION AS REQUIRED.

2. CONTRACTOR SHALL PROTECT/PRESERVE ALL EXISTING ITEMS TO REMAIN, INCLUDING, BUT NOT LIMITED TO BUILDINGS, PAVEMENT, OVERHEAD & BURIED UTILITIES, TREES LANDSCAPING, ETC. DAMAGE TO ITEMS SCHEDULED TO REMAIN SHALL BE REPAIRED OR REPLANTED AT NO ADDITIONAL COST TO THE OWNER.

3. UTILITIES SHOWN ARE APPROXIMATE. CONTRACTOR SHALL HAVE ALL UNDER -GROUND FACILITIES LOCATED AND MARKED PRIOR TO EXCAVATION/DEMOLITION/ CONSTRUCTION.

4. DISCONNECT, CAP AND REMOVE/ABANDON EXISTING UTILITIES FOR ALL BUILDINGS TO BE DEMOLISHED, UNLESS NOTED OTHERWISE. ALL UTILITY TERMINATIONS SHALL BE IN ACCORDANCE W/ THE APPLICABLE UTILITY COMPANY REQUIREMENTS.

5. CONTRACTOR SHALL LEGALLY DISPOSE OF ALL MATERIALS/DEBRIS REMOVED FROM THE SITE.

6. CONTRACTOR TO OBTAIN HIGHWAY WORK PERMIT PRIOR TO THE START OF CONSTRUCTION. CALL FOR STAKEOUT OF UTILITIES BEFORE STARTING WORK. NOTIFY ENGINEER OR OWNER'S REPRESENTATIVE OF ANY DISCREPANCIES FOUND IN THE FIELD.

7. THIS PLAN IS PREPARED FROM A SURVEY SHOWING KNOWN SURFACE FEATURES. IT IS INTENDED AS A GUIDE TO THE CONTRACTOR, NOT AS A COMPLETE AND UNIVERSAL DEMOLITION PLAN. SEE THE SITE PLAN. MORE FEATURES (NOT INDICATED) MAY REQUIRE DEMOLITION TO CONSTRUCT THE SITE PLAN. CONTRACTOR MUST VISIT THE SITE TO CONFIRM DEMOLITION EFFORT PRIOR TO BIDDING.

8. REMOVE CONCRETE SIDEWALK AND/OR PAVEMENT TO THE LIMITS INDICATED. SAW CUT CONCRETE TO THE NEAREST EXISTING CONTROL/EXPANSION JOINT.

9. BUILDING DEMOLITION SHALL BE IN ACCORDANCE WITH ALL LOCAL, STATE, AND FEDERAL REQUIREMENTS/REGULATIONS.

10. MAINTAIN STORM SEWER CONTINUITY & POSITIVE DRAINAGE DURING DEMOLITION, REMOVAL & CONSTRUCTION OF STORM SEWERS & INLETS.

DEMOLITION PLAN SHEET KEYNOTES

1. REMOVE EXISTING CONCRETE/ASPHALT PAVEMENT & SUBBASE AND/OR MASONRY UNITS
2. ACCESS ROAD CURB SHALL BE SAW CUT FULL-DEPTH AND NEATLY REMOVED FROM THE BACKSIDE. ACCESS ROAD ROAD PAVEMENT SHALL NOT BE DISTURBED AND THE PAVEMENT EDGE SHALL BE USED AS A FORM FOR PLACING NEW CURB.
3. REMOVE STORM PIPE
4. REMOVE PLANTER
5. REMOVE LIGHT POLE & FIXTURE, STORE AND REINSTALL ON NEW BASE

DEMOLITION PLAN LEGEND

CONCRETE/ASPHALT PAVEMENT/MASONRY UNITS TO BE REMOVED

20 0 20 40Ft.
20'

PLAN NORTH

FILE PATH:

SWBR

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585 232 8300 | rochester@swbr.com

SWBR NYS Certificate of Authorization #: 235221

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HCR SHARS NO. 20230391

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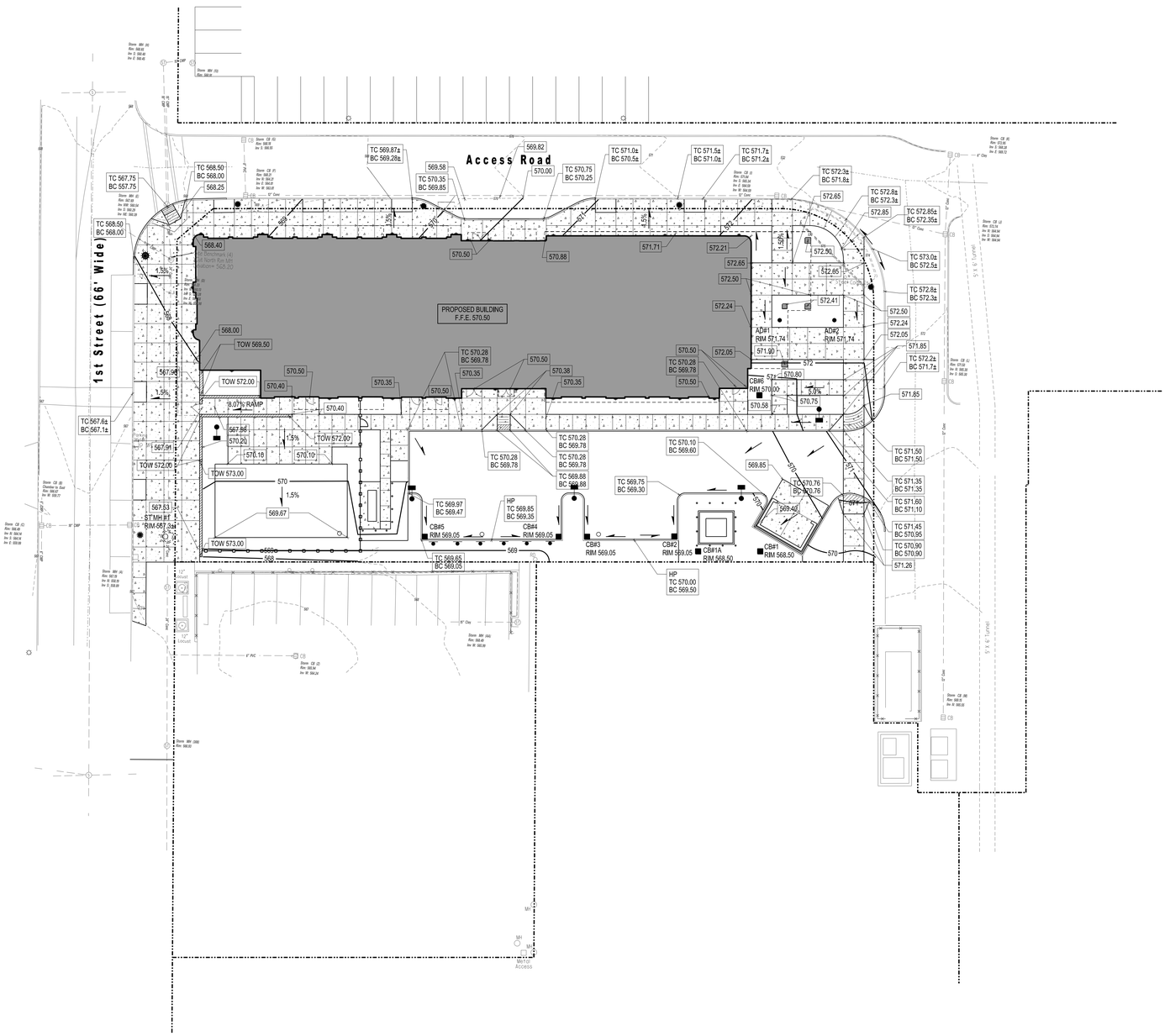
Revisions

