Division of Environmental Remediation

Remedial Investigation Report

31 Tonawanda Street Off-Site Area
Buffalo, Erie County, New York
Site Number C915299A

August 2023

New York State Department of Environmental Conservation
Region 9
700 Delaware Avenue
Buffalo, New York 14209

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LIST OF ACRONYMS

ASP	Analytical Services Protocol
BCA	Brownfield Cleanup Agreement
BCP	Brownfield cleanup Program
BGS	Below Ground Surface
CAMP	Community Air Monitoring Plan
CVOC	Chlorinated Volatile Organic Compound
DER	Division of Environmental Remediation
DUSR	Data Usability and Summary Report
EDD	Electronic Data Deliverable
ELAP	Environmental Laboratory Accreditation Program
ESA	Environmental Site Assessment
FER	Final Engineering Report
GPR	Ground Penetrating Radar
HASP	Health and Safety Plan
IRM	Interim Remedial Measures
IRM WP	Interim Remedial Measures Work Plan
MS/MSD	Matrix Spike / Matrix Spike Duplicate
MSL	Mean Sea Level
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
NYSDOL	New York State Department of Labor
PAH	Polycyclic Aromatic Hydrocarbons
PPB	Parts per Billion
PPM	Parts per Million
PPT	Parts per Trillion
PCB	Polychlorinated Biphenyl
PID	Photo-ionization Detector
PFAS	Per- and Polyfluoroalkyl Substances
PVC	Poly Vinyl Chloride
QA/QC	Quality Assurance / Quality Control
RAO	Remedial Action Objective

LIST OF ACRONYMS (CONTINUED)

REC	RECOGNIZED ENVIRONMENTAL CONDITION
RI	REMEDIAL INVESTIGATION
RIWP	REMEDIAL INVESTIGATION WORK PLAN
SCG	STANDARDS, CRITERIA, GUIDANCE
SCO	SOIL CLEANUP OBJECTIVE
SITE	31 TONAWANDA STREET, BUFFALO, NEW YORK
SMP	SITE MANAGEMENT PLAN
SVOC	SEMI VOLATILE ORGANIC COMPOUND
TAL	TARGET ANALYTE LIST
TCL	TARGET COMPOUND LIST
TCLP	TOXICITY CHARACTERISTIC LEACHING PROCEDURE
TOGS	TECHNICAL AND OPERATIONAL GUIDANCE SERIES
USEPA	UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
USGS	UNITED STATES GEOLOGICAL SURVEY
VOC	VOLATILE ORGANIC COMPOUND
VOV	VOLATILE ORGANIC VAPOR

1.0 INTRODUCTION AND OBJECTIVES

A Remedial Investigation (RI) completed at the 31 Tonawanda Street BCP Site (Site No. C915299; Figure 1-1) in 2018 documented significant concentrations of chlorinated volatile organic compounds (VOCs) in subsurface soil and groundwater in the southeast portion of the 31 Tonawanda Street property, and in sub-slab soil vapor and indoor air throughout the on-site building. The NYSDEC determined that the site represented a significant threat to public health and the environment. Due to the potential for these contaminants to migrate off-site, the New York State Department of Environmental Conservation (NYSDEC) assigned this off-site area site number C915299A and called it the 31 Tonawanda Street Off-Site Area.

The BCP applicant, as a volunteer, was not required to investigate and remediate off-site areas of contamination. As a result, the NYSDEC completed a Remedial Investigation at the C915299A Site that is the subject of this report. The overall objective of the RI was to determine the nature and extent of soil, groundwater, surface water, sediment, and soil vapor/air contamination at the Off-Site Area. The specific objectives of the RI were to:

- Complete soil vapor intrusion investigations in structures near the 31 Tonawanda Street property to determine if contaminants have adversely impacted these structures;
- Determine if contaminants have migrated from the 31 Tonawanda Street property and adversely impacted subsurface soil and groundwater near the site;
- Determine if contaminants have migrated from the 31 Tonawanda Street property and adversely impacted surface water and sediment in Scajaquada Creek;
- Determine if contaminants have migrated from the 31 Tonawanda Street property and adversely impacted the storm sewer system near the site; and
- Complete a comprehensive hydrogeologic evaluation of the site and surrounding area that includes an evaluation of the groundwater flow pattern in the area.

Remedial Investigation field activities were completed by Groundwater & Environmental Services, Inc. (GES), the prime NYSDEC Standby Spill Contractor for this project. The NYSDEC was the lead agency for the investigation.

During the final stages of drafting the Remedial Investigation Report for the 31 Tonawanda Street Off-Site Area, NYSDEC personnel collected additional samples that were not included in the report. In addition, the groundwater results for two (2) monitoring wells installed by GEI on the

Niagara Street pumphouse property became available in February 2023. These data were added to the Remedial Investigation Report in August 2023 for completeness.

2.0 SITE HISTORY AND BACKGROUND

2.1 *Site Description*

The 31 Tonawanda Street BCP Site consists of two separate parcels on Tonawanda Street in the Black Rock section of the City of Buffalo, Erie County, New York (Figures 1-1 and 2-1). The 31 Tonawanda Street property is located on the east side of Tonawanda Street near the junction of Niagara Street and is 1.86 acres in size. The 150 Tonawanda Street property is located on the west side of Tonawanda Street and is 0.92 acres in size. The two properties are not contiguous. Since the chlorinated VOC contamination is associated with the 31 Tonawanda Street property, the remaining discussion in this section focuses only on that property and the Off-Site Area.

The 31 Tonawanda Street property is bordered by Scajaquada Creek to the east; the Scajaquada Expressway off ramp and Scajaquada Creek to the south; Tonawanda Street, vacant buildings and a rail line to the west; and the 57-71 Tonawanda Street BCP Site (Site No. C915024), which includes the Class 3 Fedders Automotive Site (Site No. 915024), to the north (Figure 2-1). The New York State Thruway and the Black Rock Canal are located about 0.25 miles southwest of this property.

The 31 Tonawanda Street Off-Site Area includes Scajaquada Creek to the east and residential and commercial properties across Tonawanda Street to the west. The exact area of the C915299A site is unknown as the extent of contamination has not been fully delineated.

2.2 *Site Features*

The 31 Tonawanda Street property contains an irregularly shaped, approximately 115,000 square foot building that occupies most of the property (Figures 2-1 and 2-2). This building has now been redeveloped into a self-storage facility. The only green space is located along Scajaquada Creek on the east side of the property (Figure 2-2). The creek bank at the rear of the property is lined by a concrete retaining wall and large stone rip-rap on the creek side of the wall. The topography of the property is generally flat, except for the relatively steep embankment along Scajaquada Creek.

2.3 Site History

In the late 1800s, the United States Electric Light and Power Company of Buffalo (later called the Buffalo General Electric Company) had a plant for arc lighting on the southern portion of the 31 Tonawanda Street property while the Thompsons Shingle Mill was located on the northern portion. The electric company was an experimental station of the National High Temperature Furnace Company.

In 1907 the Fedders Manufacturing Works was located at 55-59 Tonawanda Street. Available information indicates that the initial plant was a 3-story building located at 55 Tonawanda Street. A major building expansion took place in 1910. By 1914 the company was known as the Fedders Manufacturing Co., Inc., with another major expansion occurring in 1915. A 1916 Sanborn map shows the company at 31 Tonawanda Street, but it is uncertain when use of that property began.

Initially, Fedders made milk cans, kerosene tanks for the Standard Oil Co., and bread pans for the National Biscuit Co. Later, Fedders converted the plant to making radiators for automobiles. During World War I the company also made radiators for airplanes and manufactured appliances for heating and electrical refrigeration. During World War II, Fedders received contracts to make links and clips for machine-gun belts and rifle bullets. In the late 1940s through the 1960s, Fedders made room air conditioners and electric water coolers, heaters, radiators, radiator cores, home radiators, convectors, hot-water boilers and women's handbag frames, as well as heat-transfer equipment, including convectors, condensers, evaporators, and dehumidifiers. By 1990 the company was sold to FEDCO who manufactured automobile heating equipment. Manufacturing operations at the facility ceased in June 2005 and the property was sold to Black Rock Trade Center, Inc. later that year.

The Fedders Manufacturing Company had a history of using various chemicals, oils, solvents, and other materials in their manufacturing processes. Plant processes included metal stamping, soldering, brazing, welding, painting, acid washing and degreasing. Industrial wastes were reported to include solder dross, degreasing still bottoms including trichloroethene (TCE) and tetrachloroethene (PCE), and petroleum-based lubricating fluids.

2.4 Remedial History

In May 2011, a Phase I Environmental Site Assessment (ESA) was completed on the 31 Tonawanda Street property. This was followed by the completion of a Phase II ESA in September

2014, and a Limited Sub-Slab Soil/Subsurface Assessment in March 2015. These ESAs documented the presence of volatile organic compounds (primarily chlorinated VOCs), semi-volatile organic compounds (primarily polycyclic aromatic hydrocarbons or PAHs), and metals at concentrations that exceeded the NYSDEC Part 375 Restricted Residential Soil Cleanup Objectives (SCOs). Pesticides were also detected but at concentrations below the restricted residential SCOs. Polychlorinated biphenyls (PCBs) were not detected. Groundwater at the 31 Tonawanda Street property was not evaluated during the Phase II ESAs.

Based upon the results of the ESAs, the current owner applied to the NYSDEC's Brownfield Cleanup Program (BCP) in May 2017. The 31 & 150 Tonawanda Street properties were accepted into the BCP in October 2017, and the site was assigned number C915299 by the NYSDEC.

During the Environmental Site Assessments completed at this site and the Remedial Investigation (RI) completed in 2018, samples for analysis were collected from shallow fill, subsurface fill, native soil, sub-slab soil vapor, indoor air, outdoor air, and groundwater at the 31 Tonawanda Street property (Figures 2-3 thru 2-6). Shallow fill (0-3 feet depth), subsurface soil and fill (3-15 feet depth), and groundwater were analyzed for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), pesticides, polychlorinated biphenyls (PCBs), and metals. Sub-slab soil vapor, indoor air and outdoor air were analyzed for VOCs. These investigations determined that chlorinated VOCs (trichloroethene (TCE), trichloroethane (TCA), cis-1,2-dichloroethene (DCE), dichloroethane (DCA) and vinyl chloride (VC)), polycyclic aromatic hydrocarbons (PAHs), and select metals were the primary contaminants of concern at the site.

For a detailed summary of the RI field activities and the results of that investigation, please refer to the October 2019 Remedial Investigation and Remedial Alternatives Analysis (RI/RAA) Report prepared by BE3 Corporation.

3.0 SCOPE OF WORK

To meet the Remedial Investigation objectives discussed in Section 1.0, the following activities were completed during the Remedial Investigation at the 31 Tonawanda Street Off-Site Area: (1) the compilation of results from sediment samples collected from Scajaquada Creek by the NYSDEC in 2015, the NYSDEC in 2017, and the U.S. Army Corp of Engineers in 2017; (2) an assessment of monitoring wells near the 31 Tonawanda Street property for the presence of Non-Aqueous Phase Liquid (NAPL); (3) the collection of surface water samples from Scajaquada Creek near the discharge from the Niagara Street pumphouse for chemical analysis; (4) the collection of water samples from catch basins and manholes from the storm sewer system associated with the Niagara Street pumphouse along with water samples from the pumphouse sump for chemical analysis; (5) the collection of sediment samples from Scajaquada Creek near the discharge from the Niagara Street pumphouse for chemical analysis; (6) the collection of a sediment sample from the pumphouse sump for chemical analysis; (7) the completion of soil borings along the bike path between the 57-71 Tonawanda Street BCP Site (Site No. C932024) and Scajaquada Creek; (8) the completion of soil borings at the 1660 Niagara Street BCP Site (Site No. C915311); (9) the completion of soil borings at 1675 Niagara Street; (10) the collection of fill and subsurface soil samples from the soil borings for chemical analysis; (11) the installation of monitoring wells to act as collection points for NAPL (if present) and to facilitate groundwater sampling; (12) the collection of NAPL samples for chemical analysis; (13) the collection of groundwater samples from the newly installed monitoring wells for chemical analysis; (14) the completion of soil vapor intrusion investigations in structures near the 31 Tonawanda Street property; (15) the completion of a detailed site survey; and (16) the preparation of a Remedial Investigation Report. Specific details of the work completed during the Remedial Investigation are described in the following sections. A discussion of the field activities completed during the Remedial Investigation is provided in Section 4.0.

3.1 Compilation of Historic Sediment Results

Numerous sediment samples from Scajaquada Creek, including the slip adjacent to the 1660 Niagara Street BCP Site, have been collected since 2015. As part of the Remedial Investigation of the 31 Tonawanda Street Off-Site Area, these results were compiled to determine if any data gaps exist. Information concerning sample collection and analysis is given in Table 3-1. The results that were compiled came from sediment samples collected from the Scajaquada Creek Slip and from

Scajaquada Creek between the West Avenue bridge and the Black Rock Canal. A cap exists upstream of the West Avenue bridge, which was installed by National Fuel Gas as part of the remediation of Scajaquada Creek associated with the Iroquois Gas/Westwood Pharmaceuticals Site (Site No. 915141A & B). Because of this cap, sediment samples were not collected from this portion of the creek.

The sediment investigations completed since 2015 are described briefly as follows:

3.1.1 2015 NYSDEC Investigation

On January 21, 2015, Empire GeoServices, Inc. (Empire), under contract to the NYSDEC, collected ten (10) sediment samples from the Scajaquada Creek Slip (Figure 3-1). Information concerning sample collection and analysis is given in Table 3-1. These samples were collected because a petroleum-like sheen was observed on the water surface by others during a benthic sampling event in the slip.

Empire initially attempted to collect the sediment samples utilizing a macro core sampler fitted with a clear PVC liner, removable cutting shoe and a retaining basket. The physical characteristics of the sediment, however, prevented samples from being collected by this method, and after numerous attempts, Empire switch to a sampling ladle. As a result, the exact sample interval is unknown. The sampling ladle was decontaminated between sampling locations with Alconox™ and water.

Sediment in the slip was generally described as black silt with organic matter and a trace of gravel. An industrial-type odor was documented in most samples, with sheens observed on all samples (Table 3-1). The samples were placed into certified, pre-cleaned 4- and 8-ounce glass containers, labeled with a unique sample identification code, and stored in a cooler at approximately 4 degrees Celsius for transport to TestAmerica Laboratories, Inc. in Amherst, New York. All samples were analyzed for Target Compound List (TCL) volatile organic compounds via USEPA method 8260C and TCL semi-volatile organic compounds via USEPA method 8270D, with three (3) samples also analyzed for TCL polychlorinated biphenyls (PCBs) via USEPA method 8082A, and petroleum products via DOH method 310.13. The lab report for these samples is included in Appendix E.

3.1.2 2017 NYSDEC Investigation

Between March 28 and April 5, 2017, Empire GeoServices, Inc., under contract to the NYSDEC, completed a sediment sampling investigation of Scajaquada Creek from Elmwood Avenue to the mouth of the creek at the Black Rock Canal (Figure 3-2). Sediment samples were also collected from the Black Rock Canal and the Scajaquada Creek Slip (Figure 3-2). Sediment samples were collected from 34 locations with samples collected from multiple depths at each location. The sediment samples were collected to evaluate current conditions in Scajaquada Creek sediments with regard to environmental contamination. Specifically, the sediment evaluation was completed to (1) assess conditions in the area of a planned boat launch/human access; and (2) assess the sediments as a potential contamination source for the Niagara River and Lake Ontario.

Empire collected the sediment samples from a portable, floating work platform using the following methods and equipment, as appropriate for the type of sediment encountered at each location:

- 2-foot long by 3-inch diameter split spoon sampler, or 48-inch long by 1.5-inch diameter Geoprobe® macrocore sampler, attached to drilling rods, with the sampler driven into the sediment using an AG penetrometer and a 35-pound slide hammer;
- 2-foot long by 3-inch diameter split spoon sampler, or 48-inch long by 1.5-inch diameter Geoprobe® macrocore sampler, attached to drilling rods and manually pushed or lowered into the sediment (i.e., in soft sediments); and
- 2-foot long by 3-inch diameter split spoon sampler attached to drilling rods, driven into the sediment using a motorized cat head and portable aluminum derrick (i.e., hard sediment/soil).

All sampling equipment and drilling rods were decontaminated between sampling intervals and locations to minimize the potential for cross contamination.

Most samples compiled for the 31 Tonawanda Street Remedial Investigation Report exhibited a creosote-like odor with a spotty sheen (Table 3-1). Other samples exhibited a hydrogen sulfide-like odor with and without sheens, and a petroleum-like odor without sheens. For each sampling interval, the recovered sediment was placed into a stainless-steel bowl and homogenized before being put into certified, pre-cleaned glass containers, labeled with a unique sample identification code, and stored in a cooler at approximately 4 degrees Celsius for transport to TestAmerica Laboratories, Inc. in Amherst, New York. All samples were analyzed for polycyclic aromatic hydrocarbons (PAHs) via USEPA method 8270D, TCL pesticides via USEPA method 8081B, TCL PCBs via USEPA method 8082A, TAL metals via USEPA method 6020A, mercury via USEPA method 7471B, methyl mercury via USEPA method 1630, total organic carbon (TOC) via Lloyd Kahn, grain size via ASTM method D422, and total volatile solids via USEPA method 2540G. Eighteen (18) samples were also analyzed for TCL VOCs via USEPA method 8260C with six (6) additional samples also analyzed for PCB congeners via USEPA method 1668A and dioxins/furans via USEPA method 1613B.

Sediment samples collected during the 2017 NYSDEC investigation that were compiled as part of the Remedial Investigation of the 31 Tonawanda Street Off-Site Area included nine (9) samples from seven (7) location in the Scajaquada Creek Slip and five (5) samples from five (5) locations in Scajaquada Creek downstream of the West Avenue bridge (Figure 3-2). Information concerning sample collection and analysis is given in Table 3-1, while lab reports for these samples are included in Appendix E. PCB congeners and dioxins/furans results were not compiled for the 31 Tonawanda Street Off-Site Area Remedial Investigation Report.

3.1.3 2017 U.S. Army Corp of Engineers Investigation

On September 25, 2017, the U.S. Army Corp of Engineers (USACE) collected fifteen (15) sediment samples from Scajaquada Creek between the West Avenue bridge and the Black Rock Canal (Figure 3-3). Information concerning sample collection and analysis is given in Table 3-1. These samples were collected as part of a larger investigation of the Niagara River Area of Concern (AOC). The objective of this investigation was to collect, evaluate and characterize sediment samples from the Niagara River AOC of sufficient quality and quantity to evaluate potential exposure to ecological receptors. All samples from Scajaquada Creek were collected with a ponar dredge from a boat, so the sample depth is estimated to be 0.0-0.5 feet.

Prior to sampling, the USACE divided the lower reach of Scajaquada Creek into five (5) sub-units, each of which was further divided into five sections labeled A through E (Figure 3-3). In total there were 25 sections, each of which had one planned sample location. The USACE, however, only recovered sediment at 15 of the 25 locations. Prior to analyses, the USACE composited the samples having the same letter designations (e.g., "A" samples collected from each of the 5 zones). These samples were submitted to SGS North America Inc. in Dayton, New Jersey for analysis of PAHs via USEPA method 8270, TCL pesticides via USEPA method 8081, TCL PCBs via USEPA method 8082, TAL metals via USEPA method 6010D, mercury via USEPA method 7471B, and grain size via ASTM method D422. Due to the method of compositing, these results offer little value to the Remedial Investigation of the 31 Tonawanda Street Off-Site Area and were not compiled during the investigation.

When the USACE composited the samples, however, they also archived a portion of each individual sample for potential future analyses. Based upon the results of the composite samples, they analyzed all 15 archived sediment samples for TAL metals via USEPA method 6010D, mercury via USEPA method 7471B, TOC via USEPA method 9060A and Acid Volatile Sulfide/Simultaneously Extracted Metals (AVS/SEM) via USEPA method 821 Draft. Measurements of acid volatile sulfide (AVS) and simultaneously extracted metals (SEM) are used to evaluate the toxicity of metals to indigenous benthic organisms. The results of these analyses are shown on Figure 3-4, with the TAL metals and TOC results compiled as part of the Remedial Investigation of the 31 Tonawanda Street Off-Site Area (Table 3-1). The lab report for these samples is included in Appendix E.

3.2 NAPL Assessment

In January 2019, Non-Aqueous Phase Liquid (NAPL) was detected in monitoring well MW-7 at the 1660 Niagara Street BCP Site. NAPL had also been observed in two (2) soil borings completed at the 31 Tonawanda Street BCP Site. To determine if this NAPL was widespread, existing monitoring wells were checked for the presence of NAPL using a dual phase interphase probe. During this assessment, one (1) NAPL sample was collected and transported to Eurofins TestAmerica in Amherst, New York for analysis of TCL volatile organic compounds via USEPA method 8260C, TCL semi-volatile organic compounds via USEPA method 8270D, and TCL PCBs via USEPA method 8082A. Information concerning sample collection and analysis is given in Table 3-2, while the lab report is included in Appendix F.

3.3 Surface Water Sampling and Analysis

One of the objectives of the Remedial Investigation was to determine if the 31 Tonawanda Street BCP Site is adversely impacting Scajaquada Creek or the storm sewer system near the site. To accomplish this objective, fourteen (14) surface water samples were collected at the locations shown on Figures 3-5 and 3-6. Thirteen (13) of these samples were associated with the Niagara Street pumphouse (catch basins, manholes, the pumphouse sump and the Scajaquada Creek Slip; Figure 3-5), while the remaining sample was collected from an 8-inch pipe that discharges into Scajaquada Creek at the 31 Tonawanda Street property (Figure 3-6).

The surface water samples from the Scajaquada Creek Slip and the 8-inch pipe were collected by NYSDEC personnel using standard surface water sampling procedures and placed into laboratory supplied, pre-cleaned sample jars. The jars were labeled with a unique sample identification code and stored in a cooler at approximately 4 degrees Celsius for transport to Eurofins TestAmerica in Amherst, New York. The sample from the Scajaquada Creek Slip was analyzed for TCL volatile organic compounds via USEPA method 8260C, TCL semi-volatile organic compounds via USEPA method 8270D, and TCL PCBs via USEPA method 8082A, while the sample from the 8-inch pipe was only analyzed for TCL volatile organic compounds via USEPA method 8260C. Information concerning sample collection and analysis is given in Table 3-2, while the lab reports are included in Appendix F.

The surface water samples collected from the catch basins, manholes and the Niagara Street pumphouse sump (Figure 3-5) were collected by Finger Lakes Envirotech, LLC, a NYSDEC Standby Spill Contractor, using various sampling methodologies (see Sections 4.10 and 4.11 for more details). All samples were submitted to Pace Analytical Laboratory in East Longmeadow, Massachusetts for chemical analysis of TCL volatile organic compounds via USEPA method 8260D, TCL semi-volatile organic compounds via USEPA method 8270E, and 1,4-dioxane via USEPA method 8270E. Two of the samples were also analyzed for TCL PCBs via USEPA method 8082A, TAL metals via USEPA method 6010D and 6020B, and mercury via USEPA method 7470A. Information concerning sample collection and analysis is given in Table 3-2, while the lab reports are included in Appendix F.

On August 29, 2022 NYSDEC personnel collected six (6) additional surface water samples, two (2) each from the main channel of Scajaquada Creek, the Scajaquada Creek Slip and the Black Rock Canal. The approximate locations of these samples are shown on Figure 3-11. This writer was not present during the sampling event, and a sampling report was not prepared by the samplers. As a result, it is unknown how these samples were collected. These samples were submitted to Pace Analytical Laboratory in East Longmeadow, Massachusetts for chemical analysis of TCL volatile organic compounds via USEPA method 8260D, TCL semi-volatile organic compounds via USEPA method 8270E, TCL pesticides via USEPA method 8081B, TCL herbicides via USEPA method 8151A, TCL PCBs via USEPA method 8082A, TAL metals via USEPA method 6010D, mercury via USEPA method 7470A, and 1,4-dioxane via USEPA method 8270E. Information concerning sample collection and analysis is given in Table 3-2, while the lab reports are included in Appendix K.

On December 7, 2022 NYSDEC personnel collected three (3) surface water samples from structures associated with the Niagara Street pumphouse and associated sewer system. These samples were collected from manhole 21, manhole 23, and the pumphouse sump, and were collected to evaluate the impact that cleaning/sealing of the pumphouse sump and manholes had on surface water contamination. The locations of these structures are shown on Figure 3-5. The details of this work will be reported by others.

Once again, this writer was not present during the sampling event, and a sampling report was not prepared by the samplers. As a result, it is unknown how these samples were collected. These samples were submitted to Pace Analytical Laboratory in East Longmeadow, Massachusetts for chemical analysis of TCL volatile organic compounds via USEPA method 8260D, TCL semi-volatile organic compounds via USEPA method 8270E, and 1,4-dioxane via USEPA method 8270E. Information concerning sample collection and analysis is given in Table 3-2, while the lab reports are included in Appendix K.

3.4 Sediment Sampling and Analysis

One of the objectives of the Remedial Investigation was to determine if the 31 Tonawanda Street BCP Site is adversely impacting Scajaquada Creek. To partially accomplish this objective, four (4) sediment samples were collected at the locations shown on Figure 3-5. Two samples were collected from the Scajaquada Creek Slip at the outlet of the Niagara Street pumphouse while the third sample was collected slightly downstream (i.e., closer to the main channel of Scajaquada Creek). The fourth sediment sample was collected from the Niagara Street pumphouse sump.

Two of the sediment samples from the Scajaquada Creek Slip were collected by NYSDEC personnel using disposable plastic scoops and placed into laboratory supplied, pre-cleaned sample jars. The jars were labeled with a unique sample identification code and stored in a cooler at approximately 4 degrees Celsius for transport to Eurofins TestAmerica in Amherst, New York. The samples were analyzed for TCL volatile organic compounds via USEPA method 8260C, TCL semi-volatile organic compounds via USEPA method 8270D, and TCL PCBs via USEPA method 8082A. Information concerning sample collection and analysis is given in Table 3-2, while the lab report is included in Appendix F.

One of the sediment samples from the Scajaquada Creek Slip, and the sediment sample from the Niagara Street pumphouse sump, were collected by Finger Lakes Envirotech, LLC. The creek sample was collected before NYSDEC personnel arrived at the site, so the sampling methodology isn't known. The sediment sample from the pumphouse sump was collected with a clam shell sampler. These samples were submitted to Pace Analytical Laboratory in East Longmeadow, Massachusetts for chemical analysis of TCL volatile organic compounds via USEPA method 8260D, TCL semi-volatile organic compounds via USEPA method 8270E, TCL PCBs via USEPA method 8082A, TAL metals via USEPA method 6010D, and mercury via USEPA method 7471B. The sump sediment sample was also analyzed for TCLP volatile organic compounds via USEPA method 8260D, TCLP semi-volatile organic compounds via USEPA method 8270E, TCLP metals via USEPA method 6010D and 7470A, total petroleum hydrocarbons via USEPA method 8015C, pH via USEPA method 9045C, percent solids via USEPA method 2540G, ignitability via USEPA method 1030, reactive cyanide via USEPA method 9014, and reactive sulfide via USEPA method 9030A. Information concerning sample collection and analysis is given in Table 3-2, while the lab reports are included in Appendix F. The TCLP and hazardous waste characteristic results were not tabulated for this report and are not discussed further.

3.5 Soil Boring Program

Nine (9) soil borings were completed during the Remedial Investigation of the 31 Tonawanda Street Off-Site Area at the locations shown on Figures 3-7 and 3-8. Two (2) soil borings were completed at 1675 Niagara Street (Figure 3-7), four (4) soil borings were completed at the 1660 Niagara Street BCP Site (Figure 3-7), and three (3) soil borings were completed along the bike path between the 57-71 Tonawanda Street BCP Site and Scajaquada Creek (Figure 3-8). Each soil boring was advanced to the underlying native reddish-brown silty clay for the purpose of geologic logging, to facilitate sample collection and to look for the presence of NAPL in the subsurface environment.

Continuous soil cores were collected with dedicated acetate liners using direct-push technology that was also capable of turning augers. The Drilling Contractor was responsible for opening these liners. All soil cores were screened for organic vapors using a PID supplied by the prime NYSDEC Standby Spill Contractor.

Eight (8) of the nine (9) soil borings were completed as monitoring wells (see Section 3.7). The ninth soil boring was backfilled with bentonite pellets to ground surface.

The direct-push vehicle and sampling equipment were decontaminated prior to arriving at the site. The augers, drill rods and sampler were decontaminated between borings using a steam cleaner. Reusable sampling equipment was decontaminated between samples in 5-gallon buckets using potable water and an appropriate, PFAS-free detergent. Used PPE, disposable sampling equipment and garbage generated during completion of the borings was bagged and removed from the site when the work was complete. Decontamination water and soil cuttings were drummed for subsequent testing and off-site disposal.

3.6 Subsurface Soil/Fill Sampling and Analysis

At each soil boring location, one (1) sample was collected from the most contaminated interval (based upon instrument readings, visible staining, odors, etc.) for chemical analysis. A sample of the native reddish brown silty clay was also collected from soil boring 1660-MW-5R. Samples were collected by the Standby Spill Contractor in consultation with the NYSDEC field representatives and placed into laboratory supplied, pre-cleaned sample jars. All samples collected for VOC analysis were discrete, non-homogenized grab samples. The jars were labeled with a unique sample identification code and stored in a cooler at approximately 4 degrees Celsius for transport to Eurofins TestAmerica in Amherst, New York. A total of ten (10) subsurface soil/fill samples were analyzed for TCL volatile organic compounds via USEPA method 8260C and TCL semi-volatile organic compounds via USEPA method 8270D. Information concerning sample collection and analysis is given in Table 3-2, while the lab reports are included in Appendix F.

3.7 Monitoring Wells

Five (5) overburden monitoring wells were installed at the 31 Tonawanda Street property (Figure 2-6) during completion of the BCP Remedial Investigation in 2018. In addition, four (4) overburden monitoring wells were installed at the 68 Tonawanda Street BCP Site (Site No. C915316; only one is shown on Figure 3-9), five (5) overburden monitoring wells were installed at the 57-71 Tonawanda Street BCP Site (Site No. C915024; Figure 3-10), and seven (7) overburden monitoring wells were installed at the 1660 Niagara Street BCP Site (Figure 3-9). Three (3) wells at the latter site were destroyed in 2019 during completion of a Soil Cover/Creek Bank Stabilization IRM. Construction details for these historic monitoring wells are summarized in Table 3-4.

One of the objectives of the Remedial Investigation was to complete a comprehensive hydrogeologic evaluation of the Off-Site Area to determine the full impact of the 31 Tonawanda Street BCP Site on groundwater quality. To accomplish this objective, eight (8) overburden monitoring wells were installed during the Remedial Investigation of the 31 Tonawanda Street Off-Site Area at the locations shown on Figures 3-9 and 3-10 to expand the existing monitoring well network of the area. Two (2) overburden monitoring wells were installed at 1675 Niagara Street (Figure 3-9), three

(3) overburden monitoring wells were installed along the bike path between the 57-71 Tonawanda Street BCP Site and Scajaquada Creek (Figure 3-10), and three (3) overburden monitoring wells were installed at the 1660 Niagara Street BCP Site (Figure 3-9). Two (2) of these wells replaced wells MW-3 and MW-5 that were destroyed during completion of the Soil Cover/Creek Bank Stabilization IRM in 2019.

All wells were installed with a direct-push vehicle capable of spinning augers. Each monitoring well was constructed with 2-inch diameter threaded/flush joint Schedule 40 PVC screen (10 slot), threaded bottom plugs, and flush-threaded PVC riser pipe. The wells were constructed with 10-foot or 15-foot long screens. An appropriately graded silica sand filter pack was placed around the screen and extends to approximately 2 feet above the screen. Bentonite was placed above the filter pack to ground surface. All wells were completed with protective flush mounts surrounded by concrete pads except for well 1660-MW-8, which was completed with a protective casing. Construction details for the monitoring wells installed during the Remedial Investigation of the 31 Tonawanda Street Off-Site Area are summarized in Table 3-4.

Each monitoring well was developed using an appropriate method (e.g., bailing, pumping, mechanical surging, etc.) by the Standby Spill Contractor. During development the purged water was monitored for pH, temperature, conductivity, oxidation-reduction potential (ORP), dissolved oxygen (DO), and turbidity. These data were recorded on Well Development Logs (see Appendix C). Development water that showed evidence of contamination (e.g., elevated PID readings, sheens, product, odors, etc.) was containerized in 55-gallon drums for later off-site disposal at a NYSDEC approved facility. Drums were staged at the 1660 Niagara Street BCP Site pending disposal.

In addition to the wells listed above, seven (7) monitoring wells were installed by GEI during their investigation of the Former Buffalo Gas Light/Iroquois Gas Corporation Site (Buffalo Gas Light; Site No. 915351). The locations of these wells are shown on Figure 5-11, with three (3) of those wells also shown on Figure 3-9. Construction details for these monitoring wells are summarized in Table 3-4. These wells were installed during the later stages of the NYSDEC Remedial Investigation of the 31 Tonawanda Street Off-Site Area.

GEI subsequently installed two (2) monitoring well clusters on the east side of the Niagara Street pumphouse (MW-PS-1 & MW-PS-2). The locations of these wells are shown on Figures 3-9. A report describing the installation, development and sampling of these wells is being prepared by GEI and is not yet available.

3.8 Water Level Measurements

To evaluate the hydrogeology of the 31 Tonawanda Street Off-Site Area, water levels were measured in existing and newly constructed monitoring wells within the investigation area on numerous occasions between September 16, 2020 and December 22, 2021. Water levels obtained during the Remedial Investigation of the 31 Tonawanda Street Off-Site Area are summarized in Table 3-5. Historic water levels are summarized in Table 3-6. The water level data obtained during the NYSDEC Remedial Investigation were utilized to construct hydrographs for various water-bearing zones within the Study Area.

3.9 NAPL Sampling and Analysis

NAPL was encountered in five (5) soil borings completed during the Remedial Investigation of the 31 Tonawanda Street Off-Site Area: three (3) at the 1660 Niagara Street BCP Site and two (2) along the bike path between the 57-71 Tonawanda Street BCP Site and Scajaquada Creek. Three (3) NAPL samples were collected during well development in October 2020, one (1) NAPL sample was collected during groundwater sampling in November 2020, and three (3) NAPL samples were collected in January 2021 because the October 2020 samples were prepped/analyzed outside the specified holding times and the results were suspect. All samples were submitted to Eurofins TestAmerica in Amherst, New York for analysis of TCL volatile organic compounds via USEPA method 8260C, TCL semi-volatile organic compounds via USEPA method 8270D, TCL pesticides via USEPA method 8081B, TCL PCBs via USEPA method 8082A, TAL metals via USEPA method 6010C, mercury via USEPA method 7471B, and specific gravity via ASTM method D1429-87. The samples collected in January 2021 were also analyzed for cyanide via USEPA method 9012B. Information concerning sample collection and analysis is given in Table 3-2, while the lab reports are included in Appendix F.

3.10 Groundwater Sampling and Analysis

Groundwater samples were collected from the newly installed monitoring wells to evaluate groundwater impacts related to the site. Prior to sampling, the wells were purged of at least three (3) well volumes, with the purged water monitored for pH, temperature, conductivity, oxidation-reduction potential (ORP), dissolved oxygen (DO), and turbidity. These data were recorded on Well Purge and Sampling Logs (see Appendix D). All purging activities were completed by the prime

NYSDEC Standby Spill Contractor using the low-flow purging method.

Groundwater samples were collected by the prime NYSDEC Standby Spill Contractor using the low-flow sampling method and placed into laboratory supplied, pre-cleaned sample jars. The jars were labeled with a unique sample identification code and stored in a cooler at approximately 4 degrees Celsius for transport to Eurofins TestAmerica in Amherst, New York. A total of eight (8) groundwater samples were analyzed for TCL volatile organic compounds via USEPA method 8260C, TCL semi-volatile organic compounds via USEPA method 8270D, TCL pesticides via USEPA method 8081B, TCL PCBs via USEPA method 8082A, TAL metals via USEPA method 6010C, and mercury via USEPA method 7470A. Information concerning sample collection and analysis is given in Table 3-2, while the lab reports are included in Appendix F.

The reader is referred to the Site Characterization Report for the Buffalo Gas Light Site (GEI, October 2022) for details concerning groundwater sampling and analysis of the GEI wells. A report describing the installation, development, and sampling of the Niagara Street pumphouse property wells is being prepared by GEI and is not yet available.

3.11 Soil Vapor Intrusion Investigations

Soil vapor intrusion (SVI) investigations were proposed for structures located near the 31 Tonawanda Street property to determine if chlorinated VOC's had impacted these structures. Initially, SVI investigations were proposed for the following properties:

- 18 Tonawanda Street across from the 31 Tonawanda Street property;
- 22 Tonawanda Street across from the 31 Tonawanda Street property;
- 1675 Niagara Street across from the 1660 Niagara Street BCP Site; and
- 1654 Niagara Street adjacent to the 1660 Niagara Street BCP Site (indoor air in the Niagara Street pumphouse).

Even though the NYSDEC was granted access to the 18 and 22 Tonawanda Street properties, when it came time to conduct the investigations the contact for these properties did not respond to Department emails. Access to the Niagara Street pumphouse was not granted until November 2021. Ultimately, only SVI investigations at 1675 Niagara Street were completed.

These investigations consisted of sampling vapors beneath the building slabs along with indoor air. Outdoor air samples were collected at background locations that were determined in the field.

To collect the sub-slab vapor samples a portable drill was used to drill through the concrete floor to install the sampling probes. Installation/sampling procedures were completed in accordance with the October 2006, New York State Department of Health (NYSDOH) Guidance for Evaluating Soil Vapor Intrusion in the State of New York and its amendments. The summa canisters were labeled with a unique sample identification code and transported to Eurofins TestAmerica in Knoxville, Tennessee for chemical analysis of TCL volatile organic compounds via EPA Method TO-15. Information concerning sample collection and analysis is given in Table 3-2, while the lab reports are included in Appendix F.

Inspection reports for the soil vapor intrusion investigations are provided in Appendix H.

3.12 Final Site Survey and Mapping

A surveyor licensed in the State of New York was retained by the Standby Spill Contractor to complete the following survey activities:

- Horizontal locations and vertical elevations of all monitoring wells installed during the Remedial Investigation of the 31 Tonawanda Street Off-Site Area. This included ground surface elevations and the elevations of the inner PVC risers of each well;
- Horizontal locations and vertical elevations of all existing monitoring wells at the 1660 Niagara Street BCP Site. This included ground surface elevations and the elevations of the inner PVC risers of each well;
- The horizontal location and ground surface elevation of the soil boring not completed as a monitoring well;
- Horizontal locations and vertical elevations of the catch basins in Niagara Street near and under the railroad bridge near the 1660 Niagara Street BCP Site;
- The invert elevations of the two (2) lowest catch basins described in the bullet above;
- Horizontal locations and vertical elevations of the sharpie marks on the bike path and West Avenue bridges over Scajaquada Creek; and
- The horizontal location and vertical elevation of the concrete wall at the 1660 Niagara Street BCP Site.

Monitoring wells installed at other BCP sites in the area were added to the base map using the AutoCAD files obtained from the applicants for those sites. The locations of the surface water and sediment samples collected in January 2020 near the outlet of the Niagara Street pumphouse were added to the base map using field measurements made at the time of sampling.

Vertical control was established to the nearest ±0.1 foot for all ground surface elevations, while monitoring well riser elevations were reported to the nearest ±0.01 foot. Elevations were determined relative to the North American Vertical Datum of 1988 (NAVD 88), with reference made to an existing monument in the vicinity of the site. Horizontal coordinates were determined relative to the State Plane New York West Zone of the North American Datum (NAD) of 1983 to an accuracy of ±0.5 foot.

At the completion of all surveying activities, a final base map for the 31 Tonawanda Street Off-Site Area was prepared by NYSDEC personnel.

3.13 Report Preparation

Following the completion of all Remedial Investigation field activities, NYSDEC personnel prepared this Remedial Investigation Report to: (1) describe the history of the 31 Tonawanda Street BCP Site; (2) describe the field activities completed during the Remedial Investigation; (3) present the analytical results of the samples collected during the investigation; (4) evaluate the nature and extent of contamination at the Off-Site Area including the presence of NAPL in the subsurface environment; (5) discuss the results as they relate to the objectives of the Remedial Investigation; and (6) present recommendations for future activities to be completed at the 31 Tonawanda Street Off-Site Area. Soil boring logs, well construction diagrams, well development logs, field sampling logs, lab reports, DUSRs, inspection reports, additional data tables, and survey information are included in the report as appendices.

4.0 FIELD ACTIVITIES

The Remedial Investigation of the 31 Tonawanda Street Off-Site Area was completed in multiple phases. Specific details of the field activities completed during the Remedial Investigation are described in the following sections. All field work was conducted in level D personal protective equipment, while air monitoring for organic vapors was completed during intrusive activities by the prime NYSDEC Standby Spill Contractor.

4.1 Sediment, Surface Water & DNAPL Sampling

On Wednesday, January 15, 2020 NYSDEC personnel travelled to the 1660 Niagara Street BCP Site to begin field activities for the Remedial Investigation of the 31 Tonawanda Street Off-Site Area. Department personnel were given access to the site by the Buffalo Niagara Land Trust, the owner of the property. Field activities completed that day included the following:

- Groundwater level measurements on all existing monitoring wells (6 total) at the site;
- Depth to bottom measurements of all existing wells;
- Evaluation of all existing wells for the presence of NAPL;
- The collection of one (1) NAPL sample from well 1660-MW-7, the only well that contained NAPL, for chemical analysis;
- The collection of one (1) surface water sample from the Scajaquada Creek Slip near the outlet of the Niagara Street pumphouse for chemical analysis; and
- The collection of two (2) sediment samples from the Scajaquada Creek Slip near the outlet of the Niagara Street pumphouse for chemical analysis.

The NAPL collected from the bottom of well 1660-MW-7 (Figure 4-1) was viscous, sticky, black in color with a rainbow sheen, dense, and had a distinct coal tar odor. The thickness of the NAPL was measured as approximately 0.9 feet. This sample was submitted to Eurofins TestAmerica in Amherst, New York for chemical analysis of TCL volatile organic compounds via USEPA method 8260C, TCL semi-volatile organic compounds via USEPA method 8270D, and TCL PCBs via USEPA method 8082A. Information concerning sample collection and analysis is given in Table 3-2, while the lab report is included in Appendix F.

One (1) surface water sample that was collected from the Scajaquada Creek Slip near the outlet of the Niagara Street pumphouse (see Figure 3-5 for sample location). This sample was clear with a rainbow sheen and had a faint coal tar odor. This sample was submitted to Eurofins TestAmerica in Amherst, New York for chemical analysis of TCL volatile organic compounds via USEPA method 8260C, TCL semi-volatile organic compounds via USEPA method 8270D, and TCL PCBs via USEPA method 8082A. Information concerning sample collection and analysis is given in Table 3-2, while the lab report is included in Appendix F.

One (1) sediment sample was collected from the Scajaquada Creek Slip near the outlet of the Niagara Street pumphouse, with a second sediment sample collected about 30 feet southeast (downstream) of the pumphouse outlet (see Figure 3-5 for sample locations). Both samples were collected from depths of approximately 0-4 inches. During the collection of the sediment sample near the outlet of the Niagara Street pumphouse, an extensive rainbow sheen developed on the surface of Scajaquada Creek (Figure 4-2). The sample was black, silty, organic muck with many fine roots and had a distinct coal tar odor; a slight sheen was observed on the sample (Figure 4-3). The sample left a viscous, brownish black, sticky residue in the sampling bowl (Figure 4-4). The second sediment sample was brown to black, silty, organic muck with some gravel, a coal tar odor (but not as strong as sample BSA-SED-1), and a rainbow sheen (Figure 4-5). These samples were submitted to Eurofins TestAmerica in Amherst, New York for chemical analysis of TCL volatile organic compounds via USEPA method 8260C, TCL semi-volatile organic compounds via USEPA method 8270D, and TCL PCBs via USEPA method 8082A. Information concerning sample collection and analysis is given in Table 3-2, while the lab report is included in Appendix F.

On Monday, August 29, 2022 NYSDEC personnel travelled to the site to collect surface water samples from Scajaquada Creek, the Scajaquada Creek Slip and the Black Rock Canal. Two (2) surface water samples were collected from the main channel of Scajaquada Creek, while two (2) samples were collected from the Scajaquada Creek Slip (Figure 3-11). Two (2) additional samples were collected from the Black Rock Canal (Figure 3-11). This writer was not present during the sampling event, and a sampling report was not prepared by the samplers. As a result, it is unknown how these samples were collected, nor whether sheens or odors were observed during sample collection.

These samples were submitted to Pace Analytical Laboratory in East Longmeadow, Massachusetts for chemical analysis of TCL volatile organic compounds via USEPA method 8260D, TCL semi-volatile organic compounds via USEPA method 8270E, TCL pesticides via USEPA method 8081B, TCL herbicides via USEPA method 8151A, TCL PCBs via USEPA method 8082A, TAL metals via USEPA method 6010D and 6020B, mercury via USEPA method 7470A, and 1,4-dioxane via USEPA method 8270E. Information concerning sample collection and analysis is given in Table 3-2, while the lab reports are included in Appendix K.

4.2 SVI Investigation – 1675 Niagara Street – Phase 1

On Friday, March 20, 2020 the prime NYSDEC Standby Spill Contractor met with Department personnel at 1675 Niagara Street (Figure 3-5) to complete an SVI investigation of the on-site building. This property is adjacent to Conrail tracks to the east and is directly across Niagara Street from the 1660 Niagara Street BCP Site. Field activities completed that day included the following:

- Drilling of holes through the concrete floor at three (3) locations to facilitate the collection of sub-slab soil vapor samples;
- Installation of tubing in these holes and the sealing of these tubes with modelling clay;
- Testing of the seals with helium gas;
- Attaching the tubing to summa canisters to collect sub-slab soil vapor samples; and
- The deployment of three (3) summa canisters to collect indoor air samples.

Unfortunately, the lab did not send enough summa canisters so a duplicate indoor air sample and the outdoor air sample could not be collected. The decision was made to collect a duplicate sample of sub-slab soil vapor and to skip the outdoor air sample. Due to the warmer than normal weather that year, and the work shutdown due to the COVID-19 pandemic, NYSDEC personnel elected to go ahead with the sampling as there may not have been another opportunity that heating season.

The summa canisters were retrieved during the afternoon of March 20th after being deployed for approximately 8 hours. During this process, indoor air in Room No. 10 was found to have a PID reading of 120 ppb. When the canister was removed from the lobby a PID reading of 110 ppb was recorded at the sub-slab hole, while a PID reading of 74 ppb was recorded on top of a desk.

All samples were submitted to Eurofins TestAmerica in Knoxville, Tennessee for chemical analysis of TCL volatile organic compounds via EPA method TO-15. Information concerning sample collection and analysis is given in Table 3-2, while the lab report is included in Appendix F. The NYSDEC inspection report for this sampling event is given in Appendix H.

4.3 SVI Investigation – 1675 Niagara Street – Phase 2

On Friday, April 20, 2020 the prime NYSDEC Standby Spill Contractor met with Department personnel at 1675 Niagara Street to complete a more detailed SVI investigation of the on-site building. The phase 2 sampling was required due to the elevated concentrations of 1,1,1-trichloroethane (TCA) in sub-slab soil vapor and indoor air in two (2) of the samples collected on March 20, 2020. Field activities completed during the April 20th sampling event included the following:

- Drilling of holes through the concrete floor at eight (8) locations to facilitate the collection of sub-slab soil vapor samples;
- Installation of tubing in these holes and the sealing of these tubes with modelling clay;
- Testing of the seals with helium gas;
- Attaching the tubing to summa canisters to collect sub-slab soil vapor samples;
- The deployment of six (6) summa canisters to collect indoor air samples; and
- The deployment of one (1) summa canister to collect an outdoor air sample.

During the installation process, a PID was utilized to measure VOC readings in the sub-slab holes. PID readings were found to range from 110 ppb in the front lobby to 20,000 ppb in the main hallway between room nos. 3 and 7 (see Figure 1 of the April 20, 2020 inspection report in Appendix H for locations). It is interesting to note how high the PID reading was at the latter location as this sub-slab hole did completely penetrate the concrete slab.

The summa canisters were retrieved during the afternoon of April 20th after being deployed for approximately 8 hours. All samples were submitted to Eurofins TestAmerica in Knoxville, Tennessee for chemical analysis of TCL volatile organic compounds via EPA method TO-15. Information concerning sample collection and analysis is given in Table 3-2, while the lab report is included in Appendix F. The NYSDEC inspection report for this sampling event is given in Appendix H.

4.4 Soil Borings and Monitoring Wells – 1675 Niagara Street

On Monday, September 14, 2020 Department personnel met the prime NYSDEC Standby Spill Contractor and the drilling subcontractor at 1675 Niagara Street to begin the installation of two (2) monitoring wells at the property. The locations of these wells are shown on Figure 3-9. On that day, hand clearing to five (5) feet depth was completed at the two locations.

Soil boring 1675-MW-2 began on September 15th and was completed to a depth of 20 feet below ground surface. A dense, native, reddish-brown silty clay was encountered at a depth of 12.0 feet. No staining, odors or PID readings were observed. The installation of well 1675-MW-2 also began on September 15th and was completed that day.

Soil boring 1675-MW-1 also began on September 15th and was completed to a depth of 32 feet below ground surface. A reddish-brown to brown silty clay was encountered at a depth of 29.8 feet. A gray, 8-inch seam of sand and gravel was encountered above the reddish-brown silty clay and had a slight coal tar odor. A PID reading of 9.9 ppm was measured on this sand.

The installation of well 1675-MW-1 began on September 15th and was completed on September 18th with the installation of a flush mount. The drillers had trouble installing this well as the well screen and riser floated in the boring rather than sinking to the bottom. This continued even after the J-plug was removed to vent the well. One driller ultimately needed to hold the well down with a drilling rod while the 2nd driller added the filter pack sand. During this procedure, the sand bridged in the augers and when the augers were raised the well rose with it.

The drillers succeeded in removing the top auger and were able to push the well back to the bottom of the boring. The well, however, rose again when the augers were raised, and a sand bridge was found in the top auger. The drillers removed this auger and were again able to push the well to the bottom of the boring. The well screen and riser still floated, but this time the drillers were able to get the filter pack to the bottom of the boring and eventually "lock" the well in place.

Well construction details are described in Section 3.7. The soil boring logs are included in Appendix A, while the well construction diagrams are included in Appendix B.

4.5 Soil Borings and Monitoring Wells – 1660 Niagara Street

Four (4) soil borings were completed at the 1660 Niagara Street BCP Site between September 14 and 16, 2020. The locations of these soil borings are shown on Figure 3-7. Two (2) of these borings were completed to replace wells MW-3 and MW-5 that were destroyed during completion of the Soil Cover/Creek Stabilization IRM in 2019. These borings are designated 1660-MW-3R and 1660-MW-5R. The other two (2) borings are designated 1660-SB-01 and 1660-MW-8. These soil borings were completed for the purpose of geologic logging, the collection of fill and/or subsurface soil samples for chemical analysis, to evaluate the presence of NAPL in the subsurface environment, and to facilitate the installation of monitoring wells. Soil borings 1660-MW-3R and 1660-MW-5R were completed to 28 feet depth, soil boring 1660-SB-1 was completed to 24 feet depth, and soil boring 1660-MW-8 was completed to 36 feet depth.

A native, reddish-brown silty clay was encountered at each location (the exact depth at 1660-MW-8 is uncertain due to poor sample recovery from 24 to 28 feet depth) at depths of 25.67’ (MW-5R), 25.75’ (MW-3R) and 22.0’ (1660-SB-1).

During the completion of soil boring MW-5R, coal tar NAPL was encountered at a depth of approximately 23.67 feet below ground surface in a gravelly sand deposit (Figure 4-6). A PID reading of 856 ppm was measured. This NAPL extended to the top of the reddish-brown silty clay deposit at a depth of approximately 25.67 feet. A sample of the NAPL saturated soils was collected for chemical analysis.

NAPL was also encountered in boring 1660-SB-1 at a depth of approximately 21.4 feet in a sand seam approximately 0.6 feet thick (Figure 4-7). A PID reading of 75.4 ppm was measured. This sand seam was located directly above the reddish-brown silty clay deposit, which was encountered at a depth of approximately 22.0 feet. A sample of the NAPL saturated sand was collected for chemical analysis.

NAPL was also encountered in boring 1660-MW-8 at a depth of approximately 23.67 feet (NAPL saturated gravel in shoe of sampler). The only recovery in the sample from 24 to 28 feet depth was a NAPL saturated sand in the shoe of sampler. Due to the poor recovery, it is not known if the NAPL saturated soils are continuous to this depth. An additional sample was collected from 28 to 32 feet depth. This sample contained a gray-brown, fine silty sand containing gastropod shells. A PID reading of 72.4 ppm was measured on this deposit.

A thin seam of NAPL saturated sand with gravel was encountered at a depth of approximately 31.7 feet (Figure 4-8). Reddish-brown silty clay was observed below this seam at a depth of approximately 31.8 feet (Figure 4-8). A PID reading of 692.7 ppm was measured on the NAPL saturated sand and gravel seam from 31.7 to 31.8 feet depth.

The installation of well 1660-MW-8 began on September 17th and was completed that day except for placing cement around the protective casing. That work was completed on September

18th. This well was located approximately 4 feet west of the boring location as concrete in the subsurface prevented the advancement of the augers at that location.

The installation of replacement well 1660-MW-5R began on September 21st and was completed that day. The installation of replacement well 1660-MW-3R began on September 22nd and was completed that day. Both wells were completed with flush mounts.

Well construction details are described in Section 3.7. The soil boring logs are included in Appendix A, while the well construction diagrams are included in Appendix B.

4.6 Soil Borings and Monitoring Wells - Bike Path

On Friday, September 18, 2020 three (3) soil borings were completed along the bike path adjacent to the 57-71 Tonawanda Street BCP Site to further assess the presence of NAPL that was detected in soil borings completed in 1998 during the design phase of the Scajaquada Creek remediation (Site No. 915141B). This NAPL was never sampled for chemical analysis. The locations of these borings are shown on Figure 3-8 and are designated SB-100, SB-103 and SB-106. Proposed soil borings SB-101, SB-102, SB-104 and SB-105 were not completed. Soil boring SB-100 was completed to 28 feet depth, while soil borings SB-103 and SB-106 were completed to 24 feet depth.

A native, reddish-brown silty clay was encountered at each location at depths of 21.3’ (SB-100), 22.1’ (SB-103) and 20.0’ (SB-106).

During the completion of soil boring SB-100, coal tar NAPL was encountered at a depth of approximately 16.0 feet below ground surface in a medium-grained sand. A PID reading of 71.4 ppm was measured. This NAPL extended to the top of the reddish-brown silty clay deposit at a depth of approximately 21.3 feet; however, a silty clay encountered at 25.2 feet depth was coated with NAPL and also contained sand stringers filled with NAPL. A PID reading of 824 ppm was measured on the sand while a PID reading of 1295 ppm was measured on the NAPL coated silty clay.

NAPL was also encountered in boring SB-103 at a depth of approximately 20.0 feet in a sand deposit at least 2.1 feet thick (the sample above this seam contained only fall-in so the exact depth to this sand is unknown). A PID reading of 248.4 ppm was measured on the sand. This sand deposit was located directly above the reddish-brown silty clay deposit, which was encountered at a depth of approximately 22.1 feet.

Sheens and a faint coal tar odor were detected in boring SB-106 but NAPL was not encountered.

The installation of wells MW-103 and MW-106 began on September 23rd and were completed that day except for placing cement around the flush mounts. That work was completed on September 24th. The installation of well MW-100 began on September 24th and was completed that day.

Well construction details are described in Section 3.7. The soil boring logs are included in Appendix A, while the well construction diagrams are included in Appendix B.

4.7 Monitoring Well Development

Well development activities began on Tuesday, October 27, 2020 with the wells at 1675 Niagara Street and were completed on Thursday, October 29, 2020 with the wells along the bike path. All well development activities were completed by the prime NYSDEC Standby Spill Contractor.

Prior to development, each well was gauged using an oil/water interface probe graduated to 0.01 foot to determine the static water level, well depth, and the thickness of NAPL, if any. Each well was developed using the Waterra Well Development System, which simultaneously surges and pumps the well. In detail, the Waterra Well Development System consists of a surge block-foot valve combination attached to dedicated high density polyethylene (HDPE) tubing that fits just inside the well, leaving a 1/16-inch annular gap so that water doesn't flow easily around the surge block-foot valve combo. As the combo is reciprocated up and down in the well using a Waterra Hydrolift Pump, water is forced into the formation but also pumped out of it. This breaks down bridging and mobilizes the fines in the formation, which are pumped up through the HDPE tubing and removed from the well.

Surging began at the bottom of each well with the surge block-foot valve combo raised periodically until the entire well screen was developed. Surging was initially conducted slowly, with the energy of the action increasing during the development process. The purged water was pumped into 5-gallon buckets, which when full, were discharged directly to the ground surface. Development water that showed evidence of contamination (elevated PID readings, sheens, product, odors, etc.) was containerized in 55-gallon drums for later off-site disposal at a NYSDEC approved facility. Drums were staged at the 1660 Niagara Street BCP Site pending disposal.

Field parameters, including pH, temperature, conductivity, oxidation-reduction potential

(ORP), dissolved oxygen (DO), and turbidity, were monitored throughout well development using a YSI ProDSS multi-parameter meter with flow-through cell. These data were recorded on Well Development Logs, which are included in Appendix C.

4.8 Groundwater Sampling and Analysis

Groundwater samples were collected from each newly installed monitoring well to further evaluate groundwater impacts related to the site, and to determine if any upgradient contaminant sources were present that were previously unidentified. Well sampling activities began on Wednesday, November 4, 2020 with the wells at 1675 Niagara Street and were completed on Thursday, November 5, 2020 with the wells along the bike path. All well sampling activities were completed by the prime NYSDEC Standby Spill Contractor using the low-flow sampling method. The locations of these wells are shown on Figures 3-9 and 3-10.

Prior to purging, each well was gauged using an oil/water interface probe graduated to 0.01 foot to determine the static water level and the thickness of light non-aqueous phase liquids (LNAPL), if any. Sounding each well for total depth was not completed due to the presence of NAPL in several of the wells. A thin layer of LNAPL was detected in well 1660-MW-8 but was too thin to measure with the interface probe. LNAPL was not detected in any other well. For purging purposes, the total well depth from previous measurements was utilized to calculate the volume of standing water in each well. The interface probe was decontaminated prior to use and between wells utilizing a tap water and Alconox™ rinse.

Prior to sampling, each well was purged using dedicated polyethylene tubing and the low-flow sampling technique. The purged water was pumped into 5-gallon buckets, which when full, were discharged directly to the ground surface. Purge water that showed evidence of contamination (elevated PID readings, sheens, product, odors, etc.) was containerized in 55-gallon drums for later off-site disposal at a NYSDEC approved facility. Drums were staged at the 1660 Niagara Street BCP Site pending disposal.

Field parameters, including pH, temperature, conductivity, oxidation-reduction potential (ORP), dissolved oxygen (DO), and turbidity, were monitored throughout purging using a YSI ProDSS multi-parameter meter with flow-through cell. Purging continued at each well until the field parameters stabilized. Although the field parameters stabilized, turbidity did not always get below 50 NTUs. The depth to water was measured throughout purging using an oil/water interface probe with the purge rate modified if needed to prevent significant drawdown in the well.

The groundwater samples were submitted to Eurofins TestAmerica in Amherst, New York for chemical analysis of TCL volatile organic compounds via USEPA method 8260C, TCL semi-volatile organic compounds via USEPA method 8270D, TCL pesticides via USEPA method 8081B, TCL PCBs via USEPA method 8082A, TAL metals via USEPA method 6010C, and mercury via USEPA method 7470A. Information concerning sample collection and analysis is given in Table 3-2. The Well Purge & Sampling Logs are included in Appendix D, while the lab reports are included in Appendix F.

The reader is referred to the Site Characterization Report for the Buffalo Gas Light Site (GEI, October 2022) for details concerning groundwater sampling and analysis of the GEI wells. A report describing the installation, development, and sampling of the Niagara Street pumphouse property wells is being prepared by GEI and is not yet available.

4.9 NAPL Sampling and Analysis

During well development activities on October 28 and 29, 2020 NAPL was encountered in wells 1660-MW-5R, 1660-MW-8 and MW-100. At each location, NAPL was pumped directly into sample jars and submitted to Eurofins TestAmerica in Amherst, New York for analysis of TCL volatile organic compounds via USEPA method 8260C, TCL semi-volatile organic compounds via USEPA method 8270D, TCL pesticides via USEPA method 8081B, TCL PCBs via USEPA method 8082A, TAL metals via USEPA method 6010C, mercury via USEPA method 7471B, and specific gravity via ASTM method D1429-87. Information concerning sample collection and analysis is given in Table 3-2, while the lab report is included in Appendix F.

While purging well MW-100 on November 5, 2020 prior to sampling, blebs of NAPL were occasionally observed in the tubing. As a result, following the collection of the groundwater sample the tubing was lowered to the bottom of the well and a NAPL sample was collected using the low-flow sampling method. This sample was submitted to Eurofins TestAmerica in Amherst, New York for analysis of TCL volatile organic compounds via USEPA method 8260C, TCL semi-volatile organic compounds via USEPA method 8270D, TCL pesticides via USEPA method 8081B, TCL PCBs via USEPA method 8082A, TAL metals via USEPA method 6010C, mercury via USEPA method 7471B, and specific gravity via ASTM method D1429-87. Information concerning sample collection and analysis is given in Table 3-2, while the lab report is included in Appendix F.

Unfortunately, the October 2020 NAPL samples were prepped/analyzed outside the specified holding times and the results were suspect. As a result, NAPL samples were collected from the same wells on January 14, 2021 using disposable bailers. All samples were submitted to Eurofins TestAmerica in Amherst, New York for analysis of TCL volatile organic compounds via USEPA method 8260C, TCL semi-volatile organic compounds via USEPA method 8270D, TCL pesticides via USEPA method 8081B, TCL PCBs via USEPA method 8082A, TAL metals via USEPA method 6010C, mercury via USEPA method 7471B, specific gravity via ASTM method D1429-87, and cyanide via USEPA method 9012B. Information concerning sample collection and analysis is given in Table 3-2, while the lab report is included in Appendix F.

4.10 Niagara Street Pumphouse Sampling and Analysis – Phase 1

On Thursday, November 18, 2021 Finger Lakes Envirotech, LLC, a NYSDEC Standby Spill Contractor, met with Department personnel at the Niagara Street pumphouse at 1654 Niagara Street to complete water and sediment sampling. The pumphouse is located between Niagara Street to the north, the Scajaquada Creek Slip to the south, the 1660 Niagara Street BCP site to the west and Conrail tracks to the east (Figure 3-5).

The Niagara Street pumphouse collects storm water from six (6) drop inlets (i.e., catch basins) along Niagara Street under the railroad bridge. When the water level in the pumphouse sump reaches a preset level, a pump activates and discharges the water into the Scajaquada Creek Slip. An oily residue coats the rocks of the discharge area (Figure 4-9), and oil booms have been placed in this area to absorb any NAPL pumped into the creek (Figure 4-10).

With access to the pumphouse recently granted to the Department by the City of Buffalo, the samples from November 18, 2021 were collected to evaluate water and sediment in the pumphouse and its collection system. Field activities completed included the following:

- The collection of one (1) water sample and one (1) sediment sample from the sump inside the Niagara Street Pumphouse for chemical analysis;
- The collection of one (1) sediment sample from the Scajaquada Creek Slip at the discharge area of the pumphouse for chemical analysis; and
- The collection of one (1) water sample from manhole no. 23 between Niagara Street and the pumphouse for chemical analysis.

The locations of these samples are shown on Figure 3-5.

The sediment sample from the Scajaquada Creek Slip (BPH-Out) was collected before Department personnel arrived at the site so a description of the sample is not available. This sample was submitted to Pace Analytical Laboratory in East Longmeadow, Massachusetts for chemical analysis of TCL volatile organic compounds via USEPA method 8260D, TCL semi-volatile organic compounds via USEPA method 8270E, TCL PCBs via USEPA method 8082A, TAL metals via USEPA method 6010D, and mercury via USEPA method 7471B. Information concerning sample collection and analysis is given in Table 3-2, while the lab report is included in Appendix F.

An extendable pole with a cup attachment was used to collect the water sample from manhole no. 23 (BPH-MH). The water was turbid and grey in color but had no odors or sheens. This sample was submitted to Pace Analytical Laboratory in East Longmeadow, Massachusetts for chemical analysis of TCL volatile organic compounds via USEPA method 8260D, TCL semi-volatile organic compounds via USEPA method 8270E, TCL PCBs via USEPA method 8082A, TAL metals via USEPA method 6010D, and mercury via USEPA method 7470A. Information concerning sample collection and analysis is given in Table 3-2, while the lab report is included in Appendix F.