The Nest
333 1st Street
Niagara Falls, NY 14303
SWBR Project Number 22234.00

Community Services for Every1
180 Oak Street
Buffalo, NY 14203

C-102
DEMOLITION PLAN

DECEMBER 6TH, 2024
CONSTRUCTION DOCUMENTS



GRADING PLAN LEGEND

- PROPERTY LINE
- PROPOSED CURB
- EXISTING POINT ELEVATION
- PROPOSED POINT ELEVATION
- EXISTING CONTOUR
- PROPOSED CONTOUR
- TC — TOP OF CURB
- BC — BOTTOM OF CURB
- HP — HIGH POINT
- TOW — TOP OF WALL
- FLOW DIRECTION
- CLEANOUT

20' 20 0 20 40FT

PLAN NORTH

FILE PATH:

SWBR

387 East Main Street Rochester NY 14604
585.232.8300 | rochester@swbr.com

SWBR NYS Certificate of Authorization #: 235221

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HCR SHARS NO. 20230391

Drawn By:	S.S.
Checked By:	V.O.
Project Manager:	V.O.

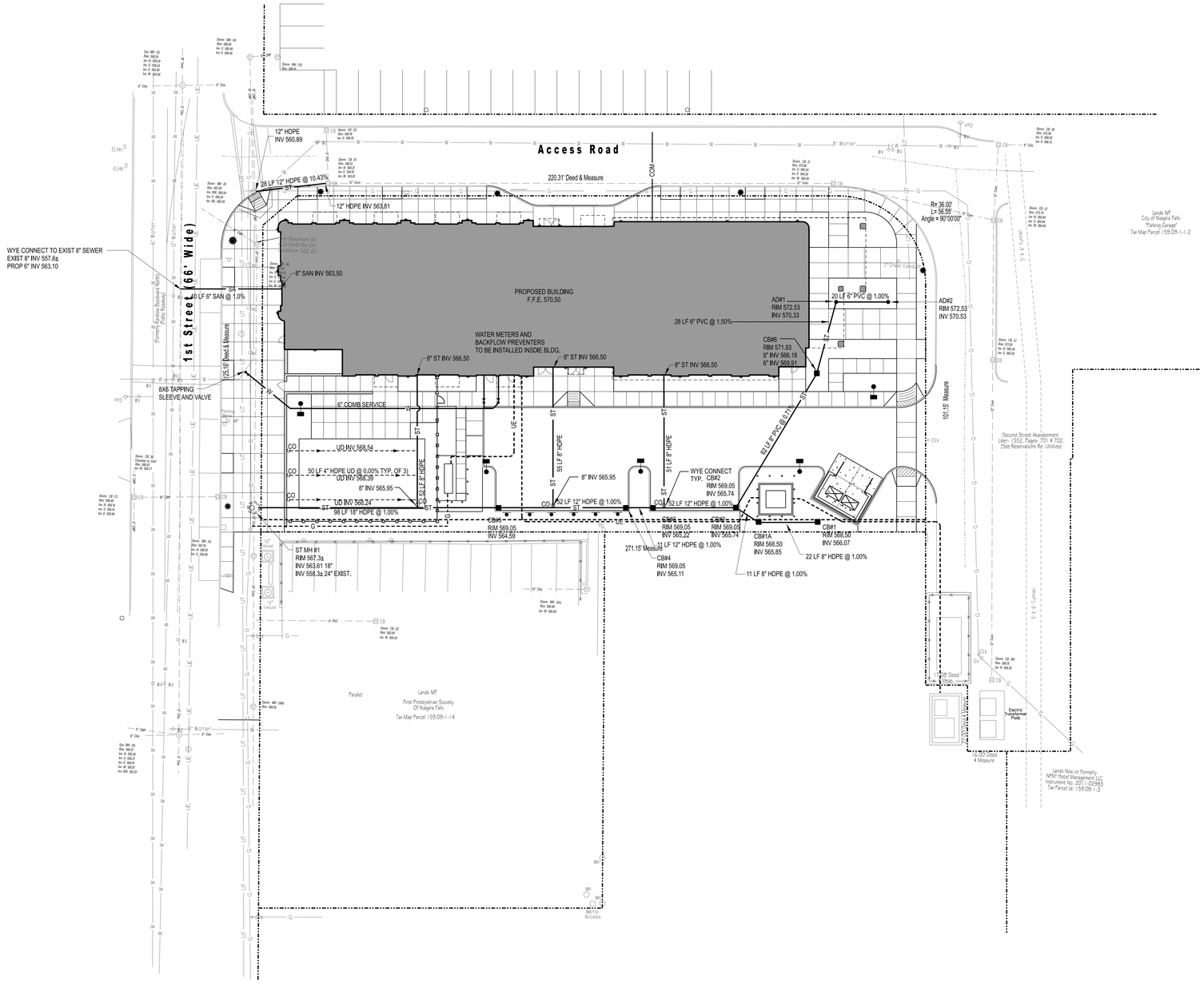
Revisions

The Nest
333 1st Street
Niagara Falls, NY 14303
SWBR Project Number 22234.00

Community Services for Every1
180 Oak Street
Buffalo, NY 14203

C-103
GRADING PLAN

DECEMBER 6TH, 2024
CONSTRUCTION DOCUMENTS



UTILITY PLAN LEGEND

EXISTING SANITARY SEWER	SA
EXISTING STORM SEWER	ST
EXISTING WATER MAIN	W
EXISTING ELECTRIC	UE
EXISTING GAS	G
PROPOSED SANITARY SEWER	SA
PROPOSED STORM SEWER	ST
PROPOSED WATER MAIN	W
PROPOSED ELECTRIC	E
PROPOSED GAS	G
PROPOSED HYDRANT	
PROPOSED MANHOLE	
PROPOSED CATCH BASIN	
PROPOSED YARD DRAIN	YD
PROPOSED CLEAN OUT	C.O.
PROPOSED LIGHT STANDARD	

20' 20 0 20 40FL

PLAN NORTH

FILE PATH:

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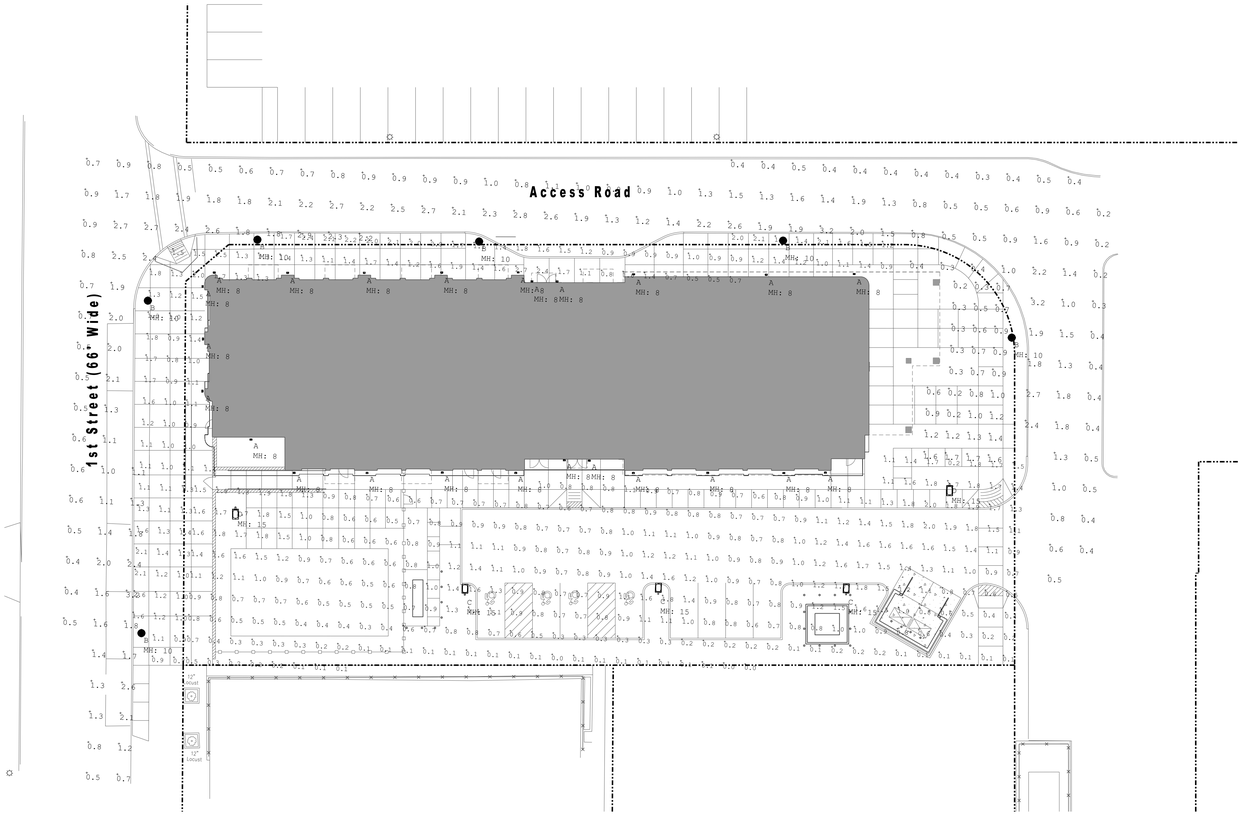
Community Services for Every1
180 Oak Street
Buffalo, NY 14203

C-104
UTILITY PLAN

DECEMBER 6TH, 2024
CONSTRUCTION DOCUMENTS



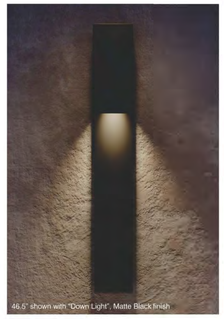
Calculation Summary							
Label	CalcType	Units	Avg	Max	Min	Avg/Min	Max/Min
CalcPts_1	Illuminance	Fc	0.87	2.0	0.0	N.A.	N.A.
Patio	Illuminance	Fc	0.84	1.7	0.2	4.20	8.50
Street	Illuminance	Fc	1.27	3.2	0.2	6.35	16.00
Street Walks	Illuminance	Fc	1.36	2.7	0.5	2.72	5.40

Luminaire Schedule					
Symbol	Tag	Qty	[MANUFAC]	[LUMCAT]	Luminaire Lumens
	A	24	Alva Light	Brian MT1	282
	B	6	Holophane	PTE2 P30 40K XX AY3 PHSS90	6800
	C	3	Lithonia Lighting	DSX0 LED P1 40K T5W MVOLT HS	3211
	D	2	Lithonia Lighting	DSX0 LED P1 40K T5M MVOLT	4891

Brian

alva

ARCHITECTURAL SCALE, WET-LISTED OUTDOOR DECORATIVE ACCENT LIGHT



46.5" shown with "Down Light", Matte Black finish

TITLE 24 · ADA COMPLIANT · 10YR WARRANTY · ETL

APPLICATIONS

Decorative accent light for building facades. Designed to provide a gentle downward or up and downward light accent.

SHADE DIMENSIONS

- 7"W x 15.5"H x 4"D
- 7"W x 31"H x 4"D
- 7"W x 46.5"H x 4"D

WEIGHT

- 15.5"H - 6 lb
- 31"H - 8 lb
- 46.5"H - 12 lb

MOUNTING

- Steel mounting system with mounting plate and cover with rubber gaskets between the junction box and mounting plate. Mounts to center of J-box at 5.5" from top of rectangular shade

SPECIFICATIONS

- Dark Sky Compliant, Full cut-off (applies to "Down Light" version)
- High efficiency, fully integrated proprietary LED module
- IP66 Rated
- BUG Rating B1-U0-G0
- 120-277V input
- 100,000+ hours rated life time
- 10 Year Limited Warranty (excludes shade)
- Title 24 Compliant
- ADA Compliant

LAMPING

- 2700K, 3000K, 3500K, 4000K CCT
- MT1 (down light) 282 lumens delivered
- MT2 (down and up) 282 lumens down, 282 lumens up
- 33W

CONSTRUCTION

Manufactured from aluminum with industrial powder coat finish

D-Series Size 0

LED Area Luminaire

d*series

Catalog Number

Notes

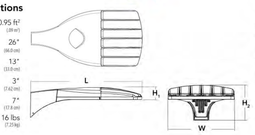
Type

Introduction

The modern styling of the D-Series is striking yet unobtrusive - making a bold, progressive statement even as it blends seamlessly with its environment. The D-Series distills the benefits of the latest in LED technology into a high performance, high efficacy, long-life luminaire. The outstanding photometric performance results in sites with excellent uniformity, greater pole spacing and lower power density. It is ideal for replacing up to 400W metal halide with typical energy savings of 70% and expected service life of over 100,000 hours.

Specifications

EPA:	0.95 ft² (.09 m²)
Length:	26" (66.0 cm)
Width:	13" (33.0 cm)
Height,:	3" (7.62 cm)
Height,:	7" (17.5 cm)
Weight (max):	16 lbs (7.25kg)



A+ Capable options indicated by this color background.