Following decontamination, the same sampling tool was used to collect the water sample from the sump inside the pumphouse (BPH-Sump). This water was also turbid and grey in color. The sample had a coal tar odor, but there were no visible sheens. NAPL was observed coating the sampling tool after having been submerged in the sump water. The NAPL was brown in color and smelled like coal tar. The pumphouse sump water sample was submitted to Pace Analytical Laboratory in East Longmeadow, Massachusetts for chemical analysis of TCL volatile organic compounds via USEPA method 8260D, TCL semi-volatile organic compounds via USEPA method 8270E, TCL PCBs via USEPA method 8082A, TAL metals via USEPA method 6010D, and mercury via USEPA method 7470A. Information concerning sample collection and analysis is given in Table 3-2, while the lab report is included in Appendix F.

After failing to collect sufficient sediment utilizing the extendable pole device, a clam shell sampler was used to obtain a sediment sample from the pumphouse sump (BPH-Sump). Sediments collected with the sampler were placed into a 5-gallon bucket and a grab sample was subsequently collected. The sample consisted of black muck that had a strong coal tar odor. This sample was submitted to Pace Analytical Laboratory in East Longmeadow, Massachusetts for chemical analysis of TCL volatile organic compounds via USEPA method 8260D, TCL semi-volatile organic compounds via USEPA method 8270E, TCL PCBs via USEPA method 8082A, TAL metals via USEPA method 6010D, and mercury via USEPA method 7471B. Information concerning sample collection and analysis is given in Table 3-2, while the lab report is included in Appendix F.

4.11 Niagara Street Pumphouse Sampling and Analysis – Phase 2

On Tuesday, September 6, 2022 Finger Lakes Envirotech, LLC, a NYSDEC Standby Spill Contractor, collected ten (10) surface water samples from the storm sewer system associated with the Niagara Street pumphouse. Field activities completed that day included the following:

- The collection of three (3) water samples from the middle drop inlet (i.e., catch basin) on the north side of Niagara Street for chemical analysis;
- The collection of one (1) water sample from each of the four (4) manholes (MH1 thru MH4) in the center of Niagara Street for chemical analysis;
- The collection of one (1) water sample from manhole no. 21 for chemical analysis;
- The collection of one (1) water sample from manhole no. 23 for chemical analysis; and
- The collection of one (1) water sample from the pumphouse sump for chemical analysis.

The locations of these samples are shown on Figure 3-5.

The three (3) surface water samples collected from the catch basin on the north side of Niagara Street were collected directly into the sample bottles from water flowing out of pipes that entered the catch basin. One of the samples was collected from a pipe entering the catch basin from under the sidewalk along Niagara Street. The origin of this pipe is unknown.

The samples obtained from manholes MH1 thru MH4, no. 21 and no. 23 were collected by Finger Lakes Envirotech personnel by entering the manholes and collecting the water directly into the sample bottles. The sample obtained from pumphouse sump was collected using a disposable bailer.

All samples were submitted to Pace Analytical Laboratory in East Longmeadow, Massachusetts for chemical analysis of TCL volatile organic compounds via USEPA method 8260D, TCL semi-volatile organic compounds via USEPA method 8270E, and 1,4-dioxane via USEPA method 8270E. Information concerning sample collection and analysis is given in Table 3-2, while the laboratory report is included in Appendix F.

4.12 Niagara Street Pumphouse Sampling and Analysis – Phase 3

On Wednesday, December 7, 2022 NYSDEC personnel travelled to the site to collect surface water samples from structures associated with the Niagara Street pumphouse and associated sewer system. Samples were collected from manhole 21, manhole 23, and the pumphouse sump. The locations of these structures are shown on Figure 3-5.

Once again, this writer was not present during the sampling event, and a sampling report was not prepared by the samplers. As a result, it is unknown how these samples were collected. These samples were submitted to Pace Analytical Laboratory in East Longmeadow, Massachusetts for chemical analysis of TCL volatile organic compounds via USEPA method 8260D, TCL semi-volatile organic compounds via USEPA method 8270E, and 1,4-dioxane via USEPA method 8270E. Information concerning sample collection and analysis is given in Table 3-2, while the lab reports are included in Appendix K.

5.0 GEOLOGY AND HYDROGEOLOGY

One objective of the Remedial Investigation of the 31 Tonawanda Street Off-Site Area was to complete a comprehensive hydrogeologic evaluation of the site and surrounding area. As part of this objective, it is important to establish the characteristics, areal extent and hydrogeologic properties of strata underlying the Study Area. This is important as these attributes govern the occurrence and flow of groundwater (and NAPL) at the Study Area. These attributes also govern the potential for contaminant migration and determine the rate and extent of this migration. As a result, a detailed evaluation of the geology of the 31 Tonawanda Street Off-Site Area is essential. Before completing such a detailed evaluation, however, it is important to first describe the regional geologic history of the western New York area as a general knowledge of this history is critical to a complete understanding of the complex interrelationships between the various geologic strata and their hydrogeologic properties. This section, therefore, describes regional and site geology, along with the characteristics, areal extent and hydrogeologic properties of the strata near and underlying the 31 Tonawanda Street BCP Site and Off-Site Area.

5.1 Regional Geology

5.1.1 Overburden Geology

Geologic evidence suggests that at least four major glacial episodes covered parts of North America during the Pleistocene Epoch (Buehler and Tesmer, 1963). In western New York, however, there is evidence of only two such episodes. The last glacial event in the area, the Wisconsin, eroded and modified the earlier glacial deposits to such an extent that little evidence of their existence remains. These glacial events widened the preexisting valleys and basins and led to the development of the present-day drainage system in western New York (La Sala, 1968).

During the final retreat of the Wisconsin ice sheet from the region, meltwater formed a complex sequence of proglacial lakes in front of the ice margin. These lakes inundated an extensive area of western New York. This succession originated in the Erie Huron Basin prior to 14,000 years ago as the ice sheet retreated from the basin and ended approximately 9,800 years ago with the formation of Lake Tonawanda (Calkins and Brett, 1978). This lake sequence was responsible for the deposition of the stratified lacustrine clays, silts, sands, and gravels that now cover much of western New York.

The Pleistocene Epoch presented a variety of environments that resulted in the deposition of unconsolidated deposits. In northwestern Erie County these deposits include the following (Malcolm Pirnie, 1987; Engineering-Science, 1989; Recra Environmental, 1990; URS, 1992; Woodward-Clyde, 1993; GeoTrans, 1994; Conestoga Rovers & Associates, 1998; Weston, 1998; May, 2007):

- Glacial till consisting of a non-sorted, non-stratified mixture of sand, silt, clay, gravel and rock fragments deposited directly from glacial ice;
- Glaciolacustrine deposits consisting primarily of silt, sand and clay deposited in lakes that formed during melting and retreat of the ice sheets;
- Glaciofluvial deposits consisting of sand and gravel deposited either by glacial meltwater streams or by the reworking of till and other glacial deposits along the shore of former glacial lakes; and
- Alluvium deposits consisting of silt, sand and gravel deposited by streams during comparatively recent geologic time.

La Sala (1968) reports that glacial till is the most widespread deposit in the Erie-Niagara Basin, ranging in thickness from 2 to 200 feet. Glaciolacustrine clay is also widespread, reaching thicknesses of 300 feet in some valleys within the basin (La Sala, 1968).

5.1.2 Bedrock Geology

The bedrock underlying western New York is characterized as a thick sequence of shales, sandstones, limestones and dolostones deposited in ancient seas during the Silurian and Devonian Periods (Buehler and Tesmer, 1963). This stratigraphic sequence is summarized in Table 5-1. Bedrock bedding generally strikes in an east-west direction, approximately paralleling the Niagara and Onondaga escarpments, and dips to the south at approximately 30 to 40 feet per mile (Johnson, 1964; La Sala, 1968; Yager and Kappel, 1987). Erosion and weathering, however, have produced local differences in the bedrock surface configuration (Snyder Engineering, 1987).

The uppermost bedrock formation underlying the 31 Tonawanda Street Off-Site Area is believed to be the Bertie Dolostone of the Salina Group (Figure 5-1), which was deposited in a marine environment during the Late Silurian Period (Rickard and Fisher, 1970; Staubitz and Miller, 1987). The Study Area, however, lies close to the contact with the underlying Camillus Shale Formation of the Salina Group (Figure 5-1). The Bertie Dolostone extends across northern Erie County in a narrow east-west trending band between the Camillus Shale Formation to the north and the Onondaga Limestone to the south (Seneca, Morehouse, and Clarence Limestone Member of Figure 5-1). The

Bertie Dolostone of western New York is everywhere underlain by the Camillus Shale Formation and overlain, where complete sections are found, by the Akron Dolostone (Rickard, 1966).

The Bertie Dolostone consists predominantly of dolostone or dolomitic limestone (Buehler and Tesmer, 1963). The upper Williamsville Dolostone Member (Table 5-1) consists of laminated, fine-grained dolostone, which weathers light gray. Its pronounced conchoidal fracture, among other criteria, serves to distinguish it from the overlying Akron Dolostone, which has an irregular fracture (Rickard, 1966). The underlying Scajaquada Dolostone Member (Table 5-1) consists of dark shales or blocky water limes, is less resistant than the Williamsville Dolostone above or the Falkirk Dolostone below, and presumably contains more argillaceous material than those two members (Rickard, 1966).

The Falkirk Dolostone Member (Table 5-1) is described by Buehler and Tesmer (1963) as a massive brown dolostone, while Rickard (1966, page 27) states that it is "composed of massive beds of dark gray dolomite, weathering yellowish brown, which are characterized by coarse conchoidal fracturing, a small marine fauna and a basal eurypterid horizon."

The underlying Oatka Dolostone Member (Table 5-1) contains dolostone and is difficult to differentiate from the underlying Camillus Shale (Buehler and Tesmer, 1963).

The underlying Camillus Shale is described by Buehler and Tesmer (1963, page 30) as a "thin bedded shale to massive mudstone. Color is gray or brownish gray with some beds showing a red or green tinge. Gypsum and anhydrite are present throughout the formation in Erie County," and occur in beds and lenses up to 5 feet in thickness (La Sala, 1968). Subsurface data indicate, however, that a considerable quantity of grey limestone and dolostone is interbedded within the shale (Stanley Consultants, 1981; GZA, 1983; URS, 1992; Woodward-Clyde, 1993; Parsons Engineering Science, 1995). The upper 10 to 25 feet of this formation can be heavily weathered and often contains abundant bedding planes and vertical fractures enlarged by dissolution and glacial scour (La Sala, 1968).

The thickness of the Bertie Dolostone in western New York is uncertain because few exposures continue downward into the underlying Camillus Shale (Rickard, 1966). The Bertie Dolostone, however, is thought to be approximately 50 to 60 feet thick (Buehler and Tesmer, 1963), although Rickard (1969) states that it could be up to 100 feet thick. Its thickness will, of course, vary from place to place depending upon the amount removed by erosion prior to deposition of the overlying Onondaga Limestone (Rickard, 1966). The maximum thickness of the Camillus Shale is reported to be 400 feet (Buehler and Tesmer, 1963). Within the Erie-Niagara Basin, however, the thickness of this formation ranges from approximately 80 to 100 feet (Rickard, 1966).

Exposures of the Bertie Dolostone and the overlying Akron Dolostone (Table 5-1) are relatively common in the western New York. Outcrops in Buffalo are located near the Main Street entrance to Forest Lawn Cemetery, the old Bennett quarry on East Amherst Street, and in a New York Central Railroad cut between Kensington and Morris Avenues (Buehler & Tesmer, 1963; Rickard, 1966). There are also good exposures at the falls of Ellicott Creek (Glen Park) in Williamsville, in the Louisville Cement Company quarry on the north side of New York route 5 near Clarence (believed to be the current location of ADESA Buffalo), and at the falls of Murder Creek in Akron Falls Park (Buehler & Tesmer, 1963; Rickard, 1966; and Staubitz and Miller, 1987). Further east, exposures of the Bertie and Akron Dolostones can be seen at Indian Falls, at Morganville, and along Route 19 and in Oatka Creek at North LeRoy (Rickard, 1966).

Although bedrock was not encountered at any of the BCP sites within the Study Area, it was encountered at the nearby Iroquois Gas/Westwood Pharmaceuticals Site (Site No. 915141A) to the east and the Pratt & Letchworth Site (Site No. 915045) to the north. At the Westwood Site, bedrock was investigated by Empire Soils Investigation (ESI) between December 1984 and February 1985 while completing test borings for building foundations. ESI logged the bedrock at twelve (12) locations across the site. Bedrock was described as highly fractured and weathered, medium in hardness, thin bedded, tannish gray to white dolostone with frequent to occasional gypsum seams and nodules, interbedded in several instances with medium hard to soft, weathered, thin bedded, gray and white shale (GeoTrans, 1994). This description was consistent with the six (6) borings that encountered bedrock during the Remedial Investigation completed at the site (GeoTrans, 1994).

At the Pratt & Letchworth Site, bedrock was cored at two (2) locations, and was thought to be the Bertie Dolostone (Engineering-Science, 1989). The upper 5 to 10 feet of this formation appeared weathered, brown, moderately to highly fractured, and contained chert and shaley partings (Engineering-Science, 1989). The bedrock became gray, and was generally more competent, with depth (Engineering-Science, 1989).

GeoTrans (1994) reported that the bedrock description for the Westwood Site was consistent with that of the Bertie Dolostone. The presence of gypsum seams and nodules, however, is more consistent with the underlying Camillus Shale. In addition, the presence of chert in the bedrock at the Pratt & Letchworth Site is more consistent with the overlying Onondaga Limestone. As a result, the upper bedrock formation underlying the Study Area is not known with any certainty.

5.2 Site Geology

One hundred eighty-two (182) soil borings and test pits have been completed throughout the Study Area. The locations of soil borings completed at the 31 Tonawanda Street property are shown on Figures 2-3 and 2-4, while locations of soil borings and test pits completed at the 57-71 Tonawanda Street BCP Site are shown on Figure 3-8. The soil borings completed during the Remedial Investigation of the 31 Tonawanda Street Off-Site Area are shown on Figures 3-7 and 3-8. For 1660 Niagara Street, 68 Tonawanda Street, and 150 Tonawanda Street, the reader is referred to the individual BCP RI Reports for figures showing the locations of soil borings and test pits completed at these sites.

In general, all soil borings and test pits were completed into native reddish-brown clay or silty clay soils (the glaciolacustrine deposit). The exception is along Scajaquada Creek where many borings and test pits ended in the alluvium deposit. The stratigraphic logs for the soil borings and test pits are given in Appendix A, while a stratigraphic summary of these logs is given in Table 5-2.

The boring and test pit logs were, in many cases, difficult to reconcile both within and between sites as they were logged by different individuals who described what they observed differently. In addition, there were some cases in which the reddish-brown silty clay was encountered above the recent alluvium deposit. Based upon the regional geology described above, and the experience of this writer, the glaciolacustrine deposit always underlies the recent alluvium deposit. It is suspected that these soils are reworked, being used to fill in low lying areas during construction of the buildings along Niagara and Tonawanda Streets. This soil, when reworked, is often difficult to elucidate between the native reddish-brown silty clay. As a result, the stratigraphic summary presented in Table 5-2 is this author's interpretation of the stratigraphic logs. Other interpretations, however, are possible.

5.2.1 Fill Material

Fifty-five (55) soil boring and test pit logs from the 1660 Niagara Street BCP Site were compiled during the Remedial Investigation of the 31 Tonawanda Street Off-Site Area (Table 5-2). These logs revealed that fill material was encountered throughout the site and consisted predominantly of brown silty clay intermingled with gravel, brick, concrete, wood, and slag. The thickness of the fill material, where completely penetrated, ranged from 0.3 to 12.8 feet (Table 5-2). In addition, apparent building foundation slabs were encountered from approximately 2 to 4 feet depth in several test pits on the southeast portion of the site. Fill material in the area of the former underground storage tanks was greater than 10 feet thick.

Two (2) soil borings were completed at 1675 Niagara Street during the Remedial Investigation of the 31 Tonawanda Street Off-Site Area (Table 5-2). The thickness of the fill material at these locations were 3.0 feet and 8.0 feet (Table 5-2).

Thirty-two (32) soil boring logs from the 31 Tonawanda Street property were compiled during the Remedial Investigation of the 31 Tonawanda Street Off-Site Area (Table 5-2). These logs revealed that fill material was encountered throughout the site and consisted predominantly of brown silty clay intermingled with gravel, brick, concrete, wood, and slag. The thickness of the fill material, where completely penetrated, ranged from 0.5 to 12.0 feet (Table 5-2).

Thirty-four (34) soil boring and test pit logs from the 57-71 Tonawanda Street BCP Site were compiled during the Remedial Investigation of the 31 Tonawanda Street Off-Site Area (Table 5-2). In addition, four (4) soil borings were completed by National Fuel in 1998 along the future bike path between the 57-71 Tonawanda Street BCP Site and Scajaquada Creek, while three (3) soil borings were completed along the bike path during the Remedial Investigation of the 31 Tonawanda Street Off-Site Area (Table 5-2).

These logs revealed that fill material was encountered throughout the site and consisted predominantly of grey gravel with some silt and concrete along Tonawanda Street, black sand, cinders, brick, ash, slag, and gravel under the parking lot, and black sand and cinders along the bike path. The thickness of the fill material at the 57-71 Tonawanda Street BCP Site ranged from 1.0 to 12.9 feet, while fill material along the bike path ranged in thickness from 4.7 to 17.3 feet (Table 5-2). Fill thicknesses, however, typically ranged from 2.0 to 6.0 feet (Table 5-2).

Thirty-seven (37) soil boring and test pit logs from the 68 Tonawanda Street BCP Site were compiled during the Remedial Investigation of the 31 Tonawanda Street Off-Site Area (Table 5-2). These logs revealed that fill material was encountered throughout the site and consisted predominantly of black sand and ash with some silt, wood, brick, and cement. The thickness of the fill material, where completely penetrated, ranged from 2.5 to 11.0 feet (Table 5-2). Fill thicknesses, however, typically ranged from 4.0 to 6.0 feet (Table 5-2).

Fifteen (15) soil boring and test pit logs from the 150 Tonawanda Street property were compiled during the Remedial Investigation of the 31 Tonawanda Street Off-Site Area (Table 5-2). These logs revealed that fill material was encountered throughout the site and consisted predominantly of black sandy fill mixed with brown soil, concrete, brick, and other debris. The thickness of the fill material, where completely penetrated, ranged from 1.5 to 8.0 feet (Table 5-2). Fill thicknesses, however, typically ranged from 3.0 to 4.5 feet (Table 5-2).

5.2.2 Reworked Soil

Reworked soil was encountered at eighteen (18) locations at the 1660 Niagara Street BCP Site and at one (1) location at 1675 Niagara Street. This soil was generally encountered near the sidewalks along Niagara Street, where brown clay or silty clay soil was encountered below the fill material at depths ranging from 0.3 to 9.5 feet (Table 5-2). The typical depth, however, was between 4.0 and 6.0 feet. Where completely penetrated, reworked soils ranged in thickness from 0.5 to 9.7 feet, with typical thicknesses being 4.0 to 6.0 feet (Table 5-2).

Reworked soil was encountered at six (6) locations under the crawl space (Figure 2-4) at the 31 Tonawanda Street BCP Site (Table 5-2). At all six (6) locations, reworked clay, or silty clay soil (color was only given for 1 boring) was encountered below the fill material at depths ranging from 2.0 to 9.0 feet (Table 5-2). Where completely penetrated, reworked soils ranged in thickness from 3.0 to 6.0 feet (Table 5-2).

Reworked soil was encountered at fourteen (14) locations at the 57-71 Tonawanda Street BCP Site but was not encountered in the bike path borings (Table 5-2). At all fourteen (14) locations, reworked reddish-brown clay was encountered below the fill material at depths ranging from 1.0 to 7.0 feet (Table 5-2). Where completely penetrated, reworked soils ranged in thickness from 0.5 to 9.5 feet (Table 5-2).

Reworked soil was not observed at the 68 Tonawanda Street BCP Site or at the 150 Tonawanda Street property (Table 5-2).

5.2.3 Recent Alluvium Deposit

Recent alluvium was encountered at thirty-three (33) locations throughout the 1660 Niagara Street BCP Site and at both locations at 1675 Niagara Street (Table 5-2). This deposit was likely deposited by Scajaquada Creek and/or the Niagara River during recent geologic time. The recent alluvium deposit directly underlies the fill material or reworked soil, and consists predominantly of fine grained, brownish grey to grey, silty sand and silty clay. At boring 1660-MW-8, small gastropod shells were observed in this deposit.

The recent alluvium deposit at 1660 & 1675 Niagara Street was encountered at depths ranging from 3.5 to 12.8 feet below ground surface (Table 5-2), although some depths appear too shallow. The entire thickness of the recent alluvium deposit was only penetrated in the six (6) borings completed during the Remedial Investigation of the 31 Tonawanda Street BCP Site Off-Site Area. At these locations, the thickness of this deposit ranged from 4.0 to 21.3 feet, although the typical thickness ranged from 18.67 to 21.3 feet (Table 5-2). This deposit was thinnest at boring 1675-MW-2 (4.0 feet), which was the farthest location from Scajaquada Creek that this deposit was encountered. This location is likely close to the northern limit of the former creek channel.

Recent alluvium was encountered at twenty-two (22) locations in the eastern portion of the 31 Tonawanda Street property (Table 5-2) and was likely deposited by Scajaquada Creek. This deposit directly underlies the fill material or reworked soil, and was variously described as black gravely silt; red-black silty, gravely sand; black sandy, silty clay; silty grey clay; black silty, sand; black sandy, clayey silt; sandy silt; sand and gravel; silty sand with some clay; black sandy silt with clay; black sandy gravely silt; black sandy silt; black silty clay; grey clay; sands with fine to coarse gravel; dark brown silt with fine sand; grey clay/silt with fine to coarse gravel; brown silt/sand with fine to coarse gravel; and silty clay with sand and stone (see soil boring logs in Appendix A).

The recent alluvium deposit at the 31 Tonawanda Street property was encountered at depths ranging from 7.0 to 12.0 feet below ground surface (Table 5-2). The entire thickness of this deposit was only penetrated in 3 borings completed at the site. At those locations, the thickness of this deposit ranged from 0.5 to 7.0 feet (Table 5-2). The boring logs indicate, however, that this deposit is > 8.0 feet in thickness at three (3) locations (Table 5-2).

Recent alluvium was encountered at seven (7) locations in the east-central portion of the 57-71 Tonawanda Street BCP Site and at all seven (7) borings along the bike path (Table 5-2). The recent alluvium was likely deposited by Scajaquada Creek during recent geologic time. This deposit directly underlies the fill material or reworked soil and consists predominantly of gray gravelly sand and gray sandy silty clay.

The recent alluvium deposit at the 57-71 Tonawanda Street BCP Site was encountered at depths ranging from 3.5 to 13.5 feet below ground surface (Table 5-2), and at depths ranging from 5.0 to 17.5 feet below ground surface in borings along the bike path (Table 5-2). The entire thickness of the recent alluvium deposit was only penetrated by four (4) borings completed at the 57-71 Tonawanda Street BCP Site and by four (4) borings completed along the bike path (Table 5-2). At the 57-71 Tonawanda Street BCP Site, the thickness of this deposit ranged from 4.0 to 6.5 feet, while along the bike path the thickness ranged from 6.3 to 15.0 feet (Table 5-2).

The recent alluvium deposit was not observed at the 68 Tonawanda Street BCP Site or at the 150 Tonawanda Street property (Table 5-2).

5.2.4 Sand and Gravel Deposit

A relatively thin sand and gravel deposit (Figures 4-6 through 4-8) directly underlies the recent alluvium deposit and was encountered in 5 of the 6 borings completed at 1660 & 1675 Niagara Street during the Remedial Investigation of the 31 Tonawanda Street BCP Site Off-Site Area. The thickness of this deposit is difficult to determine due to poor sample recovery. In soil boring SB-1, the entire deposit was contained within a single macro-core sample and measured 0.6 feet thick. At the other 4 locations, the thickness of this deposit is estimated to range from 2.3 to 4.1 feet. The NAPL encountered at the 1660 Niagara Street BCP Site is found in this deposit. This deposit is not included in Table 5-2.

Since the entire thickness of the recent alluvium deposit was only penetrated in 3 borings completed at the 31 Tonawanda Street property, the extent of the sand and gravel deposit under the property is unknown. The log for soil boring 31-BH-2 (Appendix A), however, describes a 1.0-foot-thick zone of fine to coarse sands and fine to coarse gravel, which was underlain by brown clay/silt with fine to coarse gravel. Strong odors were noted in both deposits, while NAPL was noted in the brown clay/silt with fine to coarse gravel. This deposit is likely the sand and gravel deposit encountered at 1660 & 1675 Niagara Street.

A review of the soil boring logs for the 57-71 Tonawanda Street BCP Site (Appendix A) did not reveal the presence of the sand and gravel deposit. The National Fuel boring logs for the bike path (Appendix A) describe the recent alluvium deposit as gravel and sand. This deposit was not identified in the soil borings completed along the bike path during the Remedial Investigation of the 31 Tonawanda Street Off-Site Area (Appendix A).

The sand and gravel deposit was not observed at the 68 Tonawanda Street BCP Site or at the 150 Tonawanda Street property.

5.2.5 Glaciolacustrine Silty Clay Deposit

A glaciolacustrine silty clay deposit underlies the entire Study Area. This deposit was encountered in all nine (9) borings completed during the Remedial Investigation of the 31 Tonawanda Street Off-Site Area. This glaciolacustrine deposit is encountered throughout northern Erie County and consists predominantly of reddish brown to brown, soft to very soft, saturated, highly plastic, silty clay. At many locations throughout the region, laminations (varves) are common throughout this deposit, indicating that it was deposited in a glacial lake environment. Silt lenses, fine sand lenses, and distinct layers of subangular to subrounded gravel and pebbles (drop stones) are also observed within this deposit. The glaciolacustrine deposit acts as a confining layer (aquitard) that prevents the further downward migration of contaminated groundwater and NAPL.

Varves were not observed in this deposit during the Remedial Investigation of the 31 Tonawanda Street Off-Site Area but were described in several boring logs from the nearby Iroquois Gas/Westwood Pharmaceuticals Site (Site No. 915141A). At Westwood, this deposit was incorrectly identified as a glacial till, and was described as a lean, moderate brown, dry to moist, stiff, massive, silty clay with a trace of gravel.

At 1660 & 1675 Niagara Street, the glaciolacustrine silty clay deposit underlies the recent alluvium deposit (Table 5-2). This deposit was encountered at depths ranging from 12.0 to 31.8 feet below ground surface, although the typical depth ranged from 22.0 to 31.8 feet (Table 5-2). This deposit was shallowest at boring 1675-MW-2 (12.0 feet), which as stated above, is likely close to the northern limit of the former creek of Scajaquada Creek. The thickness of the glaciolacustrine deposit under the 1660 Niagara Street BCP Site is unknown as borings did not completely penetrate this deposit (Table 5-2).

At the 31 Tonawanda Street property, the glaciolacustrine silty clay deposit underlies either the recent alluvium deposit or miscellaneous fill where the recent alluvium deposit is absent. This deposit was encountered in nine (9) borings completed at the site (Table 5-2). Along Tonawanda Street, this deposit was encountered at depths ranging from 0.5 to 3.0 feet below ground surface (Table 5-2). The glaciolacustrine silty clay deposit deepened toward Scajaquada Creek, where it ranged in depth from 8.0 to 19.0 feet below ground surface (Table 5-2). The thickness of this deposit under the 31 Tonawanda Street property is unknown as borings did not completely penetrate this deposit (Table 5-2).

At the 57-71 Tonawanda Street BCP Site, the glaciolacustrine silty clay deposit underlies either the recent alluvium deposit or miscellaneous fill where the recent alluvium is absent. This deposit was encountered in twenty-one (21) soil borings and test pits completed at the site at depths ranging from 2.0 to 16.0 feet below ground surface (Table 5-2). Along the bike path, this deposit was encountered in four (4) soil borings at depths ranging from 16.0 to 23.8 feet below ground surface (Table 5-2). The thickness of the glaciolacustrine deposit under the 57-71 Tonawanda Street BCP Site and bike path is unknown as borings did not completely penetrate this deposit (Table 5-2).

At the 68 Tonawanda Street BCP Site, the glaciolacustrine silty clay deposit underlies miscellaneous fill throughout the site (Table 5-2). This deposit was encountered in thirty (30) soil borings and test pits completed at the site at depths ranging from 2.5 to 11.0 feet below ground surface (Table 5-2). The thickness of the glaciolacustrine deposit under the 68 Tonawanda Street BCP Site is unknown as borings did not completely penetrate this deposit (Table 5-2).

At the 150 Tonawanda Street property, the glaciolacustrine silty clay deposit underlies miscellaneous fill throughout the property (Table 5-2). This deposit was encountered in all fifteen (15) soil borings and test pits completed at the site at depths ranging from 0.5 to 8.0 feet below ground surface (Table 5-2). The thickness of the glaciolacustrine deposit under the 150 Tonawanda Street property is unknown as borings did not completely penetrate this deposit (Table 5-2).

While the thickness of the glaciolacustrine silty clay deposit was not determined at any of the BCP sites in the Study Area, information concerning the thickness of this deposit under the Study Area is available. At the nearby Iroquois Gas/Westwood Pharmaceuticals Site, this deposit was completely penetrated at seventeen (17) locations, with the thickness ranging from 38.0 to 58.0 feet (Table 5-3). Further north at the Pratt & Letchworth Site (Site No. 915045), the thickness of this deposit ranged from 69.0 to 81.0 feet (Engineering-Science, 1989).

5.2.6 Glacial Till Deposit

The glacial till deposit was not encountered at the 1660 Niagara Street BCP Site, 1675 Niagara Street, the 31 Tonawanda Street property, the 57-71 Tonawanda Street BCP Site, the 68 Tonawanda Street BCP Site, or the 150 Tonawanda Street property. At the nearby Iroquois Gas/Westwood Pharmaceutical Site, the glacial till deposit is described as a sand and gravel (Table 5-3). This deposit was encountered at seventeen (17) locations at depths ranging from 60.0 to 75.0 feet below ground surface (Table 5-3). The thickness of this deposit ranged from 1.7 to 28.0 feet (Table 5-3).

Further north at the Pratt & Letchworth Site, the glacial till deposit consisted predominantly of fine sand and gravel. Numerous boulders were also encountered while drilling through this deposit. Visual observations of some of the gravel in the till samples indicated a high percentage of dolomitic limestone; however, some granitic material was also present. The thickness of this deposit ranged from 4.0 to 10.0 feet (Engineering-Science, 1989).

5.2.7 Bedrock

Bedrock was not encountered at the 1660 Niagara Street BCP Site, 1675 Niagara Street, the 31 Tonawanda Street property, the 57-71 Tonawanda Street BCP Site, the 68 Tonawanda Street BCP Site, or the 150 Tonawanda Street property. At the nearby Iroquois Gas/Westwood Pharmaceutical Site, bedrock was encountered at seventeen (17) locations. Depth to bedrock ranged from 62.8 to 92.0 feet (Table 5-3). Further north at the Pratt & Letchworth Site, depth to bedrock ranged from 85.0 to 93.0 feet (Engineering-Science, 1989).

5.3 Regional Hydrogeology

Many site investigations and hydrogeologic studies have been completed in northwestern Erie County. These studies indicate that there are four principal hydrogeologic zones in the area described as follows:

- Fill material and shallow alluvium, glaciofluvial, and glaciolacustrine sand deposits, which can be characterized as either unconfined (water table) or perched aquifers;
- The glaciolacustrine silty clay deposit, which can be characterized as an aquitard, confining groundwater from the underlying hydrogeologic zones;
- The glacial till deposit, which is often characterized as an aquitard. At the Iroquois Gas/Westwood Pharmaceutical Site, however, this deposit consists predominantly of sand and gravel, and would therefore be characterized as a water-bearing zone; and
- Upper bedrock, which is generally characterized as a confined aquifer.

In northwestern Erie County, unconfined groundwater is encountered largely within the glaciofluvial, alluvium and fill deposits. Where these deposits overlie the glaciolacustrine silty clay deposit, perched groundwater conditions occur. Well yields from these deposits in the northwestern

Erie County are generally unknown, although wells installed in highly permeable outwash deposits in the Tonawanda Creek valley have yields ranging from 1,000 to 1,400 gallons per minute (gpm) (La Sala, 1968).

The glaciolacustrine deposit separates the water table or perched aquifer from the underlying glacial till deposit and confined upper bedrock aquifer. The hydraulic conductivity of this deposit is extremely low, typically ranging from 10^{-6} to 10^{-8} cm/sec. The glaciolacustrine deposit, therefore, can be considered an aquitard, preventing the vertical movement of shallow groundwater to the underlying glacial till and Bertie Dolostone. Some vertical movement, however, can occur through desiccation cracks in the upper, unsaturated portion of this deposit. Horizontal groundwater flow within this deposit is also severely limited. This deposit, however, often contains thin seams and stringers of silt and sand that can allow limited horizontal groundwater flow.

Information regarding the hydraulic conductivity and well yields of the Bertie Dolostone is not available. For the Camillus Shale, however, La Sala (1968) reports this bedrock formation is "by far the most productive bedrock aquifer" in the Erie-Niagara Basin, with individual well yields ranging from 300 to 1,200 gpm. The production well at the Dunlop Tire Corporation in the Town of Tonawanda yields 600 to 900 gpm (Pyanowski, 1990), although yields of 1,800 gpm were observed during a 1995 Hydrogeologic Evaluation Study (May, 2007).

Information regarding regional groundwater flow in the glacial till and upper Bertie Dolostone bedrock near the 31 Tonawanda Street Off-Site Area is not available.

5.4 Site Hydrogeology

The hydrogeology of the 31 Tonawanda Street Off-Site Area has been evaluated by examining hydrogeologic data compiled and generated during the NYSDEC Remedial Investigation. These data suggest that four hydrogeologic zones underlie the Off-Site Area: (1) a shallow hydrogeologic zone consisting of miscellaneous fill and the recent alluvium deposit, (2) the glaciolacustrine deposit hydrogeologic zone, (3) the glacial till deposit hydrogeologic zone, and (4) the upper bedrock hydrogeologic zone. As described in Section 5.2, the glaciolacustrine deposit is more accurately characterized as an aquitard, restricting the downward movement of groundwater from the shallow to the deeper hydrogeologic zones. In addition, the designation of the glacial till hydrogeologic zone as a separate hydrogeologic unit is also highly generalized as this zone is in hydraulic communication with the upper bedrock hydrogeologic zone (La Sala, 1968).

Thirty-six (36) monitoring wells have been installed in the Study Area during investigations completed at the various BCP sites (Table 3-4). The well construction diagrams for these wells are provided in Appendix B. Only twenty-three (23) of these wells currently exist, the remainder having been removed during remediation/redevelopment of the various BCP sites (Table 3-4). In addition, seven (7) wells were installed by GEI during their investigation of the Former Buffalo Gas Light/Iroquois Gas Corporation Site (Buffalo Gas Light; Site No. 915351). These wells were installed during the later stages of the NYSDEC Remedial Investigation of the 31 Tonawanda Street Off-Site Area (three (3) of these wells are shown on Figure 3-9). Subsequent to this, GEI installed two (2) well clusters on the east side of the Niagara Street pumphouse (Figure 3-9). None of the GEI wells are included in Table 3-4.

5.4.1 Fill/Recent Alluvium (Shallow) Hydrogeologic Zone

Twenty-four (24) monitoring wells within the Study Area were installed within the fill material or the recent alluvium deposit (Table 3-4). Seventeen (17) of these wells currently exist (Table 3-4). The shallow water-bearing zone wells installed at the 31 Tonawanda Street property are shown on Figure 2-6, while the shallow zone wells installed at 1660 & 1675 Niagara Street are shown on Figure 3-9. The shallow water-bearing zone wells installed at the 57-71 Tonawanda Street BCP Site are shown on Figure 3-10.

During the Remedial Investigation of the 31 Tonawanda Street Off-Site Area, water levels in the shallow water-bearing zone wells were measured on eighteen (18) occasions between September 16, 2020 and December 22, 2021 (Table 3-5). Historic was level measurements for these wells are summarized in Table 3-6. The water level data obtained during the NYSDEC Remedial Investigation were utilized to construct hydrographs for the shallow water-bearing zone wells (Figures 5-2 through 5-4). These hydrographs reveal that water levels fluctuated only slightly throughout the year, generally by 1 foot or less. These wells do not appear to respond to precipitation events, where it is common to see water levels decline during the dry summer and early fall months and increase during the wetter winter and spring months. Instead, water levels appear to mirror the water levels in Scajaquada Creek and the slip (Figures 5-2 through 5-4).

It is interesting to note that the water levels for all wells at 1660 & 1675 Niagara Street, with the exception of well 1675-MW-2, are lower than the water levels in the Scajaquada Creek Slip (Figures 5-2 through 5-4). This suggests that (1) the Scajaquada Creek Slip is recharging the shallow water-bearing zone at the 1660 Niagara Street BCP Site or (2) contaminated groundwater from the

1660 Niagara Street BCP Site is flowing under the Scajaquada Creek Slip and discharging into either the Black Rock Canal or the Niagara River further to the west. Figure 5-3 shows that water levels in wells 1660-MW-6 & 1660-MW-8, the closest wells to the Scajaquada Creek Slip (Figure 3-9), are approximately 1.5 to 2.0 feet lower than the water levels in the slip.

Water levels for the shallow water-bearing zone wells at 31, 57 & 71 Tonawanda Street (Figure 5-4) are generally higher than the water levels of Scajaquada Creek, indicating that the creek is the discharge point for shallow zone groundwater in this portion of the Study Area. The exception to this is well 31-MW-3, which is located along Scajaquada Creek on the southeast portion of the 31 Tonawanda Street property (Figure 2-6). The increase in water levels in this well on August 31 & September 30, 2021 (Figure 5-4; Table 3-5) could be related to measurement or recording errors.

Figures 5-2 through 5-4 show that the water level in Scajaquada Creek and the slip decreased by over by 3.5 feet on May 28, 2021. Table 3-5 shows that all four water levels from Scajaquada Creek, the slip, and the Black Rock Canal decreased by similar amounts, indicating that this was a true water level decrease.

5.4.2 Glaciolacustrine Deposit Aquitard

Twelve (12) monitoring wells within the Study Area were installed within the reddish-brown silty clay (glaciolacustrine) deposit (Table 3-4). Only six (6) of these wells currently exist (Table 3-4). The silty clay wells installed at the 31 Tonawanda Street property are shown on Figure 2-6, while the silty clay wells installed at the 57-71 Tonawanda Street BCP Site are shown on Figure 3-10. One (1) of the silty clay wells installed at the 68 Tonawanda Street BCP Site is shown on Figure 3-9. The silty clay wells installed at the 150 Tonawanda Street property are not shown on any figures as they no longer exist.

During the Remedial Investigation of the 31 Tonawanda Street Off-Site Area, water levels in the silty clay wells were measured on eighteen (18) occasions between September 16, 2020 and December 22, 2021 (Table 3-5). Historic was level measurements for these wells are summarized in Table 3-6. The water level data obtained during the NYSDEC Remedial Investigation were utilized to construct hydrographs for the silty clay wells (Figure 5-5). This figure reveals that water levels fluctuated only slightly throughout the year, generally by 2 feet or less. Water levels, however, were generally lower during the relatively dry summer months and higher during the relatively wet late fall, winter, and spring months.

Water levels for the silty clay wells at 31, 57 & 71 Tonawanda Street are higher than the water levels of Scajaquada Creek (Figure 5-5), indicating that the creek is the discharge point for groundwater in the glaciolacustrine deposit. However, due to the extremely low hydraulic conductivities of this deposit, groundwater flow through it would be extremely slow.

5.4.3 Glacial Till Deposit Hydrogeologic Zone

There are no wells within the Study Area that monitor the glacial till deposit, so this water-bearing zone was not evaluated during the Remedial Investigation of the 31 Tonawanda Street Off-Site Area.

5.4.4 Upper Bedrock Hydrogeologic Zone

There are no wells within the Study Area that monitor the upper bedrock, so this water-bearing zone was not evaluated during the Remedial Investigation of the 31 Tonawanda Street Off-Site Area.

5.4.5 Water Table Groundwater Flow

Shallow groundwater within the Study Area occurs under unconfined (water table) conditions in saturated fill, recent alluvium, and the glaciolacustrine deposit. A water table is defined as the surface where the water pressure head is equal to the atmospheric pressure. As a result, wells installed within the fill, recent alluvium, and the upper glaciolacustrine deposit represent unconfined conditions.

The water level data obtained during the NYSDEC Remedial Investigation were utilized to construct a series of groundwater contour maps for the unconfined aquifer (Figures 5-6 through 5-10). GEI also constructed a groundwater contour map for the unconfined aquifer (Figure 5-11) during their investigation of the Buffalo Gas Light Site. The groundwater contour maps constructed from the NYSDEC water level data (Figures 5-6 through 5-10) show that a groundwater divide is present in the study area. This divide is roughly centered over the 68 Tonawanda Street BCP Site to the north and the 31 Tonawanda Street BCP Site to the south. From this divide, groundwater flows to the southeast toward the main channel of Scajaquada Creek and to the southwest toward the Scajaquada Creek Slip and the Niagara River. The groundwater divide is not well defined on the GEI groundwater contour map (Figure 5-11), but fewer water levels were used to construct this contour.

Five (5) of the six (6) groundwater contour maps for the unconfined aquifer show a groundwater depression that is centered on the Niagara Street pumphouse. Given that the storm sewer piping beneath Niagara Street is approximately 3 to 4 feet lower than the typical surface water elevation of the Scajaquada Creek Slip, and approximately 1 to 2 feet lower than groundwater elevations in nearby wells, it is suspected that the operation of the pumphouse affects the elevation of groundwater in the vicinity of the pumphouse. The observation of water flow in the storm sewer piping during a dry weather event suggests that groundwater is collected and conveyed by the storm sewer to the pumphouse, effectively maintaining a depressed groundwater elevation beneath Niagara Street.

South and east of Scajaquada Creek, groundwater flow is to the north and west toward the creek (Figure 5-11).

5.5 Seiche Events

Lake Erie, the shallowest of the Great Lakes, is known for seiches due to its east-west orientation and shallow depth, and the dominant wind direction (west to east) in the Buffalo area. A seiche (pronounced "saysh") is defined as a prolonged, standing wave oscillating through a water body such as a lake or bay. These events are often associated with periods of high winds and fast-moving thunderstorms. When high winds move parallel to the lake's long axis, water is "pushed up" along the shores of eastern Lake Erie, causing a drawdown in water level on the western shore (Figure 5-12). A great example of this was the seiche that occurred on December 23, 2022 in Buffalo, New York. Water levels in the Black Rock Canal near Scajaquada Creek increased significantly (Figure 5-13) while water levels in Lake Erie at Toledo Ohio decreased by a corresponding amount (Figure 5-14). As the winds decrease, water rebounds to the drawn-down area and continues to oscillate back and forth, often for multiple days.

These seiche events can cause local flooding (Figure 5-15), rapid and intense erosion of the shoreline, and impede recreation on the lake. When ice is present, it can pile up and cause additional damage to the shoreline. During these seiche events, more wave energy is transferred to the lake bottom as larger waves reach the shoreline, resulting in greater movement of sediments (erosion) compared to calmer times of the year. This is a major concern when sediments in the area affected by the seiche are contaminated, as they are in the lower reaches of Scajaquada Creek.

6.0 INVESTIGATION RESULTS

A description of the field activities completed during the Remedial Investigation of the 31 Tonawanda Street Off-Site Area was presented in Section 4.0. In Section 6.0, the analytical results obtained from the various samples collected or compiled during the investigation are discussed. Analytical results are summarized by environmental media (e.g., subsurface soil, groundwater, potable water, NAPL, sediment, surface water, soil vapor and air).

6.1 Standards, Criteria and Guidance Values

For this report, the analytical results for subsurface soil were evaluated against the unrestricted, restricted residential, commercial, and groundwater protection soil cleanup objectives of Tables 375-6.8(a) and 375-6.8(b) contained in the December 2006 NYSDEC publication entitled "*6NYCRR Part 375: Environmental Remediation Programs*". For contaminants not included in 6 NYCRR Part 375, the soil cleanup objectives identified in the October 2010 NYSDEC Commissioner's Policy CP-51 entitled "*Soil Cleanup Guidance*" were utilized.

Groundwater and surface water analytical results were evaluated against the water quality standards and guidance values contained in the June 1998 NYSDEC publication entitled "*Technical and Operational Guidance Series (TOGS) 1.1.1: Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations*" and its addenda. The groundwater and surface water standards and guidance values for individual contaminants were taken directly from Table 1 of that document.

NAPL analytical results were not evaluated against either the Part 375 soil cleanup objectives or the TOGS 1.1.1 water quality standards and guidance values. Although the NAPL is a liquid, the lab results were given in solid units (i.e., µg/kg).

Sediment analytical results were evaluated against the sediment guidance values contained in the June 2014 NYSDEC publication entitled "*Screening and Assessment of Contaminated Sediment*". Sediment guidance values for Class A, Class B, and Class C sediment were taken directly from Table 1 of that document, while sediment guidance values for PAHs were taken directly from Table 7. Several sediment criteria for the protection of human health bioaccumulation at 2% TOC were utilized when no other sediment guidance value was available. These values were taken directly from Table 8.

Soil vapor and indoor air analytical results were evaluated against the soil vapor/indoor air matrices contained in the October 2006 NYSDOH publication entitled "*Guidance for Evaluating Soil Vapor Intrusion in the State of New York*" and its addenda.

6.2 Subsurface Soil

6.2.1 Bike Path

Three (3) subsurface soil samples were collected from the bike path during the Remedial Investigation of the 31 Tonawanda Street Off-Site Area and analyzed for TCL volatile organic compounds via USEPA method 8260C and TCL semi-volatile organic compounds via USEPA method 8270D. The locations of the soil borings from which these samples were collected are shown on Figure 3-8. The analytical results for these samples are summarized in Table 6-1, while information concerning sample collection and analysis is given in Table 3-2. The lab report for these samples is included in Appendix F.

Table 6-1 reveals that only seven (7) volatile organic compounds were detected in these samples with petroleum VOCs being detected most frequently. Petroleum VOCs detected included benzene (2 samples), ethylbenzene (2 samples), isopropylbenzene (2 samples), toluene (2 samples), and xylenes (2 samples). Methylene chloride and styrene were each detected in 1 sample.

Of these contaminants, only benzene (1 sample), ethylbenzene (1 sample), toluene (1 sample), and xylenes (1 sample) exceeded the NYSDEC Part 375 restricted residential soil cleanup objectives (Table 6-1). None of these contaminants exceeded the NYSDEC Part 375 commercial soil cleanup objectives (Table 6-1).

Concentrations of benzene (2 samples), ethylbenzene (2 samples), methylene chloride (1 sample), toluene (1 sample), and xylenes (2 samples) exceeded the groundwater protection soil cleanup objectives (Table 6-1).

Twenty (20) semi-volatile organic compounds were detected in the subsurface soil samples with seventeen (17) of these constituents being polycyclic aromatic hydrocarbons. PAHs are a group of over 100 different chemicals that are ubiquitous in the environment. Sources of PAHs include incomplete combustion of coal, oil, gasoline, garbage, wood from stoves, automobiles, and incinerators. PAHs are also found in asphalt, coal tar, crude oil, creosote, roofing tar, medicines, dyes, plastics, and pesticides. Of the PAH compounds, benzo(a)anthracene (3 samples), benzo(a)pyrene

(3 samples), benzo(b)fluoranthene (3 samples), chrysene (1 sample), dibenzo(a,h)anthracene (3 samples), indeno(1,2,3-cd)pyrene (2 samples), naphthalene (1 sample), and phenanthrene (1 sample) were detected at concentrations that exceeded the NYSDEC Part 375 commercial soil cleanup objectives (Table 6-1).

Biphenyl (2 samples), carbazole (3 samples) and dibenzofuran (2 samples) were also detected in the subsurface soil samples collected from the bike path borings. The concentration of dibenzofuran in one (1) sample exceeded the NYSDEC Part 375 unrestricted soil cleanup objectives but did not exceed any other soil cleanup objectives (Table 6-1). There are no NYSDEC Part 375 or CP-51 soil cleanup objectives for biphenyl or carbazole.

6.2.2 1660 & 1675 Niagara Street

Six (6) subsurface soil samples were collected from 1660 & 1675 Niagara Street during the Remedial Investigation of the 31 Tonawanda Street Off-Site Area and analyzed for TCL volatile organic compounds via USEPA method 8260C and TCL semi-volatile organic compounds via USEPA method 8270D. The locations of the soil borings from which these samples were collected are shown on Figure 3-7. The analytical results for these samples are summarized in Table 6-2, while information concerning sample collection and analysis is given in Table 3-2. The lab reports for these samples are included in Appendix F.

Table 6-2 reveals that eighteen (18) volatile organic compounds were detected in these samples with petroleum and chlorinated VOCs being detected most frequently. Petroleum VOCs detected included benzene (5 samples), ethylbenzene (5 samples), naphthalene (4 samples), toluene (6 samples), 1,2,4-trimethylbenzene (5 samples), 1,3,5-trimethylbenzene (4 samples) and xylenes (5 samples). Chlorinated VOCs detected included 1,1,1-trichloroethane (1 sample), cis-1,2-dichloroethene (6 samples), trans-1,2-dichloroethene (1 sample), trichloroethene (4 samples) and vinyl chloride (2 samples). Styrene was detected in 2 samples.

Of these contaminants, only benzene (1 sample), ethylbenzene (2 samples), naphthalene (3 samples) and 1,2,4-trimethylbenzene (1 sample) exceeded the NYSDEC Part 375 restricted residential soil cleanup objectives (Table 6-2), while only naphthalene (2 samples) exceeded the NYSDEC Part 375 commercial soil cleanup objectives (Table 6-2).

Concentrations of 1,1,1-trichloroethane (1 sample), cis-1,2-dichloroethene (5 samples), benzene (4 samples), ethylbenzene (4 samples), naphthalene (4 samples), toluene (4 samples), trichloroethene (2 samples), 1,2,4-trimethylbenzene (3 samples), 1,3,5-trimethylbenzene (2 samples), vinyl chloride (2 samples) and xylenes (3 samples) exceeded the groundwater protection soil cleanup objectives (Table 6-2).

Twenty-three (23) semi-volatile organic compounds were detected in the subsurface soil samples with seventeen (17) of these constituents being polycyclic aromatic hydrocarbons (PAHs; Table 6-2). Of the PAH compounds, benzo(a)anthracene (3 samples), benzo(a)pyrene (4 samples), benzo(b)fluoranthene (3 samples), chrysene (1 sample), dibenzo(a,h)anthracene (3 samples), indeno(1,2,3-cd)pyrene (3 samples), naphthalene (2 samples), and phenanthrene (1 sample) were detected at concentrations that exceeded the NYSDEC Part 375 commercial soil cleanup objectives (Table 6-2).

Bis(2-ethylhexyl) phthalate (2 samples) was detected in the subsurface soil samples collected from 1660 & 1675 Niagara Street but did not exceed the NYSDEC CP-51 residential soil cleanup objective (Table 6-2). There are no NYSDEC Part 375 soil cleanup objectives for this contaminant. Biphenyl (4 samples), carbazole (2 samples), dibenzofuran (4 samples), 2,4-dinitrotoluene (2 samples) and n-nitrosodiphenylamine (2 samples) were also detected in the subsurface soil samples. The concentrations of dibenzofuran did not exceed the NYSDEC Part 375 commercial soil cleanup objective (Tables 6-2). There are no NYSDEC Part 375 or CP-51 soil cleanup objectives for biphenyl, carbazole, 2,4-dinitrotoluene and n-nitrosodiphenylamine.

6.3 Groundwater

6.3.1 Bike Path

As described in Sections 3.7 and 4.6, three (3) overburden monitoring wells were installed along the bike path during the Remedial Investigation of the 31 Tonawanda Street Off-Site Area. The locations of these wells are shown on Figure 3-10. Groundwater samples collected from these wells were analyzed for TCL volatile organic compounds via USEPA method 8260C, TCL semi-volatile organic compounds via USEPA method 8270D, TCL pesticides via USEPA method 8081B, TCL PCBs via USEPA method 8082A, TAL metals via USEPA method 6010C, and mercury via USEPA method 7470A. The analytical results for these samples are summarized in Table 6-3, while information concerning sample collection and analysis is given in Table 3-2. The lab report for these samples is included in Appendix F.

The results of the organic analyses revealed that both volatile and semi-volatile organic compounds were detected in the groundwater samples collected from the bike path wells (Table 6-3). Six (6) volatile organic compounds were detected in these samples with petroleum VOCs being detected most frequently (Table 6-3). Petroleum VOCs detected included benzene (2 samples), ethylbenzene (3 samples), isopropylbenzene (1 sample), toluene (2 samples) and xylenes (3 samples). Styrene was also detected in 1 sample.

VOCs that exceeded NYSDEC groundwater standards or guidance values (Table 6-3) included benzene (wells MW-100 and MW-103), ethylbenzene (wells MW-100, MW-103 and MW-106), isopropylbenzene (well MW-106), styrene (well MW-100), toluene (wells MW-100 and MW-103) and xylenes (wells MW-100, MW-103 and MW-106).

Twenty-three (23) semi-volatile organic compounds were detected in the groundwater samples collected from the bike path wells with seventeen (17) of these constituents being polycyclic aromatic hydrocarbons (Table 6-3). Of the PAH compounds, acenaphthene (wells MW-100, MW-103 and MW-106), anthracene (well MW-100), benzo(a)anthracene (wells MW-100, MW-103 and MW-106), benzo(a)pyrene (wells MW-100 and MW-103), benzo(b)fluoranthene (wells MW-100 and MW-103), benzo(k)fluoranthene (well MW-100), chrysene (wells MW-100, MW-103 and MW-106), fluoranthene (well MW-100), fluorene (well MW-100), indeno(1,2,3-cd)pyrene (well MW-100), naphthalene (wells MW-100 and MW-103), phenanthrene (wells MW-100, MW-103 and MW-106) and pyrene (well MW-100) were detected at concentrations that exceeded the NYSDEC groundwater standards or guidance values (Table 6-3).

Phenolic compounds were also detected in the groundwater samples from the bike path wells including 2,4-dimethylphenol (1 sample) and phenol (3 samples). The concentrations of phenol in wells MW-100 and MW-103, and the concentrations of biphenyl in wells MW-100 and MW-106 exceeded the NYSDEC groundwater standards for these contaminants (Table 6-3).

Carbazole (3 samples) and dibenzofuran (3 samples) were also detected in the groundwater samples (Table 6-3). There are no NYSDEC groundwater standards or guidance values for these contaminants.

Six (6) pesticides were detected in the groundwater samples collected from the bike path wells (Table 6-3). The pesticides detected included DDT (1 sample), delta-BHC (1 sample), endrin aldehyde (1 sample), endrin ketone (1 sample), gamma-BHC (2 samples) and heptachlor (1 sample).

Pesticides that exceeded the NYSDEC groundwater standards included delta-BHC (well MW-106), gamma-BHC (well MW-106) and heptachlor (well MW-106) (Table 6-3).

Groundwater samples collected from the bike path wells did not contain any polychlorinated biphenyls (PCBs) (Table 6-3).

Sixteen (16) metals were detected in the groundwater samples collected from the bike path wells with five (5) of these metals being EPA priority pollutant metals (Table 6-3). EPA priority pollutant metals are toxic metals for which technology-based effluent limitations and guidelines are required by Federal law. The only priority pollutant metal that exceeded the NYSDEC groundwater standards or guidance values was lead in well MW-100 (Table 6-3). Other metals that exceeded the NYSDEC groundwater standards or guidance values included iron (wells MW-100, MW-103 and MW-106), magnesium (wells MW-100 and MW-106), manganese (wells MW-100, MW-103 and MW-106) and sodium (wells MW-100, MW-103 and MW-106) (Table 6-3).

6.3.2 57-71 Tonawanda Street

Five (5) groundwater samples from overburden monitoring wells were collected by BE3 from the 57-71 Tonawanda Street BCP Site during the BCP Remedial Investigation. The locations of these wells are shown on Figure 3-10. The analytical results for these samples are summarized in Table 6-4, while information concerning sample collection and analysis is given in Table 3-3.

The results of the organic analyses revealed that both volatile and semi-volatile organic compounds were detected in the groundwater samples collected from the site (Table 6-4). Six (6) volatile organic compounds were detected in these samples with chlorinated VOCs being detected most frequently (Table 6-4). Chlorinated VOCs detected included 1,1,1-trichloroethane (2 samples), 1,1-dichloroethane (1 sample), cis-1,2-dichloroethene (2 samples), trichloroethene (5 samples) and vinyl chloride (1 sample).

VOCs that exceeded NYSDEC groundwater standards or guidance values included 1,1,1-trichloroethane (well 57-MW-2), 1,1-dichloroethane (well 57-MW-2), cis-1,2-dichloroethene (well 57-MW-2), acetone (wells 57-MW-2, 57-MW-3 and 57-MW-4), trichloroethene (wells 57-MW-1, 57-MW-2 and 57-MW-4) and vinyl chloride (well 57-MW-2).

Groundwater samples collected from the 57-71 Tonawanda Street BCP Site did not contain any semi-volatile organic compounds, pesticides, or polychlorinated biphenyls (PCBs) (Table 6-4).

Seven (7) metals were detected in the groundwater samples collected from the 57-71 Tonawanda Street BCP Site with five (5) of these metals being EPA priority pollutant metals (Table 6-4). The only priority pollutant metals that exceeded the NYSDEC groundwater standards or guidance values included lead (well 57-MW-3) and selenium (wells 57-MW-2, 57-MW-3, and 57-MW-4) (Table 6-4). Manganese in wells 57-MW-2, 57-MW-3, 57-MW-4, and 57-MW-5 also exceeded the NYSDEC groundwater standards or guidance values (Table 6-4).

6.3.3 1660 & 1675 Niagara Street

Thirteen (13) groundwater samples from overburden monitoring wells were collected by LaBella from the 1660 Niagara Street BCP Site during the BCP Remedial Investigation. The locations of these wells are shown on Figure 3-9. The analytical results for these samples are summarized in Table 6-5, while information concerning sample collection and analysis is given in Table 3-3. These results indicated that groundwater at the site was contaminated with petroleum and chlorinated VOCs, polycyclic aromatic hydrocarbons, and non-priority pollutant metals (Table 6-5).

As described in Sections 3.7 and 4.5, five (5) overburden monitoring wells were installed at 1660 and 1675 Niagara Street during the Remedial Investigation of the 31 Tonawanda Street Off-Site Area. The locations of these wells are shown on Figure 3-9. Groundwater samples collected from these wells were analyzed for TCL volatile organic compounds via USEPA method 8260C, TCL semi-volatile organic compounds via USEPA method 8270D, TCL pesticides via USEPA method 8081B, TCL PCBs via USEPA method 8082A, TAL metals via USEPA method 6010C, and mercury via USEPA method 7470A. The analytical results for these samples are summarized in Table 6-6, while information concerning sample collection and analysis is given in Table 3-2. The lab reports for these samples are included in Appendix F.

The results of the organic analyses revealed that both volatile and semi-volatile organic compounds were detected in the groundwater samples collected from the NYSDEC wells (Table 6-6). Twelve (12) volatile organic compounds were detected in these samples with petroleum and chlorinated VOCs being detected most frequently (Table 6-6). Petroleum VOCs detected included benzene (4 samples), ethylbenzene (2 samples), toluene (2 samples) and xylenes (2 samples). Chlorinated VOCs detected included 1,1,1-trichloroethane (3 samples), 1,1-dichloroethane (4 samples), 1,1-dichloroethene (3 samples), cis-1,2-dichloroethene (4 samples), tetrachloroethene (1 sample), trichloroethene (2 samples) and vinyl chloride (4 samples).

Petroleum VOCs that exceeded NYSDEC groundwater standards or guidance values included benzene (wells 1675-MW-1, 1660-MW-3R, 1660-MW-5R and 1660-MW-8), ethylbenzene (wells 1660-MW-5R and 1660-MW-8), toluene (wells 1660-MW-5R and 1660-MW-8) and xylenes (wells 1660-MW-5R and 1660-MW-8). Chlorinated VOCs that exceeded NYSDEC groundwater standards or guidance values included 1,1,1-trichloroethane (wells 1675-MW-2, 1660-MW-5R and 1660-MW-8), 1,1-dichloroethane (wells 1675-MW-1, 1675-MW-2, 1660-MW-5R and 1660-MW-8), 1,1-dichloroethene (wells 1660-MW-5R and 1660-MW-8), cis-1,2-dichloroethene (wells 1675-MW-1, 1660-MW-3R, 1660-MW-5R and 1660-MW-8), trichloroethene (well 1660-MW-5R) and vinyl chloride (wells 1675-MW-1, 1660-MW-3R, 1660-MW-5R and 1660-MW-8).

Twenty-one (21) semi-volatile organic compounds were detected in the groundwater samples collected from the NYSDEC wells with fourteen (14) of these constituents being polycyclic aromatic hydrocarbons (Table 6-6). Of the PAH compounds, acenaphthene (well 1660-MW-5R), benzo(a)anthracene (well 1660-MW-5R), benzo(b)fluoranthene (well 1660-MW-5R), chrysene (well 1660-MW-5R), fluorene (wells 1660-MW-5R and 1660-MW-8), naphthalene (wells 1660-MW-5R and 1660-MW-8), phenanthrene (wells 1660-MW-5R and 1660-MW-8) and pyrene (well 1660-MW-5R) were detected at concentrations that exceeded the NYSDEC groundwater standards or guidance values (Table 6-6). It is important to note that benzo(a)anthracene, benzo(b)fluoranthene and chrysene in well MW-5R were not detected in the primary sample but exceeded NYSDEC groundwater standards or guidance values in the duplicate sample from this well (Table 6-6).

Phenolic compounds were also detected in the groundwater samples including 2-methylphenol (O-Cresol) (1 sample), 4-methylphenol (P-Cresol) (2 samples) and phenol (3 samples) (Table 6-6). These contaminants exceeded the NYSDEC groundwater standards in wells 1675-MW-1 (4-methylphenol and phenol), 1660-MW-3R (phenol) and 1660-MW-8 (2-methylphenol and phenol).

Concentrations of 1,1-biphenyl exceeded the NYSDEC groundwater standard in well 1660-MW-5R (Table 6-6).

Acetophenone (2 samples), carbazole (2 samples) and dibenzofuran (2 samples) were also detected in the groundwater samples collected from the NYSDEC wells (Table 6-6). There are no NYSDEC groundwater standards or guidance values for these contaminants.

Ten (10) pesticides were detected in the groundwater samples collected from the NYSDEC wells installed at 1660 and 1675 Niagara Street (Table 6-6). The pesticides detected included DDD (2 samples), DDT (4 samples), aldrin (2 samples), alpha-BHC (3 samples), delta-BHC (5 samples), endrin ketone (1 sample), gamma-BHC (3 samples), heptachlor (1 sample), heptachlor epoxide (1 sample) and methoxychlor (2 samples). Pesticides that exceeded the NYSDEC groundwater standards included aldrin (wells 1660-MW-5R and 1660-MW-8), alpha-BHC (wells 1660-MW-3R, 1660-MW-5R and 1660-MW-8), delta-BHC (well 1660-MW-5R), gamma-BHC (well 1660-MW-5R) and heptachlor epoxide (well 1660-MW-5R) (Table 6-6).

Groundwater samples collected during the Remedial Investigation of the 31 Tonawanda Street Off-Site Area did not contain any polychlorinated biphenyls (PCBs) (Table 6-6).

Sixteen (16) metals were detected in the groundwater samples collected from the NYSDEC wells with six (6) of these metals being EPA priority pollutant metals (Table 6-6). The only priority pollutant metal that exceeded the NYSDEC groundwater standards or guidance values was lead in well 1660-MW-5R (Table 6-6). Other metals that exceeded the NYSDEC groundwater standards or guidance values included iron (wells 1675-MW-1, 1675-MW-2, 1660-MW-3R, 1660-MW-5R and 1660-MW-8), magnesium (wells 1675-MW-1, 1660-MW-3R, 1660-MW-5R and 1660-MW-8), manganese (wells 1675-MW-1, 1675-MW-2, 1660-MW-3R, 1660-MW-5R and 1660-MW-8) and sodium (wells 1675-MW-1, 1675-MW-2, 1660-MW-3R, 1660-MW-5R and 1660-MW-8) (Table 6-6).

6.3.4 GEI Wells

As described in Section 3.7, seven (7) monitoring wells were installed by GEI during their investigation of the Buffalo Gas Light Site. The groundwater results for well MW-LSC-5 have been tabulated for this Remedial Investigation Report and are provided in Table 6-16. The groundwater results for the other GEI wells have not been tabulated and are not discussed in further. All data tables from the Site Characterization Report (GEI, October 2022), however, are provided in Appendix I.

GEI subsequently installed two (2) monitoring well clusters on the east side of the Niagara Street pumphouse (MW-PS-1 & MW-PS-2). The locations of these wells are shown on Figure 3-9. A report describing the installation, development and sampling of these wells is being prepared by GEI and is not yet available. In February 2023, however, the lab reports for these samples were provided to the NYSDEC by GEI. These results have been tabulated and are provided in Table 6-16.