Ordering Information **EXAMPLE:** DSX0 LED P6 40K T3M MVOLT SPA NLTAIR2 PIRHN DDBXD

DSX0 LED

Series	LEDs	Color temperature	Distribution		Voltage	Mounting
DSX0 LED	Forward optics: P1 P4 P7, P2 P5, P3 P6. Rotated optics: P10 P12, P11 P13	30K 3000K, 40K 4000K, 50K 5000K	T1S Type I short (Automotive), T2S Type II short, T2M Type II medium, T3S Type III short, T3M Type III medium, T4M Type IV medium, T5FTM Forward throw medium, T5VS Type V very short, T5S Type V short, T5M Type V medium, T5W Type V wide, BLC Backlight control, LCCO Left corner cutoff, RCCO Right corner cutoff		MVOLT, 120, 208, 240, 277, 347, 480	Shipped included: SPA Square pole mounting, RPA Round pole mounting, WBA Wall bracket, SPUMBA Square pole universal mounting adaptor, RPUMBA Round pole universal mounting adaptor. Shipped separately: KMA8 DDBXD U Mast arm mounting bracket adaptor (specify finish)

Control options		Other options	Finish
Shipped installed: NLTAIR2 nLight AIR generation 2 enabled; PIRHN Network, high/low motion/ambient sensor; PER NEMA twist-lock receptacle only (control ordered separately); PER5 Five-pin receptacle only (control ordered separately); PER7 Seven-pin receptacle only (leads exit fixture) (control ordered separately); DMG 0-10V dimming extend out back of housing for external control (control ordered separately)	PIR High/low, motion/ambient sensor, 8-15' mounting height, ambient sensor enabled at 5fc; PIRH High/low, motion/ambient sensor, 15-30' mounting height, ambient sensor enabled at 5fc; PIR1FC3V High/low, motion/ambient sensor, 8-15' mounting height, ambient sensor enabled at 1fc; PIRH1FC3V High/low, motion/ambient sensor, 15-30' mounting height, ambient sensor enabled at 1fc; FAO Field adjustable output	Shipped installed: HS House-side shield, SF Single fuse (120, 277, 347V), DF Double fuse (208, 240, 480V), L90 Left rotated optics, R90 Right rotated optics, DDL Diffused drop lens. Shipped separately: BS Bird spikes, EGS External glare shield	DDBXD Dark bronze, DBLXD Black, DNAXD Natural aluminum, DWHXD White, DDBTXD Textured dark bronze, DBLBXD Textured black, DNATXD Textured natural aluminum, DWHGXD Textured white

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LEADER IN LIGHTING SOLUTIONS

Catalog Number

Notes

Type

PTUE3

Utility Taft Postop LED

SPECIFICATIONS

General Description

The decorative post top lantern is ideal for lighting city streets, residential areas, campuses, parking lots, and walkways. The architectural luminaire consists of a luminaire housing, a prismatic optic, and a decorative cover.

Optical Assembly

The optical assembly consists of a prismatic glass or acrylic reflactor to precisely distribute light with excellent visual comfort and reduced glare. Configurable with CCT options of 2700K, 3000K, and 4000K. CRI is 70 minimum. Available in symmetric and asymmetric distributions.

Electrical Assembly

The cast aluminum electrical housing allows tool-less access with a spring loaded latch. The hidden hinge allows the door to swing open and remain open for easy access. A (3) station terminal block is provided to accept #14 through #2 size wire. The programmable LED driver includes 0-10V dimming with optional DALI dimming. Driver is available in 120-277V, 347-480V, and 277V-480V options (50/60 Hz). Driver life is rated to at least 100,000 hours. The 277V-480V (VOLT) option includes enhanced power quality protection for maximum robustness against loss of neutral, voltage transients, harmonic disturbances, and other real-world power quality disturbances.

Finish

The luminaire housing and decorative cover are low copper cast aluminum and finished with corrosion resistant super durable powder coat paint for maximum durability. Rigorous multi-stage pre-treating and painting process yields a finish that achieves a scribe creepage rating of 8 (per ASTM D1654) after over 5,000 hours exposure to salt fog chamber (operated per ASTM B117)

Mounting

Luminaire includes an integral slipfitter that accepts a 3" tall by Ø2-7/8" – 3-1/8" O.D. tenon. Secured to the tenon by 6 set screws

Control Options

Optional controls include:

- Field adjustable output (AO) module for manual adjustment of lumen output of the luminaire
- Industry standard 7-pin NEMA photocontrols, optionally mounted inside the housing or externally in place of the finial
- "nLight AIR enabled" for connection to nLight AIR wireless control networks via internally mounted antenna (NLTAIR2) or via motion-sensing photocontrol (RSBDBG/DALI compatible drivers. Contact factory for details.
- Customization of lumen packages is possible. Consult factory for details.

Listing

The luminaire is CSA certified to US and Canadian standards. 20kV/10kA extreme surge protection per ANSI/IEEE C136.2. Suitable for operation in ambient temperatures from -40°C to 40°C. Optical chamber is sealed to IP66.

DesignLights Consortium® (DLC) Premium qualified product. Not all versions of this product may be DLC Premium qualified. Please check the DLC Qualified Products List at www.designlights.org/QPL to confirm which versions are qualified.

Government Procurement

BAA – Buy America(n) Act: Product qualifies as a domestic end product under the Buy American Act as implemented at the FAR and DFARS. Product also qualifies as manufactured in the United States under DOT Buy America regulations.

BABA – Build America Buy America: Product qualifies as produced in the United States under the definitions of the Build America, Buy America Act.

Please refer to www.acuitybrands.com/resources/buy-american for additional information.

Warranty

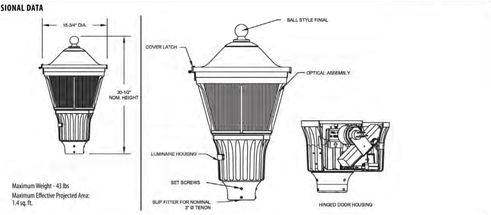
5-year limited warranty. This is the only warranty provided and no other statements in this specification sheet create any warranty of any kind. All other express and implied warranties are disclaimed. Complete warranty terms located at: www.acuitybrands.com/support/warranty/terms-and-conditions

Note: Actual performance may differ as a result of end-user environment and application.

All values are design or typical values, measured under laboratory conditions at 25 °C.

Specifications subject to change without notice.

DIMENSIONAL DATA



AcuityBrands

Holophane | One Lithonia Way, Conyers, GA 30012 | Phone: 866-HOLOPHANE | www.holophane.com | techsupportinfo@acuitybrands.com

PLAN NORTH

20' 20 0 20 40FL

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Project Manager:	V.O.