The results of the organic analyses revealed that both volatile and semi-volatile organic compounds were detected in the groundwater samples collected from the three (3) GEI wells (Table 6-16). Eight (8) volatile organic compounds were detected in these samples with petroleum and chlorinated VOCs being detected most frequently (Table 6-16). Petroleum VOCs detected included benzene (3 samples), ethylbenzene (3 samples), isopropylbenzene (3 samples), toluene (3 samples) and xylenes (3 samples). Chlorinated VOCs detected included 1,1-dichloroethane (1 sample), chloroethane (2 samples), and vinyl chloride (2 samples). All concentrations, except for vinyl chloride in well MW-LCS-5, exceeded NYSDEC groundwater standards or guidance values (Table 6-16).

Seventeen (17) semi-volatile organic compounds were detected in the groundwater samples collected from the three (3) GEI wells with eleven (11) of these constituents being polycyclic aromatic hydrocarbons (Table 6-16). Of the PAH compounds, acenaphthene (wells MW-LCS-5, MW-PS-1, and MW-PS-2), benzo(a)anthracene (wells MW-PS-1 and MW-PS-2), chrysene (wells MW-PS-1 and MW-PS-2), naphthalene (wells MW-LCS-5, MW-PS-1, and MW-PS-2), and phenanthrene (well MW-PS-1) were detected at concentrations that exceeded the NYSDEC groundwater standards or guidance values (Table 6-16).

Phenolic compounds were also detected in the groundwater samples from the three (3) GEI wells including 4-methylphenol (P-Cresol) (1 sample) and phenol (3 samples). The concentrations of phenol in wells MW-PS-1 and MW-PS-2 exceeded the NYSDEC groundwater standards for this contaminant (Table 6-16).

Biphenyl was detected in the three (3) GEI wells at concentrations that exceeded the NYSDEC groundwater standard (Table 6-16). Bis(2-ethylhexyl) phthalate was detected in well MW-PS-1 but did not exceed the NYSDEC groundwater standard for this contaminant (Table 6-16). Carbazole (3 samples) and dibenzofuran (3 samples) were also detected in the groundwater samples (Table 6-16). There are no NYSDEC groundwater standards or guidance values for these contaminants.

Only the groundwater sample from GEI well MW-LCS-5 was analyzed for pesticides (Table 6-16). No pesticides were detected in this sample.

Groundwater samples collected from the three (3) GEI wells did not contain any polychlorinated biphenyls (PCBs) (Table 6-16).

Fourteen (14) metals were detected in the groundwater samples collected from the three (3)

GEI wells with four (4) of these metals being EPA priority pollutant metals (Table 6-16). EPA priority pollutant metals are toxic metals for which technology-based effluent limitations and guidelines are required by Federal law. None of the priority pollutant metal concentrations exceeded the NYSDEC groundwater standards or guidance values (Table 6-16). Other metals that exceeded the NYSDEC groundwater standards or guidance values included iron (wells MW-LCS-5 and MW-PS-2), magnesium (wells MW-LCS-5, MW-PS-1, and MW-PS-2), manganese (wells MW-LCS-5 and MW-PS-2) and sodium (wells MW-LCS-5, MW-PS-1, and MW-PS-2) (Table 6-16).

1,4-dioxane was detected in all three (3) groundwater samples at concentrations that exceeded the NYSDEC groundwater guidance value for this contaminant (Table 6-16).

6.4 Drilling Water

During the installation of monitoring well 1675-MW-1, the well screen and riser pipe "floated" in the boring as the augers were completely full of water. It was initially thought that the well screen had plugged by the fine-grained soils so potable water brought by the drillers was poured down the riser. Because of this, a sample of the drilling water was collected for analysis to compare to the groundwater results from that well. This sample was analyzed for TCL VOCs via USEPA Method 8260C. The analytical results for this sample are summarized in Table 6-7, while information concerning sample collection and analysis is given in Table 3-2. The lab report for this sample is included in Appendix F.

Table 6-7 reveals that four (4) volatile organic compounds were detected in this sample including acetone, bromodichloromethane, chloroform, and dibromochloromethane. Bromodichloromethane, chloroform, and dibromochloromethane are formed when chlorine or bromine interacts with the natural organic materials found in water, and are common byproducts in chlorinated drinking water. The concentration of chloroform exceeded the NYSDEC groundwater standards or guidance values (Table 6-7). These contaminants were not detected in the groundwater sample collected from well 1675-MW-1, indicating that well development/natural groundwater flow had removed all traces of the drilling water from the well prior to sampling.

6.5 Non-Aqueous Phase Liquid (NAPL)

6.5.1 Bike Path

Three (3) NAPL samples were collected from bike path well MW-100 (Figure 3-10) during the Remedial Investigation of the 31 Tonawanda Street Off-Site Area and analyzed for TCL volatile organic compounds via USEPA method 8260C, TCL semi-volatile organic compounds via USEPA method 8270D, TCL pesticides via USEPA method 8081B, TCL PCBs via USEPA method 8082A, TAL metals via USEPA method 6010C, mercury via USEPA method 7471B, and specific gravity via ASTM method D1429-87. Information concerning sample collection and analysis is given in Table 3-2, while the lab reports for these samples are included in Appendix F. It is important to note that the October 2020 NAPL sample was prepped/analyzed outside the specified holding times so these results should be used with caution.

The analytical results for the bike path NAPL samples are summarized in Table 6-8. For comparison purposes, Table 6-8 also includes the analytical results for NAPL samples collected from the Iroquois Gas/Westwood Pharmaceuticals site in 1992. Information concerning sample collection and analysis of the Westwood samples is given in Table 3-3, while the lab report for these samples is included in Appendix E.

The results of the organic analyses revealed that both volatile and semi-volatile organic compounds were detected in the Westwood and bike path NAPL samples (Table 6-8). Seven (7) volatile organic compounds were detected in these samples with petroleum VOCs being detected most frequently (Table 6-8). Petroleum VOCs detected included benzene (4 samples), ethylbenzene (4 samples), isopropylbenzene (2 samples), toluene (3 samples) and xylenes (4 samples). Methylene chloride (1 sample) and styrene (1 sample) were also detected in the NAPL samples.

Twenty (20) semi-volatile organic compounds were detected in the NAPL samples collected from Westwood and bike path well MW-100 with seventeen (17) of these constituents being polycyclic aromatic hydrocarbons (Table 6-8). The NAPL from bike path well MW-100 also contained biphenyl and carbazole, while the Westwood and bike path NAPL samples contained dibenzofuran.

The volatile and semi-volatile organic compounds detected in the Westwood and bike path NAPL samples were similar, as were their concentrations, suggesting that the NAPL collected from well MW-100 is coal tar that originated from the Iroquois Gas/Westwood Pharmaceuticals site.

Two (2) pesticides were detected in the bike path NAPL samples collected during the Remedial Investigation of the 31 Tonawanda Street Off-Site Area (Table 6-8). The pesticides detected included DDT (1 sample) and methoxychlor (1 sample). The Westwood NAPL samples were not analyzed for pesticides.

PCBs were not detected in the bike path NAPL samples (Table 6-8). The Westwood NAPL samples were not analyzed for PCBs.

Fourteen (14) metals were detected in the bike path NAPL samples with five (5) of these metals being EPA priority pollutant metals (Table 6-8). The EPA priority pollutant metals detected included arsenic (1 sample), chromium (1 sample), copper (1 sample), lead (1 sample) and zinc (1 sample). The Westwood NAPL samples were not analyzed for metals.

The specific gravity of the bike path NAPL samples was measured as 1.0017 and 1.0275 grams per milliliter (g/mL), while density of the Westwood NAPL samples was measured as 1.031 and 1.054 grams per cubic centimeter (g/cc) (Table 6-8).

6.5.2 1660 Niagara Street

Five (5) NAPL samples were collected from the 1660 Niagara Street BCP Site during the Remedial Investigation of the 31 Tonawanda Street Off-Site Area and analyzed for TCL volatile organic compounds via USEPA method 8260C, TCL semi-volatile organic compounds via USEPA method 8270D, TCL pesticides via USEPA method 8081B, TCL PCBs via USEPA method 8082A, TAL metals via USEPA method 6010C, mercury via USEPA method 7471B, and specific gravity via ASTM method D1429-87. It is important to note that the October 2020 NAPL samples were prepped/ analyzed outside the specified holding times so these results should be used with caution. The locations of the wells from which these samples were collected are shown on Figure 3-9. The analytical results for the NAPL samples are summarized in Table 6-8, while information concerning sample collection and analysis is given in Table 3-2. The lab reports for these samples are included in Appendix F.

The results of the organic analyses revealed that both volatile and semi-volatile organic compounds were detected in the 1660 Niagara Street NAPL samples (Table 6-8). Thirteen (13) volatile organic compounds were detected in these samples with petroleum and chlorinated VOCs being detected most frequently (Table 6-8). Petroleum VOCs detected included benzene (3 samples), ethylbenzene (4 samples), isopropylbenzene (3 samples), toluene (5 samples) and xylenes (4 samples). Chlorinated VOCs detected included 1,1,1-trichloroethane (3 samples), 1,1-dichloroethane (3 samples), 1,1-dichloroethene (2 samples), cis-1,2-dichloroethene (3 samples), trichloroethene (2 samples), and vinyl chloride (2 samples). Methylene chloride (2 samples) and styrene (3 samples) were also detected in the NAPL samples.

It is important to note that the 1660 Niagara Street NAPL samples contain chlorinated VOCs, while the Westwood and bike path NAPL samples do not (Table 6-8). This indicates that there is a source of chlorinated VOCs in the Study Area, as yet unidentified, that has comingled with the coal tar NAPL.

Twenty-one (21) semi-volatile organic compounds were detected in the 1660 Niagara Street NAPL samples with seventeen (17) of these constituents being polycyclic aromatic hydrocarbons (Table 6-8). These samples also contained 2,4-dinitrotoluene (1 sample), biphenyl (5 samples), carbazole (2 samples), and dibenzofuran (2 samples).

Four (4) pesticides were detected in the 1660 Niagara Street NAPL samples (Table 6-8) including DDT (1 sample), delta-BHC (1 sample), gamma-chlordane (1 sample) and methoxychlor (1 sample).

PCBs were not detected in the 1660 Niagara Street NAPL samples (Table 6-8).

Sixteen (16) metals were detected in the 1660 Niagara Street NAPL samples with five (5) of these metals being EPA priority pollutant metals (Table 6-8). The EPA priority pollutant metals detected included arsenic (1 sample), chromium (1 sample), copper (1 sample), lead (1 sample) and zinc (1 sample).

The specific gravity of the 1660 Niagara Street NAPL samples was measured as 0.9887 and 1.0013 grams per milliliter (g/mL) (Table 6-8).

6.6 Sediment

6.6.1 Scajaquada Creek Slip

As described in Section 3.1, ten (10) sediment samples from the Scajaquada Creek Slip were collected by a NYSDEC Standby Spill Contractor in January 2015, with nine (9) additional sediment samples collected from the slip by a NYSDEC Standby Spill Contractor in March 2017. The locations of these samples are shown on Figures 3-1 and 3-2. The analytical results for these samples are summarized in Tables 6-9 and 6-10, while information concerning sample collection and analysis is given in Table 3-1. The lab reports for these samples are included in Appendix E.

In addition to these samples, three (3) sediment samples from the Scajaquada Creek Slip near the outfall of the Niagara Street pumphouse were collected during the Remedial Investigation of the

31 Tonawanda Street Off-Site Area. The locations of these samples are shown on Figure 3-5. Two of these samples were analyzed for TCL volatile organic compounds via USEPA method 8260C, TCL semi-volatile organic compounds via USEPA method 8270D, and TCL PCBs via USEPA method 8082A. The third sediment sample was analyzed for TCL volatile organic compounds via USEPA method 8260D, TCL semi-volatile organic compounds via USEPA method 8270E, TCL PCBs via USEPA method 8082A, TAL metals via USEPA method 6010D, and mercury via USEPA method 7471B. The analytical results for these samples are summarized in Table 6-13, while information concerning sample collection and analysis is given in Table 3-2. The lab reports for these samples are included in Appendix F.

The results of the organic analyses revealed that both volatile and semi-volatile organic compounds were detected in the sediment samples collected from the Scajaquada Creek Slip (Tables 6-9, 6-10, and 6-13). Nineteen (19) volatile organic compounds were detected in these samples with petroleum VOCs being detected most frequently (Tables 6-9, 6-10, and 6-13). Petroleum VOCs detected included 1,2,4-trimethylbenzene (10 samples), 1,3,5-trimethylbenzene (8 samples), 4-isopropyltoluene (3 samples), benzene (10 samples), ethylbenzene (16 samples), isopropylbenzene (15 samples), n-butylbenzene (9 samples), n-propylbenzene (6 samples), sec-butylbenzene (2 samples), toluene (3 sample), and xylenes (17 samples). Of these VOCs, concentrations of 1,2,4-trimethylbenzene (1 sample), benzene (5 samples), ethylbenzene (6 samples), isopropylbenzene (4 samples), and xylenes (4 samples) exceeded the NYSDEC Class C sediment guidance values (Tables 6-9, 6-10, and 6-13).

Twenty-three (23) semi-volatile organic compounds were detected in the sediment samples collected from the Scajaquada Creek Slip with seventeen (17) of these constituents being polycyclic aromatic hydrocarbons. Of the PAH compounds, acenaphthene (15 samples), acenaphthylene (11 samples), anthracene (16 samples), benzo(a)anthracene (13 samples), benzo(a)pyrene (13 samples), benzo(b)fluoranthene (12 samples), benzo(g,h,i)perylene (11 sample), benzo(k)-fluoranthene (5 samples), chrysene (13 samples), dibenzo(a,h)anthracene (2 samples), fluoranthene (20 samples), fluorene (14 samples), indeno(1,2,3-cd)pyrene (5 samples), naphthalene (14 samples), phenanthrene (21 samples), and pyrene (22 samples) were detected at concentrations that exceeded the NYSDEC sediment guidance values for PAHs (Tables 6-9, 6-10, and 6-13).

The nine (9) sediment samples collected from the Scajaquada Creek Slip in 2017 were analyzed for pesticides (Table 6-10). The pesticides detected included DDD (9 samples), DDE (8 samples), DDT (1 sample), aldrin (1 sample), delta-BHC (7 samples), alpha-chlordane (9 samples), gamma-chlordane (7 samples), oxy-chlordane (3 samples), dieldrin (1 sample), endosulfan II (1 sample), and heptachlor epoxide (9 samples). Pesticides that exceeded the NYSDEC Class B sediment guidance values included alpha-chlordane (1 sample), gamma-chlordane (2 samples), and heptachlor epoxide (7 samples). In addition, concentrations of DDD (8 samples), DDE (8 samples), and delta-BHC (7 samples) exceeded the sediment guidance values for the protection of human health (Table 6-10).

PCBs were detected in fourteen (14) sediment samples collected from the Scajaquada Creek Slip, with the concentrations in eleven (11) samples exceeding the NYSDEC Class C sediment guidance values (Tables 6-9, 6-10, and 6-13). The concentrations of PCBs in the remaining three (3) samples exceeded the NYSDEC Class B sediment guidance values (Tables 6-9, 6-10, and 6-13).

Ten (10) sediment samples collected from the Scajaquada Creek Slip were analyzed for metals (Tables 6-10 and 6-13). These tables reveal that twenty-three (23) metals were detected in these samples. Of these metals, nine (9) were detected at concentrations that exceeded the NYSDEC sediment guidance values, with eight (8) of these metals being EPA priority pollutant metals. The priority pollutant metals that exceeded the Class B (but not Class C) sediment guidance values included arsenic (10 samples), cadmium (2 samples), chromium (3 samples), copper (1 sample), mercury (3 samples), silver (2 samples), and zinc (1 sample). The priority pollutant metals that exceeded the Class C sediment guidance values included cadmium (7 samples), chromium (6 samples), copper (9 samples), lead (10 samples), mercury (6 samples), silver (7 samples), and zinc (9 samples). Concentrations of nickel also exceeded the NYSDEC Class B (5 samples) and Class C (4 samples) sediment guidance values (Tables 6-10 and 6-13).

Several sediment samples were analyzed for miscellaneous compounds including petroleum products (5 samples), percent moisture (11 samples), total volatile solids (9 samples), and total organic carbon (TOC; 11 samples) (Tables 6-9, 6-10, and 6-13). Three (3) of the sediment samples collected from the Scajaquada Creek Slip in 2015 contained motor oil (3,900 to 6,800 mg/kg) and no. 6 fuel oil (4,600 to 10,000 mg/kg; Table 6-9). There are no sediment guidance values for these compounds.

The nine (9) sediment samples collected from the Scajaquada Creek Slip in 2017 were analyzed for percent moisture, total volatile solids, and total organic carbon (Table 6-10), while two (2) of the sediment samples collected during the Remedial Investigation of the 31 Tonawanda Street

Off-Site Area were analyzed for percent moisture and total organic carbon (Table 6-13). Percent moisture in these samples ranged from 46.4% to 73.3%, while total volatile solids ranged from 9.2% to 19.8%. Total organic carbon, which can be utilized to calculate sediment guidance values using equilibrium partitioning methodology, ranged from 4.26% to 21.1%.

6.6.2 Niagara Street Pumphouse

As described in Sections 3.4 and 4.10, one (1) sediment sample from the Niagara Street pumphouse sump was collected by a NYSDEC Standby Spill Contractor in November 2021 and analyzed for TCL volatile organic compounds via USEPA method 8260D, TCL semi-volatile organic compounds via USEPA method 8270E, TCL PCBs via USEPA method 8082A, TAL metals via USEPA method 6010D, and mercury via USEPA method 7471B. The location of this sample is shown on Figure 3-5. The analytical results for the pumphouse sump sediment sample are summarized in Table 6-13, while information concerning sample collection and analysis is given in Table 3-2. The lab report for this sample is included in Appendix F.

The results of the organic analyses revealed that both volatile and semi-volatile organic compounds were detected in the sediment sample collected from the pumphouse sump (Table 6-13). Three (3) volatile organic compounds (1,2,4-trimethylbenzene, ethylbenzene, and xylenes) were detected in this sample with all three being petroleum VOCs (Table 6-13). The concentrations of all three contaminants exceeded the NYSDEC Class C sediment guidance values (Table 6-13).

Nineteen (19) semi-volatile organic compounds were detected in the sediment samples collected from the pumphouse sump with seventeen (17) of these constituents being polycyclic aromatic hydrocarbons. Of the PAH compounds, acenaphthene, acenaphthylene, anthracene, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, chrysene, fluoranthene, fluorene, naphthalene, phenanthrene, and pyrene were detected at concentrations that exceeded the NYSDEC sediment guidance values for PAHs (Table 6-13).

PCBs were detected in the sediment sample collected from the pumphouse sump with the concentration exceeding the NYSDEC Class B sediment guidance values (Table 6-13).

Twenty (20) metals were detected in the sediment sample collected from the pumphouse sump (Table 6-13). Of these metals, seven (7) were detected at concentrations that exceeded the NYSDEC sediment guidance values, with six (6) of these metals being EPA priority pollutant metals. The priority pollutant metals that exceeded the Class B (but not Class C) sediment guidance values included arsenic, cadmium, and copper. The priority pollutant metals that exceeded the Class C sediment guidance values included chromium, lead, and zinc. The concentration of nickel also exceeded the NYSDEC Class B sediment guidance values (Table 6-13).

The sediment sample collected from the pumphouse sump was also analyzed for petroleum products. Gasoline was detected in this sample at a concentration of 16,000 mg/kg (Table 6-13).

6.6.3 Scajaquada Creek Downstream of West Avenue

As described in Section 3.1, five (5) sediment samples from Scajaquada Creek downstream of West Avenue were collected by a NYSDEC Standby Spill Contractor in March 2017, with fifteen (15) additional sediment samples collected from the creek by the U.S. Army Corp of Engineers in September 2017. The locations of these samples are shown on Figures 3-2 and 3-3. The analytical results for these sediment samples are summarized in Tables 6-11 and 6-12, while information concerning sample collection and analysis is given in Table 3-1. The lab reports for these samples are included in Appendix E.

The results of the organic analyses revealed that both volatile and semi-volatile organic compounds were detected in the sediment samples collected from Scajaquada Creek downstream of West Avenue (Table 6-11). Seven (7) volatile organic compounds were detected in these samples with petroleum VOCs being detected most frequently (Table 6-11). Petroleum VOCs detected included benzene (1 sample), ethylbenzene (2 samples), isopropylbenzene (1 sample), and xylenes (1 sample). None of the concentrations, however, exceeded the NYSDEC sediment guidance values (Table 6-11).

Twenty-three (23) semi-volatile organic compounds were detected in the sediment samples collected from Scajaquada Creek downstream of West Avenue with seventeen (17) of these constituents being polycyclic aromatic hydrocarbons. Of the PAH compounds, acenaphthene (1 sample), fluoranthene (1 sample), naphthalene (1 sample), phenanthrene (2 samples), and pyrene (2 samples) were detected at concentrations that exceeded the NYSDEC sediment guidance values for PAHs (Table 6-11). Other semi-volatile organic compounds that were detected in the samples did not exceed any of the NYSDEC sediment guidance values (Table 6-11).

Nine (9) pesticides were detected in the sediment samples collected from Scajaquada Creek downstream of West Avenue (Table 6-11). The pesticides detected included DDD (5 samples), DDE (3 samples), delta-BHC (2 samples), gamma-BHC (1 sample), alpha-chlordane (1 sample), gamma-chlordane (1 sample), oxy-chlordane (1 sample), dieldrin (2 samples), and heptachlor epoxide (4 samples). Pesticides that exceeded the NYSDEC Class B sediment guidance values included heptachlor epoxide (1 sample), while DDD (3 samples), DDE (3 samples), and delta-BHC (2 samples) exceeded the sediment guidance values for the protection of human health (Table 6-11).

PCBs were detected in all five (5) sediment samples collected from Scajaquada Creek downstream of West Avenue, with the concentrations in four (4) samples exceeding the NYSDEC Class B (3 samples) or Class C (1 sample) sediment guidance values (Table 6-11).

All twenty (20) sediment samples collected from Scajaquada Creek downstream of West Avenue were analyzed for metals (Tables 6-11 and 6-12). Twenty-three (23) metals were detected in these samples. Of these metals, nine (9) were detected at concentrations that exceeded the NYSDEC sediment guidance values, with eight (8) of these metals being EPA priority pollutant metals. The priority pollutant metals that exceeded the Class B (but not Class C) sediment guidance values included arsenic (4 samples), cadmium (14 samples), chromium (15 samples), copper (9 samples), lead (3 samples), mercury (12 samples), silver (3 samples), and zinc (3 samples). The priority pollutant metals that exceeded the Class C sediment guidance values included cadmium (1 sample), copper (9 samples), lead (17 samples), silver (1 sample), and zinc (14 samples). Concentrations of nickel also exceeded the NYSDEC Class B (14 samples) sediment guidance values (Tables 6-11 and 6-12). The metal results from the sediment samples collected U.S. Army Corp of Engineers in September 2017 are shown on Figure 3-4.

The five (5) sediment samples collected from Scajaquada Creek downstream of West Avenue in March 2017 were also analyzed for percent moisture, total volatile solids, and total organic carbon (Table 6-11), while the sediment samples collected in September 2017 were also analyzed for percent solids and total organic carbon (Table 6-12). Percent moisture was calculated from percent solids and is also included in Table 6-12. Percent moisture in these samples ranged from 13.3% to 74.3%, while total volatile solids ranged from 2.0% to 12.6%. Total organic carbon values ranged from 1.39% to 8.57%.

6.7 Surface Water

6.7.1 Niagara Street Pumphouse & Storm Sewer System: Pre-Cleaning

As described in Section 3.3, fourteen (14) surface water samples were collected during the

Remedial Investigation of the 31 Tonawanda Street Off-Site Area at the approximate locations shown on Figures 3-5 and 3-6. Thirteen (13) of these samples were associated with the Niagara Street pumphouse (catch basins [drop inlets], manholes, the pumphouse sump and the Scajaquada Creek Slip; Figure 3-5), while the remaining sample was collected from an 8-inch pipe that discharges into Scajaquada Creek at the 31 Tonawanda Street property (Figure 3-6). One (1) sample collected from the Scajaquada Creek Slip was analyzed for TCL volatile organic compounds via USEPA method 8260C, TCL semi-volatile organic compounds via USEPA method 8270D, and TCL PCBs via USEPA method 8082A, while the sample from the 8-inch pipe was only analyzed for TCL volatile organic compounds via USEPA method 8260C. The remaining surface water samples were analyzed for TCL volatile organic compounds via USEPA method 8260D, TCL semi-volatile organic compounds via USEPA method 8270E, and 1,4-dioxane via USEPA method 8270E. Two of the samples were also analyzed for TCL PCBs via USEPA method 8082A, TAL metals via USEPA method 6010D and 6020B, and mercury via USEPA method 7470A. The analytical results for these samples are summarized in Table 6-14, while information concerning sample collection and analysis is given in Table 3-2. The lab reports for these samples are included in Appendix F.

The results of the organic analyses revealed that both volatile and semi-volatile organic compounds were detected in the surface water samples collected during the Remedial Investigation of the 31 Tonawanda Street Off-Site Area (Table 6-14). Nineteen (19) volatile organic compounds were detected in these samples with petroleum and chlorinated VOCs being detected most frequently (Table 6-14). Petroleum VOCs detected included 1,2,4-trimethylbenzene (2 samples), 1,3,5-trimethylbenzene (2 samples), benzene (9 samples), ethylbenzene (4 samples), isopropylbenzene (3 samples), toluene (4 samples) and xylenes (4 samples). Chlorinated VOCs detected included 1,1,1-trichloroethane (9 samples), 1,1-dichloroethane (10 samples), 1,1-dichloroethene (7 samples), cis-1,2-dichloroethene (12 samples), chloroethane (5 samples), trans-1,2-dichloroethene (5 samples), trichloroethene (5 samples), and vinyl chloride (10 samples). Methyl ethyl ketone (2-butanone) was detected in 3 samples, while styrene was detected in 2 (Table 6-14). No volatile organic compounds were detected in the sample collected from the 8-inch pipe at the 31 Tonawanda Street property (Table 6-14).

Petroleum VOCs that exceeded NYSDEC surface water standards or guidance values included 1,2,4-trimethylbenzene (2 samples), 1,3,5-trimethylbenzene (2 samples), benzene (7 samples), ethylbenzene (4 samples), toluene (4 samples) and xylenes (4 samples). Chlorinated VOCs that exceeded NYSDEC surface water standards or guidance values included 1,1,1-trichloroethane (9 samples), 1,1-dichloroethane (10 samples), 1,1-dichloroethene (5 samples), cis-1,2-dichloroethene (9 samples), chloroethane (5 samples), trichloroethene (1 sample) and vinyl chloride (9 samples). In addition, concentrations of methyl ethyl ketone in 3 samples exceeded the NYSDEC surface water guidance value for this contaminant (Table 6-14).

Twenty (20) semi-volatile organic compounds were detected in the surface water samples with ten (10) of these constituents being polycyclic aromatic hydrocarbons. Of the PAH compounds, benzo(a)anthracene (2 samples), benzo(a)pyrene (1 sample), benzo(b)fluoranthene (1 sample), and chrysene (1 sample) were detected at concentrations that exceeded the NYSDEC surface water standards or guidance values (Table 6-14). Phenol also exceeded the NYSDEC surface water standards or guidance values in five (5) samples (Table 6-14). No other surface water exceedances for semi-volatile organic compounds were documented (Table 6-14).

The surface water samples collected during the Remedial Investigation of the 31 Tonawanda Street Off-Site Area were not analyzed for pesticides, while only two (2) samples were analyzed for PCBs (Table 6-14). PCBs were not detected in either sample.

Only two (2) surface water samples collected during the Remedial Investigation of the 31 Tonawanda Street Off-Site Area were analyzed for metals (Table 6-14). Twenty-two (22) metals were detected in these samples with ten (10) of these metals being EPA priority pollutant metals (Table 6-14). No priority pollutant metal exceeded the NYSDEC surface standards or guidance values (Table 6-14). Other metals that exceeded the NYSDEC surface water standards or guidance values included aluminum (2 samples) and iron (2 samples).

Twelve of the surface water samples associated with the Niagara Street pumphouse were analyzed for 1,4-dioxane (Table 6-14). 1,4-dioxane was detected in nine (9) of these samples with all concentrations exceeding the NYSDEC surface water guidance value for this contaminant (Table 6-14).

6.7.2 Scajaquada Creek, Scajaquada Creek Slip & Black Rock Canal

As described in Sections 3.3 and 4.1, six (6) surface water samples were collected on August 29, 2022 at the approximate locations shown on Figure 3-11. These samples were collected from the main channel of Scajaquada Creek, the Scajaquada Creek Slip and the Black Rock Canal, and analyzed for TCL volatile organic compounds via USEPA method 8260D, TCL semi-volatile organic compounds via USEPA method 8270E, TCL pesticides via USEPA method 8081B, TCL herbicides via USEPA method 8151A, TCL PCBs via USEPA method 8082A, TAL metals via USEPA method 6010D, mercury via USEPA method 7470A, and 1,4-dioxane via USEPA method 8270E. The analytical results for these samples are summarized in Table 6-14D, which is new to the Remedial Investigation Report for the 31 Tonawanda Street Off-Site Area. Information concerning sample collection and analysis is given in Table 3-2, while the lab reports are included in Appendix K.

The results of the organic analyses revealed the limited presence of volatile and semi-volatile organic compounds in the surface water samples collected from Scajaquada Creek, the Scajaquada Creek Slip and the Black Rock Canal (Table 6-14D). Only three (3) volatile organic compounds, however, were detected in these samples including 1,1-dichloroethane (1 sample), cis-1,2-dichloroethene (3 samples including a surface water sample collected in January 2020), and acetone (1 sample). None of the concentrations detected exceeded NYSDEC surface water standards or guidance values (Table 6-14D).

Semi-volatile organic compounds were not detected in any of the surface water samples collected in August 2022 (Table 14D). Pyrene (1 sample) was the only semi-volatile organic compound detected in the surface water samples collected in January 2020 (Table 6-14D). The concentration, however, did not exceed NYSDEC surface water standards or guidance values (Table 6-14D).

Pesticides, herbicides, and PCBs were not detected in any of the surface water samples collected in August 2022 (Table 6-14D). PCBs were not detected in the surface water sample collected in January 2020 (Table 6-14D).

Twelve (12) metals were detected in the surface water samples collected in August 2022 with three (3) of these metals being EPA priority pollutant metals (Table 6-14D). The only priority pollutant metal that exceeded the NYSDEC surface water standards or guidance values was antimony in 4 samples (Table 6-14D). There were no other metal concentrations that exceeded the NYSDEC surface water standards or guidance values (Table 6-14D).

1,4-dioxane was detected in only one (1) of the surface water samples collected in August 2022 at a concentration that did not exceed the NYSDEC surface water guidance value for this contaminant (Table 6-14D).

6.7.3 Niagara Street Pumphouse & Storm Sewer System: Post Cleaning

During the Fall of 2022, the manholes associated with the Niagara Street pumphouse sewer system were cleaned and grouted to seal the bottoms. Sediment in the pumphouse sump was also removed during this work and the sump was subsequently pressure washed. On December 7, 2022 NYSDEC personnel collected three (3) surface water samples from structures associated with the Niagara Street pumphouse and associated sewer system to evaluate the impact that cleaning/sealing of the pumphouse sump and manholes had on surface water contamination. The locations of these structures are shown on Figure 3-5.

These surface water samples were submitted to Pace Analytical Laboratory in East Longmeadow, Massachusetts for chemical analysis of TCL volatile organic compounds via USEPA method 8260D, TCL semi-volatile organic compounds via USEPA method 8270E, and 1,4-dioxane via USEPA method 8270E. The analytical results for these samples are summarized in Tables 6-14B and 6-14C, which have been revised to incorporate these samples. Information concerning sample collection and analysis is given in Table 3-2, while the lab reports are included in Appendix K.

The results of the organic analyses revealed that both volatile and semi-volatile organic compounds were detected in the surface water samples collected in December 2022 (Tables 6-14B and 6-14C). Fifteen (15) volatile organic compounds were detected in these samples with petroleum and chlorinated VOCs being detected most frequently (Tables 6-14B and 6-14C). Petroleum VOCs detected included benzene (2 samples), ethylbenzene (2 samples), isopropylbenzene (2 samples), toluene (2 samples) and xylenes (2 samples). Chlorinated VOCs detected included 1,1,1-trichloroethane (3 samples), 1,1-dichloroethane (3 samples), 1,1-dichloroethene (2 samples), cis-1,2-dichloroethene (3 samples), chloroethane (2 samples), trichloroethene (3 samples), and vinyl chloride (3 samples). In addition, acetone and chloroform were detected in all three (3) samples, while methyl ethyl ketone (2-butanone) was detected in two (2) (Tables 6-14B and 6-14C).

Petroleum VOCs that exceeded NYSDEC surface water standards or guidance values included benzene (2 samples), ethylbenzene (2 samples), toluene (2 samples) and xylenes (2 samples). Chlorinated VOCs that exceeded NYSDEC surface water standards or guidance values included 1,1-dichloroethane (2 samples), 1,1-dichloroethene (2 samples), cis-1,2-dichloroethene (2 samples), chloroethane (2 samples), trichloroethene (3 samples), and vinyl chloride (3 samples). Concentrations of acetone, chloroform, and methyl ethyl ketone did not exceed NYSDEC surface water standards or guidance values (Tables 6-14B and 6-14C).

Only four (4) semi-volatile organic compounds were detected in the surface water samples collected in December 2022 (Tables 6-14B and 6-14C) including benzo(a)anthracene (1 sample), fluoranthene (1 sample), phenol (2 samples), and pyrene (1 sample). Only the concentration of benzo(a)anthracene (1 sample) exceeded the NYSDEC surface water standards or guidance values (Tables 6-14B and 6-14C).

The surface water samples collected in December 2022 were not analyzed for pesticides, PCBs, or metals (Tables 6-14B and 6-14C).

All three (3) surface water samples collected in December 2022 were analyzed for 1,4-dioxane (Tables 6-14B and 6-14C). 1,4-dioxane was detected in all three (3) samples at concentrations that exceeded the NYSDEC surface water guidance value for this contaminant (Tables 6-14B and 6-14C).

6.8 Soil Vapor & Indoor Air

Eleven (11) sub-slab soil vapor and nine (9) indoor air samples were collected from beneath and within the building at 1675 Niagara Street during the Remedial Investigation of the 31 Tonawanda Street Off-Site Area and analyzed for volatile organic compounds via USEPA method TO-15. The analytical results for these samples are summarized in Table 6-15, while information concerning sample collection and analysis is given in Table 3-2. The lab reports for these samples are included in Appendix F.

Table 6-15 reveals that chlorinated VOCs were detected in the sub-slab soil vapor samples collected from beneath the building. Chlorinated VOCs detected included 1,1,1-trichloroethane (10 samples), carbon tetrachloride (4 samples), 1,1-dichloroethene (6 samples), cis-1,2-dichloroethene (1 sample), tetrachloroethene (3 samples), and trichloroethene (7 samples).

Table 6-15 also reveals that chlorinated VOCs were detected in the indoor air samples collected within the building. Chlorinated VOCs detected included 1,1,1-trichloroethane (9 samples), carbon tetrachloride (3 samples), 1,1-dichloroethene (3 samples), tetrachloroethene (3 samples), and trichloroethene (4 samples).

Based upon the results described above in comparison to the NYSDOH soil vapor/indoor air matrices (Table 6-15), two (2) sub-slab depressurization systems were installed within the building at 1675 Niagara Street between February 28 and March 3, 2022.

7.0 NATURE AND EXTENT OF CONTAMINATION

The findings of the Remedial Investigation completed at the 31 Tonawanda Street Off-Site Area were discussed in Section 6.0. In this section, those findings are evaluated in more detail to assess the nature and extent of contamination associated with the site.

While the Remedial Investigation of the 31 Tonawanda Street Off-Site Area was ongoing, GEI Consulting Engineers and Scientists (GEI) completed a Site Characterization of the Former Buffalo Gas Light/Iroquois Gas Corporation Site (hereinafter called the Buffalo Gas Light Site) that is located across the Scajaquada Creek Slip from the 1660 Niagara Street BCP Site. As part of this investigation, nine (9) shallow sediment samples (0.0'-0.5' depth) and nine (9) deep sediment samples (0.0'-12.0' depth) were collected from Scajaquada Creek and the slip. The results from these samples were not tabulated for this report, nor were they discussed in Section 6.0. For Section 7.0, however, select results have been tabulated and are discussed. All data tables from the Site Characterization Report (GEI, October 2022) are provided in Appendix I.

7.1 Non-Aqueous Phase Liquid (NAPL)

In January 2019, dense non-aqueous phase liquid (DNAPL) was discovered in monitoring well MW-7 at the 1660 Niagara Street BCP Site by a NYSDEC staff member. This was a totally unexpected finding, as the presence of NAPL wasn't mentioned in the draft BCP Remedial Investigation Report. This NAPL had a distinct coal tar odor. Coal tar is a byproduct of coking operations but also from manufactured gas plants that were common before the use of natural gas. Common contaminants in coal tar include benzene, ethylbenzene, toluene, xylenes (BTEX), and polycyclic aromatic hydrocarbons (PAHs). BTEX was detected at high concentrations in groundwater from this well and it was suspected that the NAPL was the source of this contamination.

During the NYSDEC Remedial Investigation of the 31 Tonawanda Street Off-Site Area, NAPL was encountered in soil boring SB-100 that was completed along the bike path north of West Avenue, and in three (3) soil borings completed at the 1660 Niagara Street BCP Site. NAPL was also encountered during the GEI investigation of the Buffalo Gas Light Site and in one (1) well they installed east of the Niagara Street pumphouse.

In the Study Area there are two potential sources of coal tar: (1) the Iroquois Gas/Westwood Pharmaceuticals Site (Site No. 915141A); and (2) the Buffalo Gas Light Site (Site No. 915351). The

Westwood Site was the location of a manufactured gas plant that operated from approximately 1897 through 1955. Iroquois Gas (now National Fuel Gas) owned and operated the plant from 1925 through 1955 and continued to store gas on site until 1972. Three (3) large aboveground storage tanks (gasometers) were historically located on the site. Iroquois Gas removed and/or demolished some of the on-site structures in 1968, and buried waste materials such as heavy tars, sludges, coal, coke, and demolition debris. In 1972, Westwood Pharmaceuticals (now the Bristol-Myers Squibb Company, Inc.) purchased the property and demolished the remaining on-site structures.

The Buffalo Gas Light Site historically contained a large gasometer that was apparently removed when the River Section of the New York State Thruway was constructed. The tank appears on 1900, 1916 and 1950 Sanborn maps, and a 1927 aerial photo. A 1959 aerial photo shows that the gasometer is gone, and that construction of the New York State Thruway is underway.

Early manufactured gas plants typically stored their gas in expandable tanks called gasholders, or gasometers. These tanks typically consisted of a large-diameter circular pit dug into the ground, in which a steel tank was constructed. The top was movable and could rise and fall according to how much gas was stored. The bottom of the pit was kept full of water to provide a seal and keep the gas from escaping. In some cases, the tank was built in multiple telescoping sections to provide more gas storage space.

Freshly manufactured gas was piped into the gasometer while still hot and was allowed to cool in the holder. Any coal tar that condensed as the gas cooled would settle to the bottom of the holder and accumulate there. Slow leakage of tar through cracks and joints in the holder foundation was extremely common. NYSDEC has found evidence of tar leakage from these "pit" gas holders at virtually every MGP site investigated (NYSDEC Website, accessed April 29, 2020).

When gas plants were closed and demolished, it was common practice to leave accumulated tar in the gas holder foundations and fill them with demolition debris from the plant buildings. This is how many holder foundations are found today: circular foundations, often 10-20 feet deep, lined with bricks or concrete, and full of tar-soaked demolition debris such as bricks and timbers. The soil surrounding the holder foundations is often found to be heavily contaminated with tar.

The NYSDEC Remedial Investigation of the 31 Tonawanda Street Off-Site Area, combined with the Site Investigation of the Buffalo Gas Light Site by GEI, suggests that coal tar from Westwood has migrated to Scajaquada Creek, and being slightly denser than water, migrated downward until encountering the underlying low permeability glaciolacustrine deposit. The coal tar, over time, has migrated along the top of the confining layer, following the course of Scajaquada Creek until it reached the 1660 Niagara Street BCP Site.

7.2 Contaminants of Concern

During a 2018 Remedial Investigation completed at the 31 Tonawanda Street BCP Site, significant concentrations of chlorinated VOCs were detected in subsurface soil and groundwater in the southeast portion of the 31 Tonawanda Street property, and in sub-slab soil vapor and indoor air throughout the on-site building. The NYSDEC determined that the site represented a significant threat to public health and the environment. In January 2020, the NYSDEC began a Remedial Investigation of the Off-Site Area to determine if these contaminants have migrated off-site.

The primary contaminants of concern (COCs) for the 31 Tonawanda Street BCP Site and Off-Site Area are those compounds detected at concentrations that exceeded their respective comparison criteria. For subsurface soil, these criteria are the NYSDEC Part 375 soil cleanup objectives. For groundwater and surface water, these criteria are the NYSDEC TOGS 1.1.1 water quality standards and guidance values. For sediment, these criteria are the NYSDEC sediment guidance values. For soil vapor and indoor air, these criteria are the NYSDOH soil vapor/indoor air matrices.

The principal COCs for subsurface soil, groundwater, surface water, soil vapor, and indoor air are chlorinated VOCs. The primary chlorinated VOCs in these media are 1,1,1-trichloroethane, cis-1,2-dichloroethene, tetrachloroethene, trichloroethene, and vinyl chloride. The principal COCs for sediment from Scajaquada Creek and the slip are petroleum VOCs, polycyclic aromatic hydrocarbons (PAHs), polychlorinated biphenyls (PCBs), and EPA priority pollutant metals. The primary petroleum VOCs in sediment are benzene, ethylbenzene, toluene, and xylenes.

In addition to the chlorinated VOCs, petroleum VOCs, semi-volatile organic compounds (specifically PAHs), and EPA priority pollutant metals were also detected in subsurface soil at concentrations that exceeded the NYSDEC Part 375 soil cleanup objectives. Petroleum VOCs and PAHs were also detected in groundwater and surface water at concentrations that exceeded the NYSDEC water quality standards and guidance values. These compounds are secondary contaminants of concern for these environmental media.

Regarding the primary chlorinated VOCs, a summary of the results for 1,1,1-trichloroethane, by site and environmental media, is given in Table 7-1. This table includes the number of samples analyzed per media, the number of detections, the number of exceedances, and concentrations. Table 7-2 provides a similar summary for trichloroethene, while Table 7-3 provides a similar summary for tetrachloroethene. Summary tables for 1,2-dichloroethene and vinyl chloride were not completed for this investigation.

7.3 Chlorinated Volatile Organic Compounds

Three (3) subsurface soil samples were collected from the bike path borings during the Remedial Investigation of the 31 Tonawanda Street Off-Site Area, while six (6) subsurface soil samples were collected from the 1660 & 1675 Niagara Street borings. Chlorinated VOCs were detected in the samples collected from 1660 & 1675 Niagara Street, but not in the samples collected from the bike path. It is interesting to note, however, that trichloroethene was detected in 17 of 24 subsurface soil samples collected from the adjacent 57-71 Tonawanda Street BCP Site (Table 7-2).

Chlorinated VOCs detected in the subsurface soil samples from 1660 & 1675 Niagara Street included 1,1,1-trichloroethane (1 sample), cis-1,2-dichloroethene (6 samples), trans-1,2-dichloroethene (1 sample), trichloroethene (4 samples) and vinyl chloride (2 samples). None of the concentrations exceeded the NYSDEC Part 375 restricted residential soil cleanup objectives (Table 6-2). Concentrations of 1,1,1-trichloroethane (1 sample), cis-1,2-dichloroethene (5 samples), trichloroethene (2 samples), and vinyl chloride (2 samples), however, exceeded the groundwater protection soil cleanup objectives (Table 6-2).

In addition to 1660 & 1675 Niagara Street, Table 7-1 shows that 1,1,1-trichloroethane was also detected in eleven (11) soil samples collected from the 31 Tonawanda Street BCP Site. Concentrations in two (2) samples exceeded the NYSDEC Part 375 restricted residential soil cleanup objective, while concentrations in six (6) samples exceeded the groundwater protection soil cleanup objective. 1,1,1-trichloroethane was not detected in soil samples collected from the other sites within the Study Area (Table 7-1).

In addition to 1660 & 1675 Niagara Street, Table 7-2 shows that trichloroethene was also detected in seventeen (17) soil samples collected from the 57-71 Tonawanda Street BCP Site and eighteen (18) soil samples collected from the 31 Tonawanda Street BCP Site. Concentrations in three (3) samples from the 57-71 Tonawanda Street BCP Site and six (6) samples from the 31 Tonawanda

Street BCP Site exceeded the NYSDEC Part 375 restricted residential soil cleanup objective. At the 57-71 Tonawanda Street BCP Site, concentrations in ten (10) samples exceeded the groundwater protection soil cleanup objective, while thirteen (13) samples from the 31 Tonawanda Street BCP Site did so. Trichloroethene was not detected in soil samples collected from the other sites within the Study Area (Table 7-2).

Table 7-3 shows that tetrachloroethene was detected in two (2) soil samples collected from the 31 Tonawanda Street BCP Site, one (1) soil sample collected during the Buffalo Gas Light Site investigation, and nine (9) soil samples collected from the 1660 Niagara Street BCP Site. Concentrations in two (2) samples from the 1660 Niagara Street BCP Site exceeded both the NYSDEC Part 375 restricted residential and groundwater protection soil cleanup objectives. Tetrachloroethene was not detected in soil samples collected from the other sites within the Study Area (Table 7-3).

Three (3) groundwater samples were collected from the bike path wells during the Remedial Investigation of the 31 Tonawanda Street Off-Site Area, while five (5) groundwater samples were collected from wells installed at 1660 & 1675 Niagara Street. Five (5) groundwater samples from wells at the 57-71 Tonawanda Street BCP Site were collected by BE3 during the BCP Remedial Investigation. In addition, thirteen (13) groundwater samples from wells at the 1660 Niagara Street BCP Site were collected by LaBella during the BCP Remedial Investigation.

Chlorinated VOCs were detected in groundwater samples collected from wells at the 57-71 Tonawanda Street BCP Site (Table 6-4), the 1660 Niagara Street BCP Site (Tables 6-5 and 6-6), and 1675 Niagara Street (Table 6-6), but not in the wells installed along the bike path wells (Table 6-3). Chlorinated VOCs detected at the 57-71 Tonawanda Street BCP Site included 1,1,1-trichloroethane (2 samples), 1,1-dichloroethane (1 sample), cis-1,2-dichloroethene (2 samples), trichloroethene (5 samples) and vinyl chloride (1 sample), while chlorinated VOCs detected at 1660 & 1675 Niagara Street included 1,1,1-trichloroethane (8 samples), 1,1,2-trichloroethane (1 sample), 1,1-dichloroethane (12 samples), 1,1-dichloroethene (8 samples), chloroethane (3 samples), cis-1,2-dichloroethene (13 samples), trans-1,2-dichloroethene (1 sample), tetrachloroethene (1 sample), trichloroethene (5 samples) and vinyl chloride (13 samples).

At the 57-71 Tonawanda Street BCP Site, concentrations of chlorinated VOCs that exceeded NYSDEC groundwater standards or guidance values included 1,1,1-trichloroethane (1 sample), 1,1-dichloroethane (1 sample), cis-1,2-dichloroethene (1 sample), trichloroethene (3 samples) and vinyl chloride (1 sample). At 1660 & 1675 Niagara Street, concentrations of chlorinated VOCs that exceeded NYSDEC groundwater standards or guidance values included 1,1,1-trichloroethane (8 samples), 1,1,2-trichloroethane (1 sample), 1,1-dichloroethane (11 samples), 1,1-dichloroethene (6 samples), chloroethane (3 samples), cis-1,2-dichloroethene (11 samples), trans-1,2-dichloroethene (1 sample), trichloroethene (4 samples) and vinyl chloride (12 samples).

Table 7-1 shows that 1,1,1-trichloroethane was detected in three (3) groundwater samples collected from the 31 Tonawanda Street BCP Site. Concentrations in two (2) samples exceeded the NYSDEC groundwater standard.

Table 7-2 shows that trichloroethene was detected in three (3) groundwater samples collected from the 31 Tonawanda Street BCP Site. Only the concentration in one (1) sample exceeded the NYSDEC groundwater standard.

Table 7-3 shows that tetrachloroethene was only detected in one (1) groundwater sample collected from the Study Area at a concentration that did not exceed the NYSDEC groundwater standard.

During the NYSDEC Remedial Investigation of the 31 Tonawanda Street Off-Site Area, two (2) of the monitoring wells installed at the 1660 Niagara Street BCP Site replaced wells MW-3 and MW-5 that were destroyed during completion of the Soil Cover/Creek Bank Stabilization IRM in 2019. Because the soil borings completed for these wells were advanced to the underlying glaciolacustrine deposit, the bottom of the well screens are 8.5 and 9.0 feet deeper than the original BCP Remedial Investigation wells.

A comparison of the groundwater results for the BCP & NYSDEC wells is given in Table 7-4. This table shows that four (4) chlorinated VOCs were detected in the BCP RI samples including 1,1-dichloroethane (3 samples), 1,1-dichloroethene (1 sample), cis-1,2-dichloroethene (3 samples), and vinyl chloride (3 samples). Of these chlorinated VOCs, only the concentrations of 1,1-dichloroethane (2 samples), cis-1,2-dichloroethene (2 samples), and vinyl chloride (2 samples) exceeded NYSDEC groundwater standards or guidance values (Table 7-4).

Table 7-4 also shows that six (6) chlorinated VOCs were detected in the NYSDEC replacement wells, and that all concentrations exceeded NYSDEC groundwater standards or guidance values. The chlorinated VOCs detected in the NYSDEC wells included 1,1,1-trichloroethane (1 sample), 1,1-dichloroethane (1 sample), 1,1-dichloroethene (1 sample), cis-1,2-dichloroethene (2 samples), trichloroethene (1 sample) and vinyl chloride (2 samples). Concentrations of all chlorinated VOCs were significantly higher in the deeper NYSDEC wells, with 1,1,1-trichloroethane (1 sample) and trichloroethene (1 sample) now detected in well 1660-MW-5R (Table 7-4).

The results from three (3) groundwater samples collected from monitoring wells installed by GEI are summarized in Table 6-16 and were discussed in Section 6.3.4. The locations of these wells are shown on Figure 3-9. Chlorinated VOCs detected in these wells included 1,1-dichloroethane (1 sample), chloroethane (2 samples), and vinyl chloride (2 samples). All concentrations of chlorinated VOCs, except for vinyl chloride in well MW-LSC-5, exceeded NYSDEC groundwater standards or guidance values (Table 6-16).

Table 6-16 also shows that chlorinated VOCs, with the exception of vinyl chloride, were not detected in GEI well MW-LSC-5, which is located east of the railroads tracks near Niagara Street (Figure 3-9). This suggests that the source of chlorinated VOCs detected in NAPL and groundwater at the 1660 Niagara Street BCP Site is not located in this portion of the 31 Tonawanda Street Off-Site Area.

Table 7-5 compares the groundwater results from wells 1660-MW-7, MW-PS-1, and MW-PS-2. Monitoring well 1660-MW-7 is located in the northeast corner of the 1660 Niagara Street BCP Site, while monitoring wells MW-PS-1 and MW-PS-2 are located east of the pumphouse. This table shows that fewer chlorinated VOCs at lower concentrations were documented in GEI wells MW-PS-1 and MW-PS-2, again suggesting that the source of chlorinated VOCs is not east of the pumphouse. The presence of chlorinated VOCs in GEI wells MW-PS-1 and MW-PS-2 likely originates from the groundwater plume at the 1660 Niagara Street BCP Site that has extended to those wells by the operation of the pumphouse.

Three (3) NAPL samples were collected from bike path well MW-100 during the Remedial Investigation of the 31 Tonawanda Street Off-Site Area, while five (5) NAPL samples were collected from wells installed at the 1660 Niagara Street BCP Site. NAPL was also encountered during the GEI investigation of the Buffalo Gas Light Site and in one (1) well they installed east of the Niagara Street pumphouse. Unfortunately, GEI did not analyze these samples for TCL volatile organic compounds, so it is unknown if chlorinated VOCs are present in this NAPL.

Chlorinated VOCs were detected in the NAPL samples collected from the 1660 Niagara Street wells, but not in the samples collected from bike path well MW-100 (Table 6-8). Chlorinated VOCs detected included 1,1,1-trichloroethane (3 samples), 1,1-dichloroethane (3 samples), 1,1-dichloroethene (2 samples), cis-1,2-dichloroethene (3 samples), trichloroethene (2 samples) and vinyl chloride (2 samples). The NAPL results were not compared to any NYSDEC standards or guidance values.

Fourteen (14) surface water samples were collected during the Remedial Investigation of the 31 Tonawanda Street Off-Site Area. Thirteen (13) of these samples were associated with the Niagara Street pumphouse (catch basins [drop inlets], manholes, the pumphouse sump and the Scajaquada Creek Slip at the pumphouse outfall), while the remaining sample was collected from an 8-inch pipe that discharges into Scajaquada Creek at the 31 Tonawanda Street property.

Chlorinated VOCs were detected in surface water samples associated with the Niagara Street pumphouse (Table 6-14). Chlorinated VOCs detected included 1,1,1-trichloroethane (9 samples), 1,1-dichloroethane (10 samples), 1,1-dichloroethene (7 samples), cis-1,2-dichloroethene (12 samples), chloroethane (5 samples), trans-1,2-dichloroethene (5 samples), trichloroethene (5 samples), and vinyl chloride (10 samples). No volatile organic compounds were detected in the sample collected from the 8-inch pipe at the 31 Tonawanda Street property (Table 6-14).

Concentrations of chlorinated VOCs that exceeded NYSDEC surface water standards or guidance values included 1,1,1-trichloroethane (9 samples), 1,1-dichloroethane (10 samples), 1,1-dichloroethene (5 samples), cis-1,2-dichloroethene (9 samples), chloroethane (5 samples), trichloroethene (1 samples) and vinyl chloride (9 samples).

Table 6-14 shows that chlorinated VOCs were detected in 6 of 7 catch basins and manholes in Niagara Street, with the NYSDEC surface water standards or guidance values being exceeded in five (5). The locations of these catch basins and manholes are shown on Figure 3-5. Table 6-14 also shows that concentrations of chlorinated VOCs increase significantly in manhole 21 and remained elevated until the water was discharged from the pumphouse sump into the Scajaquada Creek Slip.

Table 7-5 compares the groundwater results from wells 1660-MW-7, MW-PS-1, and MW-PS-2 to the surface water results from manholes 21 & 23. It is important to note that manhole 21 is located 11.8 feet from monitoring well 1660-MW-7, while manhole 23 is located 33.6 feet from this well. The similarity of chlorinated VOCs detected in groundwater at the 1660 Niagara Street BCP Site and the manhole surface water samples, along with a significant increase in concentrations documented in these manholes compared to manholes in Niagara Street (compare Tables 6-14A and

6-14B), suggests that contaminated groundwater from 1660 Niagara Street is leaking into the Niagara Street pumphouse storm sewer system.

Only one (1) chlorinated VOC was detected in sediment samples collected from Scajaquada Creek or the slip (Tables 6-9 through 6-13). The concentration detected, however, did not exceed any NYSDEC sediment guidance values.

The results from three (3) surface water samples collected on December 7, 2022 from structures associated with the Niagara Street pumphouse and associated sewer system are summarized in Tables 6-14B and 6-14C and were discussed in Section 6.7.3. These samples were collected to evaluate the impact that cleaning/sealing of the pumphouse sump and manholes had on surface water contamination. The locations of these structures are shown on Figure 3-5.

Chlorinated VOCs detected in these samples included 1,1,1-trichloroethane (3 samples), 1,1-dichloroethane (3 samples), 1,1-dichloroethene (2 samples), cis-1,2-dichloroethene (3 samples), chloroethane (2 samples), trichloroethene (3 samples), and vinyl chloride (3 samples). Concentrations of chlorinated VOCs that exceeded NYSDEC surface water standards or guidance values included 1,1-dichloroethane (2 samples), 1,1-dichloroethene (2 samples), cis-1,2-dichloroethene (2 samples), chloroethane (2 samples), trichloroethene (3 samples), and vinyl chloride (3 samples).

Table 7-9 compares the surface water results from manhole 21, manhole 23, and the pumphouse sump before and after the cleaning/sealing of the pumphouse sump and manholes. While the December 2022 results still show the presence of chlorinated VOCs, concentrations are significantly lower, indicating that the remedial work on the pumphouse sump and manholes made a significant improvement in surface water quality with respect to chlorinated VOCs.

The results from six (6) surface water samples collected on August 29, 2022 from the main channel of Scajaquada Creek, the Scajaquada Creek Slip and the Black Rock Canal are summarized in Table 6-14D and were discussed in Section 6.7.2. The approximate locations of these samples are shown on Figure 3-11. Chlorinated VOCs detected in these samples included 1,1-dichloroethane (1 sample) and cis-1,2-dichloroethene (3 samples including a surface water sample collected in January 2020). None of the concentrations detected, however, exceeded NYSDEC surface water standards or guidance values (Table 6-14D).

It is important to note that chlorinated VOCs were only detected in the surface water samples collected from the Scajaquada Creek Slip (Table 6-14D). These chlorinated VOCs likely originate from the operation of the pumphouse as chlorinated VOCs are present in the surface water of the pumphouse sump (Tables 6-14C and 7-9).

Eleven (11) sub-slab soil vapor and nine (9) indoor air samples were collected from beneath and within the building at 1675 Niagara Street during the Remedial Investigation of the 31 Tonawanda Street Off-Site Area. The analytical results for these samples were evaluated against the NYSDOH soil vapor/indoor air matrices and are summarized in Table 6-15.

Table 6-15 shows that chlorinated VOCs were detected in the sub-slab soil vapor samples collected from beneath the building. Chlorinated VOCs detected included 1,1,1-trichloroethane (10 samples), carbon tetrachloride (4 samples), 1,1-dichloroethene (6 samples), cis-1,2-dichloroethene (1 sample), tetrachloroethene (3 samples), and trichloroethene (7 samples).

Table 6-15 also shows that chlorinated VOCs were detected in the indoor air samples collected from within the building. Chlorinated VOCs detected included 1,1,1-trichloroethane (9 samples), carbon tetrachloride (3 samples), 1,1-dichloroethene (3 samples), tetrachloroethene (3 samples), and trichloroethene (4 samples). Based upon these results, two (2) sub-slab depressurization systems were installed in this building.

7.3.1 Summary

Chlorinated VOCs in subsurface soil and groundwater were restricted to the former Fedders Manufacturing Company properties (31, 57 & 71 Tonawanda Street), the 1660 Niagara Street BCP Site, and 1675 Niagara Street, with chlorinated VOCs also detected in the water samples collected from the Niagara Street pumphouse and the associated storm sewer system. Chlorinated VOCs were also detected in groundwater samples collected from the two (2) GEI wells installed east of the pumphouse, but at lower concentrations than detected at the 1660 Niagara Street BCP Site. This suggests that the presence of chlorinated VOCs in GEI wells MW-PS-1 and MW-PS-2 likely originates from the groundwater plume at the 1660 Niagara Street BCP Site that has extended to those wells by the operation of the pumphouse.

The principal chlorinated VOC detected in subsurface soil, groundwater, surface water, sub-slab soil vapor, and indoor air is 1,1,1-trichloroethane. 1,1-dichloroethane, a breakdown product of 1,1,1-trichloroethane, was detected in numerous groundwater and surface water samples, indicating that 1,1,1-trichloroethane is naturally attenuating. This is further supported by the presence of chloroethane in groundwater and surface water, a breakdown product of 1,1-dichloroethane.

Trichloroethene was also detected in numerous groundwater and surface water samples collected from the Study Area. Cis-1,2-dichloroethene and vinyl chloride, breakdown products of trichloroethene, were also detected in numerous groundwater and surface water samples. Like 1,1,1-trichloroethane, this indicates that trichloroethene is naturally attenuating.

Tetrachloroethene was also detected but exceedances of any NYSDEC standards or guidance values were restricted to two (2) soil samples at the 1660 Niagara Street BCP Site and four (4) sub-slab soil vapor samples at the 31 Tonawanda Street BCP Site.

As stated in Section 2.3, the Fedders Manufacturing Company had a history of using various chemicals, oils, solvents, and other materials in their manufacturing processes. Plant processes included metal stamping, soldering, brazing, welding, painting, acid washing and degreasing. Industrial wastes were reported to include solder dross, degreasing still bottoms including trichloroethene (TCE) and tetrachloroethene (PCE), and petroleum-based lubricating fluids. The Fedders Manufacturing Company, therefore, is the likely source of the chlorinated VOCs detected at the two Fedders sites (the 31 Tonawanda Street BCP Site and the 57-71 Tonawanda Street BCP Site). Analytical results obtained or compiled for this investigation indicate that the chlorinated VOCs detected at the Fedders sites have not comingled with the NAPL found along Scajaquada Creek in NYSDEC well MW-100.

The property at 1660 Niagara Street appears to have been vacant from at least the late 1800s until at least 1916. By 1941 the property was identified as the Buffalo Marine Mart. The property was utilized for retail gasoline sales, boat sales, vehicle repair, and collision repair from that time until at least 2011. It is possible that chlorinated VOCs were used at the site for parts cleaning. It is interesting to note that although tetrachloroethene was detected in subsurface soil at the site, tetrachloroethene was not detected in groundwater or NAPL samples collected from the site (Table 7-3).

Table 6-8 shows that chlorinated VOCs were detected in the NAPL samples collected from the 1660 Niagara Street BCP Site, while the NAPL samples collected from the Westwood and bike path wells did not contain these contaminants. Since chlorinated VOCs are not constituents of coal tar from manufactured gas plants, the NAPL results indicate that there are chlorinated VOCs in the Study

Area that have comingled with the coal tar at the 1660 Niagara Street BCP Site. While the source of the chlorinated VOCs has not been identified, groundwater results suggest that it is not upgradient of the 1660 Niagara Street BCP Site (i.e., across Niagara Street), nor is it east of the pumphouse. Given the available data, the likely source of chlorinated VOCs is the 1660 Niagara Street BCP Site.

The chlorinated VOCs detected in groundwater at the 1660 Niagara Street BCP Site are similar to those detected in the NAPL samples collected from the site. A comparison of the NAPL and groundwater results indicates that concentrations of chlorinated VOCs in NAPL are much higher than those detected in groundwater (parts per million versus parts per billion). These facts suggest that chlorinated VOCs in the NAPL at 1660 Niagara Street is the source of the chlorinated VOCs in groundwater at the site.

A comparison of the groundwater results from well 1660-MW-7 with the surface water results from manholes 21 & 23 suggests that contaminated groundwater from 1660 Niagara Street is leaking into the Niagara Street pumphouse storm sewer system. This water is ultimately pumped into the Scajaquada Creek Slip, and is the likely source of chlorinated VOCs detected in the surface water samples collected from the slip in January 2020 and August 2022 (Table 6-14D).

The analytical results for the sediment samples collected from Scajaquada Creek and the slip (Tables 6-9 through 6-13) indicate that chlorinated VOCs detected at the former Fedders Manufacturing Company properties and the 1660 Niagara Street BCP Site have not impacted sediment in the creek and slip.

Chlorinated VOCs in sub-slab soil vapor and indoor air of the building at 1675 Niagara Street is likely caused by the volatilization of these contaminants in groundwater and NAPL at the 1660 Niagara Street BCP Site.

7.4 Petroleum Volatile Organic Compounds

Petroleum VOCs are primary contaminants of concern for sediment in Scajaquada Creek and the slip, and are secondary COCs for subsurface soil, groundwater, and surface water.

Three (3) subsurface soil samples were collected from the bike path borings during the Remedial Investigation of the 31 Tonawanda Street Off-Site Area, while six (6) subsurface soil samples were collected from the 1660 & 1675 Niagara Street borings. Petroleum VOCs detected in the bike path samples included benzene (2 samples), ethylbenzene (2 samples), isopropylbenzene (2 samples), toluene (2 samples), and xylenes (2 samples; Table 6-1), while petroleum VOCs detected in the 1660 & 1675 Niagara Street samples included benzene (5 samples), ethylbenzene (5 samples), naphthalene (4 samples), toluene (6 samples), 1,2,4-trimethylbenzene (5 samples), 1,3,5-trimethylbenzene (4 samples) and xylenes (5 samples; Table 6-2).

Concentrations of petroleum VOCs that exceeded the NYSDEC Part 375 restricted residential soil cleanup objectives included benzene (1 sample), ethylbenzene (1 sample), toluene (1 sample), and xylenes (1 sample) for the bike path samples (Table 6-1), and benzene (1 sample), ethylbenzene (2 samples), naphthalene (3 samples) and 1,2,4-trimethylbenzene (1 sample) for the 1660 & 1675 Niagara Street samples (Table 6-2). At the 31 Tonawanda Street BCP Site, petroleum VOCs were only detected in one (1) soil boring at concentrations that exceeded the NYSDEC Part 375 restricted residential soil cleanup objectives (Figure 2-3).

Concentrations of petroleum VOCs that exceeded the NYSDEC Part 375 groundwater protection soil cleanup objectives included benzene (2 samples), ethylbenzene (2 samples), toluene (1 sample), and xylenes (2 samples) for the bike path samples (Table 6-1), and benzene (4 samples), ethylbenzene (4 samples), naphthalene (4 samples), toluene (4 samples), 1,2,4-trimethylbenzene (3 samples), 1,3,5-trimethylbenzene (2 samples), and xylenes (3 samples) for the 1660 & 1675 Niagara Street samples (Table 6-2).

Petroleum VOCs were detected in subsurface soil at other sites within the Study Area but were not tabulated for this report. The data tables from individual reports, however, are provided in Appendix I.

Three (3) groundwater samples were collected from the bike path wells during the Remedial Investigation of the 31 Tonawanda Street Off-Site Area, while five (5) groundwater samples were collected from wells installed at 1660 & 1675 Niagara Street. Five (5) groundwater samples from wells at the 57-71 Tonawanda Street BCP Site were collected by BE3 during the BCP Remedial Investigation. In addition, thirteen (13) groundwater samples from wells at the 1660 Niagara Street BCP Site were collected by LaBella during the BCP Remedial Investigation.

Petroleum VOCs were detected in groundwater samples collected from the bike path wells (Table 6-3), the 1660 Niagara Street BCP Site wells (Tables 6-5 and 6-6), and the 1675 Niagara Street wells (Table 6-6), but not in the samples collected from wells at the 57-71 Tonawanda Street BCP Site

(Table 6-4). In addition, petroleum VOCs were not detected at the 31 Tonawanda Street property at concentrations that exceeded NYSDEC groundwater standards or guidance values (Figure 2-6).

Petroleum VOCs detected in the bike path wells included benzene (2 samples), ethylbenzene (3 samples), isopropylbenzene (1 sample), toluene (2 samples) and xylenes (3 samples; Table 6-3), while petroleum VOCs detected at 1660 & 1675 Niagara Street included benzene (14 samples), ethylbenzene (9 samples), isopropylbenzene (3 samples), p-isopropyltoluene (2 samples), n-propylbenzene (3 samples), toluene (9 samples) and xylenes (11 samples; Tables 6-5 and 6-6).

Concentrations of petroleum VOCs that exceeded NYSDEC groundwater standards or guidance values included benzene (2 samples), ethylbenzene (3 samples), isopropylbenzene (1 sample), toluene (2 samples) and xylenes (3 samples) in the bike path wells (Table 6-3), and benzene (14 samples), ethylbenzene (8 samples), isopropylbenzene (2 samples), n-propylbenzene (2 samples), toluene (7 samples) and xylenes (10 samples) at 1660 & 1675 Niagara Street (Tables 6-5 and 6-6).

The results from three (3) groundwater samples collected from monitoring wells installed by GEI are summarized in Table 6-16 and were discussed in Section 6.3.4. The locations of these wells are shown on Figure 3-9. Petroleum VOCs detected in these wells included benzene (3 samples), ethylbenzene (3 samples), isopropylbenzene (3 samples), toluene (3 samples) and xylenes (3 samples). All concentrations of petroleum VOCs exceeded NYSDEC groundwater standards or guidance values (Table 6-16).

Table 7-5 compares the groundwater results from wells 1660-MW-7, MW-PS-1, and MW-PS-2. Monitoring well 1660-MW-7 is located in the northeast corner of the 1660 Niagara Street BCP Site, while monitoring wells MW-PS-1 and MW-PS-2 are located east of the pumphouse. This table shows that the same petroleum VOCs, with the exception of isopropylbenzene, were detected in all three (3) wells, but at lower concentrations in GEI wells MW-PS-1 and MW-PS-2. This suggests that the source of petroleum VOCs is not east of the pumphouse. The presence of petroleum VOCs in GEI wells MW-PS-1 and MW-PS-2 likely originates from the groundwater plume at the 1660 Niagara Street BCP Site that has extended to those wells by the operation of the pumphouse.

Three (3) NAPL samples were collected from bike path well MW-100 during the Remedial Investigation of the 31 Tonawanda Street Off-Site Area, while five (5) NAPL samples were collected from wells installed at the 1660 Niagara Street BCP Site (Table 6-8). The results from two (2) NAPL samples collected from the Westwood Site were also tabulated (Table 6-8). NAPL was also encountered during the GEI investigation of the Buffalo Gas Light Site and in one (1) well they installed east of the Niagara Street pumphouse. Unfortunately, GEI did not analyze these samples for TCL volatile organic compounds, so the concentrations of petroleum VOCs in these samples is unknown.

Petroleum VOCs were detected in all NAPL samples collected or compiled during the Remedial Investigation of the 31 Tonawanda Street Off-Site Area (Table 6-8). Petroleum VOCs detected included benzene (7 samples), ethylbenzene (8 samples), isopropylbenzene (5 samples), toluene (8 samples) and xylenes (8 samples).

Fourteen (14) surface water samples were collected during the Remedial Investigation of the 31 Tonawanda Street Off-Site Area. Thirteen (13) of these samples were associated with the Niagara Street pumphouse (catch basins [drop inlets], manholes, the pumphouse sump and the Scajaquada Creek Slip at the pumphouse outfall), while the remaining sample was collected from an 8-inch pipe that discharges into Scajaquada Creek at the 31 Tonawanda Street property.

Petroleum VOCs were detected in the surface water samples associated with the Niagara Street pumphouse (Table 6-14). Petroleum VOCs detected included 1,2,4-trimethylbenzene (2 samples), 1,3,5-trimethylbenzene (2 samples), benzene (9 samples), ethylbenzene (4 samples), isopropylbenzene (3 samples), toluene (4 samples) and xylenes (4 samples). Petroleum VOCs that exceeded NYSDEC surface water standards or guidance values included 1,2,4-trimethylbenzene (2 samples), 1,3,5-trimethylbenzene (2 samples), benzene (7 samples), ethylbenzene (4 samples), toluene (4 samples) and xylenes (4 samples). No volatile organic compounds were detected in the sample collected from the 8-inch pipe at the 31 Tonawanda Street property (Table 6-14).

Table 7-5 compares the groundwater results from wells 1660-MW-7, MW-PS-1, and MW-PS-2 to the surface water results from manholes 21 & 23. The similarity of petroleum VOCs detected in groundwater at the 1660 Niagara Street BCP Site and the manhole surface water samples, along with a significant increase in concentrations documented in these manholes compared to manholes in Niagara Street (compare Tables 6-14A and 6-14B), suggests that contaminated groundwater from 1660 Niagara Street is leaking into the Niagara Street pumphouse storm sewer system.

The results from three (3) surface water samples collected on December 7, 2022 from structures associated with the Niagara Street pumphouse and associated sewer system are summarized in Tables 6-14B and 6-14C and were discussed in Section 6.7.3. These samples were collected to evaluate the impact that cleaning/sealing of the pumphouse sump and manholes had on surface water contamination. The locations of these structures are shown on Figure 3-5.

Petroleum VOCs detected in these samples included benzene (2 samples), ethylbenzene (2 samples), isopropylbenzene (2 samples), toluene (2 samples) and xylenes (2 samples). Concentrations of petroleum VOCs that exceeded NYSDEC surface water standards or guidance values included benzene (2 samples), ethylbenzene (2 samples), toluene (2 samples) and xylenes (2 samples).

Table 7-9 compares the surface water results from manhole 21, manhole 23, and the pumphouse sump before and after the cleaning/sealing of the pumphouse sump and manholes. While the December 2022 results still show the presence of petroleum VOCs, concentrations are substantially lower, indicating that the remedial work on the pumphouse sump and manholes made a significant improvement in surface water quality with respect to petroleum VOCs.

The results from six (6) surface water samples collected on August 29, 2022 from the main channel of Scajaquada Creek, the Scajaquada Creek Slip and the Black Rock Canal are summarized in Table 6-14D and were discussed in Section 6.7.2. The approximate locations of these samples are shown on Figure 3-11. Petroleum VOCs were not detected in these samples, indicating that the operation of the pumphouse is not adversely impacting surface water in the Scajaquada Creek Slip with respect to petroleum VOCs.

As described in Section 3.1, ten (10) sediment samples from the Scajaquada Creek Slip were collected by a NYSDEC Standby Spill Contractor in January 2015, with nine (9) additional sediment samples collected from the slip by a NYSDEC Standby Spill Contractor in March 2017. Three (3) additional sediment samples from the Scajaquada Creek Slip near the pumphouse outfall were collected during the Remedial Investigation of the 31 Tonawanda Street Off-Site Area. The analytical results for these samples are summarized in (Tables 6-9, 6-10, and 6-13). Six (6) sediment samples were also collected from the Scajaquada Creek Slip by GEI during their investigation of the Buffalo Gas Light Site. The results from these samples were not tabulated for this report and are not included in this discussion. The data tables from the Site Characterization Report (GEI, October 2022), however, are provided in Appendix I.

Petroleum VOCs detected in these samples included 1,2,4-trimethylbenzene (10 samples), 1,3,5-trimethylbenzene (8 samples), 4-isopropyltoluene (3 samples), benzene (10 samples), ethylbenzene (16 samples), isopropylbenzene (15 samples), n-butylbenzene (9 samples), n-propylbenzene (6 samples), sec-butylbenzene (2 samples), toluene (3 sample), and xylenes (17 samples; (Tables 6-9, 6-10, and 6-13). Of these VOCs, concentrations of 1,2,4-trimethylbenzene (1 sample), benzene (5 samples), ethylbenzene (6 samples), isopropylbenzene (4 samples), and xylenes (4 samples) exceeded the NYSDEC Class C sediment guidance values (Tables 6-9, 6-10, and 6-13).

As described in Section 3.1, five (5) sediment samples from Scajaquada Creek downstream of West Avenue were collected by a NYSDEC Standby Spill Contractor in March 2017. The analytical results for these samples are summarized in Table 6-11. Twelve (12) sediment samples were also collected from Scajaquada Creek by GEI during their investigation of the Buffalo Gas Light Site. The results from these samples were not tabulated for this report and are not included in this discussion. The data tables from the Site Characterization Report (GEI, October 2022), however, are provided in Appendix I.

Petroleum VOCs detected in these samples included benzene (1 sample), ethylbenzene (2 samples), isopropylbenzene (1 sample), and xylenes (1 sample). None of the concentrations exceeded the NYSDEC sediment guidance values (Table 6-11).

As described in Sections 3.4 and 4.10, one (1) sediment sample from the Niagara Street pumphouse sump was collected by a NYSDEC Standby Spill Contractor in November 2021. Petroleum VOCs detected in this sample included 1,2,4-trimethylbenzene, ethylbenzene, and xylenes (Table 6-13). The concentrations of all three contaminants exceeded the NYSDEC Class C sediment guidance values (Table 6-13).

7.4.1 Summary

Petroleum VOCs (primarily benzene, ethylbenzene, toluene, and xylenes) were detected in eight (8) of nine (9) subsurface soil samples collected during the Remedial Investigation of the 31 Tonawanda Street Off-Site Area (Tables 6-1 and 6-2), and in several samples collected from the 31 Tonawanda Street BCP Site, the 57-71 Tonawanda Street BCP Site, the 68 Tonawanda Street BCP Site, and the 1660 Niagara Street BCP Site (Appendix I). Petroleum VOCs exceeded the NYSDEC Part 375 restricted residential soil cleanup objectives in one (1) subsurface soil sample collected from the bike path, and in three (3) subsurface soil samples collected from the 1660 Niagara Street BCP Site.

Petroleum VOCs were also detected in groundwater samples collected from the bike path wells (Table 6-3), the 1660 Niagara Street BCP Site (Tables 6-5 and 6-6), the 1675 Niagara Street wells (Table 6-6), and the GEI wells (Table 6-16), but not in the groundwater samples collected from the 31 Tonawanda Street BCP Site (Figure 2-6; Appendix I), the 57-71 Tonawanda Street BCP Site (Table 6-4), the 68 Tonawanda Street BCP Site (Appendix I), or the 150 Tonawanda Street property (Appendix I).

Petroleum VOCs are common components of gasoline, fuel oil, hydraulic fluids, lubricants, and coal tar to name a few, and are common contaminants at brownfield sites. Historical records indicate that up to eight gasoline underground storage tanks (USTs) were present at the 1660 Niagara Street BCP Site. This is consistent with the use of the property for retail gasoline sales. Therefore, the presence of petroleum VOCs in subsurface soil and groundwater at the site is likely attributable to leaks and spills associated with these tanks.

In 2017, a Tank Removal Interim Remedial Measure (IRM) was completed at the 1660 Niagara Street BCP Site. This IRM included the removal of two (2) underground storage tanks (USTs), two (2) in-ground hydraulic lifts, and one (1) vertical grease cylinder from the west-central portion of the site. Petroleum impacted soil in the vicinity of these structures was also removed during this IRM. During the advancement of a test pit to facilitate the collection of a waste characterization sample, a third UST was uncovered at a depth of approximately 10 ft bgs. This tank was an older generation UST that had been previously closed in-place with concrete. This tank was also removed during the IRM. As a result, the USTs and associated contaminated soils are no longer a source of petroleum VOC contamination at the site.

Three (3) NAPL samples were collected from bike path well MW-100 during the Remedial Investigation of the 31 Tonawanda Street Off-Site Area, while five (5) NAPL samples were collected from wells installed at the 1660 Niagara Street BCP Site. Petroleum VOCs were detected in all NAPL samples collected or compiled during the investigation and is consistent with this material being a coal tar.

A comparison of the groundwater results from well 1660-MW-7 with the surface water results from manholes 21 & 23 suggests that contaminated groundwater from 1660 Niagara Street is leaking into the Niagara Street pumphouse storm sewer system. This water is ultimately pumped into the Scajaquada Creek Slip, but does not appear to be adversely impacting surface water in the

Scajaquada Creek Slip with respect to petroleum VOCs (Table 6-14D).

Petroleum VOCs were detected in sediment samples collected from the Scajaquada Creek Slip, and to a much lesser degree, in sediment samples from Scajaquada Creek downstream of West Avenue (Tables 6-9, 6-10, 6-11, and 6-13). Petroleum VOCs were also detected in the sediment sample collected from the Niagara Street pumphouse sump (Table 6-13). During cleaning of the storm sewer associated with the pumphouse in August 2022, NAPL was observed in the bottom of two (2) manholes. NAPL was also observed in the pumphouse sump. It is likely, therefore, that most of the petroleum VOCs detected in sediment samples collected from the Scajaquada Creek Slip is related to this NAPL being pumped into the slip from the pumphouse. The oily residue that coats the rocks at the pumphouse discharge area (Figure 4-9) and the oil-soaked booms (Figure 4-10) support this idea.

7.5 Polycyclic Aromatic Hydrocarbons (PAHs)

Polycyclic aromatic hydrocarbons (PAHs) are primary contaminants of concern for sediment in Scajaquada Creek and the slip, and are secondary COCs for subsurface soil and groundwater.

Three (3) subsurface soil samples were collected from the bike path borings during the Remedial Investigation of the 31 Tonawanda Street Off-Site Area, while six (6) subsurface soil samples were collected from the 1660 & 1675 Niagara Street borings. Seventeen (17) polycyclic aromatic hydrocarbons were detected in the subsurface soil samples collected from the bike path borings. Of these compounds, concentrations of benzo(a)anthracene (3 samples), benzo(a)pyrene (3 samples), benzo(b)fluoranthene (3 samples), chrysene (1 sample), dibenzo(a,h)anthracene (3 samples), indeno(1,2,3-cd)pyrene (2 samples), naphthalene (1 sample), and phenanthrene (1 sample) exceeded the NYSDEC Part 375 commercial soil cleanup objectives (Table 6-1).

Seventeen (17) polycyclic aromatic hydrocarbons were detected in the subsurface soil samples collected from the 1660 & 1675 Niagara Street borings. Of these compounds, concentrations of benzo(a)anthracene (3 samples), benzo(a)pyrene (4 samples), benzo(b)fluoranthene (3 samples), chrysene (1 sample), dibenzo(a,h)anthracene (3 samples), indeno(1,2,3-cd)pyrene (3 samples), naphthalene (2 samples), and phenanthrene (1 sample) exceeded the NYSDEC Part 375 commercial soil cleanup objectives (Table 6-2). At the 31 Tonawanda Street BCP Site, PAHs were detected in six (6) soil borings at concentrations that exceeded the NYSDEC Part 375 restricted residential soil cleanup objectives (Figure 2-3).

Polycyclic aromatic hydrocarbons were detected in subsurface soil at other sites within the Study Area but were not tabulated for this report`. The data tables from individual reports, however, are provided in Appendix I.

Three (3) groundwater samples were collected from the bike path wells during the Remedial Investigation of the 31 Tonawanda Street Off-Site Area, while five (5) groundwater samples were collected from wells installed at 1660 & 1675 Niagara Street. Five (5) groundwater samples from wells at the 57-71 Tonawanda Street BCP Site were collected by BE3 during the BCP Remedial Investigation. In addition, thirteen (13) groundwater samples from wells at the 1660 Niagara Street BCP Site were collected by LaBella during the BCP Remedial Investigation.

Seventeen (17) polycyclic aromatic hydrocarbons were detected in the groundwater samples collected from the bike path wells. Of these compounds, concentrations of acenaphthene (3 samples), anthracene (1 sample), benzo(a)anthracene (3 samples), benzo(a)pyrene (2 samples), benzo(b)fluoranthene (2 samples), benzo(k)fluoranthene (1 sample), chrysene (3 samples), fluoranthene (1 sample), fluorene (1 sample), indeno(1,2,3-cd)pyrene (1 sample), naphthalene (2 samples), phenanthrene (3 samples) and pyrene (1 sample) exceeded the NYSDEC groundwater standards or guidance values (Table 6-3). It is important to note that the groundwater samples collected from the 57-71 Tonawanda Street BCP Site did not contain any semi-volatile organic compounds (Table 6-4).

Fourteen (14) polycyclic aromatic hydrocarbons were detected in the groundwater samples collected from the 1660 & 1675 Niagara Street wells. Of these compounds, concentrations of acenaphthene (1 sample), benzo(a)anthracene (1 sample), benzo(b)fluoranthene (1 sample), chrysene (1 sample), fluorene (2 samples), naphthalene (2 samples), phenanthrene (2 samples) and pyrene (1 sample) exceeded the NYSDEC groundwater standards or guidance values (Table 6-6).

The results from three (3) groundwater samples collected from monitoring wells installed by GEI are summarized in Table 6-16 and were discussed in Section 6.3.4. The locations of these wells are shown on Figure 3-9. Eleven (11) polycyclic aromatic hydrocarbons were detected in the groundwater samples collected from these wells. Of these compounds, concentrations of acenaphthene (3 samples), benzo(a)anthracene (2 samples), chrysene (2 samples), naphthalene (3 samples), and phenanthrene (1 sample) were detected at concentrations that exceeded the NYSDEC groundwater standards or guidance values (Table 6-16).

Three (3) NAPL samples were collected from bike path well MW-100 during the Remedial Investigation of the 31 Tonawanda Street Off-Site Area, while five (5) NAPL samples were collected from wells installed at the 1660 Niagara Street BCP Site. Table 6-8 shows that seventeen (17) polycyclic aromatic hydrocarbons were detected in these samples.

NAPL was also encountered during the GEI investigation of the Buffalo Gas Light Site and in one (1) well they installed east of the Niagara Street pumphouse. NAPL samples collected by GEI were only sent for forensics analyses and so were not tabulated for this report.

The thirteen (13) surface water samples collected from the Niagara Street pumphouse and associated sewer system during the Remedial Investigation of the 31 Tonawanda Street Off-Site Area were analyzed for semi-volatile organic compounds. Ten (10) polycyclic aromatic hydrocarbons were detected in these samples. Of these compounds, concentrations of benzo(a)anthracene (2 samples), benzo(a)pyrene (1 sample), benzo(b)fluoranthene (1 sample), and chrysene (1 sample) exceeded the NYSDEC surface water standards or guidance values (Table 6-14).

The results from three (3) surface water samples collected on December 7, 2022 from structures associated with the Niagara Street pumphouse and associated sewer system are summarized in Tables 6-14B and 6-14C and were discussed in Section 6.7.3. These samples were collected to evaluate the impact that cleaning/sealing of the pumphouse sump and manholes had on surface water contamination. The locations of these structures are shown on Figure 3-5.

Only three (3) polycyclic aromatic hydrocarbons were detected in the surface water samples collected in December 2022 (Tables 6-14B and 6-14C) including benzo(a)anthracene (1 sample), fluoranthene (1 sample), and pyrene (1 sample). Only the concentration of benzo(a)anthracene (1 sample) exceeded the NYSDEC surface water standards or guidance values (Tables 6-14B and 6-14C).

Table 7-9 compares the surface water results from manhole 21, manhole 23, and the pumphouse sump before and after the cleaning/sealing of the pumphouse sump and manholes. This table shows that no polycyclic aromatic hydrocarbons were detected in manholes 21 and 23 in December 2022, while only three (3) were detected in the pumphouse sump. These results indicate that the remedial work on the pumphouse sump and manholes made a significant improvement in surface water quality with respect to polycyclic aromatic hydrocarbons.

The results from six (6) surface water samples collected on August 29, 2022 from the main channel of Scajaquada Creek, the Scajaquada Creek Slip and the Black Rock Canal are summarized in

Table 6-14D and were discussed in Section 6.7.2. The approximate locations of these samples are shown on Figure 3-11. Polycyclic aromatic hydrocarbons were not detected in these samples, indicating that the operation of the pumphouse is not adversely impacting surface water in the Scajaquada Creek Slip with respect to polycyclic aromatic hydrocarbons.

As described in Section 3.1, ten (10) sediment samples from the Scajaquada Creek Slip were collected by a NYSDEC Standby Spill Contractor in January 2015, with nine (9) additional sediment samples collected from the slip by a NYSDEC Standby Spill Contractor in March 2017. Three (3) additional sediment samples from the Scajaquada Creek Slip near the pumphouse outfall were collected during the Remedial Investigation of the 31 Tonawanda Street Off-Site Area. The analytical results for these samples are summarized in (Tables 6-9, 6-10, and 6-13). Six (6) sediment samples were also collected from the Scajaquada Creek Slip by GEI during their investigation of the Buffalo Gas Light Site. The results from these samples were not tabulated for this report and are not included in this discussion. The data tables from the Site Characterization Report (GEI, October 2022), however, are provided in Appendix I.

Seventeen (17) polycyclic aromatic hydrocarbons were detected in the sediment samples collected from the Scajaquada Creek Slip. Of these compounds, concentrations of acenaphthene (15 samples), acenaphthylene (11 samples), anthracene (16 samples), benzo(a)anthracene (13 samples), benzo(a)pyrene (13 samples), benzo(b)fluoranthene (12 samples), benzo(g,h,i)perylene (11 sample), benzo(k)fluoranthene (5 samples), chrysene (13 samples), dibenzo(a,h)anthracene (2 samples), fluoranthene (20 samples), fluorene (14 samples), indeno(1,2,3-cd)pyrene (5 samples), naphthalene (14 samples), phenanthrene (21 samples), and pyrene (22 samples) exceeded the NYSDEC sediment guidance values for PAHs (Tables 6-9, 6-10, and 6-13).

As described in Section 3.1, five (5) sediment samples from Scajaquada Creek downstream of West Avenue were collected by a NYSDEC Standby Spill Contractor in March 2017. The analytical results for these samples are summarized in Table 6-11. Twelve (12) sediment samples were also collected from Scajaquada Creek by GEI during their investigation of the Buffalo Gas Light Site. The results from these samples were not tabulated for this report and are not included in this discussion. The data tables from the Site Characterization Report (GEI, October 2022), however, are provided in Appendix I.

Seventeen (17) polycyclic aromatic hydrocarbons were detected in the sediment samples collected from Scajaquada Creek downstream of West Avenue. Of these compounds, concentrations of acenaphthene (1 sample), fluoranthene (1 sample), naphthalene (1 sample), phenanthrene (2 samples), and pyrene (2 samples) exceeded the NYSDEC sediment guidance values for PAHs (Table 6-11).

As described in Sections 3.4 and 4.10, one (1) sediment sample from the Niagara Street pumphouse sump was collected by a NYSDEC Standby Spill Contractor in November 2021. Seventeen (17) polycyclic aromatic hydrocarbons were detected in this sample. Of these compounds, concentrations of acenaphthene, acenaphthylene, anthracene, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, chrysene, fluoranthene, fluorene, naphthalene, phenanthrene, and pyrene were detected at concentrations that exceeded the NYSDEC sediment guidance values for PAHs (Table 6-13).

7.5.1 Summary

Polycyclic aromatic hydrocarbons (PAHs) were detected in all nine (9) subsurface soil samples collected during the Remedial Investigation of the 31 Tonawanda Street Off-Site Area (Tables 6-1 and 6-2), and at all BCP sites within the Study Area (Appendix I). PAHs were also detected in groundwater samples collected from the bike path wells (Table 6-3), the 1660 Niagara Street BCP Site (Tables 6-5 and 6-6), and the 68 Tonawanda Street BCP Site (Appendix I), but not in the groundwater samples collected from the 31 Tonawanda Street BCP Site (Figure 2-6; Appendix I), the 57-71 Tonawanda Street BCP Site (Table 6-4), the 150 Tonawanda Street property (Appendix I), or the 1675 Niagara Street wells (Table 6-6).

As previously stated, PAHs are a group of over 100 different chemicals that are ubiquitous in the environment. Sources of PAHs include incomplete combustion of coal, oil, gasoline, garbage, wood from stoves, automobiles, and incinerators. PAHs are also found in asphalt, coal tar, crude oil, creosote, roofing tar, medicines, dyes, plastics, and pesticides. As a result, PAHs are generally the most common contaminants found at brownfield sites.

Seventeen (17) polycyclic aromatic hydrocarbons were detected in the NAPL samples collected during the Remedial Investigation of the 31 Tonawanda Street Off-Site Area (Table 6-8). It is important to note that the groundwater samples with the highest concentrations of PAHs were collected from wells that also contained NAPL (compare Tables 6-3 and 6-6 to Table 6-8). This suggests that the presence of PAHs in these wells is caused by the presence of NAPL.

PAHs were detected in sediment samples collected from the Scajaquada Creek Slip, and to a much lesser degree, in sediment samples from Scajaquada Creek downstream of West Avenue (Tables 6-9, 6-10, 6-11, and 6-13). PAHs were also detected in the sediment sample collected from the Niagara Street pumphouse sump (Table 6-13). As previously stated, NAPL was observed in the bottom of two (2) manholes of the storm sewer associated with the pumphouse, and in the pumphouse sump. It is likely, therefore, that most of the PAHs detected in sediment samples collected from the Scajaquada Creek Slip is related to this NAPL being pumped into the slip.

PAHs, however, have not adversely impacted surface water in the main channel of Scajaquada Creek, the Scajaquada Creek Slip and the Black Rock Canal (Table 6-14D).

7.6 Polychlorinated Biphenyls (PCBs)

Polychlorinated biphenyls (PCBs) are primary contaminants of concern for sediment in Scajaquada Creek and the slip.

As described in Section 3.1, ten (10) sediment samples from the Scajaquada Creek Slip were collected by a NYSDEC Standby Spill Contractor in January 2015, with nine (9) additional sediment samples collected from the slip by a NYSDEC Standby Spill Contractor in March 2017. Three (3) additional sediment samples from the Scajaquada Creek Slip near the pumphouse outfall were collected during the Remedial Investigation of the 31 Tonawanda Street Off-Site Area. In addition, five (5) sediment samples from Scajaquada Creek downstream of West Avenue were collected by a NYSDEC Standby Spill Contractor in March 2017. The analytical results for these samples are summarized in (Tables 6-9, 6-10, 6-11, and 6-13). Six (6) sediment samples from the Scajaquada Creek Slip and twelve (12) sediment samples from Scajaquada Creek downstream of West Avenue were also collected by GEI during their investigation of the Buffalo Gas Light Site. The PCB results from these samples were tabulated for this report and are given as Tables 7-6 and 7-7. The data tables from the Site Characterization Report (October 2022) that show all contaminants detected in the GEI sediment samples are provided in Appendix I.

PCBs were detected in eighteen (18) sediment samples collected from the Scajaquada Creek Slip, with the concentrations in thirteen (13) samples exceeding the NYSDEC Class C sediment guidance values (Tables 6-9, 6-10, 6-13, and Table 7-6). The concentrations of PCBs in the remaining five (5) samples exceeded the NYSDEC Class B sediment guidance values (Tables 6-9, 6-10, 6-13, and Table 7-6).

PCBs were detected in fourteen (14) sediment samples collected from Scajaquada Creek downstream of West Avenue, with the concentrations in ten (10) samples exceeding the NYSDEC Class B (8 samples) or Class C (2 samples) sediment guidance values (Tables 6-11 and 7-7). PCBs were also detected in the sediment sample collected from the pumphouse sump with the concentration exceeding the NYSDEC Class B sediment guidance values (Table 6-13).

The subsurface soil samples collected during the Remedial Investigation of the 31 Tonawanda street Off-Site Area were not analyzed for PCBs. PCBs were detected in twenty-six (26) subsurface soil samples collected from the various sites within the Study Area (Appendix I). Only two (2) samples from the 68 Tonawanda Street BCP Site, however, exceeded the NYSDEC Part 375 restricted residential soil cleanup objective (Appendix I).

PCBs were not detected in groundwater samples collected from the 57-71 Tonawanda Street wells (Table 6-4), the bike path wells (Table 6-3), the 1660 & 1675 Niagara Street wells (Tables 6-5 and 6-6), or the GEI wells (Table 6-16). PCBs, however, were detected in two (2) wells at the 31 Tonawanda Street property, one (1) well at the 68 Tonawanda Street BCP Site, and one (1) well at the 150 Tonawanda Street property at concentrations that exceeded the NYSDEC groundwater standard (Appendix I).

PCBs were not detected in any of the NAPL samples collected during the Remedial Investigation of the 31 Tonawanda street Off-Site Area (Table 6-8).

PCBs were not detected in the two (2) surface water samples collected from structures associated with the Niagara Street pumphouse and associated sewer system that were analyzed for PCBs (Tables 6-14A through 6-14C).

PCBs were not detected in the six (6) surface water samples collected on August 29, 2022 from the main channel of Scajaquada Creek, the Scajaquada Creek Slip and the Black Rock Canal (Table 6-14D).

7.6.1 Summary

Polychlorinated biphenyls were detected in eighteen (18) sediment samples collected from the Scajaquada Creek Slip, and in fourteen (14) sediment samples collected from Scajaquada Creek downstream of West Avenue (Tables 6-9, 6-10, 6-11, 6-13, 7-6, and 7-7).

Concentrations in thirteen (13) samples collected from the Scajaquada Creek Slip, and two (2) samples collected from Scajaquada Creek downstream of West Avenue exceeded the NYSDEC Class C sediment guidance values (Tables 6-9, 6-10, 6-11, 6-13, 7-6, and 7-7). The concentrations of PCBs in five (5) additional samples from the Scajaquada Creek Slip and eight (8) additional samples from Scajaquada Creek downstream of West Avenue exceeded the NYSDEC Class B sediment guidance values (Tables 6-9, 6-10, 6-11, 6-13, 7-6, and 7-7). PCBs were also detected in the sediment sample collected from the pumphouse sump with the concentration exceeding the NYSDEC Class B sediment guidance values (Table 6-13).

During the NYSDEC investigation of Scajaquada Creek sediment in 2017, twenty-seven (27) sediment samples from seventeen (17) locations were collected upstream of West Avenue. The locations of these samples are shown on Figure 3-2, with the results for PCBs summarized in Table 7-8. PCBs were detected in all twenty-seven (27) samples, with the concentrations in only two (2) samples exceeding the NYSDEC Class C sediment guidance values (Table 7-8). The concentrations of PCBs in fourteen (14) additional samples exceeded the NYSDEC Class B sediment guidance values (Table 7-8). It is important to note that at the ten (10) locations where samples were collected from two (2) different depths, PCB concentrations in all cases were higher in the shallower samples than in the deeper samples (Table 7-8).

The presence of PCB in Scajaquada Creek sediment upstream of West Avenue indicates an upstream source of PCBs. To date, this source has not been determined. It is important to note, however, that concentrations of PCBs in the Scajaquada Creek Slip are much higher than concentrations in Scajaquada Creek both upstream and downstream of West Avenue (Tables 6-9, 6-10, 6-11, 6-13, 7-6, 7-7, and 7-8). This fact appears to suggest a source of PCBs in the vicinity of the Scajaquada Creek Slip. The absence of PCBs in subsurface soil, NAPL, groundwater, and surface water at significant concentrations (see the tables in this report and Appendix I) at the various sites within the Study Area argues against these sites as the source of PCBs in creek sediment.

Alternatively, the higher concentrations of PCBs in the slip may result from the slip being a depositional area for sediment; PCB contaminated sediments are less likely to be transported into the Black Rock Canal and Niagara River during high stream flow events as there is no downstream outlet to the slip. The source area for PCBs, therefore, must be upstream of West Avenue. As a result, any sediment remediation of Scajaquada Creek downstream of West Avenue has the potential to become re-contaminated by PCBs.

7.7 *EPA Priority Pollutant Metals*

EPA priority pollutant metals are primary contaminants of concern for sediment in Scajaquada Creek and the slip, and are secondary COCs for subsurface soil.

As described in Section 3.1, ten (10) sediment samples from the Scajaquada Creek Slip were collected by a NYSDEC Standby Spill Contractor in January 2015, with nine (9) additional sediment samples collected from the slip by a NYSDEC Standby Spill Contractor in March 2017. Three (3) additional sediment samples from the Scajaquada Creek Slip near the pumphouse outfall were collected during the Remedial Investigation of the 31 Tonawanda Street Off-Site Area. The analytical results for these samples are summarized in (Tables 6-9, 6-10, and 6-13). Six (6) sediment samples were also collected from the Scajaquada Creek Slip by GEI during their investigation of the Buffalo Gas Light Site. The results from these samples were not tabulated for this report and are not included in this discussion. The data tables from the Site Characterization Report (GEI, October 2022), however, are provided in Appendix I.

Ten (10) sediment samples collected from the Scajaquada Creek Slip were analyzed for metals, with twenty-three (23) metals being detected in these samples (Tables 6-10 and 6-13). Of these metals, nine (9) were detected at concentrations that exceeded the NYSDEC sediment guidance values, with eight (8) of these metals being EPA priority pollutant metals. The priority pollutant metals that exceeded the Class B (but not Class C) sediment guidance values included arsenic (10 samples), cadmium (2 samples), chromium (3 samples), copper (1 sample), mercury (3 samples), silver (2 samples), and zinc (1 sample). The priority pollutant metals that exceeded the Class C sediment guidance values included cadmium (7 samples), chromium (6 samples), copper (9 samples), lead (10 samples), mercury (6 samples), silver (7 samples), and zinc (9 samples).

As described in Section 3.1, five (5) sediment samples from Scajaquada Creek downstream of West Avenue were collected by a NYSDEC Standby Spill Contractor in March 2017, with fifteen (15) additional sediment samples collected from the creek by the U.S. Army Corp of Engineers in September 2017. The analytical results for these samples are summarized in Tables 6-11 and 6-12. Twelve (12) sediment samples were also collected from Scajaquada Creek downstream of West Avenue by GEI during their investigation of the Buffalo Gas Light Site. The results from these samples were not tabulated for this report and are not included in this discussion. The data tables from the Site Characterization Report (GEI, October 2022), however, are provided in Appendix I.

Twenty (20) sediment samples collected from Scajaquada Creek downstream of West Avenue were analyzed for metals, with twenty-three (23) metals being detected in these samples (Tables 6-11 and 6-12). Of these metals, nine (9) were detected at concentrations that exceeded the NYSDEC sediment guidance values, with eight (8) of these metals being EPA priority pollutant metals. The priority pollutant metals that exceeded the Class B (but not Class C) sediment guidance values included arsenic (4 samples), cadmium (14 samples), chromium (15 samples), copper (9 samples), lead (3 samples), mercury (12 samples), silver (3 samples), and zinc (3 samples). The priority pollutant metals that exceeded the Class C sediment guidance values included cadmium (1 sample), copper (9 samples), lead (17 samples), silver (1 sample), and zinc (14 samples).

As described in Sections 3.4 and 4.10, one (1) sediment sample from the Niagara Street pumphouse sump was collected by a NYSDEC Standby Spill Contractor in November 2021. Twenty (20) metals were detected in this sample (Table 6-13). Of these metals, seven (7) were detected at concentrations that exceeded the NYSDEC sediment guidance values, with six (6) of these metals being EPA priority pollutant metals. The priority pollutant metals that exceeded the Class B (but not Class C) sediment guidance values included arsenic, cadmium, and copper. The priority pollutant metals that exceeded the Class C sediment guidance values included chromium, lead, and zinc.

The subsurface soil samples collected during the Remedial Investigation of the 31 Tonawanda street Off-Site Area were not analyzed for metals. Subsurface soil samples collected from the various sites throughout the Study Area, however, were analyzed for metals (Appendix I). Priority pollutant metals that exceeded the NYSDEC Part 375 restricted residential soil cleanup objectives included chromium (1 sample), copper (4 samples), lead (1 sample), and mercury (2 samples) at the 31 Tonawanda Street property; arsenic (2 samples), cadmium (1 sample), copper (4 samples), lead (4 samples), and mercury (1 sample) at the 57-71 Tonawanda Street BCP Site; arsenic (6 samples), cadmium (2 samples), chromium (1 sample), copper (7 samples), and lead (3 samples) at the 68 Tonawanda Street BCP Site; arsenic (3 samples) at the 150 Tonawanda Street property; and arsenic (11 samples), cadmium (2 samples), chromium (1 sample), copper (1 sample), lead (4 samples), and mercury (2 samples) at the 1660 Niagara Street BCP Site (Appendix I).

Many metals are naturally occurring, so it is no surprise that metals were detected in all wells installed throughout the Study Area (Appendix I). The only priority pollutant metals, however, that exceeded NYSDEC groundwater standards or guidance values included lead in bike path well MW-100 (Table 6-3); lead (well 57-MW-3) and selenium (wells 57-MW-2, 57-MW-3, and 57-MW-4) at the

57-71 Tonawanda Street BCP Site (Table 6-4); chromium (well 68-MW-3) and selenium (wells 68-MW-1 and 68-MW-3) at the 68 Tonawanda Street BCP Site (Appendix I); and lead (well 1660-MW-5R), mercury (well TPMW-3), and selenium (wells TPMW-1 and TPMW-2) at the 1660 Niagara Street BCP Site (Table 6-6; Appendix I). Priority pollutant metal exceedances in groundwater were not documented for the 31 Tonawanda Street property, the 150 Tonawanda Street property, or in the GEI wells (Table 6-16; Appendix I).

Three (3) NAPL samples were collected from bike path well MW-100 during the Remedial Investigation of the 31 Tonawanda Street Off-Site Area, while five (5) NAPL samples were collected from wells installed at the 1660 Niagara Street BCP Site. Table 6-8 shows that sixteen (16) metals were detected in these samples, with five (5) of these metals being EPA priority pollutant metals. The EPA priority pollutant metals detected included arsenic (2 samples), chromium (2 samples), copper (2 samples), lead (2 samples) and zinc (2 samples). The Westwood NAPL samples were not analyzed for metals.

Twenty-three (23) surface water samples were collected during the Remedial Investigation of the 31 Tonawanda Street Off-Site Area. Fifteen (15) of these samples were associated with the Niagara Street pumphouse (catch basins, manholes, and the pumphouse sump; Tables 6-14A through 6-14C), one (1) was collected from an 8-inch pipe that discharges into Scajaquada Creek at the 31 Tonawanda Street property (Table 6-14A), and seven (7) samples were from the main channel of Scajaquada Creek, the Scajaquada Creek Slip and the Black Rock Canal (Table 6-14D).

Only two (2) samples associated with the Niagara Street pumphouse were analyzed for metals. No priority pollutant metal exceedances were documented in these samples (Tables 6-14B and 6-14C).

All six (6) surface water samples collected on August 29, 2022 from the main channel of Scajaquada Creek, the Scajaquada Creek Slip and the Black Rock Canal were analyzed for metals (Table 6-14D). Antimony (4 samples) was the only priority pollutant metal that exceeded the NYSDEC surface water standards or guidance values (Table 6-14D).

7.7.1 Summary

EPA priority pollutant metals were detected in ten (10) sediment samples collected from the Scajaquada Creek Slip, and in twenty (20) sediment samples collected from Scajaquada Creek downstream of West Avenue (Tables 6-10, 6-11, 6-12, and 6-13). Eight (8) priority pollutant metals were detected in sediment samples collected from the Scajaquada Creek Slip at concentrations that exceeded NYSDEC sediment guidance values, while eight (8) priority pollutant metals did so in sediment samples collected from Scajaquada Creek downstream of West Avenue.

For sediment samples from the Scajaquada Creek Slip, the priority pollutant metals that exceeded the Class C sediment guidance values included cadmium (7 samples), chromium (6 samples), copper (9 samples), lead (10 samples), mercury (6 samples), silver (7 samples), and zinc (9 samples). For sediment samples from Scajaquada Creek downstream of West Avenue, the priority pollutant metals that exceeded the Class C sediment guidance values included cadmium (1 sample), copper (9 samples), lead (17 samples), silver (1 sample), and zinc (14 samples).

Subsurface soil samples collected from BCP sites adjacent to Scajaquada Creek (the 31 Tonawanda Street property and the 57-71 Tonawanda Street BCP Site) and the Scajaquada Creek Slip (the 1660 Niagara Street BCP Site) are contaminated to various extent with EPA priority pollutant metals. Priority pollutant metals at these sites that exceeded the NYSDEC Part 375 restricted residential soil cleanup objectives included chromium (1 sample), copper (4 samples), lead (1 sample), and mercury (2 samples) at the 31 Tonawanda Street property; arsenic (2 samples), cadmium (1 sample), copper (4 samples), lead (4 samples), and mercury (1 sample) at the 57-71 Tonawanda Street BCP Site; and arsenic (11 samples), cadmium (2 samples), chromium (1 sample), copper (1 sample), lead (4 samples), and mercury (2 samples) at the 1660 Niagara Street BCP Site (Appendix I). These priority pollutant metals are consistent with those detected in sediment samples from Scajaquada Creek and the slip, suggesting that erosion of contaminated soil from these sites into the creek and slip has resulted in sediment contamination by metals.

As stated in Section 2.3, the Fedders Manufacturing Company made various products at the Tonawanda Street plant. Some of these products included radiators for airplanes, radiators for automobiles, radiator cores, and home radiators. Radiators manufactured up to the early 1970s were made from copper and brass (an alloy of copper and zinc; Copper Development Association, Inc. website, accessed February 14, 2023). In addition, plant processes included metal stamping, soldering, brazing, and welding. Solder is a metal alloy typically made of tin and lead, while brazing uses copper, a copper-silver alloy, a copper-zinc alloy, or a copper-tin alloy. The Fedders Manufacturing Company, therefore, is the likely source of copper, lead, and zinc detected in subsurface soil at the two Fedders sites (the 31 Tonawanda Street BCP Site and the 57-71 Tonawanda Street BCP Site) and in the sediment samples from Scajaquada Creek downstream of West Avenue.

Furthermore, the NAPL samples collected during the Remedial Investigation of the 31 Tonawanda Street Off-Site Area contain EPA priority pollutant metals. The EPA priority pollutant metals detected included arsenic (2 samples), chromium (2 samples), copper (2 samples), lead (2 samples) and zinc (2 samples). As previously stated, NAPL was observed in the bottom of two (2) manholes of the storm sewer associated with the pumphouse, and in the pumphouse sump. It is likely, therefore, that the presence of arsenic, chromium, copper, lead, and zinc in the sediment samples collected from the Scajaquada Creek Slip is related to this NAPL being pumped into the slip.

Several EPA priority pollutant metals exceeding NYSDEC groundwater standards or guidance values were documented in several wells installed throughout the study area (Appendix I), but this contamination was not widespread.

EPA priority pollutant metals have not adversely impacted surface water of the Niagara Street pumphouse and associated storm sewer system, while only antimony exceeded the NYSDEC surface water standards or guidance values in the main channel of Scajaquada Creek and the Scajaquada Creek Slip.

8.0 DISCUSSION AND RECOMMENDATIONS

8.1 *Discussion*

The overall objective of the Remedial Investigation at the 31 Tonawanda Street Off-Site Area (Site C915299A) was to determine the nature and extent of soil, groundwater, surface water, sediment, and soil vapor/air contamination at the Off-Site Area. The specific objectives of the RI were to:

- Complete soil vapor intrusion investigations in structures near the 31 Tonawanda Street property to determine if contaminants have adversely impacted these structures;
- Determine if contaminants have migrated from the 31 Tonawanda Street property and adversely impacted subsurface soil and groundwater near the site;
- Determine if contaminants have migrated from the 31 Tonawanda Street property and adversely impacted surface water and sediment in Scajaquada Creek;
- Determine if contaminants have migrated from the 31 Tonawanda Street property and adversely impacted the storm sewer system near the site; and
- Complete a comprehensive hydrogeologic evaluation of the site and surrounding area that includes an evaluation of the groundwater flow pattern in the area.

During the completion of the Remedial Investigation at the 31 Tonawanda Street Off-Site Area, NAPL was encountered along the bike path adjacent to the 57-71 Tonawanda Street BCP Site and at the 1660 Niagara Street BCP Site. This NAPL was sampled during the Remedial Investigation to evaluate the nature of contamination of this material.

The nature and extent of soil, NAPL, groundwater, surface water, and sediment at the 31 Tonawanda Street Off-Site Area was discussed in Section 7.0 and will not be discussed further in this section. The nature and extent of sub-slab soil vapor and indoor air at 1675 Niagara Street was also discussed in Section 7.0 and will not be discussed further in this section.

A comprehensive geologic and hydrogeologic evaluation of the Study Area was discussed in Section 5.0 and will not be discussed further in this section.

8.2 Recommendations

Additional investigation of the 31 Tonawanda Street Off-Site Area is required to further evaluate the presence of the chlorinated VOCs detected in groundwater, surface water, and NAPL at the site. Chlorinated VOCs were detected in groundwater samples collected from both wells installed at 1675 Niagara Street and in surface water collected from catch basins and manholes in Niagara Street at concentrations that exceeded NYSDEC groundwater standards or guidance values. Additional monitoring wells should be installed upgradient (i.e., to the north) of the 1675 Niagara Street property to determine if an upgradient source of chlorinated VOCs exists.

Additional investigation of the 57 Tonawanda Street property is required to further assess the presence of chlorinated VOCs. This is the property under ownership dispute and is no longer part of the 57-71 Tonawanda Street BCP Site. This includes the collection of subsurface soil samples from greater depths than those collected during the BCP Remedial Investigation, where fourteen (14) of twenty-four (24) samples were collected from depths less than 4 feet. Eight (8) of the subsurface soil samples collected from depths greater than 4 feet were within or close to the on-site building, whereas only two (2) deeper samples were collected from the parking lot where the historic land spreading of solvents took place. Since chlorinated VOCs are denser than water, they will migrate downward in the subsurface environment. As a result, the extent of chlorinated VOCs contamination was likely not determined during the BCP Remedial Investigation. Additional monitoring wells also need to be installed to evaluate deeper groundwater underlying the 57 Tonawanda Street property.

Additional investigation of the 57 Tonawanda Street property is also required to further evaluate the presence of NAPL found in NYSDEC well MW-100 that was installed along the bike path adjacent to the 57-71 Tonawanda Street BCP Site. Specifically, it needs to be determined if NAPL extends onto the 57 Tonawanda Street property as this could impact the ability to complete a BCP remediation of the property.

Additional investigation is required to further assess the presence of chlorinated VOCs detected in subsurface soil at the well 57-MW-4 location. This well was installed along Tonawanda Street but is located off-site of the 57-71 Tonawanda Street BCP Site. The highest concentrations of trichloroethene were detected in this well. This well is located near a loading dock, so it is possible that the presence of chlorinated VOCs in subsurface soil and groundwater at this location is related to the illegal disposal of spent degreasing fluids (i.e., spent degreasing fluids were discharged directly onto the ground surface).

NAPL was present in three (3) wells installed by GEI during the investigation of the Buffalo Gas Light Site, and in one (1) well they installed by the Niagara Street pumphouse. Unfortunately, GEI did not analyze these samples for TCL volatile organic compounds, so it is unknown if chlorinated VOCs are present in this NAPL. As a result, NAPL samples from these wells should be collected for analysis to further evaluate the nature of contamination in this material.

The upstream source of PCBs that has contaminated sediment of Scajaquada Creek and the slip needs to be further evaluated. In addition, the samples collected from within the Study Area during the Supplemental Remedial Investigation should also be analyzed for PCBs to further evaluate the 31 Tonawanda Street Off-Site Area as a potential PCB source.

Figure 8-1 shows the locations of utilities near the 57-71 Tonawanda Street BCP Site. The utilities under and along Tonawanda Street pass close to well 57-MW-4 (see Figure 3-10 for location), suggesting that these utilities could act as migration pathways for contaminated groundwater detected in this well (Table 6-4).

The nature and extent of contamination in sub-slab soil vapor and indoor air at 1675 Niagara Street, and the subsequent installation of two (2) sub-slab depressurization systems (SSDS) in the on-site building, indicates that soil vapor intrusion investigations should be completed at other properties within the Study Area. The initial task will be to send access letters to the various property owners in the area.

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FIGURES

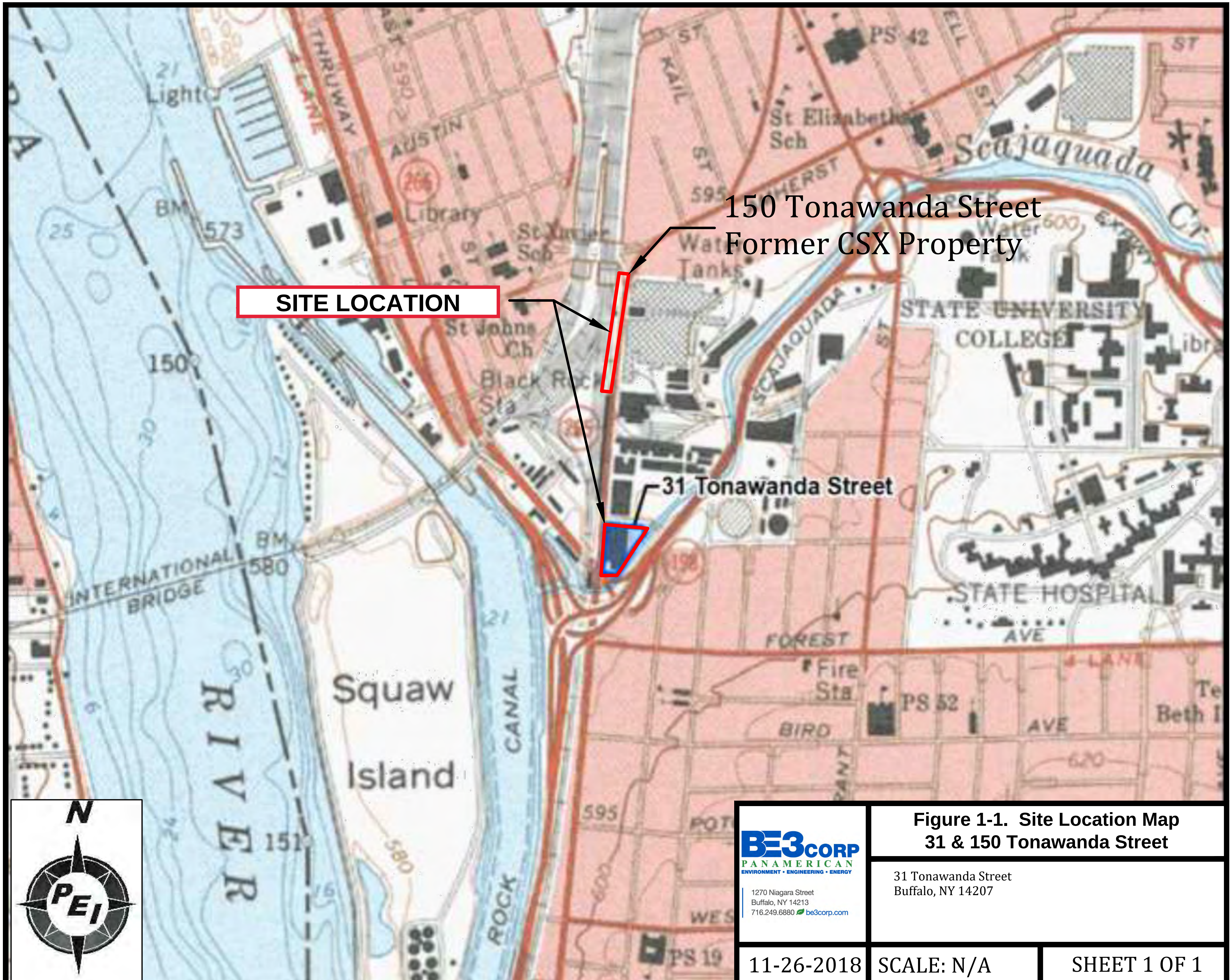
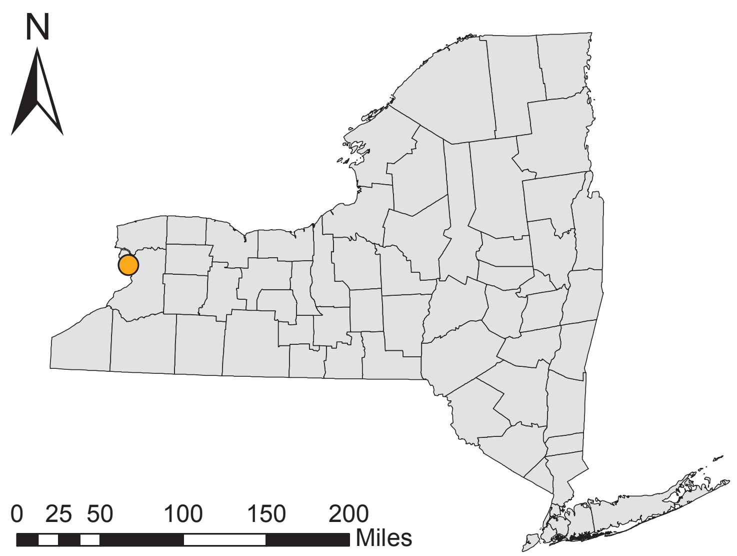


Figure 1-1. Site Location Map
31 & 150 Tonawanda Street

BE3CORP
PANAMERICAN
ENVIRONMENT • ENGINEERING • ENERGY
1270 Niagara Street
Buffalo, NY 14213
716.249.6880 be3corp.com

31 Tonawanda Street
Buffalo, NY 14207

11-26-2018	SCALE: N/A	SHEET 1 OF 1



Legend

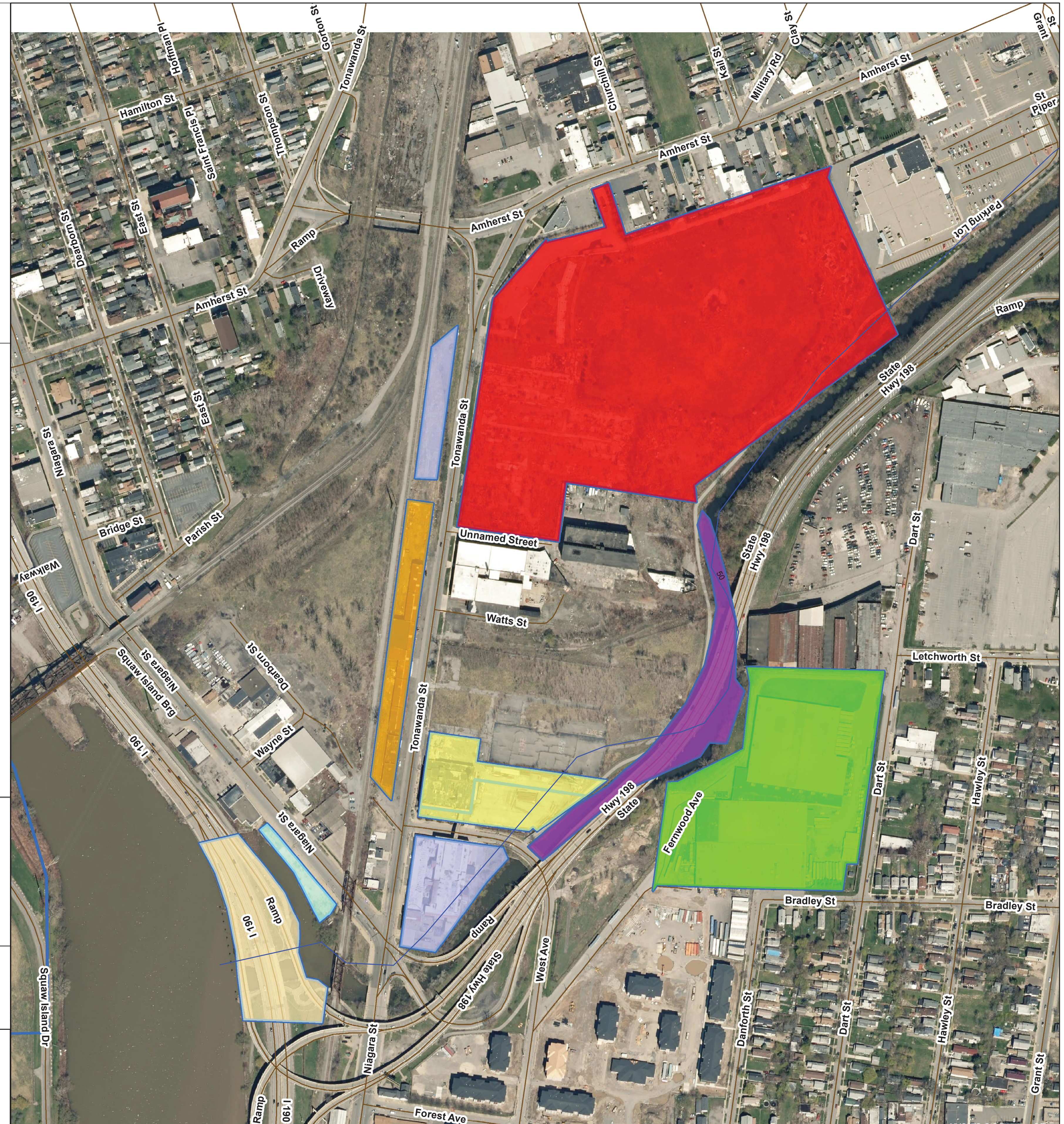
- Stream, 1:100,000
- 915351 Former Buffalo Gas Light-Iroquois Gas Corp
- C915311 1660 Niagara Street
- C915299 31 Tonawanda Street
- 915141B NFG Iroquois Gas Westwood Pharm Riparian
- 915141A Iroquois Gas Westwood Pharm Terrestrial
- C915024 57-71 Tonawanda Street
- C915316 68 Tonawanda Street
- 915045 Pratt & Letchworth
- Site Border

0 0.24 Miles

Figure 2-1
Remediation Sites in the Vicinity of the 31 Tonawanda Street BCP Site

Privileged and Confidential
Not for Public Release

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation



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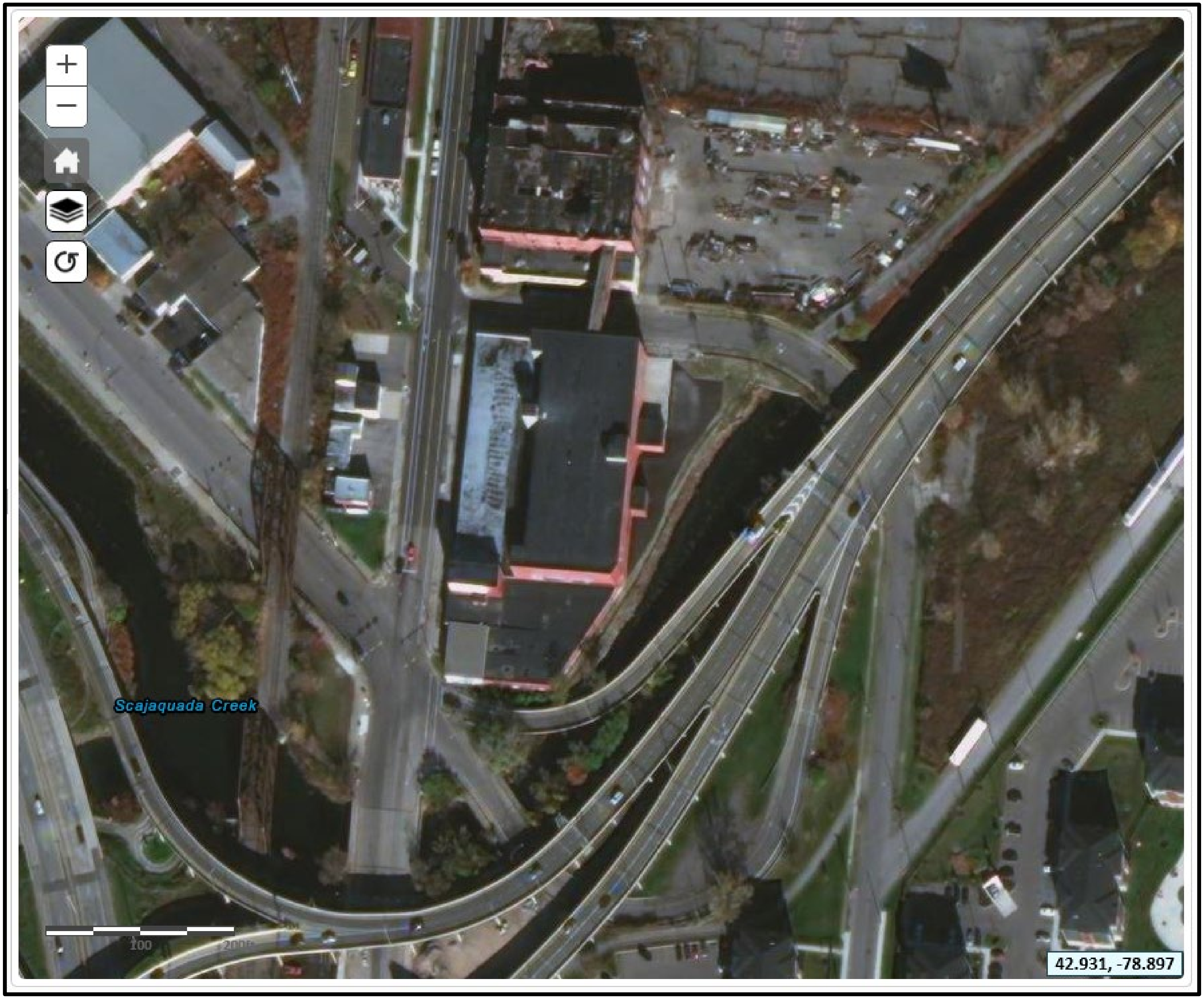
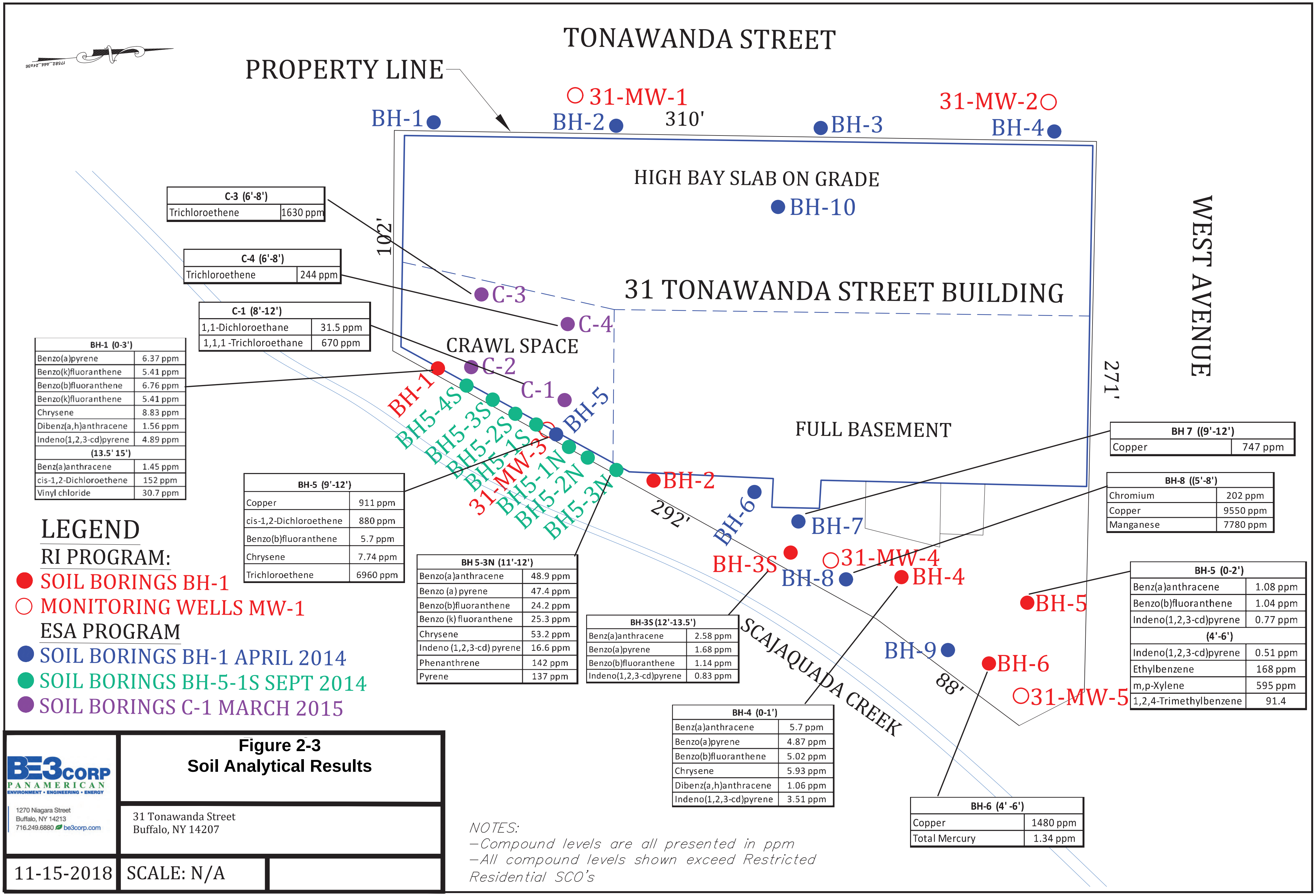


Figure 2-2. 31 Tonawanda Street with Surrounding Properties.