Revisions

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333 1st Street
Niagara Falls, NY 14303
SWBR Project Number 22234.00

Community Services for Every1
180 Oak Street
Buffalo, NY 14203

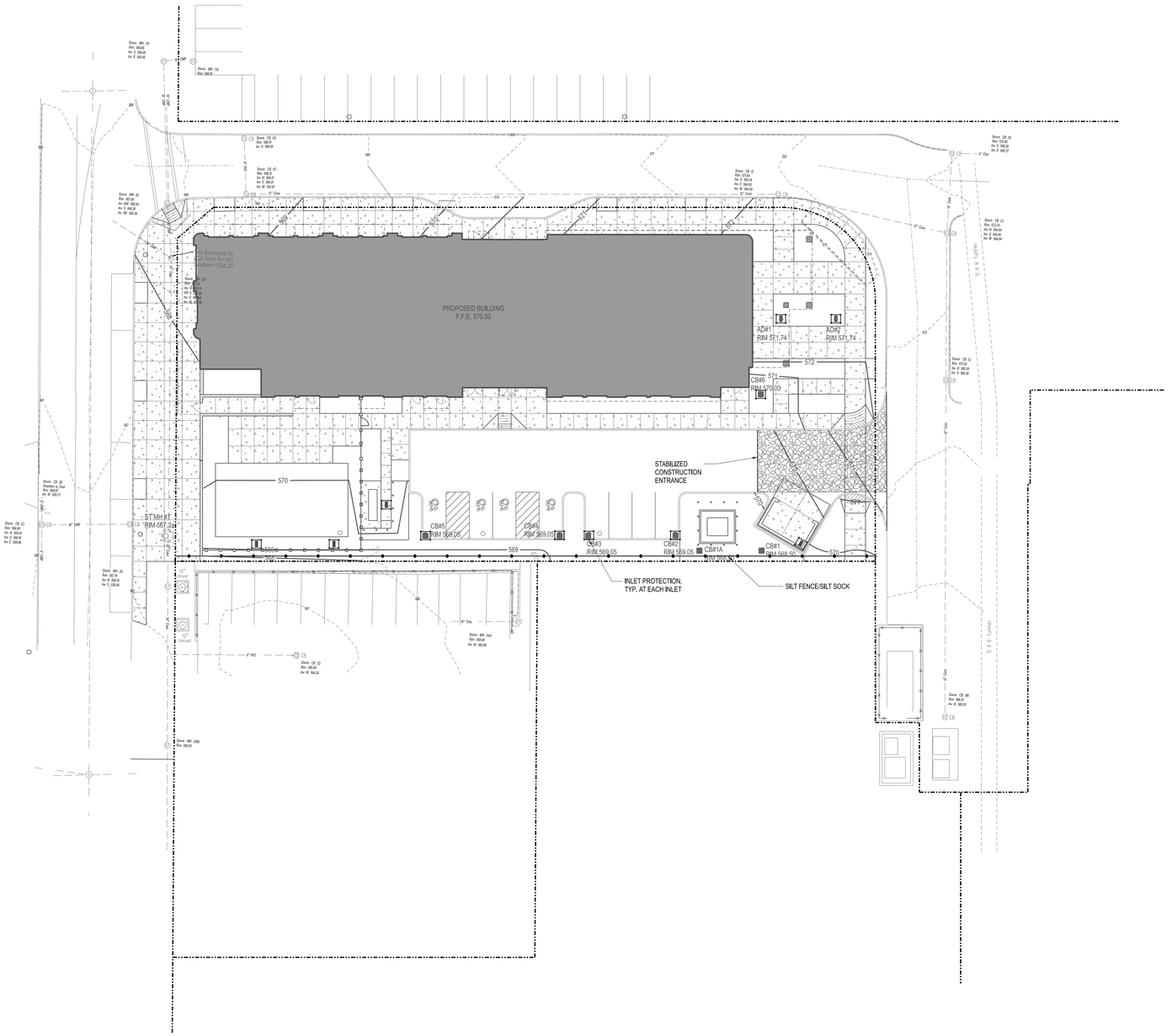
C-105

PHOTOMETRIC PLAN

DECEMBER 6TH, 2024

CONSTRUCTION DOCUMENTS

FILE PATH:



EROSION CONTROL PLAN LEGEND

- INLET PROTECTION
- SILT FENCE/SILT SOCK
- STABILIZED CONSTRUCTION ENTRANCE

20 20 0 20 40FL
20'

PLAN NORTH

FILE PATH:

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Revisions

The Nest
333 1st Street
Niagara Falls, NY 14303
SWBR Project Number 22234.00

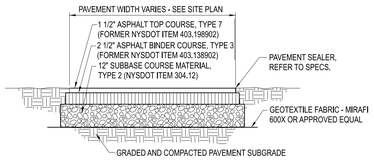
Community Services for Every1
180 Oak Street
Buffalo, NY 14203

C-106

EROSION & SEDIMENT CONTROL PLAN

DECEMBER 6TH, 2024

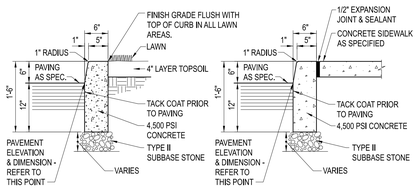
CONSTRUCTION DOCUMENTS



NOTE: CONSTRUCTION METHODS FOR ASPHALT PAVEMENT SHALL CONFORM TO FORMER NYSDOT STANDARD SPECIFICATION 401.3, WITH SUBBASE CONSTRUCTION METHODS CONFORMING TO NYSDOT STANDARD SPECIFICATION 304.3.

ASPHALT PAVEMENT SECTION 1

SCALE:NTS

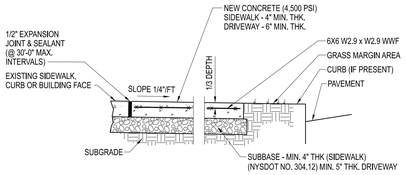


GRASS/LANDSCAPED AREAS SIDEWALK AREAS

NOTE: CONTROL JOINTS TO BE 2" DEEP AT 15'-0". SEE SPECIFICATIONS FOR FURTHER JOINT REQUIREMENTS NYSDOT 702-0700

CONCRETE CURB 2

SCALE:NTS



CROSS SECTION

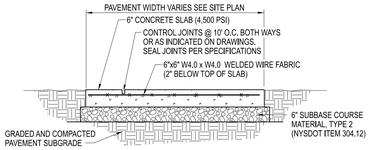
NOTES:

1. CONTROL JOINTS TO BE AT 5'-0" O.C. BOTH WAYS OR AS SHOWN ON DRAWINGS. SEAL JOINTS PER SPECIFICATIONS.

2. CONCRETE SIDEWALK AND DRIVEWAY MATERIAL SHALL CONFORM TO NYSDOT STANDARD SPECIFICATION 501 AND CONSTRUCTION METHODS SHALL CONFORM TO NYSDOT STANDARD SPECIFICATION 608-3

CONCRETE SIDEWALK 3

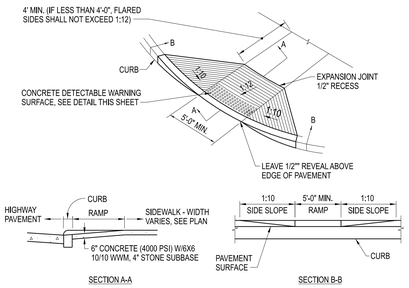
SCALE:NTS



NOTE: CONCRETE PAVEMENT MATERIAL SHALL CONFORM TO NYSDOT STANDARD SPECIFICATION 501 AND CONSTRUCTION METHODS SHALL CONFORM TO NYSDOT STANDARD SPECIFICATION 502.3

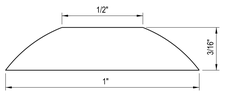
EXTERIOR CONCRETE SLAB-ON-GRADE SECTION 4