C-3 (6'-8')	
Trichloroethene	1630 ppm

C-4 (6'-8')	
Trichloroethene	244 ppm

C-1 (8'-12')	
1,1-Dichloroethane	31.5 ppm
1,1,1 -Trichloroethane	670 ppm

BH-1 (0-3')	
Benzo(a)pyrene	6.37 ppm
Benzo(k)fluoranthene	5.41 ppm
Benzo(b)fluoranthene	6.76 ppm
Benzo(k)fluoranthene	5.41 ppm
Chrysene	8.83 ppm
Dibenz(a,h)anthracene	1.56 ppm
Indeno(1,2,3-cd)pyrene	4.89 ppm
(13.5' 15')	
Benz(a)anthracene	1.45 ppm
cis-1,2-Dichloroethene	152 ppm
Vinyl chloride	30.7 ppm

BH-5 (9'-12')	
Copper	911 ppm
cis-1,2-Dichloroethene	880 ppm
Benzo(b)fluoranthene	5.7 ppm
Chrysene	7.74 ppm
Trichloroethene	6960 ppm

BH 5-3N (11'-12')	
Benzo(a)anthracene	48.9 ppm
Benzo (a) pyrene	47.4 ppm
Benzo(b)fluoranthene	24.2 ppm
Benzo (k) fluoranthene	25.3 ppm
Chrysene	53.2 ppm
Indeno (1,2,3-cd) pyrene	16.6 ppm
Phenanthrene	142 ppm
Pyrene	137 ppm

BH-3S (12'-13.5')	
Benz(a)anthracene	2.58 ppm
Benzo(a)pyrene	1.68 ppm
Benzo(b)fluoranthene	1.14 ppm
Indeno(1,2,3-cd)pyrene	0.83 ppm

BH-4 (0-1')	
Benz(a)anthracene	5.7 ppm
Benzo(a)pyrene	4.87 ppm
Benzo(b)fluoranthene	5.02 ppm
Chrysene	5.93 ppm
Dibenz(a,h)anthracene	1.06 ppm
Indeno(1,2,3-cd)pyrene	3.51 ppm

BH 7 ((9'-12')	
Copper	747 ppm

BH-8 ((5'-8')	
Chromium	202 ppm
Copper	9550 ppm
Manganese	7780 ppm

BH-5 (0-2')	
Benz(a)anthracene	1.08 ppm
Benzo(b)fluoranthene	1.04 ppm
Indeno(1,2,3-cd)pyrene	0.77 ppm
(4'-6')	
Indeno(1,2,3-cd)pyrene	0.51 ppm
Ethylbenzene	168 ppm
m,p-Xylene	595 ppm
1,2,4-Trimethylbenzene	91.4

BH-6 (4' -6')	
Copper	1480 ppm
Total Mercury	1.34 ppm

LEGEND

RI PROGRAM:

- SOIL BORINGS BH-1
- MONITORING WELLS MW-1

ESA PROGRAM

- SOIL BORINGS BH-1 APRIL 2014
- SOIL BORINGS BH-5-1S SEPT 2014
- SOIL BORINGS C-1 MARCH 2015

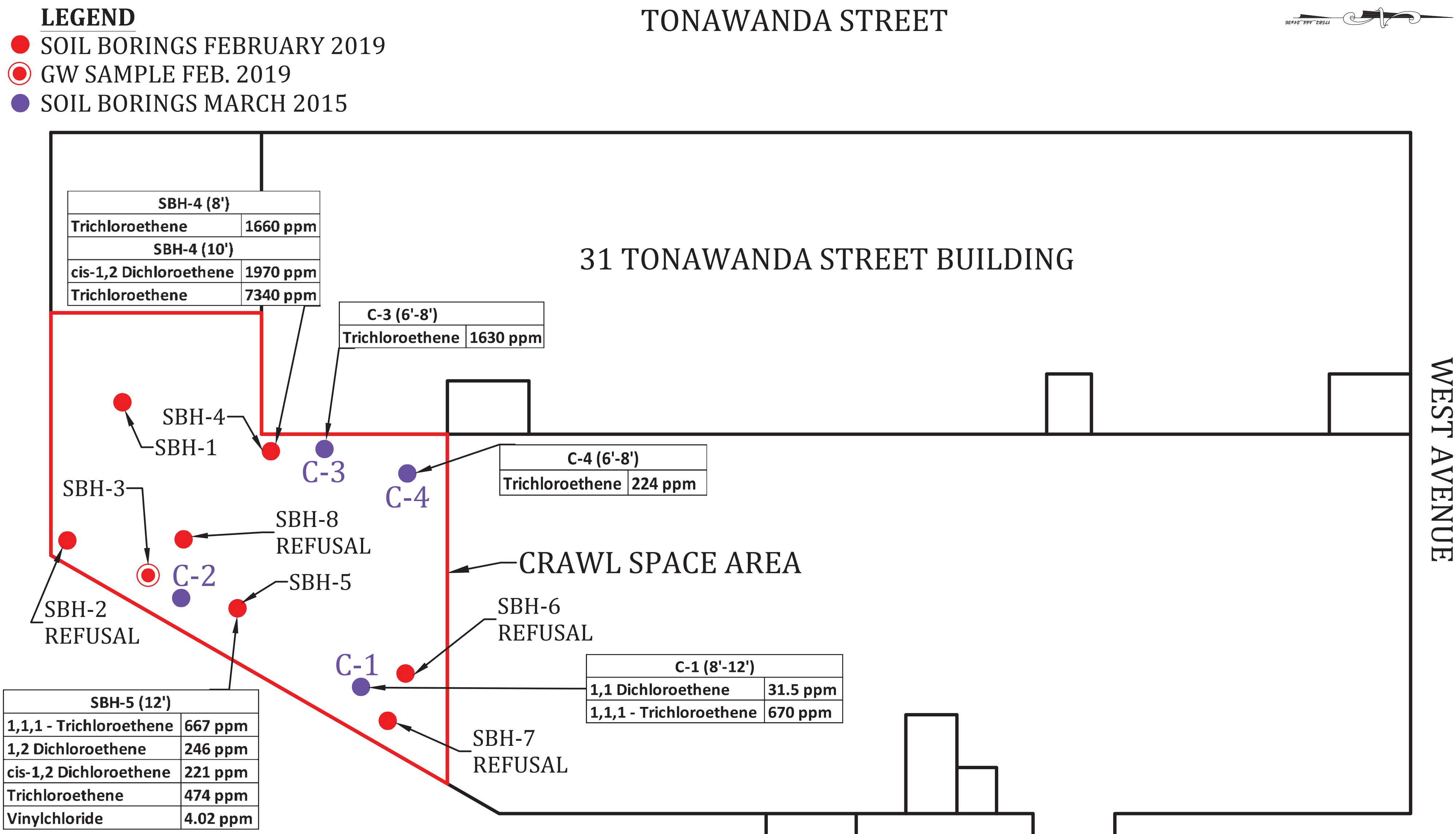
NOTES:
—Compound levels are all presented in ppm
—All compound levels shown exceed Restricted Residential SCO's

Figure 2-3
Soil Analytical Results

BE3CORP PANAMERICAN
ENVIRONMENT • ENGINEERING • ENERGY
1270 Niagara Street
Buffalo, NY 14213
716.249.6880 be3corp.com

31 Tonawanda Street
Buffalo, NY 14207

11-15-2018 | SCALE: N/A



SBH-4 (8')	
Trichloroethene	1660 ppm
SBH-4 (10')	
cis-1,2 Dichloroethene	1970 ppm
Trichloroethene	7340 ppm

C-3 (6'-8')	
Trichloroethene	1630 ppm

C-4 (6'-8')	
Trichloroethene	224 ppm

C-1 (8'-12')	
1,1 Dichloroethene	31.5 ppm
1,1,1 - Trichloroethene	670 ppm

SBH-5 (12')	
1,1,1 - Trichloroethene	667 ppm
1,2 Dichloroethene	246 ppm
cis-1,2 Dichloroethene	221 ppm
Trichloroethene	474 ppm
Vinylchloride	4.02 ppm

BE3CORP PANAMERICAN
ENVIRONMENT • ENGINEERING • ENERGY
1270 Niagara Street
Buffalo, NY 14213
716.249.6880 be3corp.com

Figure 2-4
Crawl Space Investigation

31 Tonawanda Street
Buffalo, NY 14207

04-04-2019 | SCALE: N/A | SHEET 1 OF 1

NOTE:
1) SBH-3 GW SAMPLE RESULTS SHOWN ON FIGURE 6
2) ALL SOIL COMPOUND LEVELS SHOWN EXCEED PART 375 RESTRICTED RESIDENTIAL VALUES

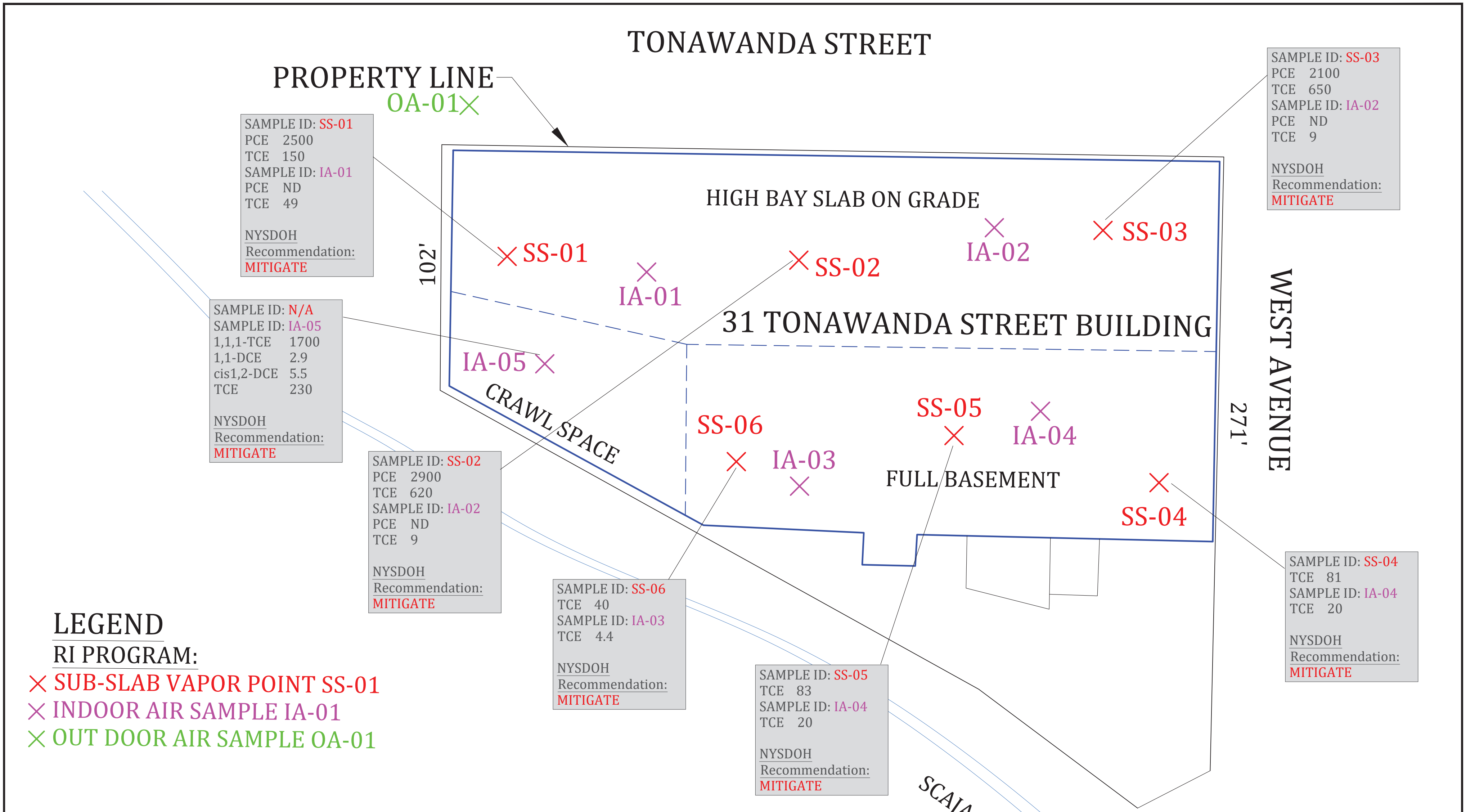


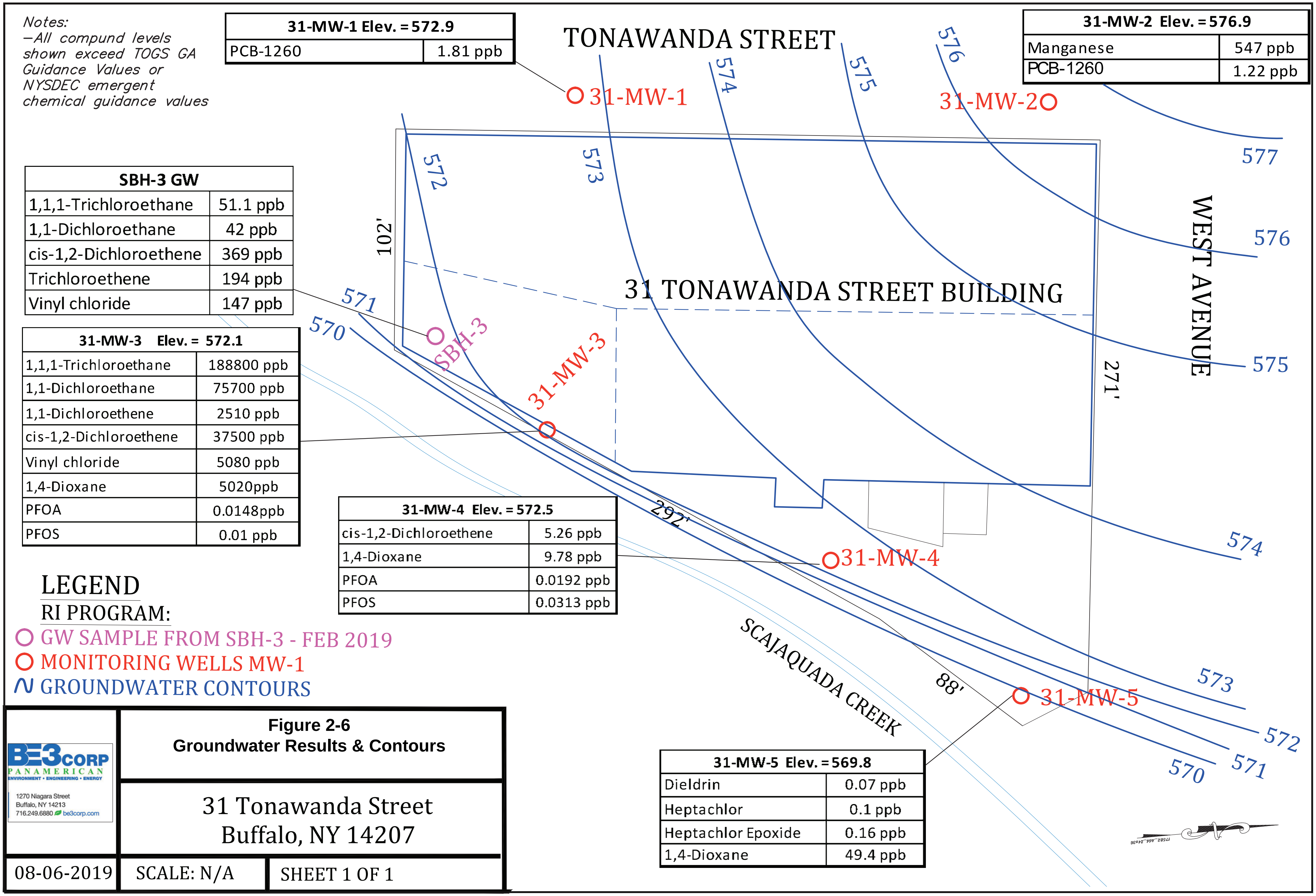
Figure 2-5
Vapor Intrusion Sample Results

BE3CORP PANAMERICAN
ENVIRONMENT • ENGINEERING • ENERGY
1270 Niagara Street
Buffalo, NY 14213
716.249.6880 be3corp.com

31 Tonawanda Street
Buffalo, NY 14207

11-26-2018 | SCALE: N/A

NOTES:
-Compound levels are all presented in ug/m^3
-All compound levels shown require action based on NYSDOH Guidance for Evaluating Soil Vapor Intrusion Decision Matrices May 2017



Notes:
–All compund levels shown exceed TOGS GA Guidance Values or NYSDEC emergent chemical guidance values

31-MW-1 Elev. = 572.9	
PCB-1260	1.81 ppb

31-MW-2 Elev. = 576.9	
Manganese	547 ppb
PCB-1260	1.22 ppb

SBH-3 GW	
1,1,1-Trichloroethane	51.1 ppb
1,1-Dichloroethane	42 ppb
cis-1,2-Dichloroethene	369 ppb
Trichloroethene	194 ppb
Vinyl chloride	147 ppb

31-MW-3 Elev. = 572.1	
1,1,1-Trichloroethane	188800 ppb
1,1-Dichloroethane	75700 ppb
1,1-Dichloroethene	2510 ppb
cis-1,2-Dichloroethene	37500 ppb
Vinyl chloride	5080 ppb
1,4-Dioxane	5020ppb
PFOA	0.0148ppb
PFOS	0.01 ppb

31-MW-4 Elev. = 572.5	
cis-1,2-Dichloroethene	5.26 ppb
1,4-Dioxane	9.78 ppb
PFOA	0.0192 ppb
PFOS	0.0313 ppb

31-MW-5 Elev. = 569.8	
Dieldrin	0.07 ppb
Heptachlor	0.1 ppb
Heptachlor Epoxide	0.16 ppb
1,4-Dioxane	49.4 ppb

LEGEND
RI PROGRAM:
GW SAMPLE FROM SBH-3 - FEB 2019
MONITORING WELLS MW-1
GROUNDWATER CONTOURS

BE3CORP PANAMERICAN
ENVIRONMENT • ENGINEERING • ENERGY
1270 Niagara Street
Buffalo, NY 14213
716.249.6880 be3corp.com

Figure 2-6
Groundwater Results & Contours

31 Tonawanda Street
Buffalo, NY 14207

08-06-2019 | SCALE: N/A | SHEET 1 OF 1

LEGEND:

S-1 INDICATES APPROXIMATE LOCATION AND DESIGNATION OF SOIL SAMPLE

NOTE:

FIGURE DEVELOPED FROM GOOGLE EARTH © 2015

N

100 0 100

SCALE FEET

EMPIRE GEO SERVICES INC

a subsidiary of SJB Services, Inc.

Figure 3-1
2015 NYSDEC Investigation
Sediment Sample Location Map

SEDIMENT SAMPLING LOCATION PLAN

DR BY: WMA	SCALE: 1" ~ 100'	PROJECT NO.: BEV-15-002
CHKD BY: DRS	DATE: 01/30/15	

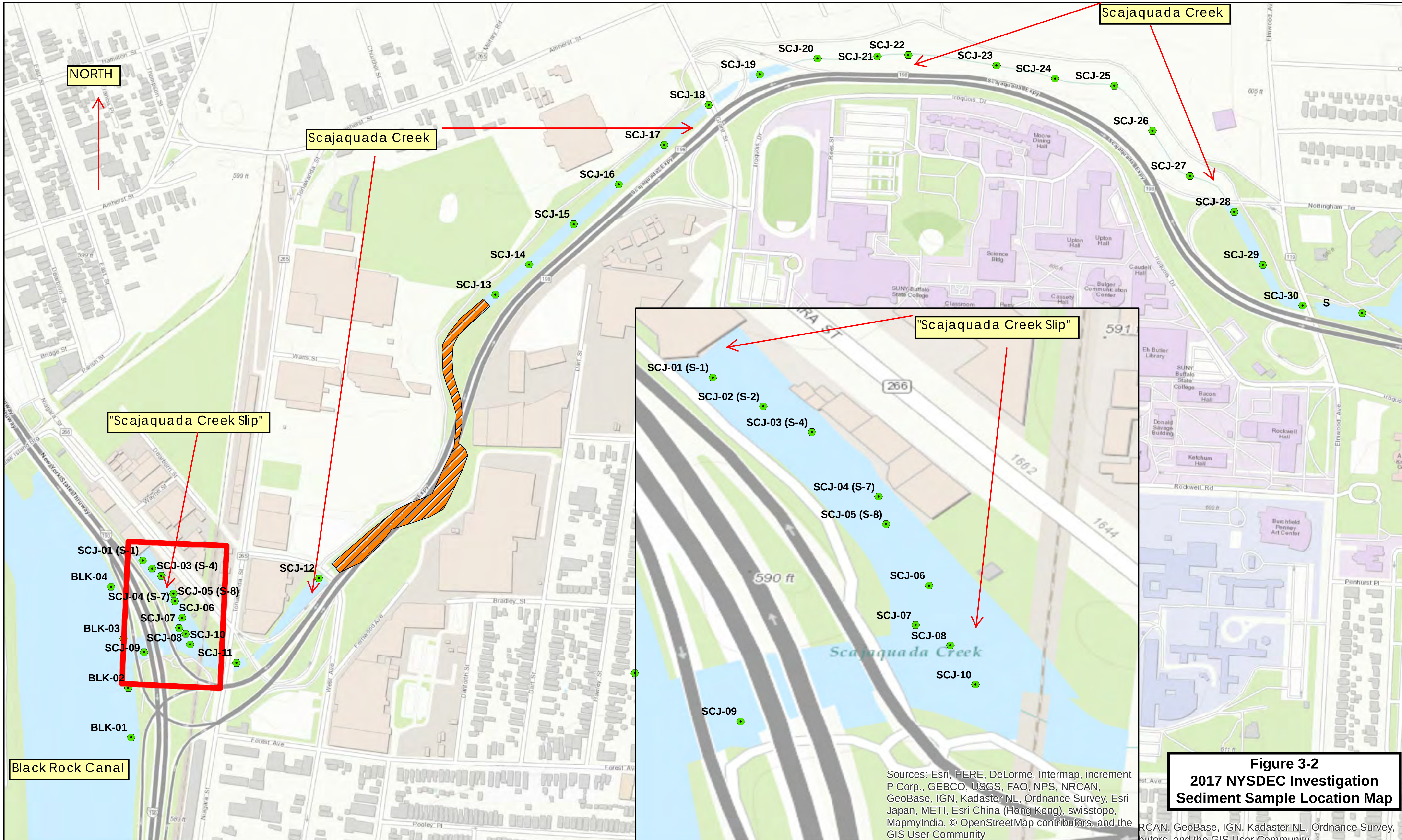


Figure 3-2
2017 NYSDEC Investigation
Sediment Sample Location Map

Legend

- Sediment Sample Location
- Decision Unit Division
- Decision Unit Subdivision

Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

0 50 100 200 Feet

US Army Corps of Engineers Buffalo District

U.S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
BUFFALO, NY

Figure 3-3
2017 USACE Investigation
Sediment Sample Location Map

Document Name: 170808_ScjaCreek.mxd
Drawn By: H5TDESPM
Date Saved: 08 Aug 2017
Time Saved: 1:44:26 PM

NIAGARA RIVER
AREA OF CONCERN

Document Path: Z:\Branch Folders\Environmental\Misc Projects\HarborEnvironmental\NiagaraAOC\ArcMap\2017\170808_ScjaCreek.mxd

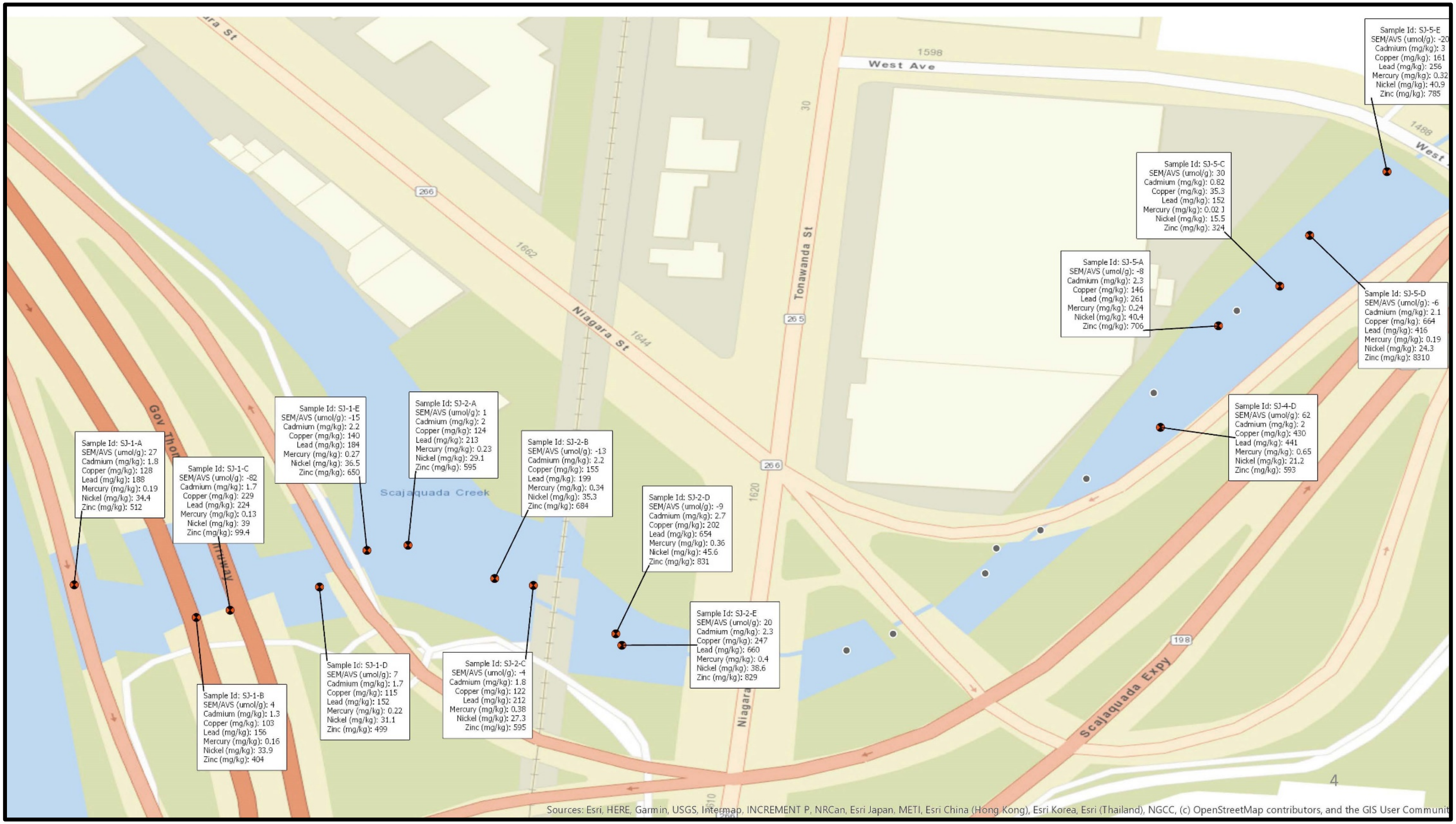
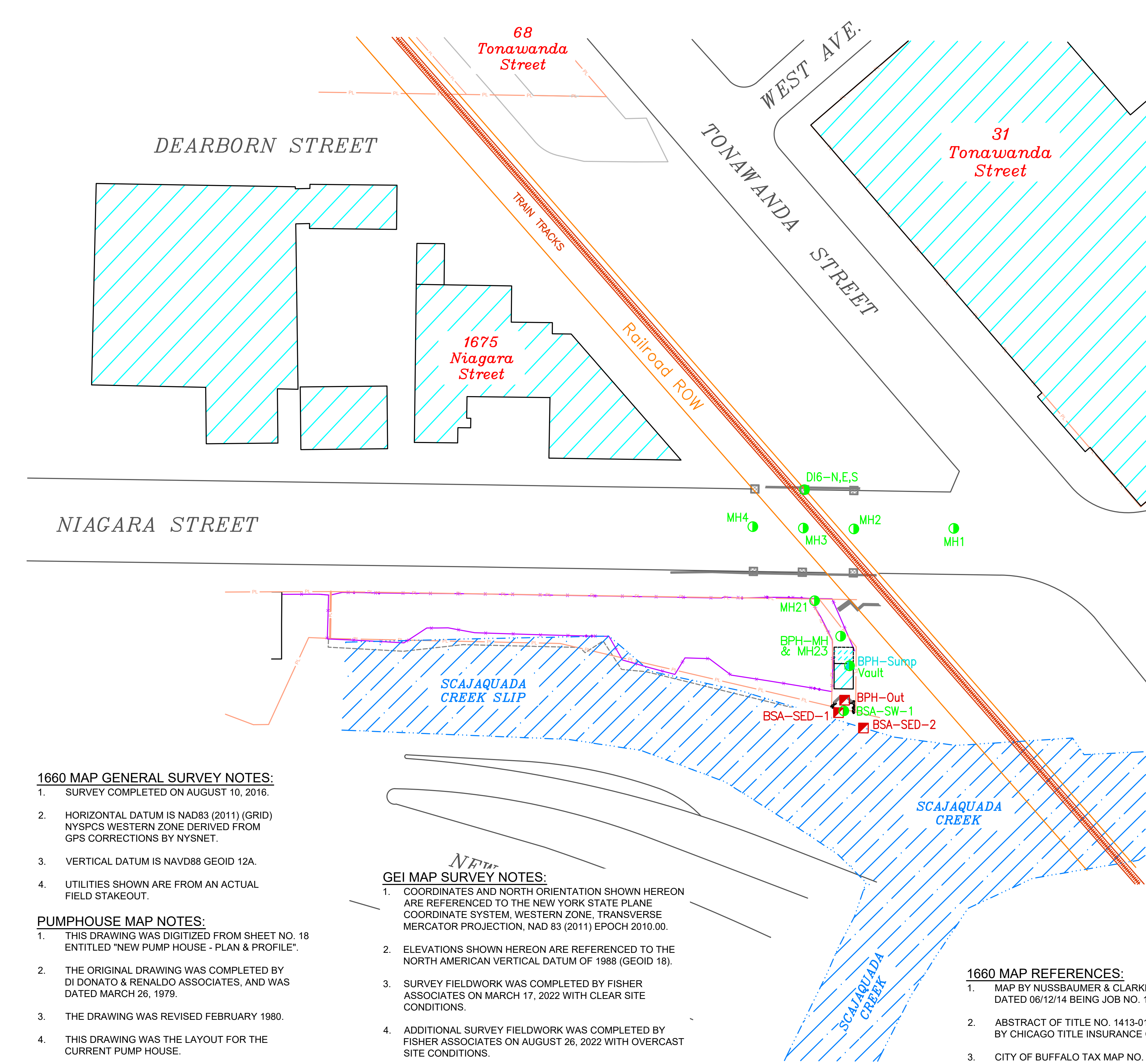


Figure 3-4. 2017 USACE Sediment Sample Location Map with Metals Results.



LEGEND

- SURFACE WATER SAMPLE
- SEDIMENT SAMPLE
- SURFACE WATER/SEDIMENT SAMPLE

80 0 80
SCALE IN FEET

1660 MAP GENERAL SURVEY NOTES:

1. SURVEY COMPLETED ON AUGUST 10, 2016.
2. HORIZONTAL DATUM IS NAD83 (2011) (GRID) NYSPCS WESTERN ZONE DERIVED FROM GPS CORRECTIONS BY NYSNET.
3. VERTICAL DATUM IS NAVD88 GEOID 12A.
4. UTILITIES SHOWN ARE FROM AN ACTUAL FIELD STAKEOUT.

PUMPHOUSE MAP NOTES:

1. THIS DRAWING WAS DIGITIZED FROM SHEET NO. 18 ENTITLED "NEW PUMP HOUSE - PLAN & PROFILE".
2. THE ORIGINAL DRAWING WAS COMPLETED BY DI DONATO & RENALDO ASSOCIATES, AND WAS DATED MARCH 26, 1979.
3. THE DRAWING WAS REVISED FEBRUARY 1980.
4. THIS DRAWING WAS THE LAYOUT FOR THE CURRENT PUMP HOUSE.

GEI MAP SURVEY NOTES:

1. COORDINATES AND NORTH ORIENTATION SHOWN HEREON ARE REFERENCED TO THE NEW YORK STATE PLANE COORDINATE SYSTEM, WESTERN ZONE, TRANSVERSE MERCATOR PROJECTION, NAD 83 (2011) EPOCH 2010.00.
2. ELEVATIONS SHOWN HEREON ARE REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (GEOID 18).
3. SURVEY FIELDWORK WAS COMPLETED BY FISHER ASSOCIATES ON MARCH 17, 2022 WITH CLEAR SITE CONDITIONS.
4. ADDITIONAL SURVEY FIELDWORK WAS COMPLETED BY FISHER ASSOCIATES ON AUGUST 26, 2022 WITH OVERCAST SITE CONDITIONS.

1660 MAP REFERENCES:

1. MAP BY NUSSBAUMER & CLARKE, INC DATED 06/12/14 BEING JOB NO. 14j2-0547.
2. ABSTRACT OF TITLE NO. 1413-01552 BY CHICAGO TITLE INSURANCE COMPANY.
3. CITY OF BUFFALO TAX MAP NO. 088.58

PROJECT
31 TONAWANDA STREET OFF-SITE INVESTIGATION, SITE NO. C915299A
BUFFALO, NEW YORK

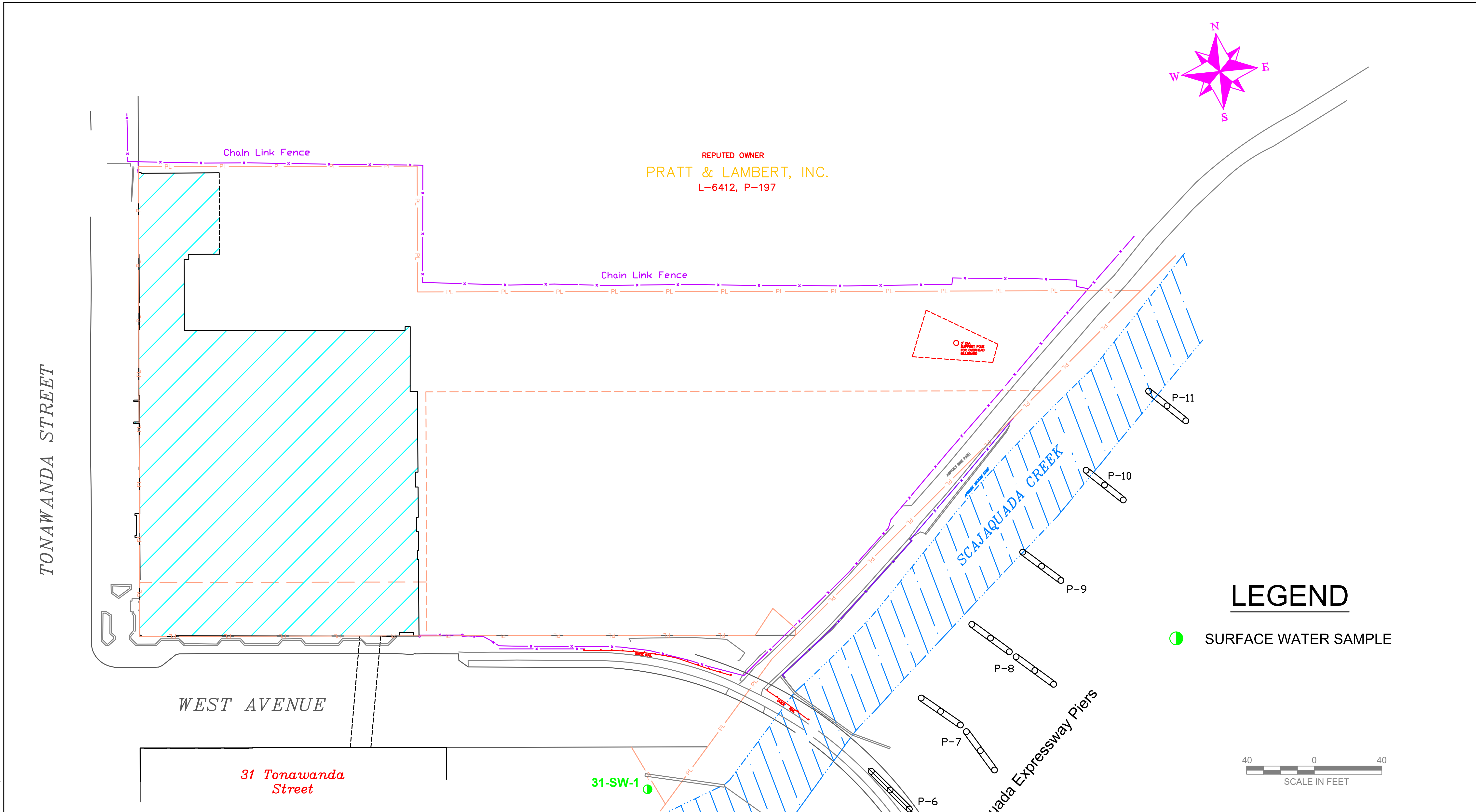
TITLE
SURFACE WATER & SEDIMENT SAMPLE LOCATION MAP

New York State Department of Environmental Conservation

SITE NO.: C915299 A			FILE NO.: NOT APPLICABLE	
DESIGN	GMM	09/09/2022	SCALE AS SHOWN	REV. 0
CADD	GMM	09/09/2022		
CHECK				
REVIEW				

FIGURE 3-5

Drawing Name: AutoCAD Drawings/1660 Niagara/10A 1660 Niagara Street with GEI AutoCAD Drawings.dwg
Operator Name: Glenn M. May Plot Date: December 1, 2022



PHASE II GENERAL SURVEY NOTES:

1. SURVEY MAP DATED MARCH 3, 1991.
2. SITE BENCHMARK IS A CHISELED "+" ON THE NORTHEAST BOLT OF A HYDRANT LOCATED ON THE SOUTH SIDE OF WEST AVENUE, ELEVATION = 586.50.
3. PROPERTY LINES ARE APPROXIMATE AND WERE DERIVED FROM PORTIONS OF TAX MAPS PROVIDED BY ECOLOGY & ENVIRONMENT, P.C.

GENERAL DRAWING NOTES:

1. THIS DRAWING WAS COMPLETED BY GLENN M. MAY ON SEPTEMBER 29, 2022 AND CONSISTS OF THE SURVEY FOR 57-71 TONAWANDA STREET, THE BE3 BCP RI FIGURES, THE PHASE II SURVEY MAP, AND THE RETEC SOIL BORING SURVEY MAP.
2. LOCATIONS OF THE BE3 RI SOIL BORINGS, TEST PITS, AND MONITORING WELLS ARE FROM THE LOCATIONS SHOWN ON THE RI REPORT FIGURES RATHER THAN THE COORDINATES GIVEN IN TABLE 7 AS THEY WERE BELIEVED TO BE INCORRECT.

57-71 GENERAL SURVEY NOTES:

1. THIS SURVEY WAS COMPLETED IN 2019 BY McINTOSH & McINTOSH, P.C. IN 2019.
2. THIS SURVEY WAS PREPARED WITHOUT THE BENEFIT OF AN ABSTRACT OF TITLE AND IS SUBJECT TO ANY STATE OF FACTS THAT MAY BE REVEALED BY AN EXAMINATION OF SUCH.

PROJECT
31 TONAWANDA STREET OFF-SITE INVESTIGATION, SITE NO. C915299A
BUFFALO, NEW YORK

TITLE
SURFACE WATER SAMPLE LOCATION MAP

New York State Department of Environmental Conservation

SITE NO.: C915299 A			FILE NO.: NOT APPLICABLE	
DESIGN	GMM	09/09/2022	SCALE AS SHOWN	REV. 0
CADD	GMM	09/09/2022	FIGURE 3-6	
CHECK				
REVIEW				

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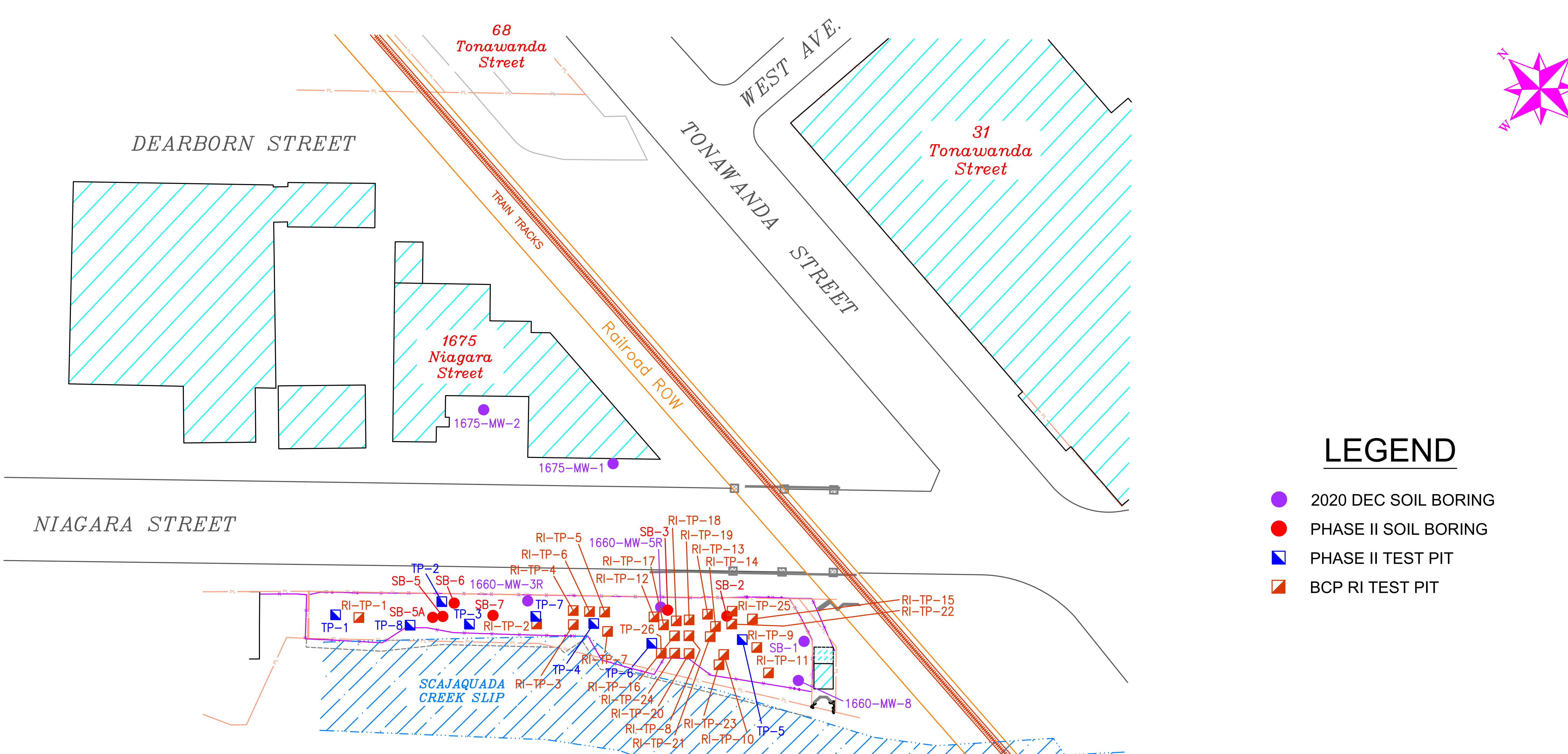
Operator Name: Glenn M. May Plot Date: December 1, 2022



LEGEND

- 2020 DEC SOIL BORING
- PHASE II SOIL BORING
- PHASE II TEST PIT
- BCP RI TEST PIT

80 0 80

SCALE IN FEET

1660 MAP GENERAL SURVEY NOTES:

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3. VERTICAL DATUM IS NAVD88 GEOID 12A.
4. UTILITIES SHOWN ARE FROM AN ACTUAL FIELD STAKEOUT.

PUMPHOUSE MAP NOTES:

1. THIS DRAWING WAS DIGITIZED FROM SHEET NO. 18 ENTITLED "NEW PUMP HOUSE - PLAN & PROFILE".
2. THE ORIGINAL DRAWING WAS COMPLETED BY DI DONATO & RENALDO ASSOCIATES, AND WAS DATED MARCH 26, 1979.
3. THE DRAWING WAS REVISED FEBRUARY 1980.
4. THIS DRAWING WAS THE LAYOUT FOR THE CURRENT PUMP HOUSE.

GEI MAP SURVEY NOTES:

1. COORDINATES AND NORTH ORIENTATION SHOWN HEREON ARE REFERENCED TO THE NEW YORK STATE PLANE COORDINATE SYSTEM, WESTERN ZONE, TRANSVERSE MERCATOR PROJECTION, NAD 83 (2011) EPOCH 2010.00.
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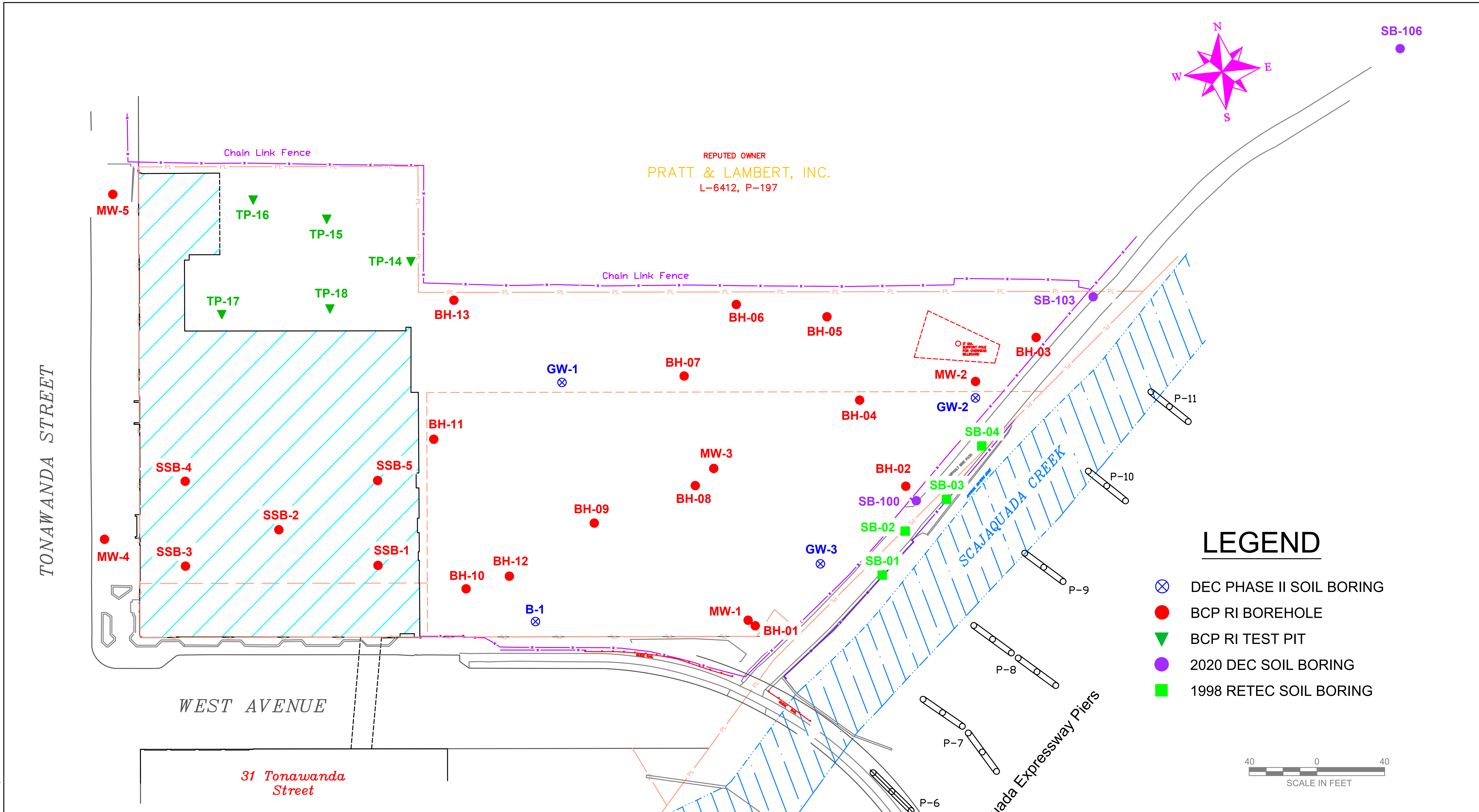
1660 MAP REFERENCES:

1. MAP BY NUSSBAUMER & CLARKE, INC DATED 06/12/14 BEING JOB NO. 14j2-0547.
2. ABSTRACT OF TITLE NO. 1413-01552 BY CHICAGO TITLE INSURANCE COMPANY.
3. CITY OF BUFFALO TAX MAP NO. 088.58

PROJECT	31 TONAWANDA STREET OFF-SITE INVESTIGATION, SITE NO. C915299A BUFFALO, NEW YORK				
TITLE	SOIL BORING & TEST PIT LOCATION MAP				
New York State Department of Environmental Conservation	SITE NO.: C915299 A			FILE NO.: NOT APPLICABLE	
	DESIGN	GMM	09/09/2022	SCALE AS SHOWN	REV. 0
	CADD	GMM	09/09/2022	FIGURE 3-7	
	CHECK				
	REVIEW				



PHASE II GENERAL SURVEY NOTES:

1. SURVEY MAP DATED MARCH 3, 1991.
2. SITE BENCHMARK IS A CHISELED "+" ON THE NORTHEAST BOLT OF A HYDRANT LOCATED ON THE SOUTH SIDE OF WEST AVENUE, ELEVATION = 586.50.
3. PROPERTY LINES ARE APPROXIMATE AND WERE DERIVED FROM PORTIONS OF TAX MAPS PROVIDED BY ECOLOGY & ENVIRONMENT, P.C.

GENERAL DRAWING NOTES:

1. THIS DRAWING WAS COMPLETED BY GLENN M. MAY ON SEPTEMBER 29, 2022 AND CONSISTS OF THE SURVEY FOR 57-71 TONAWANDA STREET, THE BE3 BCP RI FIGURES, THE PHASE II SURVEY MAP, AND THE RETEC SOIL BORING SURVEY MAP.
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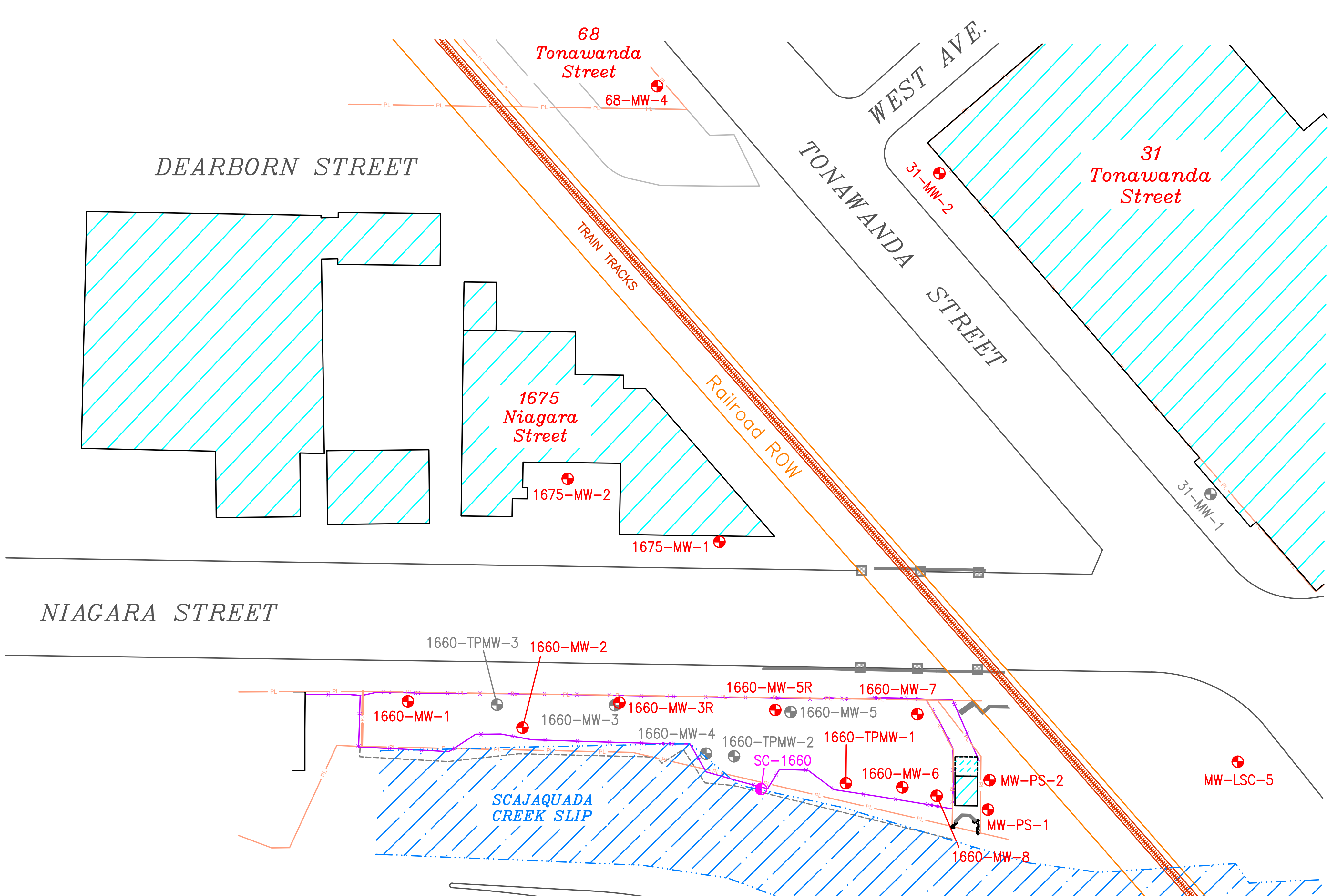
2. THIS SURVEY WAS PREPARED WITHOUT THE BENEFIT OF AN ABSTRACT OF TITLE AND IS SUBJECT TO ANY STATE OF FACTS THAT MAY BE REVEALED BY AN EXAMINATION OF SUCH.

PROJECT	31 TONAWANDA STREET OFF-SITE INVESTIGATION, SITE NO. C915299A BUFFALO, NEW YORK
TITLE	SOIL BORING & TEST PIT LOCATION MAP

New York State Department of Environmental Conservation	SITE NO.: C915299 A			FILE NO.: NOT APPLICABLE	
	DESIGN	GMM	09/09/2022	SCALE AS SHOWN	REV. 0
	CADD	GMM	09/09/2022	FIGURE 3-8	
	CHECK				
	REVIEW				



LEGEND

- EXISTING MONITORING WELL
- FORMER MONITORING WELL
- STAFF GAUGE

80 0 80
SCALE IN FEET

1660 MAP GENERAL SURVEY NOTES:

1. SURVEY COMPLETED ON AUGUST 10, 2016.
2. HORIZONTAL DATUM IS NAD83 (2011) (GRID) NYSPCS WESTERN ZONE DERIVED FROM GPS CORRECTIONS BY NYSNET.
3. VERTICAL DATUM IS NAVD88 GEOID 12A.
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GEI MAP SURVEY NOTES:

1. COORDINATES AND NORTH ORIENTATION SHOWN HEREON ARE REFERENCED TO THE NEW YORK STATE PLANE COORDINATE SYSTEM, WESTERN ZONE, TRANSVERSE MERCATOR PROJECTION, NAD 83 (2011) EPOCH 2010.00.
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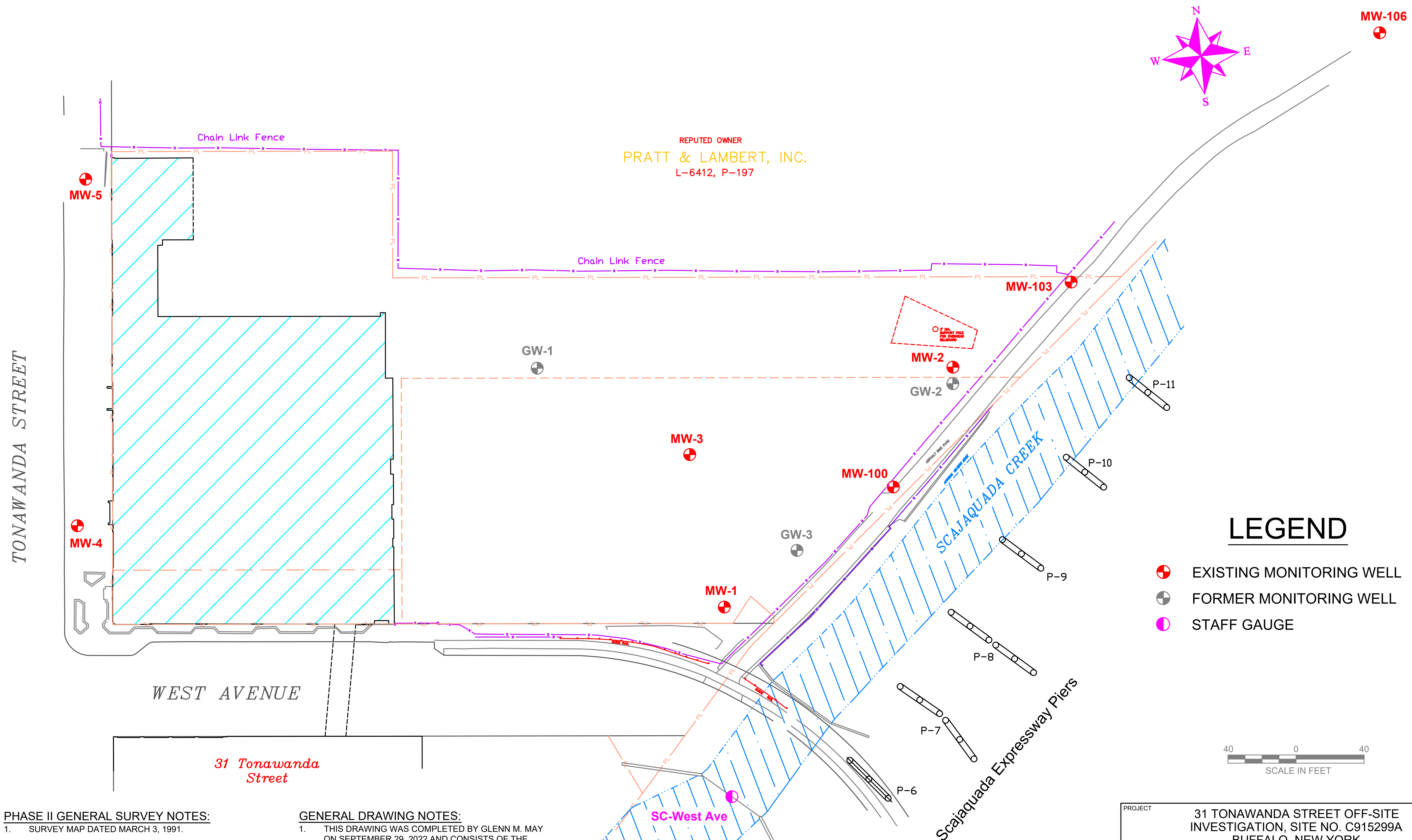
2. ABSTRACT OF TITLE NO. 1413-01552 BY CHICAGO TITLE INSURANCE COMPANY.
3. CITY OF BUFFALO TAX MAP NO. 088.58

PROJECT	31 TONAWANDA STREET OFF-SITE INVESTIGATION, SITE NO. C915299A BUFFALO, NEW YORK			
TITLE	MONITORING WELL LOCATION MAP			
New York State Department of Environmental Conservation	SITE NO.: C915299 A			FILE NO.: NOT APPLICABLE
	DESIGN	GMM	09/09/2022	SCALE AS SHOWN / REV. 0
	CADD	GMM	09/09/2022	FIGURE 3-9
	CHECK			
	REVIEW			

Drawing Name: AutoCAD Drawings/1660 Niagara/10A 1660 Niagara Street with GEI AutoCAD Drawings.dwg
Operator Name: Glenn M. May Plot Date: December 1, 2022



PHASE II GENERAL SURVEY NOTES:

1. SURVEY MAP DATED MARCH 3, 1991.
2. SITE BENCHMARK IS A CHISELED "+" ON THE NORTHEAST BOLT OF A HYDRANT LOCATED ON THE SOUTH SIDE OF WEST AVENUE, ELEVATION = 586.50.
3. PROPERTY LINES ARE APPROXIMATE AND WERE DERIVED FROM PORTIONS OF TAX MAPS PROVIDED BY ECOLOGY & ENVIRONMENT, P.C.

GENERAL DRAWING NOTES:

1. THIS DRAWING WAS COMPLETED BY GLENN M. MAY ON SEPTEMBER 29, 2022 AND CONSISTS OF THE SURVEY FOR 57-71 TONAWANDA STREET, THE BE3 BCP RI FIGURES, THE PHASE II SURVEY MAP, AND THE RETEC SOIL BORING SURVEY MAP.
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PROJECT
31 TONAWANDA STREET OFF-SITE INVESTIGATION, SITE NO. C915299A
BUFFALO, NEW YORK

TITLE
MONITORING WELL LOCATION MAP

New York State Department of Environmental Conservation

SITE NO.: C915299 A			FILE NO.: NOT APPLICABLE	
DESIGN	GMM	09/09/2022	SCALE AS SHOWN	REV. 0
CADD	GMM	09/09/2022	FIGURE 3-10	
CHECK				
REVIEW				

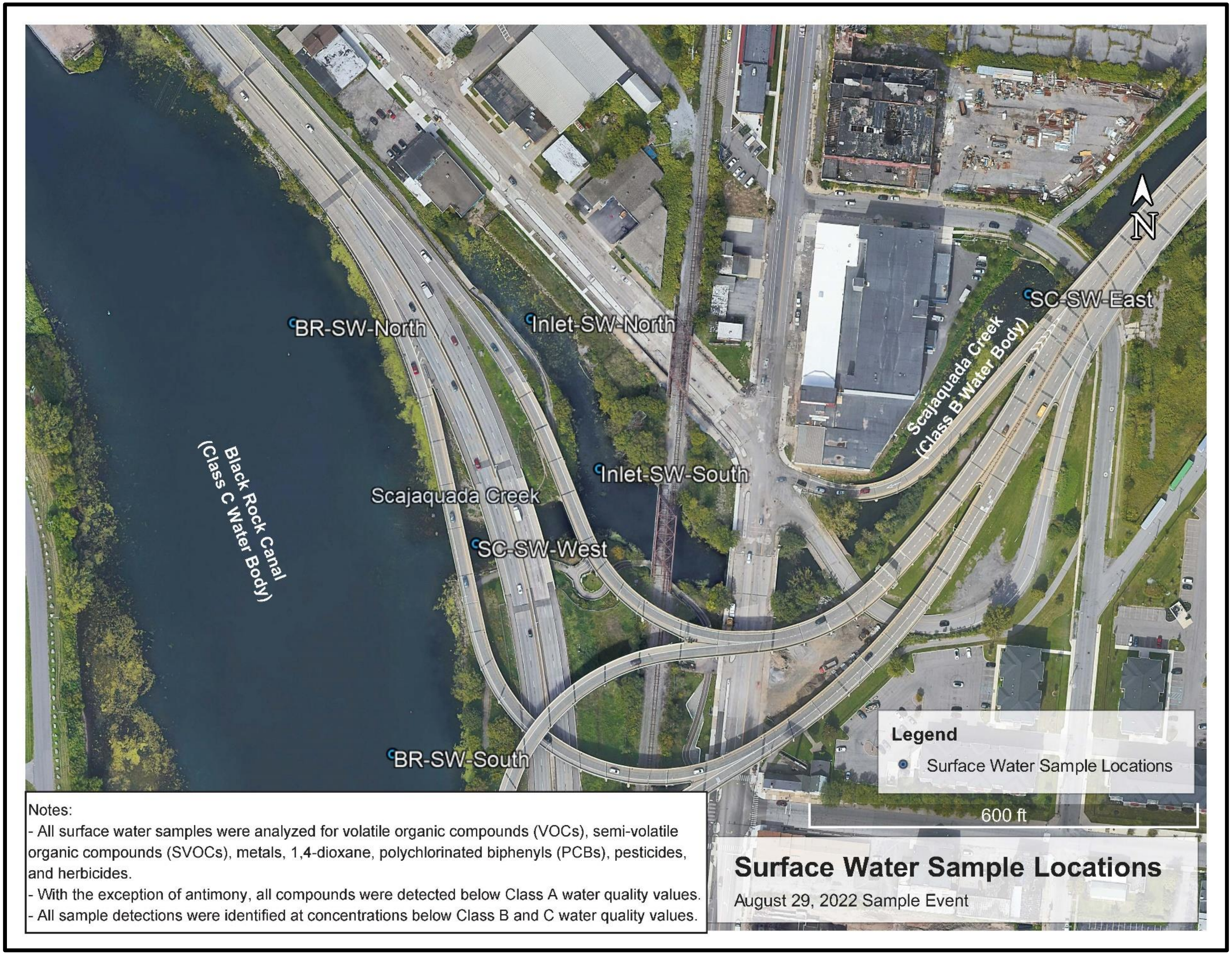


Figure 3-11. Surface Water Sample Location Map for the August 29, 2022 NYSDEC Sampling Event.

Figure 4-1. Photo showing the NAPL extracted from monitoring well 1660-MW-7 during sample collection. Photo taken by Glenn M. May on January 15, 2020.

Figure 4-2. Photo showing the sheen that was generated on the Scajaquada Creek slip during the collection of sediment sample BSA-SED-1. View looking south. Photo taken by Glenn M. May on January 15, 2020.

Figure 4-3. Photo showing sediment sample SED-1. Photo taken by Glenn M. May on January 15, 2020.

Figure 4-4. Photo showing the viscous, brownish black, sticky residue in the sampling bowl following the collection of sediment sample SED-1. Photo taken by Glenn M. May on January 15, 2020.

Figure 4-5. Photo showing the rainbow sheen on sediment sample SED-2. Photo taken by Glenn M. May on January 15, 2020.

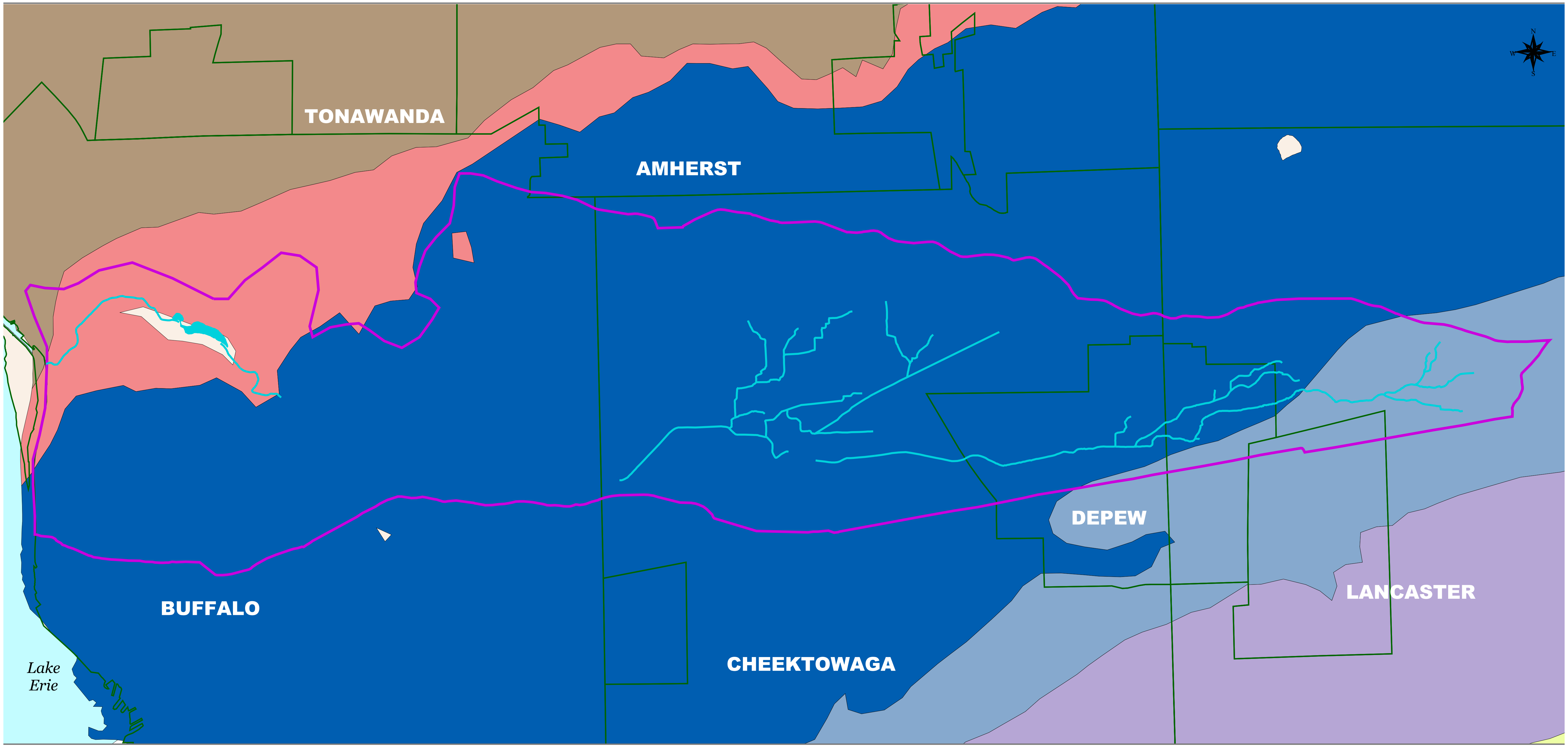
Figure 4-6. Photo showing NAPL and sheens in the gravelly sand deposit in soil boring 1660-MW-5R. Photo taken by Glenn M. May on September 14, 2020.

Figure 4-7. Photo showing NAPL in a sand seam in soil boring 1660-SB-1. Photo taken by Glenn M. May on September 16, 2020.

Figure 4-8. Photo showing NAPL in a sand seam in soil boring 1660-MW-8. The underlying reddish-brown silty clay is also shown. Photo taken by Glenn M. May on September 16, 2020.

Figure 4-9. Photo showing the oily residue that coats the rocks at the Niagara Street pumphouse discharge area. Photo taken on May 3, 2019 by unknown.

Figure 4-10. Photo showing the oil booms placed at the Niagara Street pumphouse discharge area to absorb any NAPL pumped into the creek. Photo taken on May 3, 2019 by unknown.



1 0 1 2 3 Miles

- Camillus, Syracuse, & Vernon Formations--shale, dolostone, salt, and gypsum
  Upper Silurian
- Akron Dolostone; Bertie Formation--dolostone, shale
  Upper Silurian
- Seneca, Morehouse (cherty), & Clarence Limestone Member, local coral bioherms; Bois Blanc Formation--sandy, thin, discontinuous
  Middle Devonian
- Marcellus Formation--Oatka Creek Shale Member
  Middle Devonian
- Skaneateles Formation--Levanna Shale, Stafford Limestone Members
  Middle Devonian
- Ludlowville Formation--Deep Run Shale, Tichenor Limestone, Wanakah & Ledyard Shales, Centerfield Limestone Members
  Middle Devonian
- Scajaquada Creek and Tributaries
- Scajaquada Creek Watershed
- Municipal Boundaries

Scajaquada Creek Watershed Advisory Council
Erie County Soil and Water Conservation District
USDA Natural Resources Conservation Service

Scajaquada Creek Watershed
Erie County, New York
Bedrock Geology

Figure 5-1

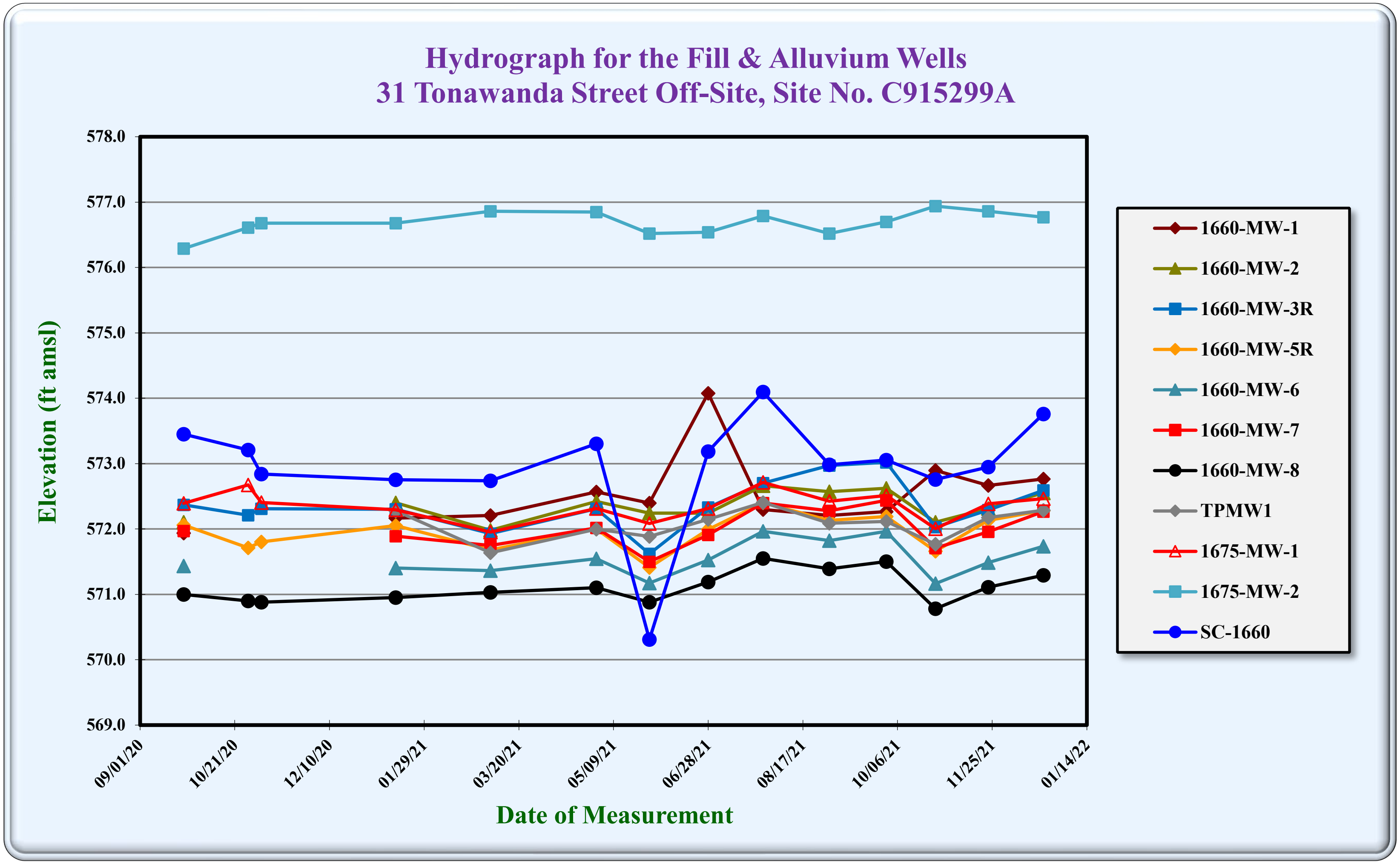


Figure 5-2. Hydrograph for the Fill & Alluvium Wells at 1660 & 1675 Niagara Street.

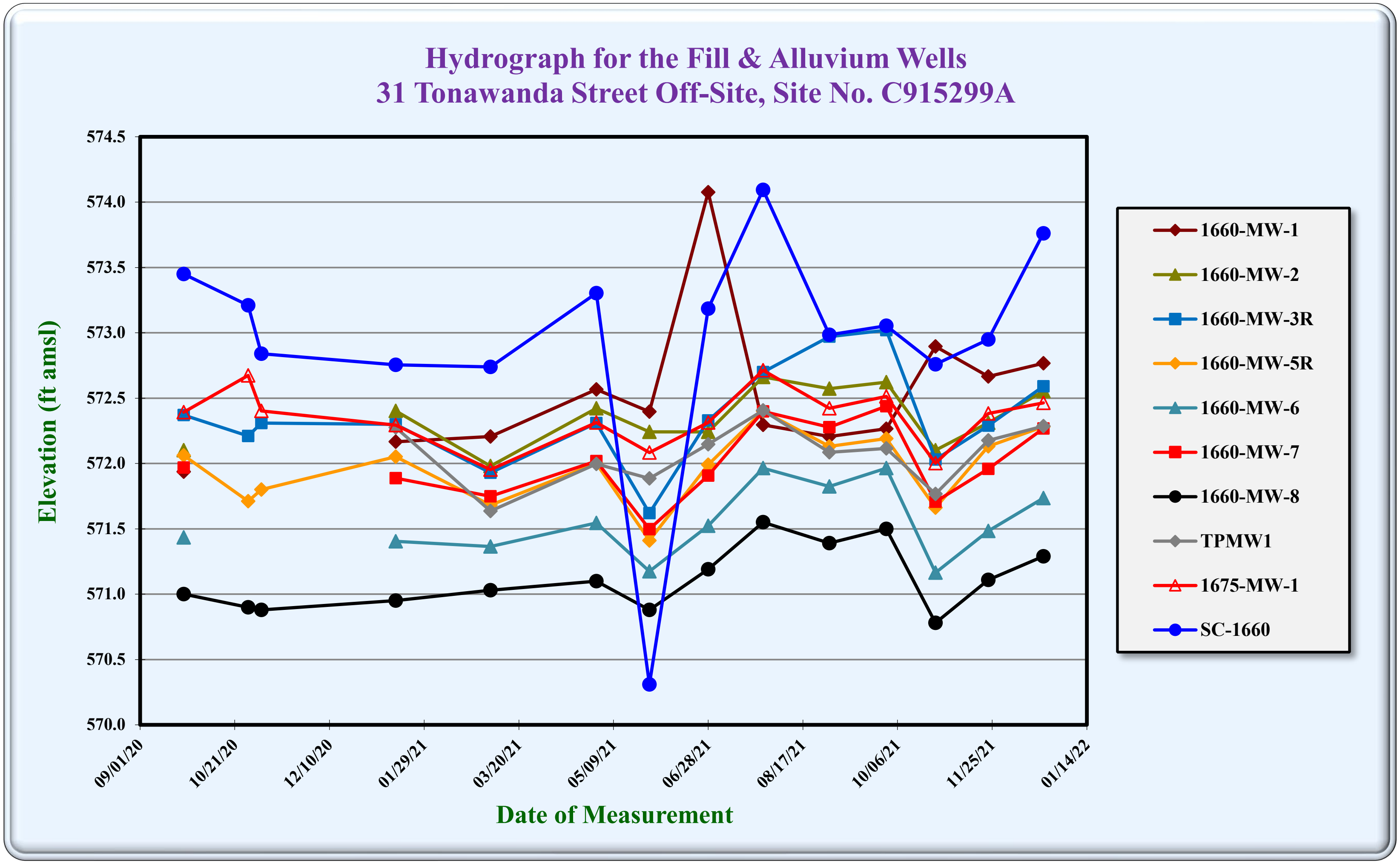


Figure 5-3. Hydrograph for the Fill & Alluvium Wells at 1660 & 1675 Niagara Street. Groundwater elevations for well 1675-MW-2 have been removed from this plot.

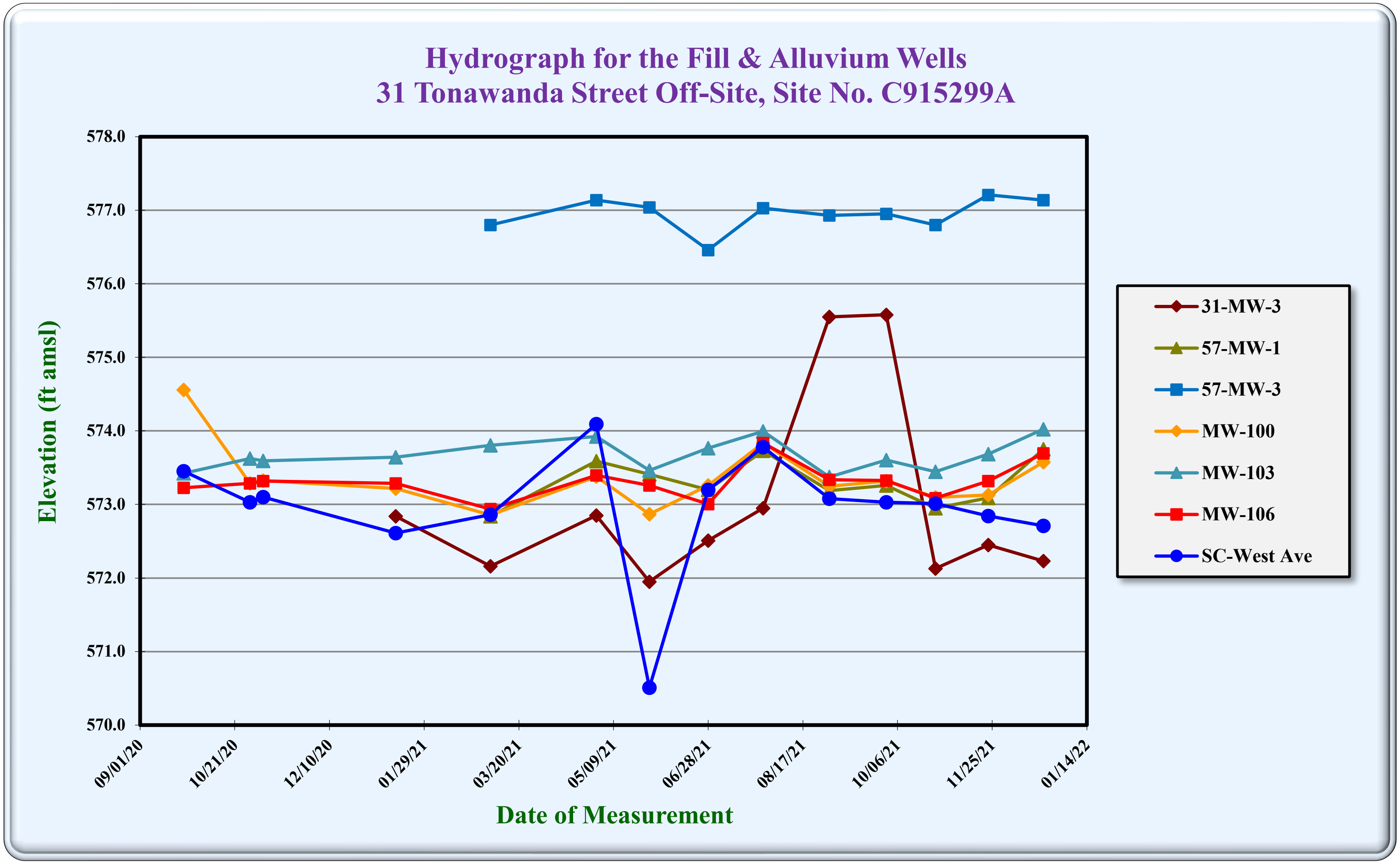


Figure 5-4. Hydrograph for the Fill & Alluvium Wells at 31, 57 & 71 Tonawanda Street.

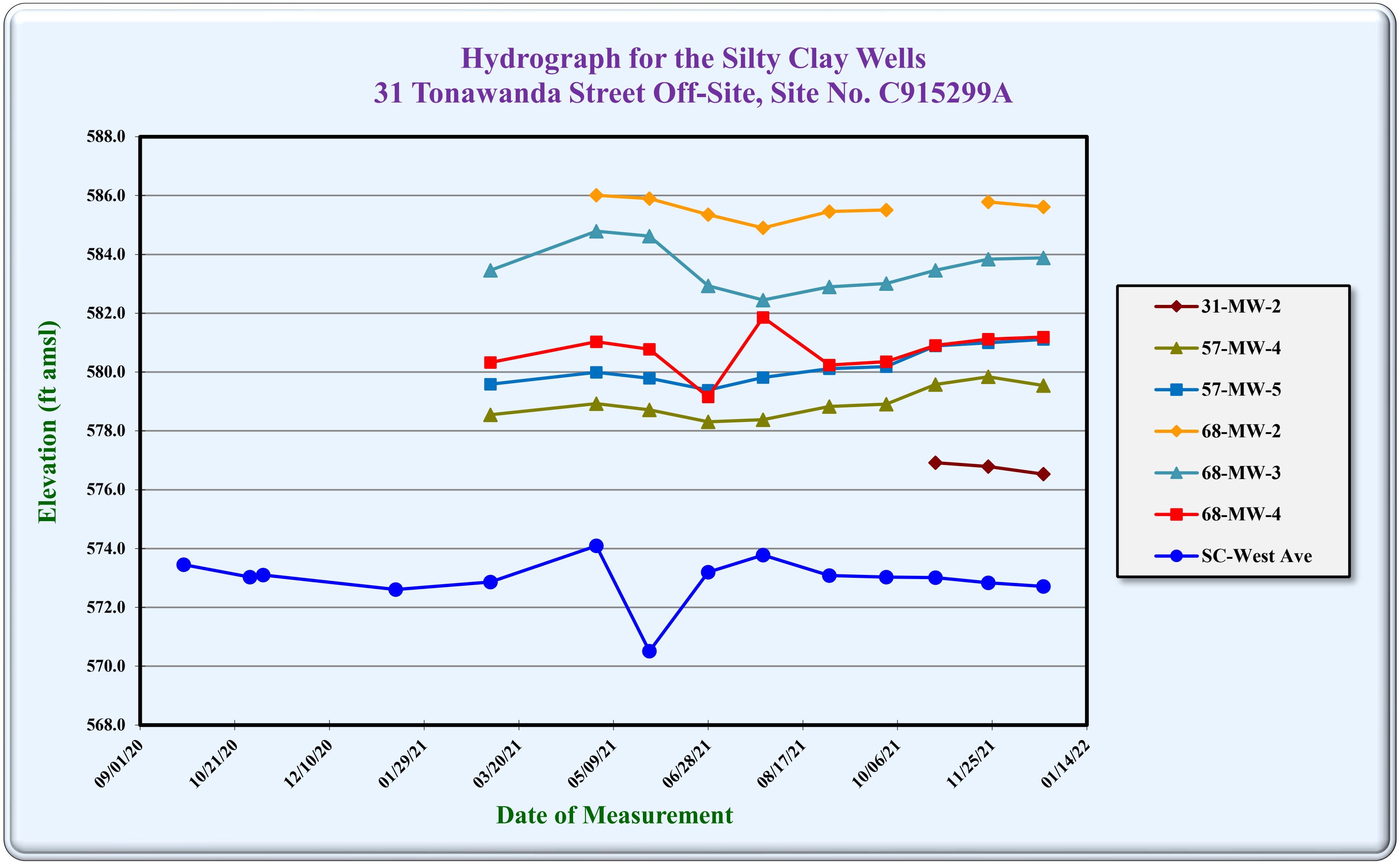
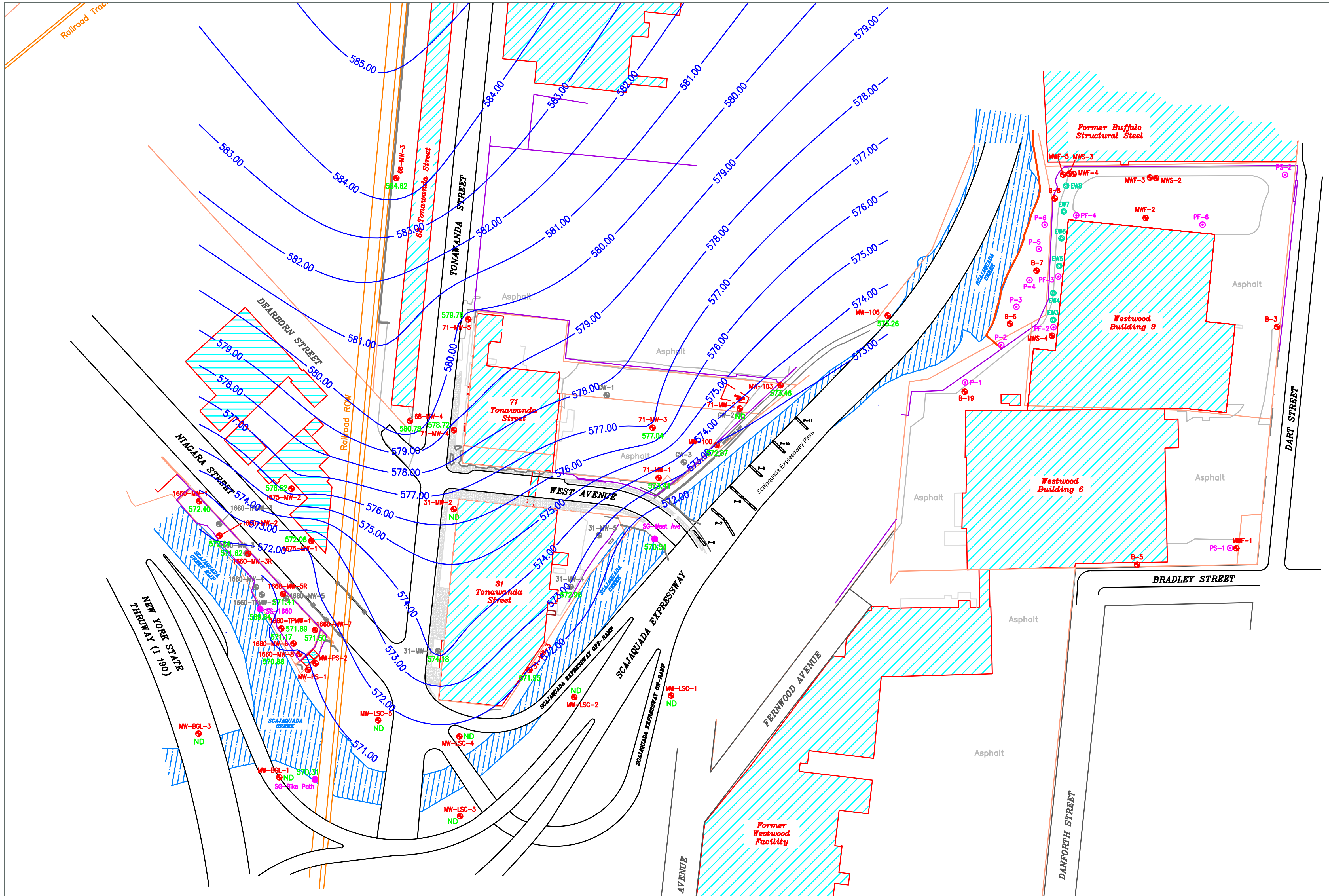


Figure 5-5. Hydrograph for the Silty Clay Wells at 31, 57 & 71 Tonawanda Street.



LEGEND

- EXISTING MONITORING WELL
- FORMER MONITORING WELL
- STAFF GAUGE
- FORMER EXTRACTION WELL
- EXISTING PIEZOMETER

GROUNDWATER CONTOUR MAP FOR MAY 28, 2021

31 TONAWANDA STREET OFF-SITE INVESTIGATION BUFFALO, NEW YORK

Drawn G.M.M.		Date 3/31/23
Designed		Figure 5-6
Approved		

Scale In Feet
0 200

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

1660 MAP GENERAL SURVEY NOTES:

1. SURVEY COMPLETED ON AUGUST 10, 2016.
2. HORIZONTAL DATUM IS NAD83 (2011) (GRID) NYSPCS WESTERN ZONE DERIVED FROM GPS CORRECTIONS BY NYSNET.
3. VERTICAL DATUM IS NAVD88 GEOID 12A.
4. UTILITIES SHOWN ARE FROM AN ACTUAL FIELD STAKEOUT.

PUMPHOUSE MAP NOTES:

1. THIS DRAWING WAS DIGITIZED FROM SHEET NO. 18 ENTITLED "NEW PUMP HOUSE - PLAN & PROFILE".
2. THE ORIGINAL DRAWING WAS COMPLETED BY DI DONATO & RENALDO ASSOCIATES, AND WAS DATED MARCH 26, 1979.
3. THE DRAWING WAS REVISED FEBRUARY 1980.
4. THIS DRAWING WAS THE LAYOUT FOR THE CURRENT PUMP HOUSE.

GEI MAP SURVEY NOTES:

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2. ABSTRACT OF TITLE NO. 1413-01552 BY CHICAGO TITLE INSURANCE COMPANY.
3. CITY OF BUFFALO TAX MAP NO. 088.58

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PROPERTY MAY BE AFFECTED BY THE FOLLOWING:

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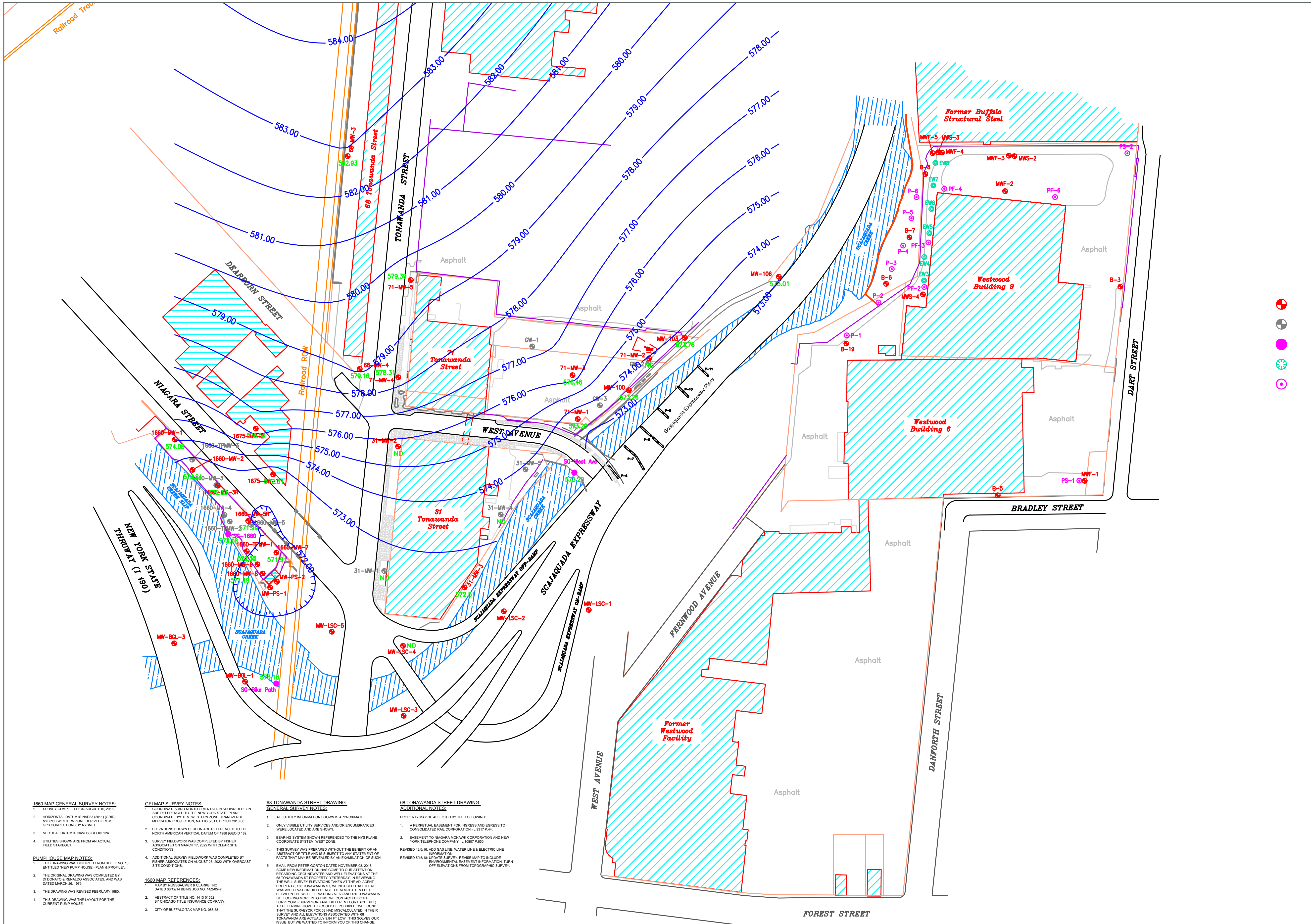
2. EASEMENT TO NIAGARA MOHAWK CORPORATION AND NEW YORK TELEPHONE COMPANY - L.10807 P.650.

REVISED 12/6/16: ADD GAS LINE, WATER LINE & ELECTRIC LINE INFORMATION

REVISED 5/15/18: UPDATE SURVEY, REVISE MAP TO INCLUDE ENVIRONMENTAL EASEMENT INFORMATION, TURN OFF ELEVATIONS FROM TOPOGRAPHIC SURVEY.



LEGEND

- EXISTING MONITORING WELL
- FORMER MONITORING WELL
- STAFF GAUGE
- FORMER EXTRACTION WELL
- EXISTING PIEZOMETER

1660 MAP GENERAL SURVEY NOTES:
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2. ABSTRACT OF TITLE NO. 1413-01552 BY CHICAGO TITLE INSURANCE COMPANY.
3. CITY OF BUFFALO TAX MAP NO. 088.58

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REVISED 12/6/16: ADD GAS LINE, WATER LINE & ELECTRIC LINE INFORMATION
REVISED 5/15/18: UPDATE SURVEY, REVISE MAP TO INCLUDE ENVIRONMENTAL EASEMENT INFORMATION, TURN OFF ELEVATIONS FROM TOPOGRAPHIC SURVEY.

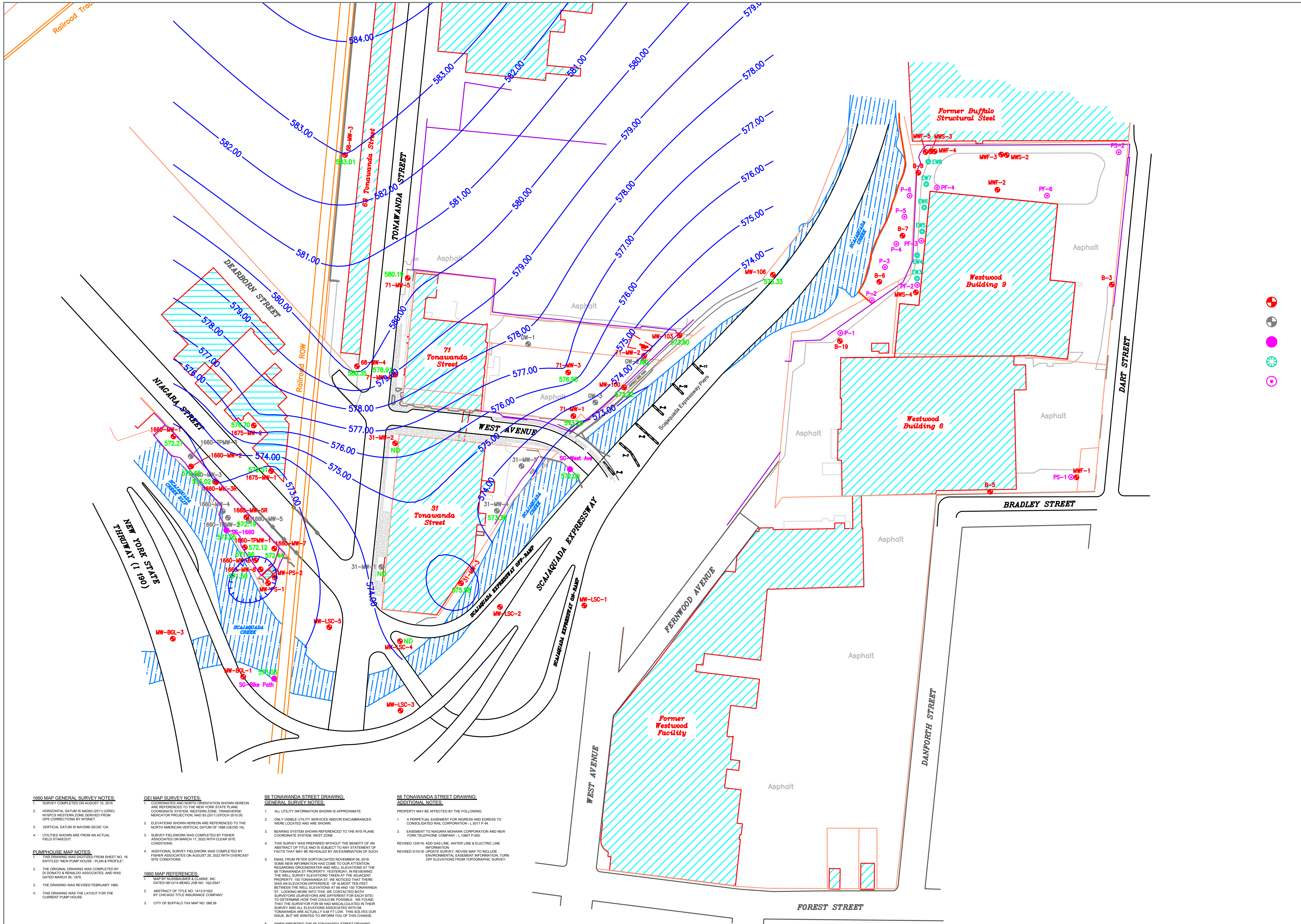
GROUNDWATER CONTOUR MAP FOR JUNE 28, 2021

31 TONAWANDA STREET OFF-SITE INVESTIGATION BUFFALO, NEW YORK

Drawn G.M.M.	Date 3/31/23
Designed	Figure 5-7
Approved	

Scale In Feet
0 200

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation



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REVISED 5/15/18: UPDATE SURVEY, REVISE MAP TO INCLUDE ENVIRONMENTAL EASEMENT INFORMATION, TURN OFF ELEVATIONS FROM TOPOGRAPHIC SURVEY.

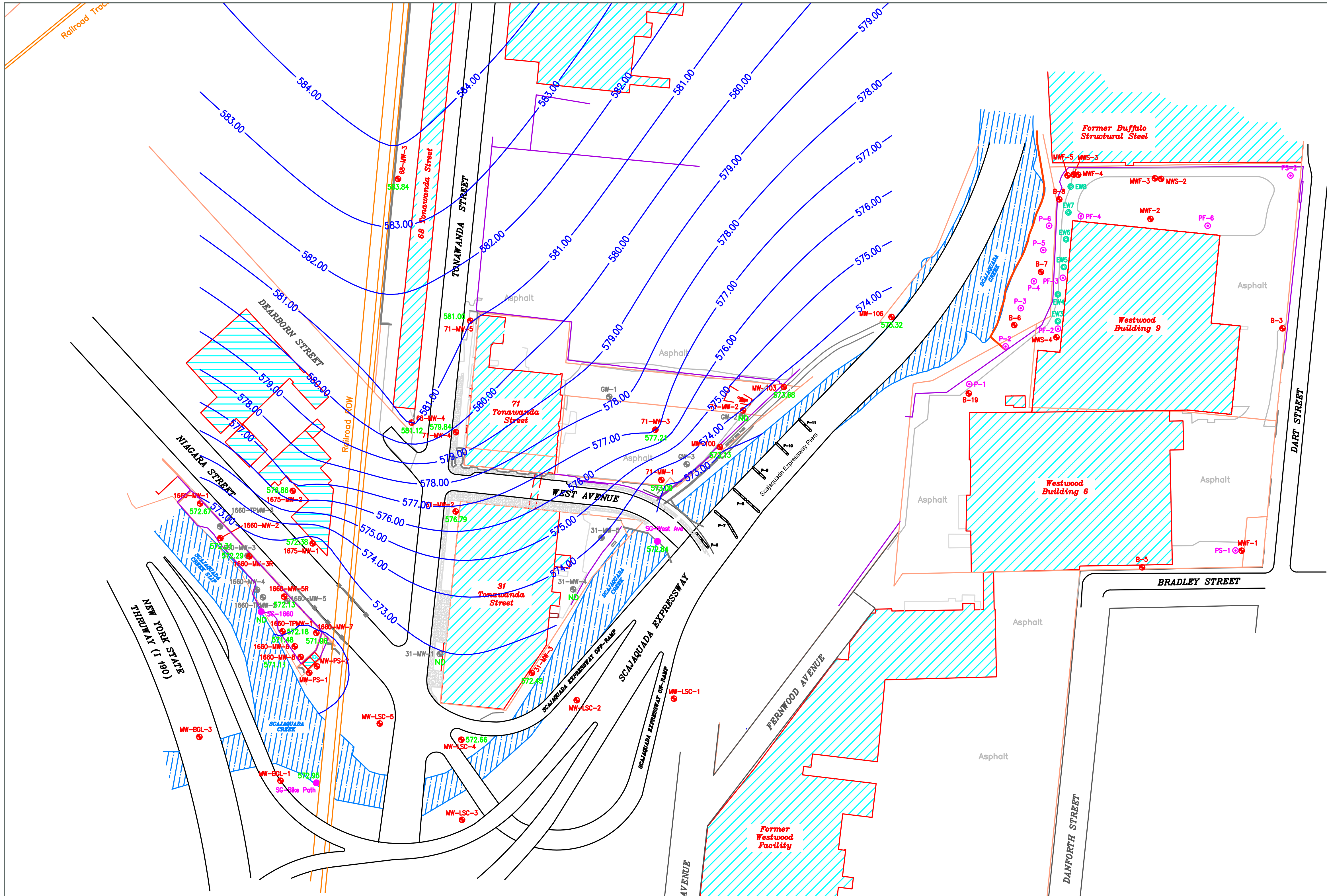
GROUNDWATER CONTOUR MAP
FOR SEPTEMBER 30, 2021

31 TONAWANDA STREET
OFF-SITE INVESTIGATION
BUFFALO, NEW YORK

Drawn G.M.M.	Date 3/31/23
Designed	Figure 5-8
Approved	

Scale In Feet
0 200

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation



LEGEND

- EXISTING MONITORING WELL
- FORMER MONITORING WELL
- STAFF GAUGE
- FORMER EXTRACTION WELL
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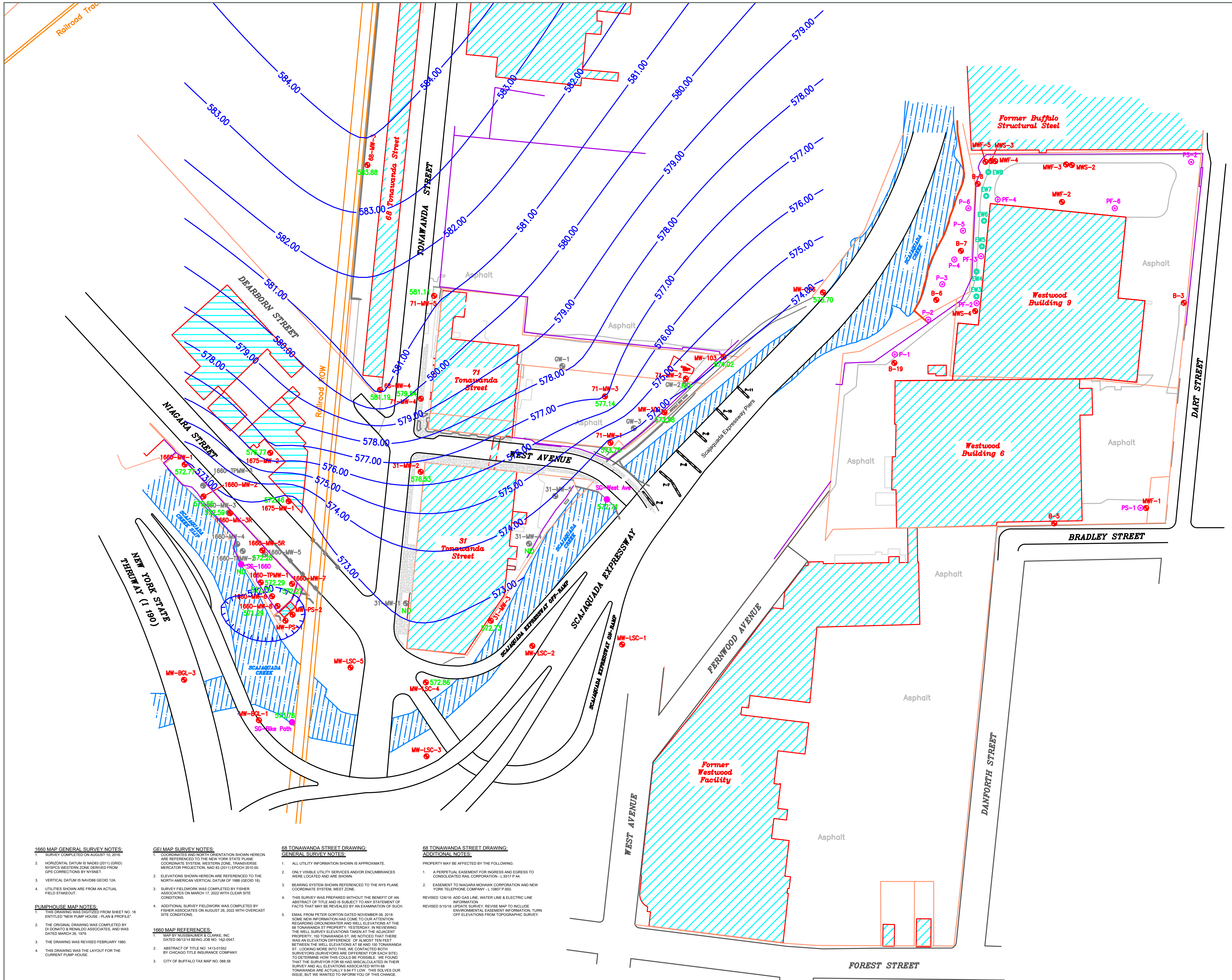
GROUNDWATER CONTOUR MAP
FOR NOVEMBER 23, 2021

31 TONAWANDA STREET
OFF-SITE INVESTIGATION
BUFFALO, NEW YORK

Drawn	Date
G.M.M.	3/31/23
Designed	Figure
	5-9
Approved	

Scale In Feet
0 200

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation



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GROUNDWATER CONTOUR MAP
FOR DECEMBER 22, 2021

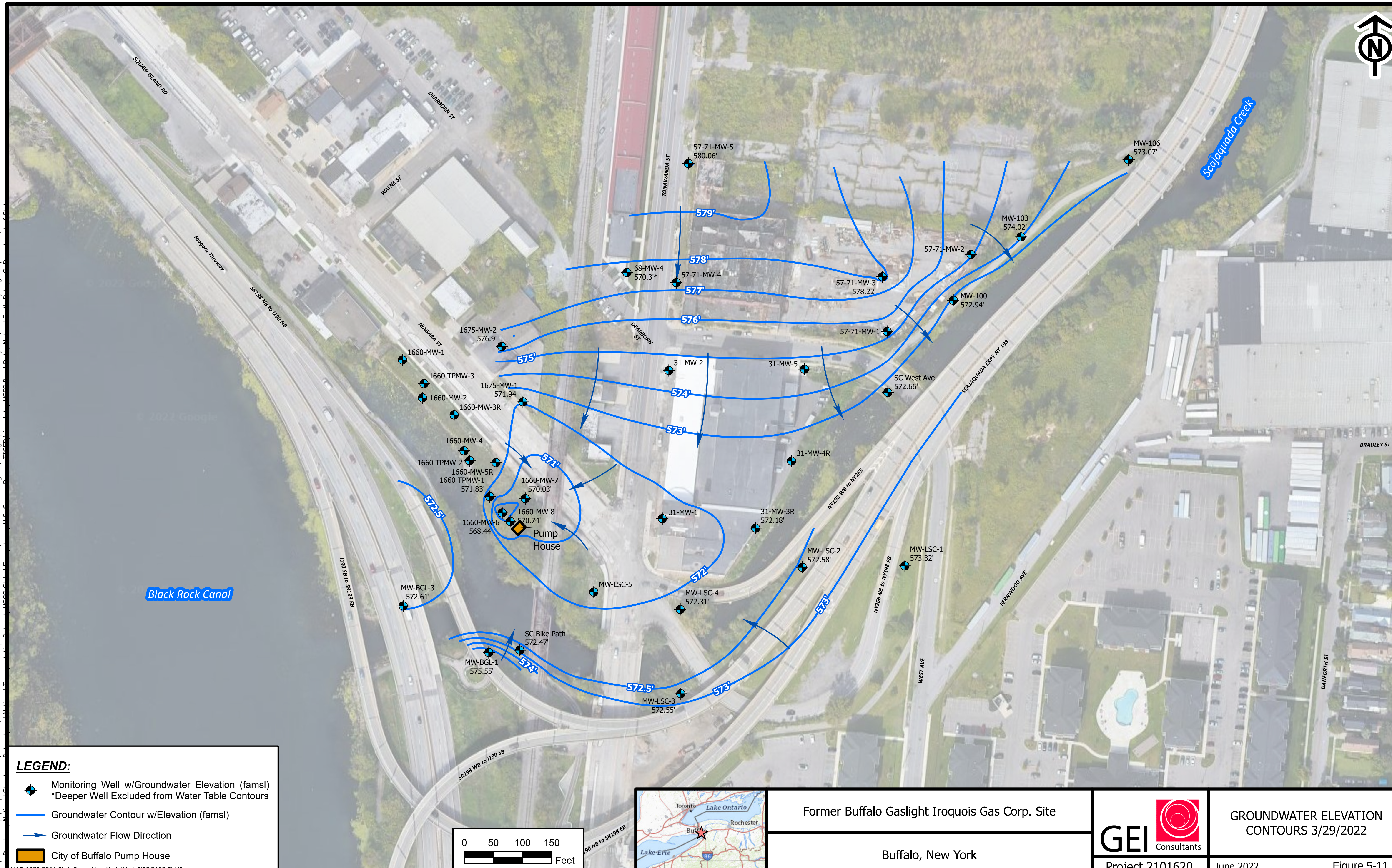
31 TONAWANDA STREET
OFF-SITE INVESTIGATION
BUFFALO, NEW YORK

Drawn G.M.M.
Designed
Approved

Date 3/31/23
Figure 5-10

Scale In Feet
0 200

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation



Former Buffalo Gaslight Iroquois Gas Corp. Site

Buffalo, New York

GEI Consultants

Project 2101620

GROUNDWATER ELEVATION CONTOURS 3/29/2022

June 2022

Figure 5-11

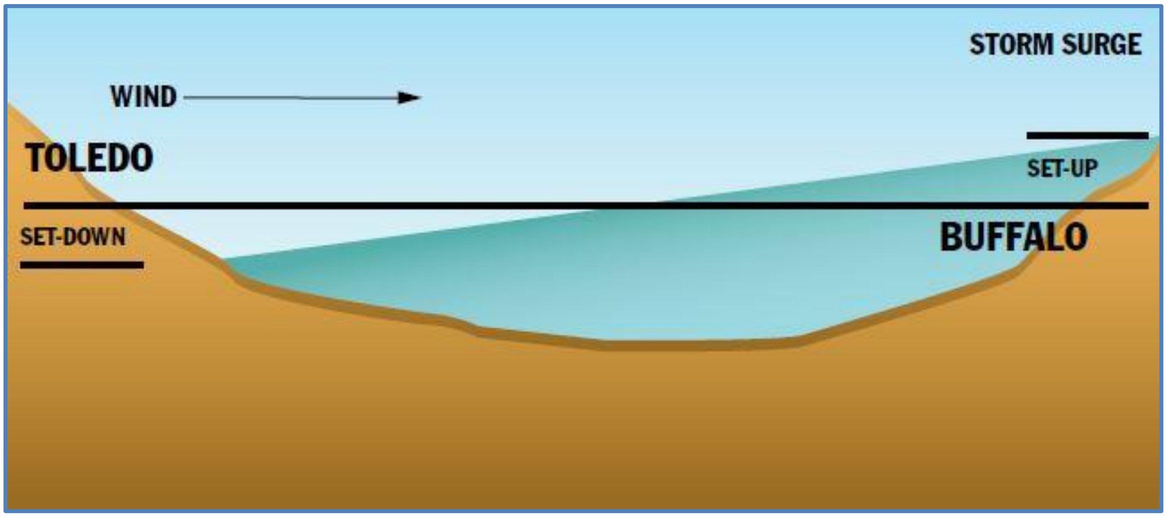


Figure 5-12. Diagram of a seiche event. During seiche events on Lake Erie, wind "pushes up" water on the eastern shore of the lake at Buffalo, New York. At the same time, water levels on the western side near Toledo, Ohio, are "pulled down". Image from Widrig and Vorenkamp (2021).

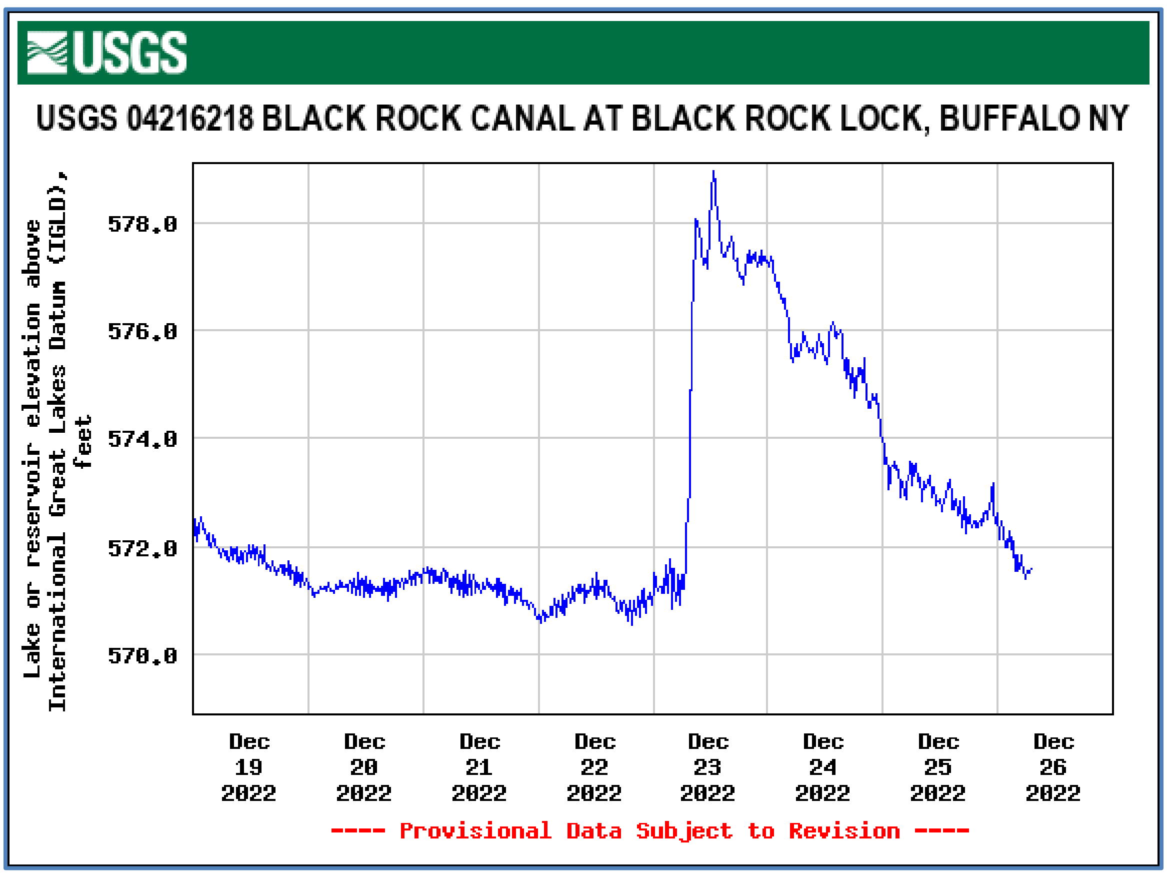


Figure 5-13. Water levels in the Black Rock Canal at Buffalo, New York during the December 2022 seiche event. Diagram obtained from the USGS National Water Information System website.

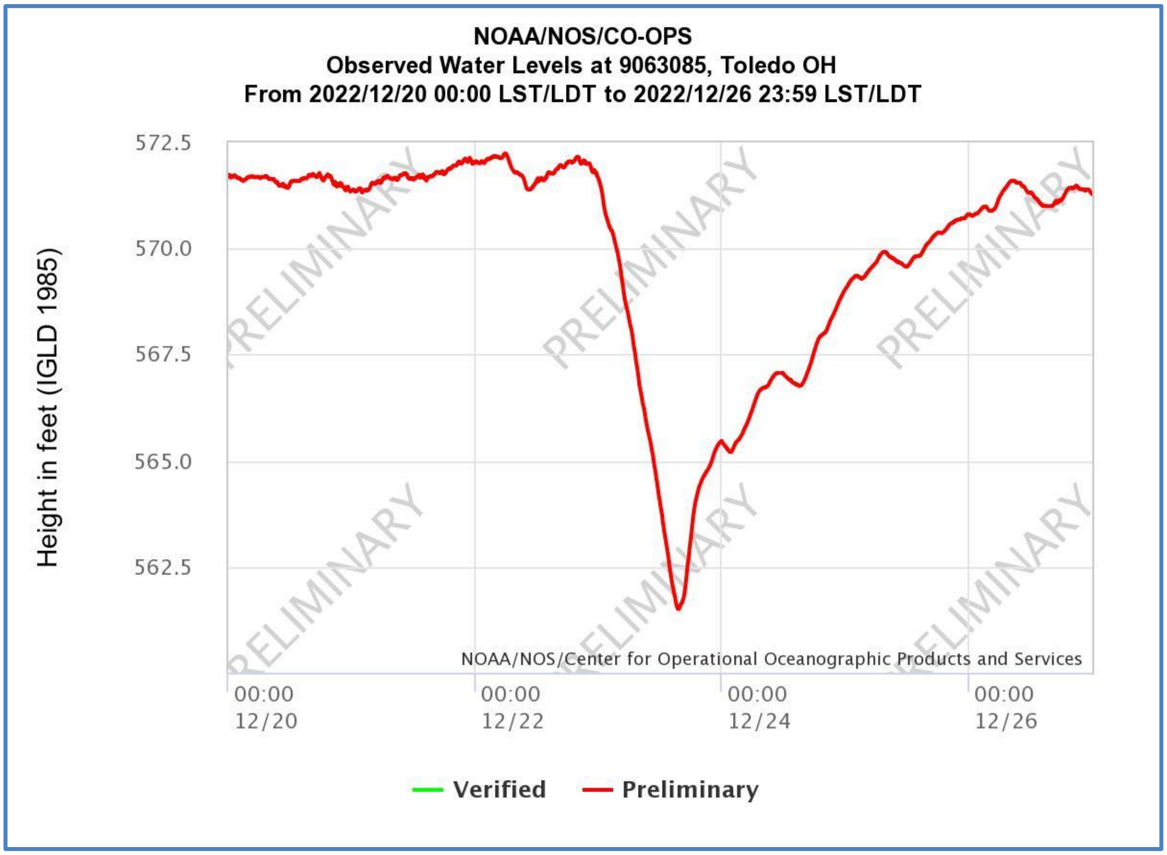
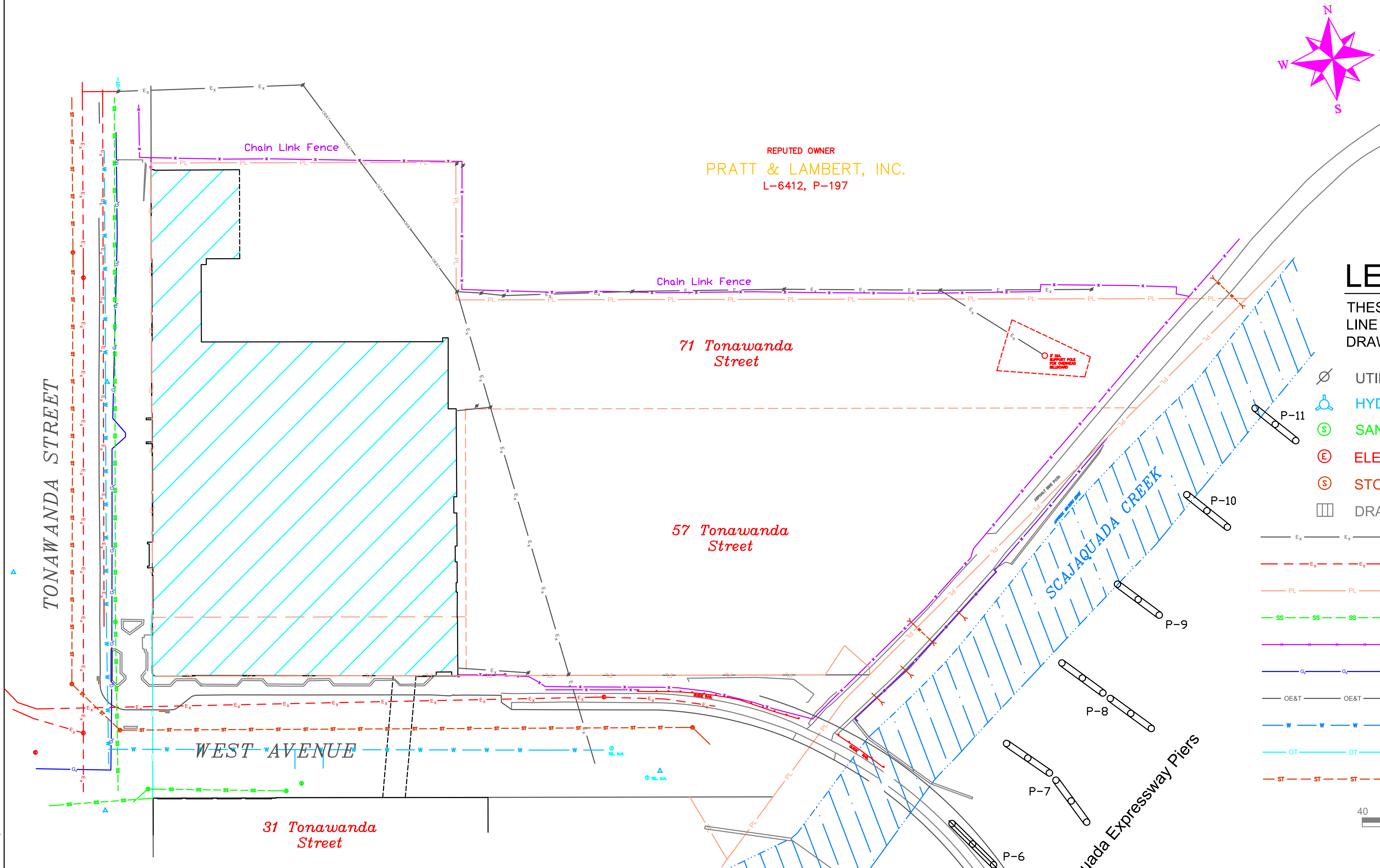


Figure 5-14. Water levels in Lake Erie at Toledo, Ohio during the December 2022 seiche event. Diagram obtained from the NOAA Tides & Currents website.

Figure 5-15. Photo showing the flooding of Niagara Street during the December 2022 seiche event. Image captured from a Facebook video of the flood.



LEGEND

THESE STANDARD SYMBOLS AND LINE STYLES WILL BE FOUND IN THE DRAWING:

- UTILITY POLE
- HYDRANT
- SANITARY MANHOLE
- ELECTRIC MANHOLE
- STORM SEWER MANHOLE
- DRAINAGE STRUCTURE
- OVERHEAD ELECTRIC LINE
- UNDERGROUND ELECTRIC
- PROPERTY LINE
- SANITARY SEWER
- FENCE (6' CHAINLINK)
- NATURAL GAS
- ELECTRIC & TELEPHONE
- WATER LINE
- OVERHEAD TELEPHONE
- STORM SEWER

40 0 40
SCALE IN FEET

PHASE II GENERAL SURVEY NOTES:

1. SURVEY MAP DATED MARCH 3, 1991.
2. SITE BENCHMARK IS A CHISELED "+" ON THE NORTHEAST BOLT OF A HYDRANT LOCATED ON THE SOUTH SIDE OF WEST AVENUE, ELEVATION = 586.50.
3. PROPERTY LINES ARE APPROXIMATE AND WERE DERIVED FROM PORTIONS OF TAX MAPS PROVIDED BY ECOLOGY & ENVIRONMENT, P.C.

GENERAL DRAWING NOTES:

1. THIS DRAWING WAS COMPLETED BY GLENN M. MAY ON SEPTEMBER 29, 2022 AND CONSISTS OF THE SURVEY FOR 57-71 TONAWANDA STREET, THE BE3 BCP RI FIGURES, THE PHASE II SURVEY MAP, AND THE RETEC SOIL BORING SURVEY MAP.
2. LOCATIONS OF THE BE3 RI SOIL BORINGS, TEST PITS, AND MONITORING WELLS ARE FROM THE LOCATIONS SHOWN ON THE RI REPORT FIGURES RATHER THAN THE COORDINATES GIVEN IN TABLE 7 AS THEY WERE BELIEVED TO BE INCORRECT.