SCALE:NTS

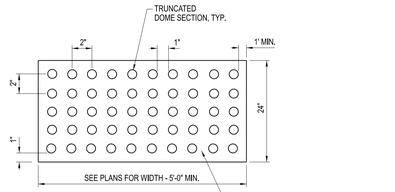


ACCESSIBLE CURB RAMP 5

SCALE:NTS



TRUNCATED DOME SECTION

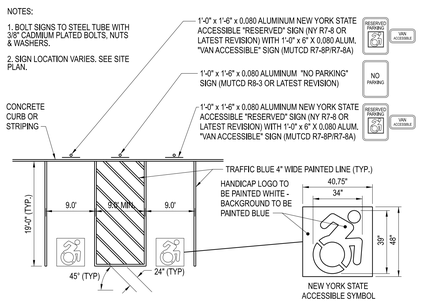


DOME SPACING

NOTE:
DETECTABLE WARNING DEVICES SHALL BE PER 2010 ADA STANDARDS SECTION 705 OR THE MOST CURRENT UPDATE

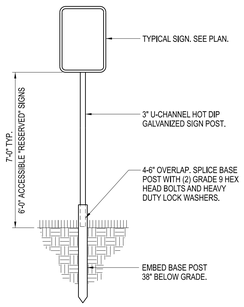
DETECTABLE WARNING SURFACE

SCALE:NTS



ACCESSIBLE SIGNS & MARKINGS 6

SCALE:NTS



SIGN POST 7

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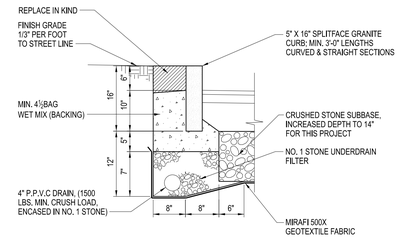
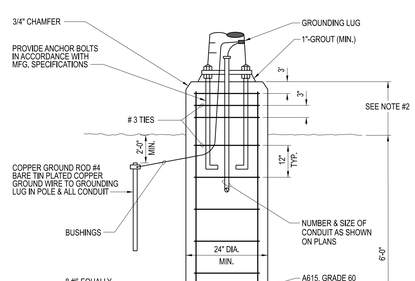


GRANITE STONE CURB DETAIL (CITY OF NIAGARA FALLS) 8

SCALE:NTS



NOTES:

1. AUGER HOLES FOR FOOTING, INSPECT THE EXCAVATION & NOTIFY THE ENGINEER OF UNSUITABLE MATERIALS BEFORE PLACING THE STEEL & CONCRETE.

2. LIGHT POLE BASE SHALL BE: 30" ABOVE GRADE IN PAVED AREAS
12" ABOVE THE CURB IN LANDSCAPED AREAS
30" ABOVE GRADE IN AREAS W/O CURBING

3. FOR LOCATIONS OF LIGHT POLES, SEE SIGHT PLAN.

LIGHT POLE FOUNDATION 9

SCALE:NTS

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Revisions

The Nest
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SWBR Project Number 22234.00

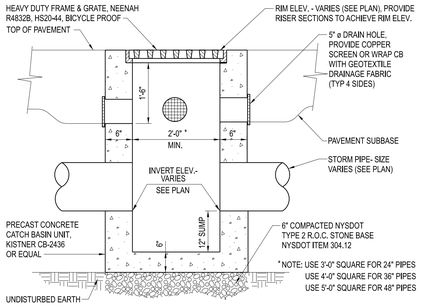
Community Services for Every1
160 Oak Street
Buffalo, NY 14203

C-501

SITE DETAILS

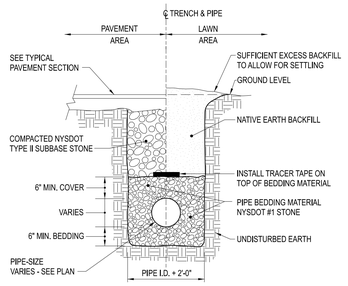
DECEMBER 6TH, 2024

CONSTRUCTION DOCUMENTS



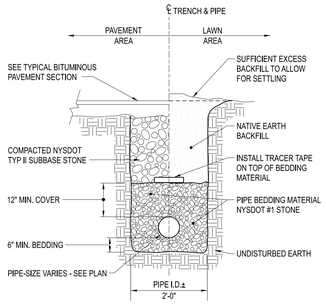
TYPICAL PRECAST CATCH BASIN

SCALE: NTS



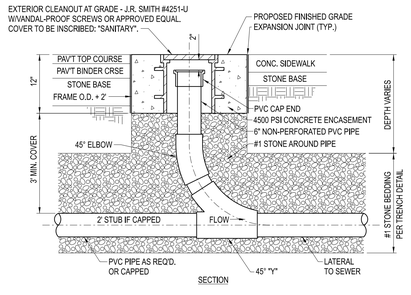
SANITARY SEWER TRENCH SECTION

SCALE: NTS



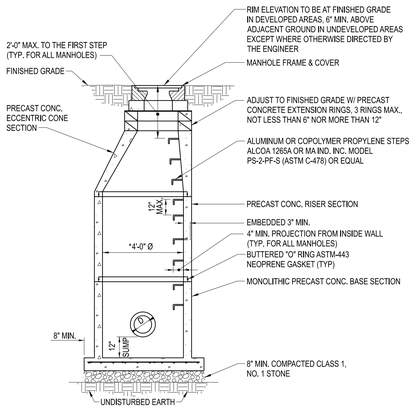
STORM PIPE TRENCH SECTION

SCALE: NTS



TYPICAL SANITARY SEWER CLEANOUT IN PAVEMENT AREAS

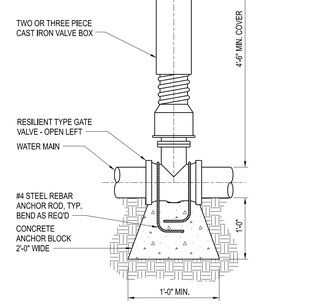
SCALE: NTS



NOTE:
PROVIDE HEAVY DUTY NEENAH R-1792-FG OPEN GRATE AND FRAME FOR ALL STORM MANHOLES
PROVIDE HEAVY DUTY NEENAH R-1792-FL FRAME AND COVER FOR ALL SOLID COVER MANHOLES

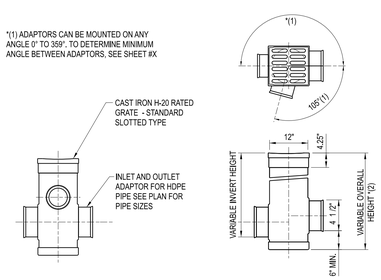
PRECAST CONCRETE STORM MANHOLE DETAIL

SCALE: NTS



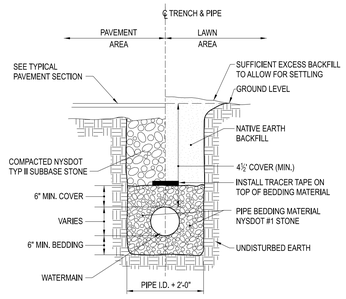
TYPICAL VALVE SETTING DETAIL

SCALE: NTS



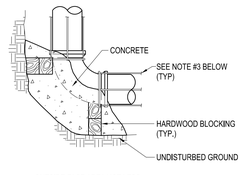
12" YARD DRAIN

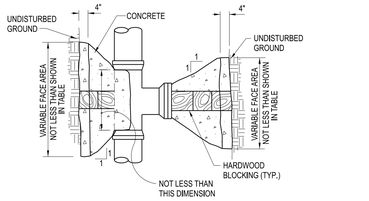
SCALE: NTS

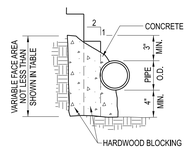


TYPICAL WATERLINE TRENCH SECTION

SCALE: NTS



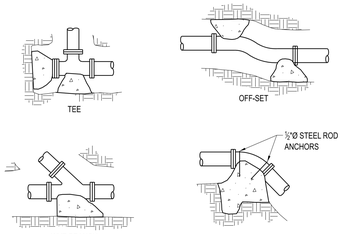




TYPICAL THRUST BLOCKING DETAILS FOR TEES, PLUGS AND BENDS

PIPE SIZE	AREA SQ. IN.	TOTAL PRESS. IN LBS.	AREA OF BLOCK IN SQUARE FEET				
			TEES PLUGS	90° BENDS	45° BENDS	22 1/2° BENDS	11 1/4° BENDS
4"	26	5,800	1.5	2.1	1.1	1.0	1.0
6"	48	10,800	2.7	3.8	2.1	1.0	1.0
8"	79	17,600	4.5	6.3	3.5	2.0	1.0
10"	114	25,700	6.4	9.0	4.9	2.5	1.25
12"	158	35,600	9.0	12.7	6.9	3.5	2.0

NOTES:
1. THRUST BLOCKS ARE TO BE CONSTRUCTED OF DRY-MIX PORTLAND CEMENT ATTAINING 3000 AT 28 DAYS.
2. THRUST BLOCKS ARE TO BE USED IN CONJUNCTION WITH LOCKING COLLARS
3. PROVIDE TIE-RODS OR MEGA-LUGS TO ALIGNMENT CONCRETE THRUST BLOCKS AS SHOWN.



TYPICAL THRUST BLOCK PAVEMENT

SCALE: NTS

STABILIZED CONSTRUCTION ENTRANCE NOTES:

1. STONE SIZE - USE 2" STONE, WASHED, CRUSHED.

2. LENGTH - NOT LESS THAN 50 FEET

3. THICKNESS - NOT LESS THAN SIX (6) INCHES

4. WIDTH - TWELVE (12) FOOT MINIMUM, BU NOT LESS THAN THE FULL WIDTH AT POINTS WHERE INGRESS OR EGRESS OCCURS. TWENTY-FOUR (24) FOOT IF SINGLE ENTRANCE TO SITE.

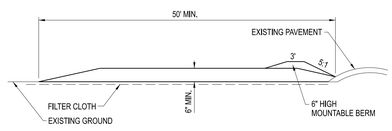
5. FILTER CLOTH - WILL BE PLACED OVER THE ENTIRE AREA PRIOR TO PLACING OF STONE.

6. SURFACE WATER - ALL SURFACE WATER FLOWING OR DIVERTED TOWARD CONSTRUCTION ENTRANCES SHALL BE PIPED ACROSS THE ENTRANCE. IF PIPING IS IMPRACTICAL, A MOUNTABLE BERM WITH 5:1 SLOPES WILL BE PERMITTED.

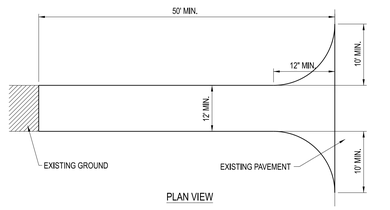
7. MAINTENANCE - THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY. ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC-RIGHTS-OF-WAY MUST BE REMOVED IMMEDIATELY.

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

9. PERIODIC INSPECTION & NEEDED MAINTENANCE SHALL BE PROVIDED AFTER EACH RAIN.



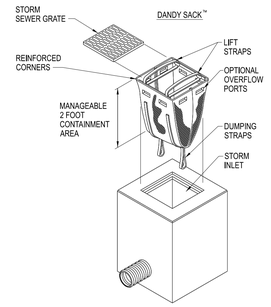
PROFILE



PLAN VIEW

TEMPORARY STABILIZED CONSTRUCTION ENTRANCE

SCALE: NTS



DANDY SACK™ SPECIFICATIONS

NOTE: THE DANDY SACK™ WILL BE MANUFACTURED IN THE U.S.A. FROM A WOVEN MONOFILAMENT FABRIC THAT MEETS OR EXCEEDS THE FOLLOWING SPECIFICATIONS:

REGULAR FLOW DANDY SACK™ (BLACK)

MECHANICAL PROPERTIES	TEST METHOD	UNITS	MARV
GRAB TENSILE STRENGTH	ASTM D 4632	kN (lbs)	1.78 (400) x 1.40 (315)
GRAB TENSILE ELONGATION	ASTM D 4632	%	15 x 15
PUNCTURE STRENGTH	ASTM D 4833	kN (lbs)	0.67 (150)
MULLEN BURST STRENGTH	ASTM D 3786	kPa (psi)	5506 (800)
TRAPEZOID TEAR STRENGTH	ASTM D 4533	kN (lbs)	0.67 (150) x 0.73 (165)
UV RESISTANCE	ASTM D 4355	%	90
APPARENT OPENING SIZE	ASTM D 4751	Mm (US Std Sieve)	0.425 (40)
FLOW RATE	ASTM D 4491	l/min/m² (gal/min/ft²)	2852 (70)
PERMITTIVITY	ASTM D 4491	Sec⁻¹	0.90

HI-FLOW DANDY SACK™ (SAFETY ORANGE)

MECHANICAL PROPERTIES	TEST METHOD	UNITS	MARV
GRAB TENSILE STRENGTH	ASTM D 4632	kN (lbs)	1.62 (365) X 0.89 (200)
GRAB TENSILE ELONGATION	ASTM D 4632	%	24 X 10
PUNCTURE STRENGTH	ASTM D 4833	kN (lbs)	0.40 (90)
MULLEN BURST STRENGTH	ASTM D 3786	kPa (psi)	3097 (450)
TRAPEZOID TEAR STRENGTH	ASTM D 4533	kN (lbs)	0.51 (115) X 0.33 (75)
UV RESISTANCE	ASTM D 4355	%	90
APPARENT OPENING SIZE	ASTM D 4751	Mm (US Std Sieve)	0.425 (40)
FLOW RATE	ASTM D 4491	l/min/m² (gal/min/ft²)	5907 (145)
PERMITTIVITY	ASTM D 4491	Sec⁻¹	2.1

*NOTE: DANDY SACKS™ CAN BE ORDERED WITH OUR OPTIONAL OIL ABSORBENT PILLOWS.