57-71 GENERAL SURVEY NOTES:

1. THIS SURVEY WAS COMPLETED IN 2019 BY McINTOSH & McINTOSH, P.C. IN 2019.
2. THIS SURVEY WAS PREPARED WITHOUT THE BENEFIT OF AN ABSTRACT OF TITLE AND IS SUBJECT TO ANY STATE OF FACTS THAT MAY BE REVEALED BY AN EXAMINATION OF SUCH.

PROJECT
31 TONAWANDA STREET OFF-SITE INVESTIGATION, SITE NO. C915299A
BUFFALO, NEW YORK

TITLE
SITE PLAN

New York State Department of Environmental Conservation

SITE NO.: C915299 A			FILE NO.: NOT APPLICABLE	
DESIGN	GMM	09/09/2022	SCALE AS SHOWN	REV. 0
CADD	GMM	09/09/2022	FIGURE 8-1	
CHECK				
REVIEW				

Drawing Name: AutoCAD Drawings/71 Tonawanda/08 71 Tonawanda - RI Figures - Phase II Survey - Westwood Borings.dwg
Operator Name: Glenn M. May Plot Date: December 1, 2022

TABLES

Table 3-1
Summary of Historic Sediment Samples Collected from Scajaquada Creek and the Slip
31 Tonawanda Street Off-Site Area, Site No. C915299A
Buffalo, New York

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Sample ID	Date Sampled	Time Sampled	Interval Sampled *	Analytical Parameters	Agency, Sample Description and Observations	Table Reference
Scajaquada Creek						
SCJ-08-01-22	03/29/17	1155	0.0' - 1.8'	VOCs, SVOCs, Pesticides, PCBs, Metals, TOC	NYSDEC. Occasional spotty sheen.	6-11
SCJ-09-01-17	03/30/17	1340	0.0' - 1.4'	VOCs, SVOCs, Pesticides, PCBs, Metals, TOC	NYSDEC. Very slight creosote-like odor.	6-11
SCJ-10-01-09	03/30/17	1245	0.0' - 0.75'	VOCs, SVOCs, Pesticides, PCBs, Metals, TOC	NYSDEC. Very slight creosote-like odor.	6-11
SCJ-11-01-09	03/30/17	1120	0.0' - 0.75'	SVOCs, Pesticides, PCBs, Metals, TOC	NYSDEC. Slight creosote-like odor.	6-11
SCJ-12-01-02	03/30/17	1015	0.0' - 0.2'	Pesticides, PCBs, Metals, TOC	NYSDEC.	6-11
SJ-1-A	09/25/17	1155	0.0' - 0.5'	Metals	USACOE. Description/observations not available.	6-12
SJ-1-B	09/25/17	1150	0.0' - 0.5'	Metals	USACOE. Description/observations not available.	6-12
SJ-1-C	09/25/17	1150	0.0' - 0.5'	Metals	USACOE. Description/observations not available.	6-12
SJ-1-D	09/25/17	1145	0.0' - 0.5'	Metals	USACOE. Description/observations not available.	6-12
SJ-1-E	09/25/17	1140	0.0' - 0.5'	Metals	USACOE. Description/observations not available.	6-12
SJ-2-A	09/25/17	1135	0.0' - 0.5'	Metals	USACOE. Description/observations not available.	6-12
SJ-2-B	09/25/17	1130	0.0' - 0.5'	Metals	USACOE. Description/observations not available.	6-12
SJ-2-C	09/25/17	1130	0.0' - 0.5'	Metals	USACOE. Description/observations not available.	6-12
SJ-2-D	09/25/17	1125	0.0' - 0.5'	Metals	USACOE. Description/observations not available.	6-12
SJ-2-E	09/25/17	1120	0.0' - 0.5'	Metals	USACOE. Description/observations not available.	6-12
SJ-4-D	09/25/17	1110	0.0' - 0.5'	Metals	USACOE. Description/observations not available.	6-12
SJ-5-A	09/25/17	1030	0.0' - 0.5'	Metals	USACOE. Description/observations not available.	6-12
SJ-5-C	09/25/17	1015	0.0' - 0.5'	Metals	USACOE. Description/observations not available.	6-12
SJ-5-D	09/25/17	1010	0.0' - 0.5'	Metals	USACOE. Description/observations not available.	6-12
SJ-5-E	09/25/17	0955	0.0' - 0.5'	Metals	USACOE. Description/observations not available.	6-12
Scajaquada Creek Slip						
S-1	01/21/15	1020	3.6' - 10.0'	VOCs, SVOCs, PCBs	NYSDEC. Black organics and silt, tr gravel, brown clay at 9 feet, industrial-type/fuel oil-like odor, slight sheen.	6-9
S-2	01/21/15	1033	3.6' - 10.0'	VOCs, SVOCs	NYSDEC. Black organics and silt, tr gravel, brown clay at 9 feet, industrial-type odor, slight sheen.	6-9
S-3	01/21/15	1100	3.0' - 7.0'	VOCs, SVOCs	NYSDEC. Black silt, little organics, tr gravel, very slight industrial-type odor, very slight sheen.	6-9
S-4	01/21/15	1110	3.0' - 7.0'	VOCs, SVOCs	NYSDEC. Black silt, little organics, tr gravel, very slight industrial-type odor, very slight sheen.	6-9
S-5	01/21/15	1130	3.0' - 8.0'	VOCs, SVOCs	NYSDEC. Black silt, little organics, tr gravel, very slight industrial-type odor, slight sheen.	6-9

Table 3-1
Summary of Historic Sediment Samples Collected from Scajaquada Creek and the Slip
31 Tonawanda Street Off-Site Area, Site No. C915299A
Buffalo, New York

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Sample ID	Date Sampled	Time Sampled	Interval Sampled *	Analytical Parameters	Agency, Sample Description and Observations	Table Reference
Scajaquada Creek Slip (continued)						
S-6	01/21/15	1145	3.0' - 8.0'	VOCs, SVOCs, PCBs	NYSDEC. Black silt, little organics, tr gravel, very slight industrial-type odor, slight sheen.	6-9
S-7	01/21/15	1205	2.5' - 6.0'	VOCs, SVOCs	NYSDEC. Black silt, tr organics, very slight sheen.	6-9
S-8	01/21/15	1220	2.5' - 6.0'	VOCs, SVOCs	NYSDEC. Black silt, tr organics, very slight industrial-type odor, very slight sheen.	6-9
S-9	01/21/15	1235	2.0' - 6.0'	VOCs, SVOCs	NYSDEC. Black silt, little organics, slight petroleum-like odor, slight sheen.	6-9
S-10	01/21/15	1252	2.5' - 5.0'	VOCs, SVOCs, PCBs	NYSDEC. Black silt, some organics, slight industrial-like odor, brown clay at 4.5 feet, slight sheen.	6-9
SCJ-01-01-38	03/28/17	1240	0.0' - 3.2'	SVOCs, Pesticides, PCBs, Metals, TOC	NYSDEC. Creosote-like odor, spotty sheen.	6-10
SCJ-01-02-48	03/28/17	1300	3.2' - 4.0'	SVOCs, Pesticides, PCBs, Metals, TOC	NYSDEC. Creosote-like odor, spotty sheen.	6-10
SCJ-02-01-27	03/28/17	1445	0.0' - 2.25'	VOCs, SVOCs, Pesticides, PCBs, Metals, TOC	NYSDEC.	6-10
SCJ-03-01-24	03/29/17	0855	0.0' - 2.0'	VOCs, SVOCs, Pesticides, PCBs, Metals, TOC	NYSDEC. Creosote-like odor, slight spotty sheen, peak PID 42 ppm.	6-10
SCJ-03-01-30	03/29/17	0920	0.0' - 2.5'	VOCs, SVOCs, Pesticides, PCBs, Metals, TOC	NYSDEC. Duplicate sample.	6-10
SCJ-04-01-28	03/29/17	0945	0.0' - 2.3'	VOCs, SVOCs, Pesticides, PCBs, Metals, TOC	NYSDEC. Creosote-like odor, spotty sheen.	6-10
SCJ-05-01-20	03/29/17	10125	0.0' - 1.7'	VOCs, SVOCs, Pesticides, PCBs, Metals, TOC	NYSDEC. Creosote-like odor, spotty sheen.	6-10
SCJ-06-01-36	03/29/17	1100	0.0' - 3.0'	VOCs, SVOCs, Pesticides, PCBs, Metals, TOC	NYSDEC. Creosote-like odor, slight spotty sheen, gasoline-like product, PID 7.1 to 51.6 ppm.	6-10
SCJ-07-01-36	03/29/17	1125	0.0' - 3.0'	VOCs, SVOCs, Pesticides, PCBs, Metals, TOC	NYSDEC. Creosote-like odor, spotty sheen.	6-10

Notes:

*** = Sampled interval is given in inches or feet below ground surface.**
N/A = Not applicable.
VOCs = Volatile Organic Compounds.
SVOCs = Semivolatile Organic Compounds.
PCBs = Polychlorinated Biphenyls.

Table 3-2
Summary of Samples Collected During the NYSDEC Remedial Investigation
31 Tonawanda Street Off-Site Area, Site No. C915299A
Buffalo, New York

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Sample ID	Date Sampled	Time Sampled	Interval Sampled *	Analytical Parameters	Sample Location and Description	Table Reference
Subsurface Soil						
1675-MW-1	09/15/20	1225	28.0' - 29.0'	VOCs, SVOCs	1675 Niagara Street. Native, sand and gravel with a slight odor.	6-2
MW-3R	09/14/20	1300	26.0' - 27.0'	VOCs, SVOCs	1660 Niagara Street. Native, sand and gravel with a slight odor.	6-2
MW-5R	09/14/20	1400	24.0' - 26.0'	VOCs, SVOCs	1660 Niagara Street. NAPL saturated gray gravelly sand and the underlying	6-2
MW-5R	09/14/20	1420	27.0' - 28.0'	VOCs, SVOCs	1660 Niagara Street. Reddish-brown silty clay underlying the NAPL saturated	6-2
1660-SB-1	09/16/20	1300	23.0' - 23.6'	VOCs, SVOCs	1660 Niagara Street. NAPL saturated gray sand.	6-2
1660-MW-8	09/16/20	1445	32.0' - 34.0'	VOCs, SVOCs	1660 Niagara Street. NAPL saturated sand and gravel.	6-2
SB-100	09/18/20	0935	26.0' - 27.0'	VOCs, SVOCs	Bike Path. Silty clay with sand stringers containing NAPL.	6-1
SB-103	09/18/20	1115	22.0' - 22.5'	VOCs, SVOCs	Bike Path. NAPL saturated sand.	6-1
SB-106	09/18/20	1300	17.0' - 18.0'	VOCs, SVOCs	Bike Path. Black foundry sand with NAPL sheens and black silty clay.	6-1
Groundwater Samples						
1675-MW-1	11/04/20	0940	16.5' - 31.75'	VOCs, SVOCs, Pesticides, PCBs, Metals	1675 Niagara Street. New well in front of building, east side of property.	6-6
1675-MW-2	11/04/20	1055	3.5' - 13.75'	VOCs, SVOCs, Pesticides, PCBs, Metals	1675 Niagara Street. New well in parking lot, near garage door.	6-6
1660-MW-3R	11/04/20	1225	13.75' - 29.0'	VOCs, SVOCs, Pesticides, PCBs, Metals	1660 Niagara Street. Replacement well MW-3R near Niagara Street, center of site.	6-6
1660-MW-5R	11/04/20	1430	12.75' - 28.0'	VOCs, SVOCs, Pesticides, PCBs, Metals	1660 Niagara Street. Replacement well MW-5R near Niagara Street, east-central portion of site.	6-6
1660-MW-8	11/05/20	0925	16.25' - 31.5'	VOCs, SVOCs, Pesticides, PCBs, Metals	1660 Niagara Street. New well near Scajaquada Creek, eastern end of site.	6-6
MW-100	11/05/20	1135	13.64' - 28.64'	VOCs, SVOCs, Pesticides, PCBs, Metals	Bike Path. Adjacent to 57-71 Tonawanda Street BCP Site at base of bike path ramp.	6-3
MW-103	11/05/20	1405	8.58' - 23.58'	VOCs, SVOCs, Pesticides, PCBs, Metals	Bike Path. Adjacent to 57-71 Tonawanda Street near the billboard.	6-3
MW-106	11/05/20	1515	8.63' - 23.63'	VOCs, SVOCs, Pesticides, PCBs, Metals	Bike Path. Adjacent to former Pratt & Lambert Paint Company near Scajaquada Expressway overpass.	6-3

Table 3-2
Summary of Samples Collected During the NYSDEC Remedial Investigation
31 Tonawanda Street Off-Site Area, Site No. C915299A
Buffalo, New York

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Sample ID	Date Sampled	Time Sampled	Interval Sampled *	Analytical Parameters	Sample Location and Description	Table Reference
Sediment Samples						
BSA-SED-1	01/15/20	1235	0.0' - 0.3'	VOCs, SVOCs, PCBs	Scajaquada Creek at outfall of BSA pumphouse. Black silty organic muck, many fine roots, distinct coal tar odor, sheen observed on sample.	6-13
BSA-SED-2	01/15/20	1256	0.0' - 0.3'	VOCs, SVOCs, PCBs	Scajaquada Creek near outfall of BSA pumphouse. Brown to black silty organic muck, some gravel, coal tar odor, spotty sheen.	6-13
BPH-Sump	11/18/21	1250	≈ 19'	VOCs, SVOCs, PCBs, Metals	Sump in the BSA pump house. Black muck with a sheen and a distinct coal tar odor.	6-13
BPH-Out	11/18/21	1202	0.0' - 0.3'	VOCs, SVOCs, PCBs, Metals	Scajaquada Creek at outfall of BSA pumphouse. Description of sample was not recorded.	6-13
Surface Water Samples						
BSA-SW-1	01/15/20	1209	N/A	VOCs, SVOCs, PCBs	Scajaquada Creek at outfall of BSA pumphouse. Clear with a rainbow color sheen on the surface and a faint coal tar odor.	6-14C & 6-14D
31-SW-1	09/14/20	1205	N/A	VOCs	31 Tonawanda Street. Discharge from an 8-inch pipe into Scajaquada Creek.	6-14A
BPH-MH	11/18/21	1120	≈ 9	VOCs, SVOCs, PCBs, Metals	Manhole no. 23 near the BSA pump house	6-14B
BPH-Sump	11/18/21	1132	≈ 14	VOCs, SVOCs, PCBs, Metals	Sump in the BSA pump house	6-14C
BR-SW-North	08/29/22	0900	N/A	VOCs, SVOCs, Pesticides, Herbicides, PCBs, Metals, 1,4-Dioxane	Black Rock Canal downstream of Scajaquada Creek	6-14D
BR-SW-South	08/29/22	0915	N/A	VOCs, SVOCs, Pesticides, Herbicides, PCBs, Metals, 1,4-Dioxane	Black Rock Canal upstream of Scajaquada Creek	6-14D
Inlet-SW-North	08/29/22	0830	N/A	VOCs, SVOCs, Pesticides, Herbicides, PCBs, Metals, 1,4-Dioxane	Scajaquada Creek Slip adjacent to 1660 Niagara Street	6-14D
Inlet-SW-South	08/29/22	0840	N/A	VOCs, SVOCs, Pesticides, Herbicides, PCBs, Metals, 1,4-Dioxane	Scajaquada Creek Slip near the confluence with the main channel of the creek	6-14D
SC-SW-East	08/29/22	0955	N/A	VOCs, SVOCs, Pesticides, Herbicides, PCBs, Metals, 1,4-Dioxane	Scajaquada Creek downstream of West Avenue	6-14D
SC-SW-West	08/29/22	0930	N/A	VOCs, SVOCs, Pesticides, Herbicides, PCBs, Metals, 1,4-Dioxane	Scajaquada Creek near the Black Rock Canal	6-14D
DI6-N	09/06/22	1105	N/A	VOCs, SVOCs, 1,4-Dioxane	Pipe entering the catch basin on the north side of Niagara Street	6-14A
DI6-E	09/06/22	1110	N/A	VOCs, SVOCs, 1,4-Dioxane	Pipe entering the catch basin on the north side of Niagara Street	6-14A
DI6-S	09/06/22	1100	N/A	VOCs, SVOCs, 1,4-Dioxane	Pipe entering the catch basin on the north side of Niagara Street	6-14A

Table 3-2
Summary of Samples Collected During the NYSDEC Remedial Investigation
31 Tonawanda Street Off-Site Area, Site No. C915299A
Buffalo, New York

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Sample ID	Date Sampled	Time Sampled	Interval Sampled *	Analytical Parameters	Sample Location and Description	Table Reference
Surface Water Samples (continued)						
MH-1	09/06/22	0940	N/A	VOCs, SVOCs, 1,4-Dioxane	Manhole no. 1 in the middle of Niagara Street closest to Tonawanda Street	6-14A
MH-2	09/06/22	0935	N/A	VOCs, SVOCs, 1,4-Dioxane	Manhole no. 2 in the middle of Niagara Street west of manhole no. 1	6-14A
MH-3	09/06/22	0950	N/A	VOCs, SVOCs, 1,4-Dioxane	Manhole no. 3 in the middle of Niagara Street under the railroad bridge	6-14A
MH-4	09/06/22	0955	N/A	VOCs, SVOCs, 1,4-Dioxane	Manhole no. 4 in the middle of Niagara Street west of the railroad bridge	6-14B
MH-21	09/06/22	1245	N/A	VOCs, SVOCs, 1,4-Dioxane	Manhole no. 21 near the BSA pump house	6-14B
MH-23	09/06/22	1250	N/A	VOCs, SVOCs, 1,4-Dioxane	Manhole no. 23 near the BSA pump house	6-14B
Vault	09/06/22	1330	N/A	VOCs, SVOCs, 1,4-Dioxane	Sump in the BSA pump house	6-14C
MH-21	12/07/22	0815	N/A	VOCs, SVOCs, 1,4-Dioxane	Manhole no. 21 near the BSA pump house	6-14B
MH-23	12/07/22	0830	N/A	VOCs, SVOCs, 1,4-Dioxane	Manhole no. 23 near the BSA pump house	6-14B
Vault	12/07/22	0845	N/A	VOCs, SVOCs, 1,4-Dioxane	Sump in the BSA pump house	6-14C
NAPL Samples						
MW-5R	10/28/20	1200	NA	VOCs, SVOCs, Pesticides, PCBs, Metals, Specific Gravity	1660 Niagara Street. NAPL from replacement well MW-5R.	6-8
MW-5R	01/14/21	1400	NA	VOCs, SVOCs, Pesticides, PCBs, Metals, Cyanide, Specific Gravity	1660 Niagara Street. NAPL from replacement well MW-5R.	6-8
MW-7	01/15/20	1445	NA	VOCs, SVOCs, PCBs	1660 Niagara Street. NAPL from well MW-7.	6-8
1660-MW-8	10/29/20	0830	NA	VOCs, SVOCs, Pesticides, PCBs, Metals, Specific Gravity	1660 Niagara Street. NAPL from new well 1660-MW-8.	6-8
1660-MW-8	01/14/21	1245	NA	VOCs, SVOCs, Pesticides, PCBs, Metals, Cyanide, Specific Gravity	1660 Niagara Street. NAPL from new well 1660-MW-8.	6-8
MW-100	10/29/20	1135	NA	VOCs, SVOCs, Pesticides, PCBs, Metals, Specific Gravity	Bike Path. NAPL collected at well MW-100 at the time of well development.	6-8
MW-100	11/05/20	1200	NA	VOCs, SVOCs, Pesticides, PCBs, Metals, Specific Gravity	Bike Path. NAPL collected from well MW-100 at the time of groundwater sampling.	6-8
MW-100	01/14/21	1130	NA	VOCs, SVOCs, Pesticides, PCBs, Metals, Cyanide, Specific Gravity	Bike Path. NAPL collected from well MW-100.	6-8

Table 3-2
Summary of Samples Collected During the NYSDEC Remedial Investigation
31 Tonawanda Street Off-Site Area, Site No. C915299A
Buffalo, New York

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Sample ID	Date Sampled	Time Sampled	Interval Sampled *	Analytical Parameters	Sample Location and Description	Table Reference
Drilling Water Samples						
DW-1	09/17/20	0830	N/A	VOCs	Drilling water poured down the well to aid in getting the filter pack sand down the annulus.	6-7
Soil Vapor Intrusion Samples						
LOB-1A	03/20/20	8-hr	Indoor Air	VOCs by Method TO-15	1675 Niagara Street. Indoor air in Lobby near church.	6-15
LOB-SS	03/20/20	8-hr	Sub-Slab	VOCs by Method TO-15	1675 Niagara Street. Sub-slab soil vapor in Lobby near chruch.	6-15
RM1-SS	03/20/20	8-hr	Sub-Slab	VOCs by Method TO-15	1675 Niagara Street. Sub-slab soil vapor in Room 1	6-15
RM2-A	03/20/20	8-hr	Indoor Air	VOCs by Method TO-15	1675 Niagara Street. Indoor air in Room 2.	6-15
RM10-A	03/20/20	8-hr	Indoor Air	VOCs by Method TO-15	1675 Niagara Street. Indoor air in Room 10.	6-15
RM10-SS	03/20/20	8-hr	Sub-Slab	VOCs by Method TO-15	1675 Niagara Street. Sub-slab soil vapor in Room 10.	6-15
GRG1-SS	04/20/20	8-hr	Sub-Slab	VOCs by Method TO-15	1675 Niagara Street. Sub-slab soil vapor in Garage 1.	6-15
HALL1-A	04/20/20	8-hr	Indoor Air	VOCs by Method TO-15	1675 Niagara Street. Indoor air in Hall.	6-15
HALL1-SS	04/20/20	8-hr	Sub-Slab	VOCs by Method TO-15	1675 Niagara Street. Sub-slab soil vapor in Hall.	6-15
OFC2-A	04/20/20	8-hr	Indoor Air	VOCs by Method TO-15	1675 Niagara Street. Indoor air in Office.	6-15
OFC2-SS	04/20/20	8-hr	Sub-Slab	VOCs by Method TO-15	1675 Niagara Street. Sub-slab soil vapor in Office.	6-15
OUT1-A	04/20/20	8-hr	Outdoor Air	VOCs by Method TO-15	1675 Niagara Street. Outdoor air.	6-15
RM5-SS	04/20/20	8-hr	Sub-Slab	VOCs by Method TO-15	1675 Niagara Street. Sub-slab soil vapor in Room 5.	6-15
RM6-A	04/20/20	8-hr	Indoor Air	VOCs by Method TO-15	1675 Niagara Street. Indoor air in Room 6.	6-15
RM6-SS	04/20/20	8-hr	Sub-Slab	VOCs by Method TO-15	1675 Niagara Street. Sub-slab soil vapor in Room 6.	6-15
RM8-A	04/20/20	8-hr	Indoor Air	VOCs by Method TO-15	1675 Niagara Street. Indoor air in Room 8.	6-15
RM8-SS	04/20/20	8-hr	Sub-Slab	VOCs by Method TO-15	1675 Niagara Street. Sub-slab soil vapor in Room 8.	6-15

Table 3-2
Summary of Samples Collected During the NYSDEC Remedial Investigation
31 Tonawanda Street Off-Site Area, Site No. C915299A
Buffalo, New York

Sample ID	Date Sampled	Time Sampled	Interval Sampled *	Analytical Parameters	Sample Location and Description	Table Reference
Soil Vapor Intrusion Samples (continued)						
RM12-A	04/20/20	8-hr	Indoor Air	VOCs by Method TO-15	1675 Niagara Street. Indoor air in Room 12.	6-15
RM12-SS	04/20/20	8-hr	Sub-Slab	VOCs by Method TO-15	1675 Niagara Street. Sub-slab soil vapor in Room 12.	6-15
UTL1-A	04/20/20	8-hr	Indoor Air	VOCs by Method TO-15	1675 Niagara Street. Indoor air in Utility Room.	6-15
UTL1-SS	04/20/20	8-HR	Sub-Slab	VOCs by Method TO-15	1675 Niagara Street. Sub-slab soil vapor in Utility Room.	6-15

Notes:

*** = Sampled interval is given in feet below ground surface.**
NA = Not Applicable.
VOCs = Volatile Organic Compounds.
SVOCs = Semivolatile Organic Compounds.
PCBs = Polychlorinated Biphenyls.

Table 3-3
Summary of Other Samples Compiled and Incorporated into the NYSDEC Remedial Investigation
31 Tonawanda Street Off-Site Area, Site No. C915299A
Buffalo, New York

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Sample ID	Date Sampled	Time Sampled	Interval Sampled *	Analytical Parameters	Sample Location, Description, and Observations	Table Reference
Groundwater Samples						
57-MW-1	01/22/20	1030	5.0' - 15.0'	VOCs, SVOCs, Pesticides, PCBs, Metals, Cyanide	57 Tonawanda Street. BCP RI well in parking lot at southeast corner of site.	6-4
57-MW-2	01/22/20	1420	5.0' - 15.0'	VOCs, SVOCs, Pesticides, PCBs, Metals, Cyanide	57 Tonawanda Street. BCP RI well in parking lot at northeast corner of site near billboard.	6-4
57-MW-3	01/22/20	1220	5.0' - 15.0'	VOCs, SVOCs, Pesticides, PCBs, Metals, Cyanide	58 Tonawanda Street. BCP RI well in center of parking lot.	6-4
57-MW-4	01/23/20	0930	10.0' - 30.0'	VOCs, SVOCs, Pesticides, PCBs, Metals, Cyanide	57 Tonawanda Street. BCP RI well in front of building, south side of site.	6-4
57-MW-5	01/23/20	1120	10.0' - 30.0'	VOCs, SVOCs, Pesticides, PCBs, Metals, Cyanide	57 Tonawanda Street. BCP RI well in front of building, north side of site.	6-4
RI-MW-1	06/01/17	1700	10.0' - 20.0'	VOCs, SVOCs, Pesticides, PCBs, Metals	1660 Niagara Street. BCP RI well near Niagara Street, western end of site.	6-5
RI-MW-2	06/01/17	1600	10.0' - 20.0'	VOCs, SVOCs, Pesticides, PCBs, Metals	1660 Niagara Street. BCP RI well near Scajaquada Creek, western end of site.	6-5
RI-MW-3	06/01/17	1450	10.0' - 20.0'	VOCs, SVOCs, Pesticides, PCBs, Metals	1660 Niagara Street. BCP RI well near Niagara Street, center of site.	6-5
RI-MW-3	01/17/19	Unknown	10.0' - 20.0'	VOCs, SVOCs	1660 Niagara Street. BCP RI well near Niagara Street, center of site.	6-5
RI-MW-4	06/01/17	1330	10.0' - 20.0'	VOCs, SVOCs, Pesticides, PCBs, Metals	1660 Niagara Street. BCP RI well near Scajaquada Creek, center of site. Destroyed during IRM.	6-5
RI-MW-4	01/16/19	Unknown	10.0' - 20.0'	VOCs, SVOCs	1660 Niagara Street. BCP RI well near Scajaquada Creek, center of site. Destroyed during IRM.	6-5
RI-MW-5	06/01/17	1130	10.0' - 20.0'	VOCs, SVOCs, Pesticides, PCBs, Metals	1660 Niagara Street. BCP RI well near Niagara Street, east-central portion of site.	6-5
RI-MW-5	01/17/19	Unknown	10.0' - 20.0'	VOCs, SVOCs	1660 Niagara Street. BCP RI well near Niagara Street, east-central portion of site.	6-5
RI-MW-6	06/01/17	0930	10.0' - 20.0'	VOCs, SVOCs, Pesticides, PCBs, Metals	1660 Niagara Street. BCP RI well near Niagara Street, eastern end of site.	6-5
RI-MW-6	08/24/17	Unknown	10.0' - 20.0'	VOCs	1660 Niagara Street. BCP RI well near Niagara Street, eastern end of site.	6-5
RI-MW-6	01/16/19	Unknown	10.0' - 20.0'	VOCs, SVOCs	1660 Niagara Street. BCP RI well near Niagara Street, eastern end of site.	6-5
RI-MW-7	08/24/17	1250	14.0' - 24.0'	VOCs	1660 Niagara Street. BCP RI well near Niagara Street, eastern end of site.	6-5
RI-MW-7	01/16/19	Unknown	14.0' - 24.0'	VOCs, SVOCs	1660 Niagara Street. BCP RI well near Niagara Street, eastern end of site.	6-5

Table 3-3
Summary of Other Samples Compiled and Incorporated into the NYSDEC Remedial Investigation
31 Tonawanda Street Off-Site Area, Site No. C915299A
Buffalo, New York

Sample ID	Date Sampled	Time Sampled	Interval Sampled *	Analytical Parameters	Sample Location, Description, and Observations	Table Reference
NAPL Samples						
B8	05/20/92	Unknown	NA	VOCs, SVOCs, Viscosity, Density	Westwood Pharmaceutical. NAPL from well B8.	6-8
MWF2	05/20/92	Unknown	NA	VOCs, SVOCs, Viscosity, Density	Westwood Pharmaceutical. NAPL from well MWF2.	6-8
Sediment Samples						
SCJ-13-01-04	04/05/17	0905	0.0' - 0.33'	VOCs, SVOCs, Pesticides, PCBs, Metals, TOC	NYSDEC. Occasional spotty sheen.	7-8
SCJ-14-01-05	04/05/17	0930	0.0' - 0.42'	SVOCs, Pesticides, PCBs, Metals, TOC	NYSDEC.	7-8
SCJ-15-01-06	04/05/17	0950	0.0' - 0.5'	SVOCs, Pesticides, PCBs, Metals, TOC	NYSDEC. Hydrogen sulfide-like odor.	7-8
SCJ-16-01-12	04/05/17	1015	0.0' - 1.0'	SVOCs, Pesticides, PCBs, Metals, TOC	NYSDEC. Spotty sheen.	7-8
SCJ-17-01-07	04/05/17	1000	0.0' - 0.58'	SVOCs, Pesticides, PCBs, Metals, TOC	NYSDEC. Occasional spotty sheen.	7-8
SCJ-19-01-12	04/04/17	1340	0.0' - 1.0'	SVOCs, Pesticides, PCBs, Metals, TOC	NYSDEC. Spotty sheen.	7-8
SCJ-19-02-24	04/04/17	1350	1.0' - 2.0'	SVOCs, Pesticides, PCBs, Metals, TOC	NYSDEC. Spotty sheen.	7-8
SCJ-20-01-12	04/04/17	1305	0.0' - 1.0'	SVOCs, Pesticides, PCBs, Metals, TOC	NYSDEC. Spotty sheen.	7-8
SCJ-20-02-17	04/04/17	1315	1.0' - 1.42'	SVOCs, Pesticides, PCBs, Metals, TOC	NYSDEC.	7-8
SCJ-21-01-12	04/04/17	1235	0.0' - 1.0'	SVOCs, Pesticides, PCBs, Metals, TOC	NYSDEC. Spotty sheen.	7-8
SCJ-21-02-16	04/04/17	1225	1.0' - 1.33'	SVOCs, Pesticides, PCBs, Metals, TOC	NYSDEC.	7-8
SCJ-22-01-12	04/03/17	1440	0.0' - 1.0'	VOCs, SVOCs, Pesticides, PCBs, Metals, TOC	NYSDEC.	7-8
SCJ-23-01-12	04/03/17	1415	0.0' - 1.0'	SVOCs, Pesticides, PCBs, Metals, TOC	NYSDEC. Petroleum-like odor.	7-8
SCJ-23-02-19	04/03/17	1410	1.0' - 1.58'	SVOCs, Pesticides, PCBs, Metals, TOC	NYSDEC. Petroleum-like odor.	7-8
SCJ-24-01-12	04/03/17	1355	0.0' - 1.0'	SVOCs, Pesticides, PCBs, Metals, TOC	NYSDEC.	7-8
SCJ-24-02-24	04/03/17	1345	1.0' - 2.0'	SVOCs, Pesticides, PCBs, Metals, TOC	NYSDEC.	7-8
SCJ-25-01-12	04/03/17	1315	0.0' - 1.0'	SVOCs, Pesticides, PCBs, Metals, TOC	NYSDEC.	7-8
SCJ-26-01-12	04/03/17	1200	0.0' - 1.0'	SVOCs, Pesticides, PCBs, Metals, TOC	NYSDEC.	7-8
SCJ-26-02-24	04/03/17	1150	1.0' - 2.0'	SVOCs, Pesticides, PCBs, Metals, TOC	NYSDEC.	7-8
SCJ-27-01-12	04/03/17	1130	0.0' - 1.0'	SVOCs, Pesticides, PCBs, Metals, TOC	NYSDEC.	7-8
SCJ-27-02-18	04/03/17	1120	1.0' - 1.5'	SVOCs, Pesticides, PCBs, Metals, TOC	NYSDEC.	7-8
SCJ-28-01-12	04/03/17	1100	0.0' - 1.0'	SVOCs, Pesticides, PCBs, Metals, TOC	NYSDEC.	7-8
SCJ-28-02-15	04/03/17	1050	1.0' - 1.25'	SVOCs, Pesticides, PCBs, Metals, TOC	NYSDEC.	7-8
SCJ-29-01-12	04/03/17	1010	0.0' - 1.0'	SVOCs, Pesticides, PCBs, Metals, TOC	NYSDEC. Slight hydrogen sulfide-like odor.	7-8
SCJ-29-02-27	04/03/17	1020	1.0' - 2.25'	SVOCs, Pesticides, PCBs, Metals, TOC	NYSDEC. Slight hydrogen sulfide-like odor.	7-8
SCJ-30-01-12	04/03/17	0940	0.0' - 1.0'	SVOCs, Pesticides, PCBs, Metals, TOC	NYSDEC. Hydrogen sulfide-like odor, spotty sheen.	7-8
SCJ-30-02-23	04/03/17	0945	1.0' - 1.92'	SVOCs, Pesticides, PCBs, Metals, TOC	NYSDEC. Hydrogen sulfide-like odor, slight spotty sheen.	7-8

Table 3-3
Summary of Other Samples Compiled and Incorporated into the NYSDEC Remedial Investigation
31 Tonawanda Street Off-Site Area, Site No. C915299A
Buffalo, New York

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Sample ID	Date Sampled	Time Sampled	Interval Sampled *	Analytical Parameters	Sample Location, Description, and Observations	Table Reference
Sediment Samples (continued)						
SED-LSC-1	11/11/21	1130	0.0' - 0.5'	VOCs, SVOCs, Pesticides, Herbicides, PCBs, Metals, Cyanide, TOC	GEI. Very slight petroleum-like odor.	7-6
SED-LSC-1	11/09/21	1015	11.0' - 15.0'	VOCs, SVOCs, Pesticides, Herbicides, PCBs, Metals, Cyanide, TOC	GEI. Stronger petroleum-like odor with sheen.	7-6
SED-LSC-2	11/11/21	1115	0.0' - 0.5'	VOCs, SVOCs, Pesticides, Herbicides, PCBs, Metals, Cyanide, TOC	GEI. No odors.	7-6
SED-LSC-2	11/09/21	1205	14.0' - 16.0'	VOCs, SVOCs, Pesticides, Herbicides, PCBs, Metals, Cyanide, TOC	GEI. Reddish-brown silty clay with petroleum-like odor. Brown staining on exterior, and NAPL blebs within core.	7-6
SED-LSC-3	11/11/21	1035	0.0' - 0.5'	VOCs, SVOCs, Pesticides, Herbicides, PCBs, Metals, Cyanide, TOC	GEI. Slight petroleum-like odor with sheen.	7-6
SED-LSC-3	11/09/21	1440	13.0' - 16.0'	VOCs, SVOCs, Pesticides, Herbicides, PCBs, Metals, Cyanide, TOC	GEI. Coal tar-like odor with sheen.	7-6
SED-LSC-4	11/11/21	1000	0.0' - 0.5'	VOCs, SVOCs, Pesticides, Herbicides, PCBs, Metals, Cyanide, TOC	GEI. Coal tar-like odor with staining.	7-6
SED-LSC-4	11/10/21	1000	14.0' - 16.0'	VOCs, SVOCs, Pesticides, Herbicides, PCBs, Metals, Cyanide, TOC	GEI. Reddish-brown silty clay with coal tar-like odor and sheen on exterior of core.	7-7
SED-LSC-5	11/11/21	0945	0.0' - 0.5'	VOCs, SVOCs, Pesticides, Herbicides, PCBs, Metals, Cyanide, TOC	GEI. No odors.	7-7
SED-LSC-5	11/10/21	1130	14.0' - 16.0'	VOCs, SVOCs, Pesticides, Herbicides, PCBs, Metals, Cyanide, TOC	GEI. Strong coal tar-like odor with sheen and TLM.	7-7
SED-LSC-6	11/03/21	1200	0.0' - 0.5'	VOCs, SVOCs, Pesticides, Herbicides, PCBs, Metals, Cyanide, TOC	GEI. No odors.	7-7
SED-LSC-6	11/03/21	1100	12.0' - 19.5'	VOCs, SVOCs, Pesticides, Herbicides, PCBs, Metals, Cyanide, TOC	GEI. Coal tar-like odor, suspect TLM, and NAPL blebs.	7-7
SED-LSC-7	11/03/21	1230	0.0' - 0.5'	VOCs, SVOCs, Pesticides, Herbicides, PCBs, Metals, Cyanide, TOC	GEI. Slight petroleum-like odor.	7-7
SED-LSC-7	11/02/21	1200	12.0' - 18.0'	VOCs, SVOCs, Pesticides, Herbicides, PCBs, Metals, Cyanide, TOC	GEI. Petroleum-like and coal tar-like odors, sheen, suspect TLM, and a few NAPL blebs.	7-7
SED-LSC-8	11/03/21	1215	0.0' - 0.5'	VOCs, SVOCs, Pesticides, Herbicides, PCBs, Metals, Cyanide, TOC	GEI. No odors.	7-7
SED-LSC-8	11/01/21	1330	6.8' - 15.0'	VOCs, SVOCs, Pesticides, Herbicides, PCBs, Metals, Cyanide, TOC	GEI. Petroleum-like odor.	7-7
SED-BGL-1	11/11/21	1015	0.0' - 0.5'	VOCs, SVOCs, Pesticides, Herbicides, PCBs, Metals, Cyanide, TOC	GEI. Septic-like odor.	7-7
SED-BGL-1	11/10/21	1345	12.0' - 14.0'	VOCs, SVOCs, Pesticides, Herbicides, PCBs, Metals, Cyanide, TOC	GEI. Reddish-brown silty clay.	7-7

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Notes:

*** = Sampled interval is given in feet below ground surface.**
NA = Not Applicable.
VOCs = Volatile Organic Compounds.
SVOCs = Semivolatile Organic Compounds.
PCBs = Polychlorinated Biphenyls.
TOC = Total organic carbon.
TLM = Tar-like material.

Table 3-4
Monitoring Well Construction Summary
31 Tonawanda Street Off-Site Area, Site No. C915299A
Buffalo, New York

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Well Number	New York State Plane Coordinates		Ground Surface Elevation (ft. amsl)	Top of Riser Elevation (ft. amsl)	Total ♦ Boring Depth (feet)	Sandpack Interval (ft. bgs)	Sandpack Interval (ft. amsl)	Well Screen Interval (ft. bgs)	Well Screen Interval (ft. amsl)	Monitored Water-Bearing Zone
	Easting (x)	Northing (y)								
1660 Niagara Street (Site No. C915311)										
TPMW1	1063936.8070	1067612.2055	576.77	582.20	16.0	11.03 to 16.03	565.74 to 560.74	11.03 to 16.03	565.74 to 560.74	Sandy Silt
~~TPMW2~~	~~1063901.2899~~	~~1067674.0202~~	~~576.85~~	~~581.55~~	~~16.0~~	~~10.30 to 15.30~~	~~566.55 to 561.55~~	~~10.30 to 15.30~~	~~566.55 to 561.55~~	~~Sandy Silt~~
~~TPMW3~~	~~1063823.5031~~	~~1067802.7557~~	~~578.14~~	~~581.04~~	~~24.0~~	~~17.10 to 22.10~~	~~561.04 to 556.04~~	~~17.10 to 22.10~~	~~561.04 to 556.04~~	~~Silty Sand~~
MW-1	1063787.1321	1067844.3516	578.29	580.40	20.0	3.38 to 22.23	574.91 to 556.06	12.23 to 22.23	566.06 to 556.06	Silty Clay
MW-2	1063824.0844	1067781.5073	577.15	578.50	20.0	0.52 to 19.37	576.63 to 557.78	9.37 to 19.37	567.78 to 557.78	Fill; Silty Clay
~~MW-3~~	~~1063873.5453~~	~~1067749.4565~~	~~576.82~~	~~577.32~~	~~20.0~~	~~1.00 to 19.85~~	~~575.82 to 556.97~~	~~9.85 to 19.85~~	~~566.97 to 556.97~~	~~Fill; Silty Clay~~
1660-MW-3R	1063876.6478	1067748.5530	579.01	578.63	28.0	12.00 to 29.00	567.01 to 550.01	13.75 to 28.75	565.26 to 550.26	(see note 1)
~~MW-4~~	~~1063890.5111~~	~~1067687.7889~~	~~575.05~~	~~575.55~~	~~20.0~~	~~1.00 to 19.85~~	~~574.05 to 555.20~~	~~9.85 to 19.85~~	~~565.20 to 555.20~~	~~Fill; Silty Clay~~
~~MW-5~~	~~1063945.4002~~	~~1067667.4287~~	~~576.75~~	~~577.25~~	~~20.0~~	~~1.00 to 19.85~~	~~575.75 to 556.90~~	~~9.85 to 19.85~~	~~566.90 to 556.90~~	~~Fill; Silty Clay~~
1660-MW-5R	1063939.7597	1067675.2249	578.02	577.61	28.0	11.00 to 28.50	567.02 to 549.52	12.75 to 27.75	565.27 to 550.27	(see note 2)
MW-6	1063959.0103	1067585.0004	576.70	579.91	20.0	1.92 to 20.77	574.78 to 555.93	10.77 to 20.77	565.93 to 555.93	Fill; Silty Clay
MW-7	1063998.3554	1067609.4297	577.21	579.91	24.0	1.43 to 24.73	575.78 to 552.48	14.73 to 24.73	562.48 to 552.48	Fill; Silty Clay
1660-MW-8	1063969.8407	1067565.9350	578.27	580.80	36.0	13.00 to 31.50	565.27 to 546.77	16.25 to 31.25	562.02 to 547.02	(see note 3)
1675 Niagara Street										
1675-MW-1	1063991.6953	1067772.0231	578.10	577.51	32.0	13.0 to 32.0	565.10 to 546.10	16.5 to 31.5	561.60 to 546.60	(see note 1)
1675-MW-2	1063955.4582	1067867.2189	580.58	580.29	20.0	2.5 to 15.0	578.08 to 565.58	3.5 to 13.5	577.08 to 567.08	(see note 5)
31 Tonawanda Street (Site No. C915299)										
~~31-MW-1~~	~~1064222.4943~~	~~1067571.1353~~	~~581.20~~	~~580.66~~	~~20.2~~	~~9.0 to 20.2~~	~~572.20 to 561.00~~	~~10.0 to 20.0~~	~~571.20 to 561.20~~	~~Silty Clay~~
31-MW-2	1064251.3780	1067829.9518	582.30	581.89	30.2	19.0 to 30.2	563.30 to 552.10	20.0 to 30.0	562.30 to 552.30	Silty Clay ?
31-MW-3	1064389.5276	1067536.8973	579.30	578.96	18.0	7.0 to 18.0	572.30 to 561.30	8.0 to 18.0	571.30 to 561.30	(see note 4)
~~31-MW-4~~	~~1064464.5768~~	~~1067688.4651~~	~~580.90~~	~~580.60~~	~~20.0~~	~~8.5 to 20.0~~	~~572.40 to 560.90~~	~~10.0 to 20.0~~	~~570.90 to 560.90~~	~~Silty Clay ?~~
~~31-MW-5~~	~~1064516.1718~~	~~1067782.2664~~	~~581.40~~	~~583.14~~	~~20.5~~	~~4.0 to 20.5~~	~~577.40 to 560.90~~	~~5.5 to 20.5~~	~~575.90 to 560.90~~	~~Unknown~~
57-71 Tonawanda Street (Site No. C915024)										
MW-1	1064624.8444	1067886.9812	578.22	577.70	16.0	4.0 to 15.0	574.22 to 563.22	5.0 to 15.0	573.22 to 563.22	Gravel & Sand
MW-2	1064773.0547	1068013.3477	578.53	578.33	15.0	4.0 to 15.0	574.53 to 563.53	5.0 to 15.0	573.53 to 563.53	Fill & Sand
MW-3	1064613.9569	1067978.2588	579.65	579.15	15.0	4.0 to 15.0	575.65 to 564.65	5.0 to 15.0	574.65 to 564.65	Sand & Silty Clay
MW-4	1064251.8012	1067973.9167	582.79	582.75	30.0	9.0 to 30.0	573.79 to 552.79	10.0 to 30.0	572.79 to 552.79	Silty Clay

Table 3-4
Monitoring Well Construction Summary
31 Tonawanda Street Off-Site Area, Site No. C915299A
Buffalo, New York

Well Number	New York State Plane Coordinates		Ground Surface Elevation (ft. amsl)	Top of Riser Elevation (ft. amsl)	Total ♦ Boring Depth (feet)	Sandpack Interval (ft. bgs)	Sandpack Interval (ft. amsl)	Well Screen Interval (ft. bgs)	Well Screen Interval (ft. amsl)	Monitored Water-Bearing Zone
	Easting (x)	Northing (y)								
57-71 Tonawanda Street (continued)										
MW-5	1064277.7818	1068176.0533	584.80	584.00	30.0	9.0 to 30.0	575.80 to 554.80	10.0 to 30.0	574.80 to 554.80	Silty Clay
Bike Path										
MW-100	1064730.9733	1067946.8962	578.82	578.56	28.0	12.0 to 29.0	566.82 to 549.82	13.64 to 28.64	565.18 to 550.18	Sand
MW-103	1064847.3382	1068055.9210	578.81	578.37	24.0	7.0 to 24.0	571.81 to 554.81	8.58 to 23.58	570.23 to 555.23	Fill?; Sand
MW-106	1065042.8495	1068182.8885	580.26	579.84	24.0	7.0 to 24.0	573.26 to 556.26	8.63 to 23.63	571.63 to 556.63	(see note 2)
68 Tonawanda Street (Site No. C915316)										
~~68-MW-1~~	~~1064209.6817~~	~~1068956.2871~~	~~592.62~~	~~595.41~~	~~32.0~~	~~20.0 to 32.0~~	~~572.62 to 560.62~~	~~22.0 to 32.0~~	~~570.62 to 560.62~~	~~Silty Clay~~
68-MW-2	1064255.4506	1068951.6819	592.62	595.39	34.5	22.5 to 34.5	570.12 to 558.12	24.5 to 34.5	568.12 to 558.12	Silty Clay
68-MW-3	1064146.5464	1068433.6323	591.92	594.10	38.0	26.0 to 38.0	565.92 to 553.92	28.0 to 38.0	563.92 to 553.92	Silty Clay
68-MW-4	1064171.5705	1067991.1804	586.72	589.06	39.0	27.0 to 39.0	559.72 to 547.72	29.0 to 39.0	557.72 to 547.72	Silty Clay
150 Tonawanda Street (Site No. C915299)										
~~150-MW-1~~	~~1064219.8648~~	~~1069031.3881~~	~~593.20~~	~~594.62~~	~~36.0~~	~~5.0 to 36.0~~	~~588.20 to 557.20~~	~~6.0 to 36.0~~	~~587.20 to 557.20~~	~~Silty Clay~~
~~150-MW-2~~	~~1064307.3693~~	~~1069383.1616~~	~~592.50~~	~~594.65~~	~~36.0~~	~~5.0 to 36.0~~	~~587.50 to 556.50~~	~~6.0 to 36.0~~	~~586.50 to 556.50~~	~~Silty Clay~~
~~150-MW-3~~	~~1064259.3787~~	~~1069436.2754~~	~~593.50~~	~~596.57~~	~~36.0~~	~~5.0 to 36.0~~	~~588.50 to 557.50~~	~~6.0 to 36.0~~	~~587.50 to 557.50~~	~~Silty Clay~~
~~150-MW-4~~	~~1064271.2277~~	~~1069087.6629~~	~~593.50~~	~~595.65~~	~~36.0~~	~~5.0 to 36.0~~	~~588.50 to 557.50~~	~~6.0 to 36.0~~	~~587.50 to 557.50~~	~~Silty Clay~~
Former Buffalo Gas Light/Iroquois Gas Corporation Site (Site No. 915351)										
MW-LSC-1	1064647.7100	1067490.1600	585.76	585.69	24.0	12.0 to 24.0	573.76 to 561.76	14.0 to 24.0	571.76 to 561.76	(see note 6)
MW-LSC-2	1064471.1100	1067487.3100	582.46	585.35	40.0	21.5 to 32.5	560.96 to 549.96	22.5 to 32.5	559.96 to 549.96	Alluvium; SC
MW-LSC-3	1064262.8500	1067270.1400	584.19	586.95	32.0	8.0 to 26.0	576.19 to 558.19	9.0 to 26.0	575.19 to 558.19	(see note 6)
MW-LSC-4	1064261.6000	1067415.4900	582.37	582.13	32.0	17.0 to 28.0	565.37 to 554.37	18.0 to 28.0	564.37 to 554.37	Alluvium; SC
MW-LSC-5	1064113.4600	1067444.8800	582.72	582.48	42.0	22.0 to 33.0	560.72 to 549.72	23.0 to 33.0	559.72 to 549.72	Alluvium; SC
MW-BGL-1	1063933.2000	1067341.1200	582.17	581.74	28.0	14.0 to 25.0	568.17 to 557.17	15.0 to 25.0	567.17 to 557.17	Silty Clay
MW-BGL-3	1063785.9400	1067420.6200	576.88	579.82	28.0	9.0 to 19.0	567.88 to 557.88	9.0 to 19.0	567.88 to 557.88	Fill

Table 3-4
Monitoring Well Construction Summary
31 Tonawanda Street Off-Site Area, Site No. C915299A
Buffalo, New York

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Notes:

Horizontal coordinates are relative to the State Plane New York West Zone of the North American Datum (NAD) of 1983.
♦ = Total boring depths as installed. These depths have not been adjusted to account for the construction of cover systems during remediation.
ft. amsl = feet above mean sea level.
ft. bgs = Feet below ground surface.
(1) = Silty clay; silty fine sand; sand & gravel.
(2) = Silty fine sand; sand & gravel.
(3) = Silty fine sand; sand & gravel.
(4) = Silty gravelly sand; silty clay.
(5) = Fill; silty clay.
(6) = Fill; alluvium; silty clay.
SC = Silty clay.
Crossed out wells were destroyed during remedial activities.

Coordinates:

Blue shaded coordinates are from the Regional Base Map completed by Glenn M. May as coordinates from the BCP RI Report were not correct.
Orange shaded coordinates were surveyed by the BCP applicants and were obtained from the AutoCAD files that were provided to the DEC.
Purple shaded coordinates are from the EDD file that LaBella sent to the Department for upload to EQuIS.
Yellow shaded coordinates were survyed by the DEC in 2020 as part of the 31 Tonawanda Street Off-Site Investigation.
Coordinates for the Former Buffalo Gas Light Site wells are from a table that was attached to an email I received from Michael Cummins of GEI on September 12, 2022.

Elevations:

Blue shaded elevations were calculated by adding the stickup to the ground surface elevation. Top of riser elevations were not surveyed.
Gray shaded elevations are from Table 8 (Groundwater Elevations) of the BE3 RI Report dated May 2019.
Green shaded elevations are the original surveyed elevations prior to the installation of a cover system during remediation.
Orange shaded elevations were calculated by subtracting the stickup from the top of riser elevations. Ground surface was not surveyed.
Pink shaded elevations were estimated from the TIN lines on the 57-71 Tonawanda Street AutoCAD property survey drawing.
Purple shaded elevations are from a January 31, 2020 email sent to Glenn M. May by Andrew Benkleman of LaBella.
Yellow shaded elevations were surveyed by the DEC in 2020 as part of the 31 Tonawanda Street Off-Site Investigation.
Unshaded elevations are from a PDF drawing of an ALTA survey dated November 8, 2018. These elevations have been adjusted by 9.84 feet to account for a calculation error by the surveyor. See Appendix J for details.
Ground surface and top of riser elevations for the Former Buffalo Gas Light Site wells are from a table that was attached to an email I received from Michael Cummins of GEI on September 12, 2022.

Table 3-5
Summary of Remedial Investigation Water Levels in Overburden Monitoring Wells
31 Tonawanda Street Off-Site Area, Site No. C915299A
Buffalo, New York

Well Number	Top of Riser Elevation	Depth to Water 09/16/20	Water Elevation 09/16/20	Depth to Water 09/17/20	Water Elevation 09/17/20	Depth to Water 09/18/20	Water Elevation 09/18/20	Depth to Water 09/21/20	Water Elevation 09/21/20	Depth to Water 09/24/20	Water Elevation 09/24/20	Depth to Water 10/27-29/20	Water Elevation 10/27-29/20
1660 Niagara Street (Site No. C915311)													
1660-MW-1	580.40	NM	NA	NM	NA	NM	NA	NM	NA	8.46	571.94	NM	NA
1660-MW-2	579.53	NM	NA	NM	NA	NM	NA	NM	NA	7.43	572.10	NM	NA
1660-MW-3R	578.63	NI	NA	NI	NA	NI	NA	NI	NA	6.26	572.37	6.42	572.21
1660-MW-5R	577.61	NI	NA	NI	NA	NI	NA	5.89	571.72	5.55	572.06	5.90	571.71
1660-MW-6	579.91	NM	NA	NM	NA	NM	NA	8.68	571.23	8.48	571.43	NM	NA
1660-MW-7	579.91	NM	NA	NM	NA	NM	NA	NM	NA	7.94	571.97	NM	NA
1660-MW-8	580.80	NI	NA	NI	NA	NI	NA	9.94	570.86	9.80	571.00	9.90	570.90
TPMW1	582.20	NM	NA	NM	NA	NM	NA	NM	NA	NM	NA	NM	NA
1675 Niagara Street													
1675-MW-1	577.51	3.21	574.30	4.63	572.88	5.29	572.22	5.37	572.14	5.12	572.39	4.84	572.67
1675-MW-2	580.29	3.95	576.34	3.95	576.34	3.95	576.34	3.95	576.34	4.00	576.29	3.68	576.61
31 Tonawanda Street (Site No. C915299)													
31-MW-1	580.66	NM	NA	NM	NA	NM	NA	NM	NA	NM	NA	NM	NA
31-MW-2	581.89	NM	NA	NM	NA	NM	NA	NM	NA	NM	NA	NM	NA
31-MW-3	578.96	NM	NA	NM	NA	NM	NA	NM	NA	NM	NA	NM	NA
31-MW-4	580.60	NM	NA	NM	NA	NM	NA	NM	NA	NM	NA	NM	NA
31-MW-5	583.14	NM	NA	NM	NA	NM	NA	NM	NA	Well removed during remediation in 2020			
57-71 Tonawanda Street (Site No. C915024)													
57-MW-1	577.70	NM	NA	NM	NA	NM	NA	NM	NA	NM	NA	NM	NA
57-MW-2	578.33	NM	NA	NM	NA	NM	NA	NM	NA	NM	NA	NM	NA
57-MW-3	579.15	NM	NA	NM	NA	NM	NA	NM	NA	NM	NA	NM	NA
57-MW-4	582.75	NM	NA	NM	NA	NM	NA	NM	NA	NM	NA	NM	NA
57-MW-5	584.00	NM	NA	NM	NA	NM	NA	NM	NA	NM	NA	NM	NA
Bike Path													
MW-100	578.56	NI	NA	NI	NA	NI	NA	NI	NA	4.00	574.56	5.27	573.29
MW-103	578.37	NI	NA	NI	NA	NI	NA	NI	NA	4.95	573.42	4.75	573.62
MW-106	579.84	NI	NA	NI	NA	NI	NA	NI	NA	6.61	573.23	6.55	573.29

Table 3-5
Summary of Remedial Investigation Water Levels in Overburden Monitoring Wells
31 Tonawanda Street Off-Site Area, Site No. C915299A
Buffalo, New York

Well Number	Top of Riser Elevation	Depth to Water 09/16/20	Water Elevation 09/16/20	Depth to Water 09/17/20	Water Elevation 09/17/20	Depth to Water 09/18/20	Water Elevation 09/18/20	Depth to Water 09/21/20	Water Elevation 09/21/20	Depth to Water 09/24/20	Water Elevation 09/24/20	Depth to Water 10/27-29/20	Water Elevation 10/27-29/20
68 Tonawanda Street (Site No. C915316)													
68-MW-1	595.41	NM	NA	NM	NA	NM	NA	NM	NA	Well removed during remediation in 2019			
68-MW-2	595.39	NM	NA	NM	NA	NM	NA	NM	NA	NM	NA	NM	NA
68-MW-3	594.10	NM	NA	NM	NA	NM	NA	NM	NA	NM	NA	NM	NA
68-MW-4	589.06	NM	NA	NM	NA	NM	NA	NM	NA	NM	NA	NM	NA
150 Tonawanda Street (Site No. C915299)													
150-MW-1	594.62	Well removed during installation of the cover system in 2020											
150-MW-2	594.65	Well removed during installation of the cover system in 2020											
150-MW-3	596.57	Well removed during installation of the cover system in 2020											
150-MW-4	595.65	Well removed during installation of the cover system in 2020											
Scajaquada Creek													
SC-1660	577.09	NM	NA	NM	NA	NM	NA	NM	NA	NM	NA	NM	NA
SC-West Ave	583.61	NM	NA	NM	NA	NM	NA	NM	NA	NM	NA	NM	NA
SC-Bike Path	578.96	NM	NA	NM	NA	NM	NA	NM	NA	NM	NA	NM	NA
BRC	-----	-----	573.55	-----	573.43	-----	573.17	-----	573.04	-----	573.45	-----	573.21

Notes:

NA = Not Applicable.
NI = Not Installed.
NM = Not Measured.
(1) = Well 57-MW-5 is an extremely slow recharging well and the measured water level is not representative of the surrounding water levels.
SC = Scajaquada Creek.
BRC = Black Rock Canal at the Black Rock Lock. Water levels at this location are measured every 15 minutes. When the times of water levels measurements were known, the average canal elevation between those times was used. Otherwise, the canal elevation at noon was used.
Elevations are referenced to Datum NAVD 88.
Orange shaded values were measured from the top of the protective casing or from a riser that was later cut shorter. Depth to water was adjusted to the current the top of riser elevation.
Green shaded values were measured from the top of the protective casing. The reference elevation is from that point. The top of riser elevation is 578.502.

Table 3-5
Summary of Remedial Investigation Water Levels in Overburden Monitoring Wells
31 Tonawanda Street Off-Site Area, Site No. C915299A
Buffalo, New York

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Well Number	Top of Riser Elevation	Depth to Water	Water Elevation	Depth to Water	Water Elevation	Depth to Water	Water Elevation	Depth to Water	Water Elevation	Depth to Water	Water Elevation	Depth to Water	Water Elevation
		11/04-05/20		01/14/21		03/05/21		04/30/21		05/28/21		06/28/21	
1660 Niagara Street (Site No. C915311)													
1660-MW-1	580.40	NM	NA	8.23	572.17	8.19	572.21	7.83	572.57	8.00	572.40	6.32	574.08
1660-MW-2	579.53	NM	NA	7.13	572.40	7.55	571.98	6.08	572.42	6.26	572.24	6.05	572.24
1660-MW-3R	578.63	6.32	572.31	6.33	572.30	6.70	571.93	6.32	572.31	7.01	571.62	6.30	572.33
1660-MW-5R	577.61	5.81	571.80	5.56	572.05	5.93	571.68	5.61	572.00	6.20	571.41	5.62	571.99
1660-MW-6	579.91	NM	NA	8.51	571.40	8.55	571.36	8.37	571.54	8.74	571.17	8.39	571.52
1660-MW-7	579.91	NM	NA	8.02	571.89	8.16	571.75	7.89	572.02	8.41	571.50	8.00	571.91
1660-MW-8	580.80	9.92	570.88	9.85	570.95	9.77	571.03	9.70	571.10	9.92	570.88	9.61	571.19
TPMW1	582.20	NM	NA	9.92	572.28	10.56	571.64	10.20	572.00	10.31	571.89	10.05	572.15
1675 Niagara Street													
1675-MW-1	577.51	5.11	572.40	5.22	572.29	5.56	571.95	5.20	572.31	5.43	572.08	5.20	572.31
1675-MW-2	580.29	3.61	576.68	3.61	576.68	3.43	576.86	3.44	576.85	3.77	576.52	3.75	576.54
31 Tonawanda Street (Site No. C915299)													
31-MW-1	580.66	NM	NA	NM	NA	NM	NA	NM	NA	6.48	574.18	NM	NA
31-MW-2	581.89	NM	NA	NM	NA	NM	NA	NM	NA	NM	NA	NM	NA
31-MW-3	578.96	NM	NA	6.12	572.84	6.80	572.16	6.11	572.85	7.01	571.95	6.45	572.51
31-MW-4	580.60	NM	NA	8.57	572.03	7.76	572.84	7.24	573.36	7.64	572.96	NM	NA
31-MW-5	583.14	Well removed during installation of the cover system in 2020											
57-71 Tonawanda Street (Site No. C915024)													
57-MW-1	577.70	NM	NA	NM	NA	4.86	572.84	4.11	573.59	4.29	573.41	4.50	573.20
57-MW-2	578.33	NM	NA	NM	NA	NM	NA	NM	NA	NM	NA	NM	NA
57-MW-3	579.15	NM	NA	NM	NA	2.35	576.80	2.01	577.14	2.11	577.04	2.69	576.46
57-MW-4	582.75	NM	NA	NM	NA	4.20	578.55	3.82	578.93	4.03	578.72	4.44	578.31
57-MW-5	584.00	NM	NA	NM	NA	4.41	579.59	4.01	579.99	4.21	579.79	4.61	579.39
Bike Path													
MW-100	578.56	5.23	573.33	5.34	573.22	5.70	572.86	5.18	573.38	5.69	572.87	5.30	573.26
MW-103	578.37	4.78	573.59	4.73	573.64	4.57	573.80	4.45	573.92	4.91	573.46	4.61	573.76
MW-106	579.84	6.52	573.32	6.55	573.29	6.90	572.94	6.44	573.40	6.58	573.26	6.83	573.01

Table 3-5
Summary of Remedial Investigation Water Levels in Overburden Monitoring Wells
31 Tonawanda Street Off-Site Area, Site No. C915299A
Buffalo, New York

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Well Number	Top of Riser Elevation	Depth to Water	Water Elevation	Depth to Water	Water Elevation	Depth to Water	Water Elevation	Depth to Water	Water Elevation	Depth to Water	Water Elevation	Depth to Water	Water Elevation
		11/04-05/20		01/14/21		03/05/21		04/30/21		05/28/21		06/28/21	
68 Tonawanda Street (Site No. C915316)													
68-MW-1	595.41	Well removed during installation of the cover system in 2019											
68-MW-2	595.39	NM	NA	NM	NA	NM	NA	9.38	586.01	9.49	585.90	10.04	585.35
68-MW-3	594.10	NM	NA	NM	NA	10.64	583.46	9.31	584.79	9.48	584.62	11.17	582.93
68-MW-4	589.06	NM	NA	NM	NA	8.73	580.33	8.03	581.03	8.28	580.78	9.90	579.16
150 Tonawanda Street (Site No. C915299)													
150-MW-1	594.62	Well removed during installation of the cover system in 2020											
150-MW-2	594.65	Well removed during installation of the cover system in 2020											
150-MW-3	596.57	Well removed during installation of the cover system in 2020											
150-MW-4	595.65	Well removed during installation of the cover system in 2020											
Scajaquada Creek													
SC-1660	577.09	NM	NA	4.34	572.75	Frozen	NA	3.79	573.30	7.45	569.64	3.91	573.18
SC-West Ave	583.61	NM	NA	11.00	572.61	10.75	572.86	9.52	574.09	13.10	570.51	10.41	573.20
SC-Bike Path	578.96	NM	NA	6.06	572.90	6.22	572.74	5.00	573.96	8.65	570.31	5.78	573.18
BRC	-----	-----	573.10	-----	572.68	-----	572.74	-----	573.61	-----	570.30	-----	573.08

Notes:

NA = Not Applicable.
NI = Not Installed.
NM = Not Measured.
SC = Scajaquada Creek.
BRC = Black Rock Canal at the Black Rock Lock. Water levels at this location are measured every 15 minutes. When the times of water levels measurements were known, the average canal elevation between those times was used. Otherwise, the canal elevation at noon was used.
Elevations are referenced to Datum NAVD 88.
Green shaded values were measured from the top of the protective casing. The reference elevation is from that point. The top of riser elevation is 578.502.

Table 3-5
Summary of Remedial Investigation Water Levels in Overburden Monitoring Wells
31 Tonawanda Street Off-Site Area, Site No. C915299A
Buffalo, New York

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Well Number	Top of Riser Elevation	Depth to Water 07/27/21	Water Elevation 07/27/21	Depth to Water 08/31/21	Water Elevation 08/31/21	Depth to Water 09/30/21	Water Elevation 09/30/21	Depth to Water 10/26/21	Water Elevation 10/26/21	Depth to Water 11/23/21	Water Elevation 11/23/21	Depth to Water 12/22/21	Water Elevation 12/22/21
1660 Niagara Street (Site No. C915311)													
1660-MW-1	580.40	8.10	572.30	8.19	572.21	8.13	572.27	7.50	572.90	7.73	572.67	7.63	572.77
1660-MW-2	578.50	5.84	572.66	5.93	572.57	5.88	572.62	6.40	572.10	6.19	572.31	5.95	572.55
1660-MW-3R	578.63	5.93	572.70	5.66	572.97	5.61	573.02	6.60	572.03	6.34	572.29	6.04	572.59
1660-MW-5R	577.61	5.21	572.40	5.48	572.13	5.42	572.19	5.95	571.66	5.48	572.13	5.33	572.28
1660-MW-6	579.91	7.95	571.96	8.09	571.82	7.95	571.96	8.75	571.16	8.43	571.48	8.18	571.73
1660-MW-7	579.91	7.51	572.40	7.63	572.28	7.47	572.44	8.20	571.71	7.95	571.96	7.64	572.27
1660-MW-8	580.80	9.25	571.55	9.41	571.39	9.30	571.50	10.02	570.78	9.69	571.11	9.51	571.29
TPMW1	582.20	9.79	572.41	10.11	572.09	10.08	572.12	10.43	571.77	10.02	572.18	9.91	572.29
1675 Niagara Street													
1675-MW-1	577.51	4.80	572.71	5.09	572.42	5.00	572.51	5.51	572.00	5.13	572.38	5.05	572.46
1675-MW-2	580.29	3.50	576.79	3.77	576.52	3.59	576.70	3.35	576.94	3.43	576.86	3.52	576.77
31 Tonawanda Street (Site No. C915299)													
31-MW-1	580.66	Well appears to have been destroyed during redevelopment in 2021											
31-MW-2	581.89	NM	NA	NM	NA	NM	NA	4.97	576.92	5.10	576.79	5.36	576.53
31-MW-3	578.96	6.01	572.95	3.41	575.55	3.38	575.58	6.83	572.13	6.51	572.45	6.23	572.73
31-MW-4	580.60	NM	NA	NM	NA	7.24	573.36	NM	NA	NM	NA	NM	NA
31-MW-5	583.14	Well removed during installation of the cover system in 2020											
57-71 Tonawanda Street (Site No. C915024)													
57-MW-1	577.70	3.97	573.73	4.51	573.19	4.44	573.26	4.75	572.95	4.61	573.09	3.95	573.75
57-MW-2	578.33	NM	NA	NM	NA	NM	NA	NM	NA	NM	NA	NM	NA
57-MW-3	579.15	2.12	577.03	2.22	576.93	2.20	576.95	2.35	576.80	1.94	577.21	2.01	577.14
57-MW-4	582.75	4.37	578.38	3.92	578.83	3.84	578.91	3.17	579.58	2.91	579.84	3.21	579.54
57-MW-5	584.00	4.18	579.82	3.88	580.12	3.81	580.19	3.11	580.89	3.00	581.00	2.89	581.11
Bike Path													
MW-100	578.56	4.72	573.84	5.31	573.25	5.24	573.32	5.46	573.10	5.43	573.13	4.98	573.58
MW-103	578.37	4.38	573.99	5.00	573.37	4.77	573.60	4.93	573.44	4.69	573.68	4.35	574.02
MW-106	579.84	6.00	573.84	6.50	573.34	6.51	573.33	6.75	573.09	6.52	573.32	6.14	573.70

Table 3-5
Summary of Remedial Investigation Water Levels in Overburden Monitoring Wells
31 Tonawanda Street Off-Site Area, Site No. C915299A
Buffalo, New York

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Well Number	Top of Riser Elevation	Depth to Water	Water Elevation	Depth to Water	Water Elevation	Depth to Water	Water Elevation	Depth to Water	Water Elevation	Depth to Water	Water Elevation	Depth to Water	Water Elevation
		07/27/21		08/31/21		09/30/21		10/26/21		11/23/21		12/22/21	
68 Tonawanda Street (Site No. C915316)													
68-MW-1	595.41	Well removed during installation of the cover system in 2019											
68-MW-2	595.39	10.49	584.90	9.93	585.46	9.88	585.51	NM	NA	9.61	585.78	9.77	585.62
68-MW-3	594.10	11.65	582.45	11.20	582.90	11.09	583.01	10.64	583.46	10.26	583.84	10.22	583.88
68-MW-4	589.06	7.20	581.86	8.82	580.24	8.71	580.35	8.15	580.91	7.94	581.12	7.87	581.19
150 Tonawanda Street (Site No. C915299)													
150-MW-1	594.62	Well removed during installation of the cover system in 2020											
150-MW-2	594.65	Well removed during installation of the cover system in 2020											
150-MW-3	596.57	Well removed during installation of the cover system in 2020											
150-MW-4	595.65	Well removed during installation of the cover system in 2020											
Scajaquada Creek													
SC-1660	577.09	3.00	574.09	4.11	572.98	4.04	573.05	NM	NA	NM	NA	NM	NA
SC-West Ave	583.61	9.83	573.78	10.53	573.08	11.61	572.00	10.60	573.01	10.77	572.84	10.90	572.71
SC-Bike Path	578.96	4.95	574.01	5.92	573.04	5.93	573.03	6.20	572.76	6.01	572.95	5.20	573.76
BRC	-----	-----	573.72	-----	572.91	-----	572.70	-----	572.84	-----	572.64	-----	573.22

Notes:

NA = Not Applicable.
NI = Not Installed.
NM = Not Measured.
SC = Scajaquada Creek.
BRC = Black Rock Canal at the Black Rock Lock. Water levels at this location are measured every 15 minutes. When the times of water levels measurements were known, the average canal elevation between those times was used. Otherwise, the canal elevation at noon was used.
Elevations are referenced to Datum NAVD 88.

Table 3-6
Summary of Historic Water Levels in Overburden Monitoring Wells
31 Tonawanda Street Off-Site Area, Site No. C915299A
Buffalo, New York

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Well Number	Top of Riser Elevation	Depth to Water	Water Elevation	Depth to Water	Water Elevation	Depth to Water	Water Elevation	Depth to Water	Water Elevation	Depth to Water	Water Elevation	Depth to Water	Water Elevation	Depth to Water	Water Elevation
		06/01/17		08/24/17		08/30/17		02/23/18		03/30/18		09/11/18		09/17/18	
1660 Niagara Street (Site No. C915311)															
1660-MW-1	578.79	7.9	570.89	NM	NA	7.5	571.29	NM	NA	NM	NA	NM	NA	NM	NA
1660-MW-2	577.65	8.3	569.35	NM	NA	6.3	571.35	NM	NA	NM	NA	NM	NA	NM	NA
1660-MW-3	577.32	5.6	571.72	NM	NA	6.1	571.22	NM	NA	NM	NA	NM	NA	NM	NA
1660-MW-4	575.55	5.1	570.45	NM	NA	4.4	571.15	NM	NA	NM	NA	NM	NA	NM	NA
1660-MW-5	577.25	10.8	566.45	NM	NA	5.4	571.85	NM	NA	NM	NA	NM	NA	NM	NA
1660-MW-6	577.20	6.1	571.10	6.4	570.80	6.5	570.70	NM	NA	NM	NA	NM	NA	NM	NA
1660-MW-7	578.21	NI	NA	7.0	571.21	7.1	571.11	NM	NA	NM	NA	NM	NA	NM	NA
TPMW1	581.17	NM	NA	NM	NA	NM	NA	NM	NA	NM	NA	NM	NA	NM	NA
31 Tonawanda Street (Site No. C915299)															
31-MW-1	580.66	NI	NA	NI	NA	NI	NA	NI	NA	NI	NA	NM	NA	7.40	573.26
31-MW-2	581.89	NI	NA	NI	NA	NI	NA	NI	NA	NI	NA	NM	NA	5.40	576.49
31-MW-3	578.96	NI	NA	NI	NA	NI	NA	NI	NA	NI	NA	NM	NA	6.10	572.86
31-MW-4	580.60	NI	NA	NI	NA	NI	NA	NI	NA	NI	NA	NM	NA	8.40	572.20
31-MW-5	583.14	NI	NA	NI	NA	NI	NA	NI	NA	NI	NA	NM	NA	15.60	567.54
57-71 Tonawanda Street (Site No. C915024)															
57-MW-1	577.70	NI	NA	NI	NA	NI	NA	NI	NA	NI	NA	NI	NA	NI	NA
57-MW-2	578.33	NI	NA	NI	NA	NI	NA	NI	NA	NI	NA	NI	NA	NI	NA
57-MW-3	579.15	NI	NA	NI	NA	NI	NA	NI	NA	NI	NA	NI	NA	NI	NA
57-MW-4	582.75	NI	NA	NI	NA	NI	NA	NI	NA	NI	NA	NI	NA	NI	NA
57-MW-5	584.00	NI	NA	NI	NA	NI	NA	NI	NA	NI	NA	NI	NA	NI	NA
68 Tonawanda Street (Site No. C915316)															
68-MW-1	595.41	NI	NA	NI	NA	NI	NA	5.78	589.63	5.84	589.57	NM	NA	NM	NA
68-MW-2	595.39	NI	NA	NI	NA	NI	NA	31.75	563.64	9.21	586.18	NM	NA	NM	NA
68-MW-3	594.10	NI	NA	NI	NA	NI	NA	9.74	584.36	10.18	583.92	NM	NA	NM	NA
68-MW-4	589.06	NI	NA	NI	NA	NI	NA	10.34	578.72	10.23	578.83	NM	NA	NM	NA

Table 3-6
Summary of Historic Water Levels in Overburden Monitoring Wells
31 Tonawanda Street Off-Site Area, Site No. C915299A
Buffalo, New York

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Well Number	Top of Riser Elevation	Depth to Water	Water Elevation	Depth to Water	Water Elevation	Depth to Water	Water Elevation	Depth to Water	Water Elevation	Depth to Water	Water Elevation	Depth to Water	Water Elevation	Depth to Water	Water Elevation
		06/01/17		08/24/17		08/30/17		02/23/18		03/30/18		09/11/18		09/17/18	
150 Tonawanda Street (Site No. C915299)															
150-MW-1	594.62	NI	NA	NI	NA	NI	NA	NI	NA	NI	NA	7.40	587.22	NM	NA
150-MW-2	594.65	NI	NA	NI	NA	NI	NA	NI	NA	NI	NA	7.60	587.05	NM	NA
150-MW-3	596.57	NI	NA	NI	NA	NI	NA	NI	NA	NI	NA	9.40	587.17	NM	NA
150-MW-4	595.65	NI	NA	NI	NA	NI	NA	NI	NA	NI	NA	25.40	570.25	NM	NA
Scajaquada Creek															
BRC	-----	-----	N/A	-----	573.05	-----	572.54	-----	574.20	-----	573.01	-----	572.64	-----	572.67

Notes:

NA = Not Applicable.
N/A = Not Available.
NI = Not Installed.
NM = Not Measured.
SC = Scajaquada Creek.
BRC = Black Rock Canal at the Black Rock Lock. Water levels at this location are measured every 15 minutes. When the times of water levels measurements were known, the average canal elevation between those times was used. Otherwise, the canal elevation at noon was used.
Elevations are referenced to Datum NAVD 88.

Table 3-6
Summary of Historic Water Levels in Overburden Monitoring Wells
31 Tonawanda Street Off-Site Area, Site No. C915299A
Buffalo, New York

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Well Number	Top of Riser Elevation	Depth to Water	Water Elevation	Depth to Water	Water Elevation	Depth to Water	Water Elevation	Depth to Water	Water Elevation	Depth to Water	Water Elevation	Depth to Water	Water Elevation	Depth to Water	Water Elevation
		09/21/18		09/24/18		11/06/18		01/16/19		01/13/20		01/22/20		05/01/20	
1660 Niagara Street (Site No. C915311)															
1660-MW-1	578.79	NM	NA	NM	NA	NM	NA	7.7	571.09	NM	NA	NM	NA	NM	NA
1660-MW-2	577.65	NM	NA	NM	NA	NM	NA	5.9	571.75	NM	NA	NM	NA	NM	NA
1660-MW-3	577.32	NM	NA	NM	NA	NM	NA	6.15	571.17	NM	NA	NM	NA	NM	NA
1660-MW-4	575.55	NM	NA	NM	NA	NM	NA	3.85	571.70	NM	NA	NM	NA	NM	NA
1660-MW-5	577.25	NM	NA	NM	NA	NM	NA	5.69	571.56	NM	NA	NM	NA	NM	NA
1660-MW-6	577.20	NM	NA	NM	NA	NM	NA	6.12	571.08	NM	NA	NM	NA	NM	NA
1660-MW-7	578.21	NM	NA	NM	NA	NM	NA	6.56	571.65	NM	NA	NM	NA	NM	NA
TPMW1	581.17	NM	NA	NM	NA	NM	NA	10.03	571.14	NM	NA	NM	NA	NM	NA
31 Tonawanda Street (Site No. C915299)															
31-MW-1	580.66	NM	NA	7.80	572.86	NM	NA	NM	NA	NM	NA	NM	NA	NM	NA
31-MW-2	581.89	NM	NA	5.20	576.69	NM	NA	NM	NA	NM	NA	NM	NA	NM	NA
31-MW-3	578.96	NM	NA	6.30	572.66	NM	NA	NM	NA	NM	NA	NM	NA	NM	NA
31-MW-4	580.60	NM	NA	8.10	572.50	NM	NA	NM	NA	NM	NA	NM	NA	NM	NA
31-MW-5	583.14	NM	NA	13.30	569.84	NM	NA	NM	NA	NM	NA	NM	NA	NM	NA
57-71 Tonawanda Street (Site No. C915024)															
57-MW-1	577.70	NI	NA	NI	NA	NI	NA	NI	NA	3.75	573.95	3.85	573.85	3.70	574.00
57-MW-2	578.33	NI	NA	NI	NA	NI	NA	NI	NA	3.06	575.27	3.35	574.98	3.20	575.13
57-MW-3	579.15	NI	NA	NI	NA	NI	NA	NI	NA	1.66	577.49	2.35	576.80	2.30	576.85
57-MW-4	582.75	NI	NA	NI	NA	NI	NA	NI	NA	4.11	578.64	4.11	578.64	5.40	577.35
57-MW-5	584.00	NI	NA	NI	NA	NI	NA	NI	NA	NM (1)	NA	26.53	557.47	4.60	579.40
68 Tonawanda Street (Site No. C915316)															
68-MW-1	595.41	NM	NA	NM	NA	NM	NA	NM	NA	NM	NA	NM	NA	NM	NA
68-MW-2	595.39	NM	NA	NM	NA	NM	NA	NM	NA	NM	NA	NM	NA	NM	NA
68-MW-3	594.10	NM	NA	NM	NA	NM	NA	NM	NA	NM	NA	NM	NA	NM	NA
68-MW-4	589.06	NM	NA	NM	NA	NM	NA	NM	NA	NM	NA	NM	NA	NM	NA

Table 3-6
Summary of Historic Water Levels in Overburden Monitoring Wells
31 Tonawanda Street Off-Site Area, Site No. C915299A
Buffalo, New York

Well Number	Top of Riser Elevation	Depth to Water	Water Elevation	Depth to Water	Water Elevation	Depth to Water	Water Elevation	Depth to Water	Water Elevation	Depth to Water	Water Elevation	Depth to Water	Water Elevation	Depth to Water	Water Elevation
		09/21/18		09/24/18		11/06/18		01/16/19		01/13/20		01/22/20		05/01/20	
150 Tonawanda Street (Site No. C915299)															
150-MW-1	594.62	6.70	587.92	NM	NA	NM	NA	NM	NA	NM	NA	NM	NA	NM	NA
150-MW-2	594.65	7.40	587.25	NM	NA	NM	NA	NM	NA	NM	NA	NM	NA	NM	NA
150-MW-3	596.57	9.30	587.27	NM	NA	NM	NA	NM	NA	NM	NA	NM	NA	NM	NA
150-MW-4	595.65	12.80	582.85	NM	NA	5.50	590.15	NM	NA	NM	NA	NM	NA	NM	NA
Scajaquada Creek															
BRC	-----	-----	573.11	-----	572.42	-----	573.63	-----	572.79	-----	573.68	-----	573.72	-----	574.44

Notes:

NA = Not Applicable.
N/A = Not Available.
NI = Not Installed.
NM = Not Measured.
(1) = Well 57-MW-5 is an extremely slow recharging well and the measured water level is not representative of the surrounding water levels.
SC = Scajaquada Creek.
BRC = Black Rock Canal at the Black Rock Lock. Water levels at this location are measured every 15 minutes. When the times of water levels measurements were known, the average canal elevation between those times was used. Otherwise, the canal elevation at noon was used.
Elevations are referenced to Datum NAVD 88.

Table 5-1
Stratigraphic Sequence of Western New York
Compiled from Buehler and Tesmer (1963) and Brett et al. (1995).

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Epoch	Group	Formation	Member
Middle Devonian	Hamilton	Moscow Shale	Windom Shale Kashong Shale
		Ludlowville Formation	Tichenor Limestone Wanakah Shale Ledyard Shale Centerfield Limestone
		Skaneateles Formation	Levanna Shale Stafford Limestone
		Marcellus Shale	Oatka Creek Shale
		Onondaga Limestone	Seneca Limestone Morehouse Limestone Nedrow Limestone Clarence Limestone Edgecliff Limestone
Late Silurian	Salina	Akron Dolostone	
		Bertie Dolostone	Williamsville Dolostone Scajaquada Dolostone Falkirk Dolostone Oatka Dolostone
		Camillus Shale Syracuse Formation Vernon Shale	
Middle Silurian	Lockport	Guelph Dolostone Eramosa Dolostone	
		Goat Island Dolostone	Vinemount Dolostone Ancaster Dolostone Niagara Falls Dolostone
		Gasport Limestone	Pekin Dolostone Gothic Hill Limestone
	Clinton	Decew Dolostone	
		Rochester Shale	Burleigh Hill Shale Lewiston Shale
		Irondequoit Limestone Rockway Dolostone Williamson Shale Merritton Limestone	
		Reynales Limestone	Hickory Corners Limestone
		Neahga Shale	
Early Silurian	Medina	Kodak Sandstone Cambria Shale Thorold Sandstone Grimsby Formation Devils Hole Shale Power Glen Shale Whirlpool Sandstone	
Late Ordovician	Richmond	Queenston Shale Oswego Sandstone	

Table 5-2
Stratigraphic Summary of Soil Borings and Test Pits Completed Within the Study Area
NYSDEC Remedial Investigation
31 Tonawanda Street Off-Site Area, Site No. C915299A
Buffalo, New York

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Boring or Test Pit Number	Date Completed	New York State Plane Coordinates		Ground Surface Elevation (ft amsl)	Total Depth (ft bgs)	Miscellaneous Fill Including Concrete Slabs & Asphalt Paving			Brown Clay or Silty Clay (Possibly Reworked)			Brownish-Grey Silty Sand & Silty Clay (Alluvium)			Native Reddish Brown Silty Clay		
		Easting (x)	Northing (y)			Depth (ft bgs)	Surface * Elevation	Thickness (ft)	Depth (ft bgs)	Surface * Elevation	Thickness (ft)	Depth (ft bgs)	Surface * Elevation	Thickness (ft)	Depth (ft bgs)	Surface * Elevation	Thickness (ft)
1660 Niagara Street (Site No. C915311)																	
TP-1	11/18/15	1063773.3377	1067843.0620	578.71	4.0	0.0	578.71	> 4.0	-----	-----	-----	-----	-----	-----	-----	-----	-----
TP-2	11/18/15	1063833.3144	1067793.5590	578.41	6.0	0.0	578.41	4.0	4.0	574.41	> 2.0	-----	-----	-----	-----	-----	-----
TP-3	11/18/15	1063835.2592	1067767.7675	578.02	10.0	0.0	578.02	> 10.0	-----	-----	-----	-----	-----	-----	-----	-----	-----
TP-4	11/18/15	1063897.6660	1067702.3867	577.06	4.5	0.0	577.06	> 4.5	-----	-----	-----	-----	-----	-----	-----	-----	-----
TP-5	11/18/15	1063963.3580	1067615.9444	577.14	4.0	0.0	577.14	> 4.0	-----	-----	-----	-----	-----	-----	-----	-----	-----
TP-6	11/18/15	1063916.2224	1067661.8888	577.19	4.0	0.0	577.19	> 4.0	-----	-----	-----	-----	-----	-----	-----	-----	-----
TP-7	11/18/15	1063872.4756	1067736.5641	576.98	4.0	0.0	576.98	> 4.0	-----	-----	-----	-----	-----	-----	-----	-----	-----
TP-8	11/18/15	1063805.0532	1067798.5623	578.03	4.0	0.0	578.03	> 4.0	-----	-----	-----	-----	-----	-----	-----	-----	-----
SB-1/TPMW1	12/08/15	1063936.8070	1067612.2055	576.77	16.0	0.0	576.77	9.0	-----	-----	-----	9.0	567.77	> 7.0	-----	-----	-----
SB-2	12/08/15	1063968.0902	1067635.8189	577.33	16.0	0.0	577.33	8.0	-----	-----	-----	8.0	569.33	> 8.0	-----	-----	-----
SB-3	12/08/15	1063941.6631	1067670.0514	577.40	16.0	0.0	577.40	4.0	4.0	573.40	4.0	8.0	569.40	> 8.0	-----	-----	-----
SB-4/TPMW2	12/08/15	1063901.2899	1067674.0202	576.85	16.0	0.0	576.85	12.0	-----	-----	-----	12.0	564.85	> 4.0	-----	-----	-----
SB-5	12/08/15	1063826.0238	1067785.6640	579.05	10.0	0.0	579.05	> 10.0	-----	-----	-----	-----	-----	-----	-----	-----	-----
SB-5A	12/08/15	1063820.4927	1067790.4753	578.85	10.0	0.0	578.85	> 10.0	-----	-----	-----	-----	-----	-----	-----	-----	-----
SB-6	12/08/15	1063838.7299	1067786.2812	578.25	16.0	0.0	578.25	4.0	-----	-----	-----	4.0	574.25	> 12.0	-----	-----	-----
SB-7	12/08/15	1063851.6430	1067759.6605	578.14	16.0	0.0	578.14	6.0	6.0	572.14	6.0	12.0	566.14	> 4.0	-----	-----	-----
SB-8/TPMW3	12/08/15	1063823.5031	1067802.7557	578.14	24.0	0.0	578.14	6.0	6.0	572.14	4.0	10.0	568.14	> 14.0	-----	-----	-----
RI-TP-1	05/18/17	1063783.4682	1067829.4023	578.73	12.0	0.0	578.73	4.0	4.0	574.73	6.0	10.0	568.73	> 2.0	-----	-----	-----
RI-TP-2	05/18/17	1063868.9305	1067732.3687	576.98	12.0	0.0	576.98	8.0	-----	-----	-----	8.0	568.98	> 4.0	-----	-----	-----
RI-TP-3	05/18/17	1063886.8770	1067712.6611	577.21	6.0	0.0	577.21	4.0	4.0	573.21	> 2.0	-----	-----	-----	-----	-----	-----
RI-TP-4	05/18/17	1063894.2604	1067719.7116	577.29	10.0	0.0	577.29	6.0	6.0	571.29	3.0	9.0	568.29	> 1.0	-----	-----	-----
RI-TP-5	05/18/17	1063909.1743	1067702.4222	577.28	12.0	0.0	577.28	4.0	4.0	573.28	4.0	8.0	569.28	> 4.0	-----	-----	-----
RI-TP-6	05/18/17	1063901.8303	1067710.6042	577.19	12.0	0.0	577.19	4.0	4.0	573.19	4.0	8.0	569.19	> 4.0	-----	-----	-----
RI-TP-7	05/18/17	1063900.3925	1067691.1601	576.78	4.0	0.0	576.78	> 4.0	-----	-----	-----	-----	-----	-----	-----	-----	-----
RI-TP-8	05/18/17	1063938.7507	1067646.0515	577.24	4.0	0.0	577.24	> 4.0	-----	-----	-----	-----	-----	-----	-----	-----	-----
RI-TP-9	05/18/17	1063966.4677	1067604.3658	577.32	4.0	0.0	577.32	> 4.0	-----	-----	-----	-----	-----	-----	-----	-----	-----
RI-TP-10	05/18/17	1063946.2693	1067618.2864	576.94	5.0	0.0	576.94	> 5.0	-----	-----	-----	-----	-----	-----	-----	-----	-----
RI-TP-11	05/18/17	1063958.9533	1067585.5148	577.02	8.0	0.0	577.02	> 8.0	-----	-----	-----	-----	-----	-----	-----	-----	-----
RI-TP-12	05/18/17	1063931.2951	1067673.9425	577.40	12.0	0.0	577.40	8.0	-----	-----	-----	8.0	569.40	> 4.0	-----	-----	-----
RI-TP-13	05/18/17	1063959.4507	1067646.9591	577.33	2.0	0.0	577.33	> 2.0	-----	-----	-----	-----	-----	-----	-----	-----	-----
RI-TP-14	05/18/17	1063956.9410	1067636.6505	577.30	2.0	0.0	577.30	> 2.0	-----	-----	-----	-----	-----	-----	-----	-----	-----
RI-TP-15	05/18/17	1063979.3363	1067620.8891	577.33	8.0	0.0	577.33	6.0	-----	-----	-----	6.0	571.33	> 2.0	-----	-----	-----
SB-1/MW-1	05/30/17	1063787.1321	1067844.3516	578.29	20.0	0.0	578.29	0.3	0.3	577.99	9.7	10.0	568.29	> 10.0	-----	-----	-----
SB-2/MW-2	05/30/17	1063824.0844	1067781.5073	577.15	20.0	0.0	577.15	5.0	5.0	572.15	2.5	7.5	569.65	> 12.5	-----	-----	-----
SB-3/MW-3	05/30/17	1063873.5453	1067749.4565	576.82	20.0	0.0	576.82	9.5	9.5	567.32	0.5	10.0	566.82	> 10.0	-----	-----	-----

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Table 5-2
Stratigraphic Summary of Soil Borings and Test Pits Completed Within the Study Area
NYSDEC Remedial Investigation
31 Tonawanda Street Off-Site Area, Site No. C915299A
Buffalo, New York

Boring or Test Pit Number	Date Completed	New York State Plane Coordinates		Ground Surface Elevation (ft amsl)	Total Depth (ft bgs)	Miscellaneous Fill Including Concrete Slabs & Asphalt Paving			Brown Clay or Silty Clay (Possibly Reworked)			Brownish-Grey Silty Sand & Silty Clay (Alluvium)			Native Reddish Brown Silty Clay		
		Easting (x)	Northing (y)			Depth (ft bgs)	Surface * Elevation	Thickness (ft)	Depth (ft bgs)	Surface * Elevation	Thickness (ft)	Depth (ft bgs)	Surface * Elevation	Thickness (ft)	Depth (ft bgs)	Surface * Elevation	Thickness (ft)
1660 Niagara Street (continued)																	
SB-4/MW-4	05/30/17	1063890.5111	1067687.7889	575.05	20.0	0.0	575.05	4.5	4.5	570.55	0.5	5.0	570.05	> 15.0	-----	-----	-----
SB-5/MW-5	05/30/17	1063945.4002	1067667.4287	576.75	20.0	0.0	576.75	9.0	-----	-----	-----	9.0	567.75	> 11.0	-----	-----	-----
SB-6/MW-6	05/30/17	1063956.1857	1067580.9129	576.70	20.0	0.0	576.70	9.0	9.0	567.70	> 1.0 ●	-----	-----	-----	-----	-----	-----
RI-TP-8RE	07/27/17	NS	NS	NS	10.0	0.0	N/A	6.0	-----	-----	-----	6.0	N/A	> 4.0	-----	-----	-----
RI-TP-16	07/27/17	1063931.5158	1067653.6124	577.23	8.0	0.0	577.23	4.0	-----	-----	-----	4.0	573.23	> 4.0	-----	-----	-----
RI-TP-17	07/27/17	1063931.8442	1067664.9058	577.29	5.5	0.0	577.29	4.0	4.0	573.29	> 1.5	-----	-----	-----	-----	-----	-----
RI-TP-18	07/27/17	1063940.2903	1067660.1317	577.35	6.0	0.0	577.35	5.0	5.0	572.35	> 1.0	-----	-----	-----	-----	-----	-----
RI-TP-19	07/27/17	1063947.2511	1067653.8400	577.33	6.0	0.0	577.33	4.0	-----	-----	-----	4.0	573.33	> 2.0	-----	-----	-----
RI-TP-20	07/28/17	1063929.4077	1067637.0803	577.17	7.5	0.0	577.17	4.0	-----	-----	-----	4.0	573.17	> 3.5	-----	-----	-----
RI-TP-21	07/28/17	1063948.9254	1067634.3607	577.12	7.5	0.0	577.12	4.5	-----	-----	-----	4.5	572.62	> 3.0	-----	-----	-----
RI-TP-22	07/28/17	1063966.3329	1067629.2866	577.33	7.0	0.0	577.33	5.0	-----	-----	-----	5.0	572.33	> 2.0	-----	-----	-----
RI-TP-23	07/28/17	1063938.5003	1067615.7056	576.77	7.0	0.0	576.77	6.0	-----	-----	-----	6.0	570.77	> 1.0	-----	-----	-----
RI-TP-24	07/28/17	1063922.4713	1067644.8536	577.04	8.0	0.0	577.04	7.5	-----	-----	-----	7.5	569.54	> 0.5	-----	-----	-----
RI-TP-25	07/28/17	1063973.3116	1067635.4776	577.36	8.0	0.0	577.36	3.5	-----	-----	-----	3.5	573.86	> 4.5	-----	-----	-----
RI-TP-26	07/28/17	1063915.7104	1067651.9085	577.01	8.0	0.0	577.01	5.0	-----	-----	-----	5.0	572.01	> 3.0	-----	-----	-----
SB-7/MW-7	08/18/17	1063998.3554	1067609.4297	577.21	20.0	0.0	577.21	5.0	5.0	572.21	2.0	7.0	570.21	> 13.0	-----	-----	-----
SB-1	09/16/20	1063993.3430	1067582.4380	578.88	24.0	0.0	578.88	Poor recovery so stratigraphic contacts could not be determined with any certainty							22.0	556.88	> 2.0
MW-3R	09/14/20	1063876.6478	1067748.5530	579.01	28.0	1.0	578.01	4.0	5.0	574.01	2.0	7.0	572.01	18.75	25.75	553.26	> 2.25
MW-5R	09/14/20	1063939.7597	1067675.2249	578.02	28.0	1.0	577.02	6.0	-----	-----	-----	7.0	571.02	18.67	25.67	552.35	> 2.33
MW-8	09/16/20	1063969.8407	1067565.9350	578.27	36.0	0.0	578.27	> 8.0	-----	-----	-----	-----	-----	-----	31.8	546.47	> 4.2
1675 Niagara Street (Site No. C915311)																	
MW-1	09/15/20	1063991.6953	1067772.0231	578.10	32.0	0.7	577.43	2.3	3.0	575.10	5.5	8.5	569.60	21.3	29.8	548.30	> 2.2
MW-2	09/15/20	1063955.4582	1067867.2189	580.58	20.0	0.0	580.58	8.0	-----	-----	-----	8.0	572.58	4.0	12.0	568.58	> 8.0
31 Tonawanda Street (Site No. C915299)																	
BH-1	04/11/14	1064217.9910	1067499.0884	581.37	15.0	0.0	581.37	0.5	-----	-----	-----	-----	-----	-----	0.5	580.87	> 14.5
BH-2	04/11/14	1064228.3809	1067598.0061	581.77	8.0	0.0	581.77	3.0	-----	-----	-----	-----	-----	-----	3.0	578.77	> 5.0
BH-3	04/11/14	1064239.1106	1067708.9305	581.87	8.0	0.0	581.87	1.0	-----	-----	-----	-----	-----	-----	1.0	580.87	> 7.0
BH-4	04/11/14	1064251.8953	1067835.5478	582.36	8.0	0.0	582.36	0.5	-----	-----	-----	-----	-----	-----	0.5	581.86	> 7.5
BH-5	04/11/14	1064393.2477	1067551.0285	579.37	16.0	0.0	579.37	7.0	-----	-----	-----	7.0	572.37	5.0	12.0	567.37	> 4.0
BH-6	04/11/14	1064433.8057	1067655.9908	580.09	5.0	0.0	580.09	> 5.0	-----	-----	-----	-----	-----	-----	-----	-----	-----
BH-7	04/11/14	1064451.8642	1067678.4780	581.44	12.0	0.0	581.44	9.0	-----	-----	-----	9.0	572.44	> 3.0	-----	-----	-----
BH-8	04/11/14	N/A	N/A	Note 1	9.5	0.0	N/A	8.0	-----	-----	-----	-----	-----	-----	8.0	N/A	> 1.5
BH-9	04/11/14	N/A	N/A	Note 2	12.0	0.0	N/A	10.0	-----	-----	-----	10.0	N/A	> 2.0	-----	-----	-----
BH-10	04/11/14	1064280.0116	1067682.0907	NS/NE	12.0	0.0	N/A	5.0	-----	-----	-----	-----	-----	-----	5.0	N/A	> 7.0

Table 5-2
Stratigraphic Summary of Soil Borings and Test Pits Completed Within the Study Area
NYSDEC Remedial Investigation
31 Tonawanda Street Off-Site Area, Site No. C915299A
Buffalo, New York

Boring or Test Pit Number	Date Completed	New York State Plane Coordinates		Ground Surface Elevation	Total Depth	Miscellaneous Fill Including Concrete Slabs & Asphalt Paving			Brown Clay or Silty Clay (Possibly Reworked)			Brownish-Grey Silty Sand & Silty Clay (Alluvium)			Native Reddish Brown Silty Clay		
		Easting (x)	Northing (y)	(ft amsl)	(ft bgs)	Depth (ft bgs)	Surface * Elevation	Thickness (ft)	Depth (ft bgs)	Surface * Elevation	Thickness (ft)	Depth (ft bgs)	Surface * Elevation	Thickness (ft)	Depth (ft bgs)	Surface * Elevation	Thickness (ft)
31 Tonawanda Street (continued)																	
BH5-1S	09/09/14	1064386.9681	1067540.6368	579.49	16.0	0.0	579.49	8.0	-----	-----	-----	8.0	571.49	> 8.0	-----	-----	-----
BH5-2S	09/09/14	1064380.1703	1067529.8407	579.62	12.0	0.0	579.62	8.0	-----	-----	-----	8.0	571.62	> 4.0	-----	-----	-----
BH5-3S	09/09/14	1064371.3829	1067518.1964	579.77	8.2	0.0	579.77	> 8.2	-----	-----	-----	-----	-----	-----	-----	-----	-----
BH5-4S	09/09/14	1064362.5694	1067504.6377	580.09	12.0	0.0	580.09	8.0	-----	-----	-----	8.0	572.09	> 4.0	-----	-----	-----
BH5-1N	09/09/14	1064400.6832	1067557.3839	579.26	9.5	0.0	579.26	7.5	-----	-----	-----	7.5	571.76	> 2.0	-----	-----	-----
BH5-2N	09/09/14	1064407.3525	1067567.0859	579.28	16.0	0.0	579.28	7.5	-----	-----	-----	7.5	571.78	> 8.5	-----	-----	-----
BH5-3N	09/09/14	1064415.4051	1067582.0397	579.53	12.0	0.0	579.53	8.0	-----	-----	-----	8.0	571.53	> 4.0	-----	-----	-----
C-1	02/18/15	1064375.0246	1067557.2032	NS/NE	12.0	0.0	N/A	4.0	4.0	N/A	4.0	8.0	N/A	> 4.0	-----	-----	-----
C-2	Unknown	1064352.7592	1067508.0354	NS/NE	12.0	0.0	N/A	4.0	4.0	N/A	6.0	10.0	N/A	> 2.0	-----	-----	-----
C-3	03/05/15	1064313.7412	1067516.9793	NS/NE	16.0	0.0	N/A	11.0	-----	-----	-----	11.0	N/A	> 5.0	-----	-----	-----
C-4	03/05/15	1064333.8570	1067562.4290	NS/NE	16.0	0.0	N/A	9.0	9.0	N/A	3.0	12.0	N/A	> 4.0	-----	-----	-----
31-BH-1	08/16/18	1064351.8784	1067489.9277	580.46	16.0	0.0	580.46	8.0	-----	-----	-----	8.0	572.46	> 8.0	-----	-----	-----
31-BH-2	08/16/18	1064422.9137	1067601.7197	579.48	20.0	0.0	579.48	12.0	-----	-----	-----	12.0	567.48	7.0	19.0	560.48	> 1.0
31-BH-3S	08/16/18	1064468.4197	1067672.7918	579.08	13.5	0.0	579.08	9.0	-----	-----	-----	9.0	570.08	> 4.5	-----	-----	-----
31-BH-4	08/16/18	1064486.9033	1067731.8162	580.32	16.0	0.0	580.32	12.0	-----	-----	-----	12.0	568.32	> 4.0	-----	-----	-----
31-BH-5	08/16/18	1064506.6842	1067798.9144	582.18	12.0	0.0	582.18	9.0	-----	-----	-----	9.0	573.18	> 3.0	-----	-----	-----
31-BH-6	08/16/18	N/A	N/A	Note 1	6.0	0.0	N/A	> 6.0	-----	-----	-----	-----	-----	-----	-----	-----	-----
SBH-1	02/04/19	1064298.5068	1067494.6802	NS/NE	16.0	0.0	N/A	3.0	3.0	N/A	4.5	7.5	N/A	0.5	8.0	N/A	> 8.0
SBH-2	02/04/19	1064334.8644	1067475.7838	NS/NE	1.0	0.0	N/A	> 1.0	-----	-----	-----	-----	-----	-----	-----	-----	-----
SBH-3	02/04/19	1064346.6209	1067496.9724	NS/NE	16.0	0.0	N/A	6.0	6.0	N/A	4.0	10.0	N/A	> 6.0	-----	-----	-----
SBH-4	02/04/19	1064316.0139	1067534.0300	NS/NE	12.0	0.0	N/A	10.0	-----	-----	-----	10.0	N/A	> 2.0	-----	-----	-----
SBH-5	02/04/19	1064358.1285	1067520.5947	NS/NE	12.0	0.0	N/A	2.0	2.0	N/A	6.0	8.0	N/A	> 4.0	-----	-----	-----
57-71 Tonawanda Street (Site No. C915024)																	
B-1	09/25/90	1064499.8888	1067899.2073	580.86	8.0	0.0	580.86	2.0	-----	-----	-----	-----	-----	-----	2.0	578.86	> 6.0
GW-1	09/26/90	1064530.1320	1068038.0412	581.00	11.0	0.0	581.00	4.0	-----	-----	-----	-----	-----	-----	4.0	577.00	> 7.0
GW-2	09/26/90	1064771.9945	1068003.6534	577.10	14.0	0.0	577.10	12.9	-----	-----	-----	12.9	564.20	> 1.1	-----	-----	-----
GW-3A	09/25/90	N/A	N/A	NS	15.0	0.0	N/A	4.0	4.0	N/A	9.5	13.5	N/A	> 1.5	-----	-----	-----
GW-3B	09/25/90	N/A	N/A	NS	8.0	0.0	N/A	> 8.0	-----	-----	-----	-----	-----	-----	-----	-----	-----
GW-3	09/25/90	1064670.7584	1067915.6807	577.30	14.0	0.0	577.30	12.5	-----	-----	-----	12.5	564.80	> 1.5	-----	-----	-----
BH-01	12/17/19	1064628.7170	1067883.2798	578.04	12.0	0.0	578.04	5.5	5.5	572.54	> 6.5	-----	-----	-----	-----	-----	-----
BH-02	12/18/19	1064725.6733	1067956.0556	578.34	12.0	0.0	578.34	7.0	7.0	571.34	1.0	-----	-----	-----	8.0	570.34	> 4.0
BH-03	12/18/19	1064811.3564	1068035.5053	578.58	12.0	0.0	578.58	4.0	4.0	574.58	> 8.0	-----	-----	-----	-----	-----	-----
BH-04	12/17/19	1064703.8300	1068009.4551	578.98	20.0	0.0	578.98	3.5	3.5	575.48	6.0	9.5	569.48	6.5	16.0	562.98	> 4.0
BH-05	12/18/19	1064689.7450	1068060.4365	580.09	8.0	0.0	580.09	4.5	4.5	575.59	> 3.5	-----	-----	-----	-----	-----	-----

Table 5-2
Stratigraphic Summary of Soil Borings and Test Pits Completed Within the Study Area
NYSDEC Remedial Investigation
31 Tonawanda Street Off-Site Area, Site No. C915299A
Buffalo, New York

Boring or Test Pit Number	Date Completed	New York State Plane Coordinates		Ground Surface Elevation (ft amsl)	Total Depth (ft bgs)	Miscellaneous Fill Including Concrete Slabs & Asphalt Paving			Brown Clay or Silty Clay (Possibly Reworked)			Brownish-Grey Silty Sand & Silty Clay (Alluvium)			Native Reddish Brown Silty Clay		
		Easting (x)	Northing (y)			Depth (ft bgs)	Surface * Elevation	Thickness (ft)	Depth (ft bgs)	Surface * Elevation	Thickness (ft)	Depth (ft bgs)	Surface * Elevation	Thickness (ft)	Depth (ft bgs)	Surface * Elevation	Thickness (ft)
57-71 Tonawanda Street (continued)																	
BH-06	12/18/19	1064637.2436	1068073.2004	581.42	8.0	0.0	581.42	3.5	3.5	577.92	> 4.5	-----	-----	-----	-----	-----	-----
BH-07	12/17/19	1064602.2389	1068034.3671	580.52	12.0	0.0	580.52	3.5	3.5	577.02	0.5	4.0	576.52	4.0	8.0	572.52	> 4.0
BH-08	12/18/19	1064602.0713	1067969.3216	579.70	12.0	0.0	579.70	4.0	-----	-----	-----	4.0	575.70	4.0	8.0	571.70	> 4.0
BH-09	12/18/19	1064540.4512	1067953.4555	580.56	8.0	0.0	580.56	3.0	-----	-----	-----	-----	-----	-----	3.0	577.56	> 5.0
BH-10	12/18/19	1064461.1391	1067922.6996	582.09	8.0	0.0	582.09	2.0	-----	-----	-----	-----	-----	-----	2.0	580.09	> 6.0
BH-11	12/18/19	1064451.3078	1068012.5568	582.56	12.0	0.0	582.56	6.0	-----	-----	-----	-----	-----	-----	6.0	576.56	> 6.0
BH-12	12/19/19	1064487.3361	1067927.4465	581.61	4.0	0.0	581.61	2.0	-----	-----	-----	-----	-----	-----	2.0	579.61	> 2.0
BH-13	12/18/19	1064471.6367	1068092.9856	585.67	4.0	0.0	585.67	2.3	-----	-----	-----	-----	-----	-----	2.3	583.37	> 1.7
TP-14	01/08/20	1064448.7918	1068119.1063	587.51	10.0	0.0	587.51	8.0	-----	-----	-----	-----	-----	-----	8.0	579.51	> 2.0
TP-15	01/08/20	1064402.0081	1068149.1719	587.88	10.0	0.0	587.88	> 10.0	-----	-----	-----	-----	-----	-----	-----	-----	-----
TP-16	01/08/20	1064359.9565	1068164.9457	587.60	10.0	0.0	587.60	> 10.0	-----	-----	-----	-----	-----	-----	-----	-----	-----
TP-17	01/08/20	1064334.5017	1068099.5506	587.21	10.0	0.0	587.21	2.0	-----	-----	-----	-----	-----	-----	2.0	585.21	> 8.0
TP-18	01/08/20	1064398.3751	1068096.2613	587.20	6.0	0.0	587.20	2.0	-----	-----	-----	-----	-----	-----	2.0	585.20	> 4.0
MW-1	01/13/20	1064624.8444	1067886.9812	578.22	15.0	0.0	578.22	7.0	7.0	571.22	> 8.0	-----	-----	-----	-----	-----	-----
MW-2	01/13/20	1064773.0547	1068013.3477	578.53	15.0	0.0	578.53	5.0	5.0	573.53	> 10.0	-----	-----	-----	-----	-----	-----
MW-3	01/13/20	1064613.9569	1067978.2588	579.65	15.0	0.0	579.65	3.5	-----	-----	-----	3.5	576.15	4.5	8.0	571.65	> 7.0
MW-4	01/14/20	1064251.8012	1067973.9167	582.79	30.0	0.0	582.79	2.0	-----	-----	-----	-----	-----	-----	2.0	580.79	> 28.0
MW-5	01/15/20	1064277.7818	1068176.0533	584.80	30.0	0.0	584.80	2.0	-----	-----	-----	-----	-----	-----	2.0	582.80	> 28.0
SSB-1	03/18/20	1064410.8289	1067941.8397	NS/NE	8.0	0.0	N/A	4.0	4.0	N/A	2.0	-----	-----	-----	6.0	N/A	> 2.0
SSB-2	03/18/20	1064354.7816	1067968.8540	NS/NE	11.0	0.0	N/A	1.0	1.0	N/A	3.0	-----	-----	-----	4.0	N/A	> 7.0
SSB-3	03/19/20	1064297.7097	1067953.1947	NS/NE	11.0	0.0	N/A	1.0	1.0	N/A	3.0	-----	-----	-----	4.0	N/A	> 7.0
SSB-4	03/19/20	1064302.7172	1068003.0792	NS/NE	11.0	0.0	N/A	1.0	1.0	N/A	3.0	-----	-----	-----	4.0	N/A	> 7.0
SSB-5	03/19/20	1064415.8364	1067991.7242	NS/NE	11.0	0.0	N/A	4.0	-----	-----	-----	-----	-----	-----	4.0	N/A	> 7.0
68 Tonawanda Street (Site No. C915316)																	
BH-1	03/05/14	1064162.6811	1068380.6714	590.99	12.0	0.0	590.99	6.0	-----	-----	-----	-----	-----	-----	6.0	584.99	> 6.0
BH-2	03/05/14	1064152.3575	1068282.8110	590.68	12.0	0.0	590.68	3.5	-----	-----	-----	-----	-----	-----	3.5	587.18	> 8.5
BH-3	03/05/14	1064145.4820	1068196.7751	590.77	4.0	0.0	590.77	2.5	-----	-----	-----	-----	-----	-----	2.5	588.27	> 1.5
BH-4	03/05/14	1064123.3695	1068052.2817	590.61	12.0	0.0	590.61	11.0	-----	-----	-----	-----	-----	-----	11.0	579.61	> 1.0
BH-5	03/05/14	1064155.0665	1067994.6268	587.72	7.0	0.0	587.72	3.5	-----	-----	-----	-----	-----	-----	3.5	584.22	> 3.5
BH-9	03/05/14	1064222.1099	1068859.2796	591.84	4.0	0.0	591.84	> 4.0	-----	-----	-----	-----	-----	-----	-----	-----	-----
BH-10	03/05/14	N/A	N/A	N/A	8.0	0.0	N/A	4.0	-----	-----	-----	-----	-----	-----	4.0	N/A	> 4.0
BH-11	03/05/14	1064190.8699	1068659.9466	592.53	8.0	0.0	592.53	5.0	-----	-----	-----	-----	-----	-----	5.0	587.53	> 3.0
BH-1A	01/26/17	1064235.5158	1068821.8699	591.14	12.0	0.0	591.14	4.0	-----	-----	-----	-----	-----	-----	4.0	587.14	> 8.0
BH-2A	01/26/17	1064216.5114	1068803.9588	592.07	12.0	0.0	592.07	3.5	-----	-----	-----	-----	-----	-----	3.5	588.57	> 8.5

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Boring or Test Pit Number	Date Completed	New York State Plane Coordinates		Ground Surface Elevation	Total Depth	Miscellaneous Fill Including Concrete Slabs & Asphalt Paving			Brown Clay or Silty Clay (Possibly Reworked)			Brownish-Grey Silty Sand & Silty Clay (Alluvium)			Native Reddish Brown Silty Clay		
		Easting (x)	Northing (y)	(ft amsl)	(ft bgs)	Depth (ft bgs)	Surface * Elevation	Thickness (ft)	Depth (ft bgs)	Surface * Elevation	Thickness (ft)	Depth (ft bgs)	Surface * Elevation	Thickness (ft)	Depth (ft bgs)	Surface * Elevation	Thickness (ft)
68 Tonawanda Street (continued)																	
BH-3A	01/26/17	1064194.5077	1068750.7560	592.25	12.0	0.0	592.25	6.0	-----	-----	-----	-----	-----	-----	6.0	586.25	> 6.0
BH-4A	01/26/17	1064193.1125	1068700.6765	592.42	12.0	0.0	592.42	9.0	-----	-----	-----	-----	-----	-----	9.0	583.42	> 3.0
BH-5A	01/26/17	1064165.6948	1068667.1310	592.58	12.0	0.0	592.58	6.0	-----	-----	-----	-----	-----	-----	6.0	586.58	> 6.0
BH-6A	01/26/17	1064155.8862	1068522.2421	592.33	8.0	0.0	592.33	> 8.0	-----	-----	-----	-----	-----	-----	-----	-----	-----
BH-7A	01/26/17	1064157.4735	1068333.3629	590.81	8.0	0.0	590.81	4.0	-----	-----	-----	-----	-----	-----	4.0	586.81	> 4.0
BH-8A	01/26/17	1064142.1864	1068152.8984	590.49	8.0	0.0	590.49	4.0	-----	-----	-----	-----	-----	-----	4.0	586.49	> 4.0
BH-9A	01/26/17	1064123.0508	1068024.9998	590.01	8.0	0.0	590.01	> 8.0	-----	-----	-----	-----	-----	-----	-----	-----	-----
RI-01	02/07/18	1064153.5863	1068033.2625	588.31	12.0	0.0	588.31	7.0	-----	-----	-----	-----	-----	-----	7.0	581.31	> 5.0
RI-02	02/07/18	1064138.4181	1068112.6472	589.56	12.0	0.0	589.56	4.0	-----	-----	-----	-----	-----	-----	4.0	585.56	> 8.0
RI-03	02/07/18	1064120.0250	1068127.4550	590.02	12.0	0.0	590.02	4.5	-----	-----	-----	-----	-----	-----	4.5	585.52	> 7.5
RI-04	02/07/18	1064131.9295	1068271.1020	591.02	12.0	0.0	591.02	5.0	-----	-----	-----	-----	-----	-----	5.0	586.02	> 7.0
RI-05	02/07/18	1064139.2987	1068371.2554	591.52	8.0	0.0	591.52	4.0	-----	-----	-----	-----	-----	-----	4.0	587.52	> 4.0
RI-06	02/07/18	1064173.8083	1068512.3953	591.99	12.0	0.0	591.99	5.0	-----	-----	-----	-----	-----	-----	5.0	586.99	> 7.0
RI-07	02/07/18	1064183.7608	1068618.9369	592.28	12.0	0.0	592.28	6.0	-----	-----	-----	-----	-----	-----	6.0	586.28	> 6.0
RI-08	02/07/18	1064166.6142	1068639.4664	592.46	8.0	0.0	592.46	4.0	-----	-----	-----	-----	-----	-----	4.0	588.46	> 4.0
RI-09	02/07/18	1064224.0649	1068738.6059	592.46	12.0	0.5	591.96	3.5	-----	-----	-----	-----	-----	-----	4.0	588.46	> 8.0
RI-10	02/07/18	1064245.4481	1068831.4927	590.76	8.0	0.0	590.76	4.5	-----	-----	-----	-----	-----	-----	4.5	586.26	> 3.5
RI-11	02/07/18	1064249.6511	1068916.2917	591.52	12.0	0.0	591.52	4.0	-----	-----	-----	-----	-----	-----	4.0	587.52	> 8.0
RI-12	02/07/18	1064199.0190	1068934.1905	592.89	5.0	0.0	592.89	> 5.0	-----	-----	-----	-----	-----	-----	-----	-----	-----
RI-13	02/07/18	1064195.2231	1068870.7589	592.70	8.0	0.0	592.70	4.5	-----	-----	-----	-----	-----	-----	4.5	588.20	> 3.5
RI-14	02/07/18	1064180.5386	1068795.7979	592.44	4.0	0.0	592.44	> 4.0	-----	-----	-----	-----	-----	-----	-----	-----	-----
TP-1	02/13/18	1064235.7464	1068935.4343	592.61	7.0	0.0	592.61	> 7.0	-----	-----	-----	-----	-----	-----	-----	-----	-----
TP-2	02/13/18	1064229.9686	1068889.9389	592.00	7.0	0.0	592.00	6.0	-----	-----	-----	-----	-----	-----	6.0	586.00	> 1.0
TP-3	02/13/18	1064176.9687	1068762.0807	592.28	5.0	0.0	592.28	> 5.0	-----	-----	-----	-----	-----	-----	-----	-----	-----
TP-4	02/13/18	1064130.7790	1068025.3254	590.13	8.0	0.0	590.13	5.0	-----	-----	-----	-----	-----	-----	5.0	585.13	> 3.0
TP-5	02/13/18	1064132.8139	1068051.9375	590.70	7.0	0.0	590.70	6.0	-----	-----	-----	-----	-----	-----	6.0	584.70	> 1.0
TP-6	02/13/18	1064126.0949	1068039.5441	590.38	6.5	0.0	590.38	5.5	-----	-----	-----	-----	-----	-----	5.5	584.88	> 1.0
150 Tonawanda Street (Site No. C915299)																	
TP-1	01/04/16	1064219.8574	1069053.7049	593.68	6.0	0.0	593.68	4.5	-----	-----	-----	-----	-----	-----	4.5	589.18	> 1.5
TP-2	01/04/16	1064225.9799	1069116.2200	594.16	5.5	0.0	594.16	3.0	-----	-----	-----	-----	-----	-----	3.0	591.16	> 2.5
TP-3	01/04/16	1064233.8807	1069164.9947	594.78	6.0	0.0	594.78	3.0	-----	-----	-----	-----	-----	-----	3.0	591.78	> 3.0
TP-4	01/04/16	1064276.1097	1069158.9873	593.73	6.0	0.0	593.73	4.0	-----	-----	-----	-----	-----	-----	4.0	589.73	> 2.0
TP-5	01/04/16	1064271.0659	1069217.8906	593.47	6.0	0.0	593.47	1.5	-----	-----	-----	-----	-----	-----	1.5	591.97	> 4.5
TP-6	01/04/16	1064258.9672	1069265.9796	595.18	6.0	0.0	595.18	2.0	-----	-----	-----	-----	-----	-----	2.0	593.18	> 4.0

Table 5-2
Stratigraphic Summary of Soil Borings and Test Pits Completed Within the Study Area
NYSDEC Remedial Investigation
31 Tonawanda Street Off-Site Area, Site No. C915299A
Buffalo, New York

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Boring or Test Pit Number	Date Completed	New York State Plane Coordinates		Ground Surface Elevation (ft amsl)	Total Depth (ft bgs)	Miscellaneous Fill Including Concrete Slabs & Asphalt Paving			Brown Clay or Silty Clay (Possibly Reworked)			Brownish-Grey Silty Sand & Silty Clay (Alluvium)			Native Reddish Brown Silty Clay		
		Easting (x)	Northing (y)			Depth (ft bgs)	Surface * Elevation	Thickness (ft)	Depth (ft bgs)	Surface * Elevation	Thickness (ft)	Depth (ft bgs)	Surface * Elevation	Thickness (ft)	Depth (ft bgs)	Surface * Elevation	Thickness (ft)
150 Tonawanda Street (continued)																	
TP-7	01/04/16	1064254.5049	1069315.9226	595.40	6.0	0.0	595.40	3.0	-----	-----	-----	-----	-----	-----	3.0	592.40	> 3.0
TP-8	01/04/16	1064297.5785	1069319.1150	591.33	5.0	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.5	590.83	> 4.5
TP-9	01/04/16	1064305.9962	1069408.7073	592.64	5.0	-----	-----	-----	-----	-----	-----	-----	-----	-----	0.5	592.14	> 4.5
BH-1	08/15/18	1064262.0968	1069019.2112	592.95	10.5	0.0	592.95	7.0	-----	-----	-----	-----	-----	-----	7.0	585.95	> 3.5
BH-2	08/15/18	1064248.0373	1069102.1686	593.65	11.0	0.0	593.65	7.0	-----	-----	-----	-----	-----	-----	7.0	586.65	> 4.0
BH-3	08/15/18	1064239.5349	1069237.4853	595.13	10.7	0.0	595.13	8.0	-----	-----	-----	-----	-----	-----	8.0	587.13	> 2.7
BH-4	08/15/18	1064272.8664	1069380.1171	593.28	8.0	0.0	593.28	2.8	-----	-----	-----	-----	-----	-----	2.8	590.48	> 5.2
BH-5	08/15/18	1064287.7916	1069453.5964	592.96	8.0	0.0	592.96	4.0	-----	-----	-----	-----	-----	-----	4.0	588.96	> 4.0
BH-6	08/15/18	1064318.5216	1069520.1149	593.00	9.0	0.0	593.00	5.2	-----	-----	-----	-----	-----	-----	5.2	587.80	> 3.8
Bike Path Near West Avenue																	
SB-01	12/12/98	1064706.3811	1067905.2750	579.00	20.0	0.0	579.00	12.0	-----	-----	-----	12.0	567.00	> 8.0	-----	-----	-----
SB-02	12/12/98	1064722.5720	1067929.7261	579.00	16.0	0.0	579.00	8.0	-----	-----	-----	8.0	571.00	> 8.0	-----	-----	-----
SB-03	12/12/98	1064748.7884	1067945.8566	579.00	20.0	0.0	579.00	8.0	-----	-----	-----	8.0	571.00	8.0	16.0	563.00	> 4.0
SB-04	12/12/98	1064772.7696	1067975.0637	579.00	16.0	0.0	579.00	8.0	-----	-----	-----	8.0	571.00	> 8.0	-----	-----	-----
SB-100	09/18/20	1064730.9733	1067946.8962	578.82	28.0	0.17	578.65	16.6	-----	-----	-----	16.8	562.02	4.5	21.3	557.52	> 6.7
SB-103	09/18/20	1064847.3382	1068055.9210	578.81	24.0	1.0	577.81	7.0	-----	-----	-----	8.0	570.81	14.1	22.1	556.71	> 1.9
SB-106	09/18/20	1065042.8495	1068182.8885	580.26	24.0	0.33	579.93	8.4	-----	-----	-----	8.7	571.56	11.3	20.0	560.26	> 4.0

Notes:

* = Surface elevations in feet above mean sea level.
● = No sample recovery between 10.0 and 20.0 feet depth.
amsl = above mean sea level.
bgs = Below ground surface.
N/A = Not Applicable.
NS = Not Surveyed.
NE = Not Estimated. Soil boring was completed within a building. Floor elevations are not available so estimates could not be made.
Note 1: Soil boring plots on slope to Scajaquada Creek. This boring location is not correct so coordinates are not given.
Note 2: Soil boring plots at base of slope near Scajaquada Creek. This boring location is not correct so coordinates are not given.

Elevations:

Blue shaded elevations are from the EDD file that was submitted to the NYSDEC for upload to EQuIS.
Gray shaded elevations were estimated from the spot elevations and TIN lines on the 31 & 150 Tonawanda Street AutoCAD property survey drawing.
Green shaded elevations were estimated from the TIN lines on the 57-71 Tonawanda Street AutoCAD survey drawing.
Orange shaded elevations were calculated by subtracting the stickup from the top of riser elevations. Ground surface was not surveyed.
Pink shaded elevations are from the NYSDEC survey for the Remedial Investigation of the 31 Tonawanda Street Off-Site Area.
Purple shaded elevations are from the NYSDEC Phase II Investigation Report dated February 1992.
Red shaded elevations are listed on the soil boring logs prepared by RETEC in December 1998.

Table 5-2
Stratigraphic Summary of Soil Borings and Test Pits Completed Within the Study Area
NYSDEC Remedial Investigation
31 Tonawanda Street Off-Site Area, Site No. C915299A
Buffalo, New York

Notes (continued):

Elevations (continued):

Tan shaded elevations were estimated from the spot elevations and TIN lines on the 68 Tonawanda Street AutoCAD property survey drawing.
These elevations were then adjusted by 9.84 feet to account for a calculation error by the surveyor. See Appendix J for details.
Yellow shaded elevations were surveyed by the BCP applicant and were obtained from the AutoCAD file that was provided to the DEC.

Coordinates:

For information concerning the coordinates for each site, please see Appendix J.

Depths:

Orange shaded depths appear too shallow for the given deposit, but were assigned to this unit based upon color. This material could be reworked.

Table 5-3
Stratigraphic Summary of the Iroquois Gas/Westwood Pharmaceuticals Site
NYSDEC Remedial Investigation
31 Tonawanda Street Off-Site Area, Site No. C915299A
Buffalo, New York

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Boring or Test Pit Number	Date Completed	Ground ** Surface Elevation (ft amsl)	Total Boring Depth (ft bgs)	Miscellaneous Fill Including Crushed Stone & Asphalt Paving			Brownish-Grey to Grey Silty Sand & Silty Clay (Alluvium)			Native Reddish Brown Silty Clay			Native Sand and Gravel (Glacial Till)			Bedrock	
				Depth (ft bgs)	Surface * Elevation	Thickness (ft)	Depth (ft bgs)	Surface * Elevation	Thickness (ft)	Depth (ft bgs)	Surface * Elevation	Thickness (ft)	Depth (ft bgs)	Surface * Elevation	Thickness (ft)	Depth (ft bgs)	Surface * Elevation
Iroquois Gas/Westwood Pharmaceuticals Site (Site No. 915141A)																	
B-1	12/30/85	588.34	16.0	0.0	588.34	4.0	----	-------	----	4.0	584.34	> 12.0	----	-------	----	----	-------
B-2	12/31/85	589.38	20.0	0.0	589.38	5.5	----	-------	----	5.5	583.88	> 14.5	----	-------	----	----	-------
B-3 ●	01/02/86	590.35	31.0	0.0	590.35	6.0	6.0	584.35	3.5	9.5	580.85	> 21.5	----	-------	----	----	----
B-4	12/30/85	590.46	23.0	0.0	590.46	13.0	----	-------	----	13.0	577.46	> 10.0	----	-------	----	----	----
B-5 ●	12/31/85	590.20	11.0	0.0	590.20	6.0	----	-------	----	6.0	584.20	> 5.0	----	-------	----	----	----
B-6 ●	01/06/86	589.98	28.0	0.0	589.98	21.0	21.0	568.98	> 7.0	----	-------	----	----	-------	----	----	----
B-7 ●	01/05/86	590.30	34.0	0.0	590.30	24.0	24.0	566.30	8.0	32.0	558.30	> 2.0	----	-------	----	----	----
B-8 ●	01/07/86	590.27	29.0	0.0	590.27	22.0	22.0	568.27	> 7.0	----	-------	----	----	-------	----	----	----
B-19A ●	06/09/86	588.29	23.0	0.0	588.29	11.0	----	-------	----	11.0	577.29	> 12.0	----	-------	----	----	----
P-3	03/18/86	589.09	10.7	0.0	589.09	> 10.7	----	-------	----	----	-------	----	----	-------	----	----	----
P-3A	03/18/86	589.09	5.8	0.0	589.09	> 5.8	----	-------	----	----	-------	----	----	-------	----	----	----
P-4	03/17/86	590.09	9.5	0.0	590.09	8.5	----	-------	----	8.5	581.59	> 1.0	----	-------	----	----	----
P-5	03/18/86	588.84	10.6	0.0	588.84	> 10.6	----	-------	----	----	-------	----	----	-------	----	----	----
P-6	03/18/86	588.79	9.4	0.0	588.79	> 9.4	----	-------	----	----	-------	----	----	-------	----	----	----
P-7	03/17/86	589.04	8.0	0.0	589.04	> 8.0	----	-------	----	----	-------	----	----	-------	----	----	----
P-8	03/17/86	588.99	8.6	0.0	588.99	8.0	----	-------	----	8.0	580.99	> 0.6	----	-------	----	----	----
P-10	03/17/86	588.89	11.0	0.0	588.89	10.0	----	-------	----	10.0	578.89	> 1.0	----	-------	----	----	----
P-11	03/18/86	589.89	13.6	0.0	589.89	> 13.6	----	-------	----	----	-------	----	----	-------	----	----	----
P-12	03/18/86	588.84	8.0	0.0	588.84	7.0	----	-------	----	7.0	581.84	> 1.0	----	-------	----	----	----
P-13	03/18/86	590.74	12.4	0.0	590.74	7.8	----	-------	----	7.8	582.94	> 4.6	----	-------	----	----	----
P-14	03/18/86	588.84	6.0	0.0	588.84	> 6.0	----	-------	----	----	-------	----	----	-------	----	----	----
B-16 ●	01/18/85	591.90	71.0	0.0	591.90	3.0	----	-------	----	3.0	588.90	58.0	61.0	530.90	10.0	71.0	520.90
B-19 ●	02/21/85	589.40	17.0	1.0	588.40	12.5	----	-------	----	13.5	575.90	> 3.5	----	-------	----	----	----
B-1	02/19/85	591.49	26.0	0.0	591.49	22.0	22.0	569.49	2.0	24.0	567.49	> 2.0	----	-------	----	----	----
B-3	02/