FILTER SACK INLET PROTECTION

SCALE: NTS

EROSION CONTROL NOTES:

THE FOLLOWING EROSION CONTROL PROCEDURE SHALL BE ADHERED TO BY THE CONTRACTOR:

1. INSTALL TEMPORARY SILT FENCE BARRIERS AS SHOWN ON THE PLAN AND AT ALL EXISTING STORMWATER CATCH BASINS WITHIN THE WORK AREA TO PREVENT SEDIMENT MIGRATION. ALL SILT FENCE/SOCK BARRIERS SHALL BE INSTALLED IN ACCORDANCE WITH THE DETAILS SHOWN ON THE PLANS.

2. THE TOPSOIL SHALL BE STRIPPED & STOCKPILED ON SITE FOR RE-USE AS DIRECTED BY THE OWNER. ALL LOCAL ORDINANCES REGARDING THE SALE AND/OR REMOVAL OF TOPSOIL FROM THE SITE MUST BE FOLLOWED.

3. ALL SILT FENCES/SOCKS SHALL BE REPLACED WHENEVER THEY BECOME CLOGGED OR INOPERABLE.

4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTENNACE & REMOVAL OF TEMPORARY SEDIMENTATION CONTROLS.

5. THE CONTRACTOR MUST CONTROL DUST DURING CONSTRUCTION. DURING EARTHWORK OPERATIONS, WATER SPREADING EQUIPMENT SHALL BE PROVIDED BY THE CONTRACTOR AND WATER APPLIED AS NECESSARY AND AS DIRECTED BY THE OWNER IN ORDER TO CONTROL DUST.

6. DIRT OR DEBRIS LEFT ON LOCAL PUBLIC ROADS AS A RESULT OF THIS CONSTRUCTION PROJECT SHALL BE REMOVED & ROAD SURFACES CLEANED BY THE CONTRACTOR ON A DAILY BASIS.

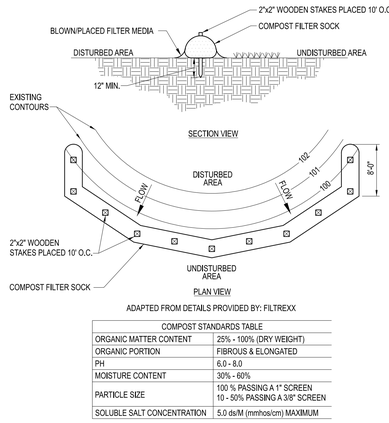
7. ALL DISTURBED AREAS (EXCEPT AREAS TO BE PAVED OR BUILT UPON) SHALL BE TOPSOILED TO A MINIMUM 4" DEPTH & SEEDED IMMEDIATELY AFTER FINE GRADING TAKES PLACE & AS SOON AS PHYSICALLY POSSIBLE.

8. THE CONTRACTOR IS RESPONSIBLE FOR THE MAINTENANCE OF DOWNSTREAM STORM SEWERS, DITCHES & CULVERTS. SILT BUILD-UP FOUND TO BE A RESULT OF THIS SITE CONSTRUCTION WORK SHALL BE REMOVED FROM DOWNSTREAM CULVERTS BY THE CONTRACTOR AT NO ADDITIONAL EXPENSE TO THE OWNER OR THE TOWN.

9. IN ADDITION TO STORM WATER DISCHARGES, THE FOLLOWING NON-STORM WATER DISCHARGES MAY CONTRIBUTE TO THE RUN-OFF FROM THE SITE:

- WATER FROM WATER SERVICE FLUSHINGS
- WATER USED TO WASH DOWN CONSTRUCTION VEHICLES (NO DETERGENTS)
- WATER USED FOR DUST CONTROL
- UNCONTAMINATED GROUNDWATER

10. THE ABOVE NON-STORM WATER FLOWS SHALL BE TREATED IN THE SAME MANNER AS STORM WATER FLOWS INDICATED HERIN.



ADAPTED FROM DETAILS PROVIDED BY: FILTREXX

COMPOST STANDARDS TABLE	
ORGANIC MATTER CONTENT	25% - 100% (DRY WEIGHT)
ORGANIC PORTION	FIBROUS & ELONGATED
PH	6.0 - 8.0
MOISTURE CONTENT	30% - 60%
PARTICLE SIZE	100 % PASSING A 1" SCREEN 10 - 50% PASSING A 3/8" SCREEN
SOLUBLE SALT CONCENTRATION	5.0 ds/M (mmhos/cm) MAXIMUM

1. SOCK FABRIC SHALL MEET STANDARDS OF TABLE 5.1. COMPOST SHALL MEET THE STANDARDS LISTED ON OF TABLE 5.2.

2. COMPOST FILTER SOCK SHALL BE PLACED AT EXISTING LEVEL GRADE. BOTH ENDS OF THE SOCK SHALL BE EXTENDED AT LEAST 8 FEET UP SLOPE AT 45 DEGREES TO THE MAIN SOCK ALIGNMENT (FIGURE 5.2). MAXIMUM SLOPE LENGTH ABOVE ANY SOCK SHALL NOT EXCEED THAT SHOWN ON FIGURE X.X. STAKES MAY BE INSTALLED IMMEDIATELY DOWNSLOPE OF THE SOCK IF SO SPECIFIED BY THE MANUFACTURER.

3. TRAFFIC SHALL NOT BE PERMITTED TO CROSS FILTER SOCKS.

4. ACCUMULATED SEDIMENT SHALL BE REMOVED WHEN IT REACHES HALF THE ABOVE GROUND HEIGHT OF THE SOCK & DISPOSED IN THE MANNER DESCRIBED ELSEWHERE IN THE PLAN.

5. SOCKS SHALL BE INSPECTED WEEKLY AND AFTER EACH RUNOFF EVENT. DAMAGED SOCKS SHALL BE REPAIRED ACCORDING TO MANUFACTURER'S SPECIFICATIONS OR REPLACED WITHIN 24 HOURS OF INSPECTION.

6. BIODEGRADABLE FILTER SOCKS SHALL BE REPLACED AFTER 6 MONTHS; PHOTODEGRADABLE SOCKS AFTER 1 YEAR. POLYPROPYLENE SOCKS SHALL BE REPLACED ACCORDING TO MANUFACTURER'S RECOMMENDATIONS.

7. UPON STABILIZATION OF THE AREA TRIBUTARY TO THE SOCKS, STAKES SHALL BE REMOVED. THE SOCK MAY BE LEFT IN PLACE AND VEGETATED OR REMOVED. IN THE LATTER CASE, THE MESH SHALL BE CUT OPEN AND THE MULCH SPREAD AS A SOIL SUPPLEMENT.

COMPOST FILTER SOCK

SCALE: NTS

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SWBR NYS Certificate of Authorization #: 233221

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HCR SHARS NO. 20230391

Drawn By:	S.S.
Checked By:	V.O.
Project Manager:	V.O.

Revisions

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Niagara Falls, NY 14303
SWBR Project Number 22234.00

Community Services for Every1
180 Oak Street
Buffalo, NY 14203

C-502
UTILITY DETAILS

DECEMBER 6TH, 2024
CONSTRUCTION DOCUMENTS

FILE PATH: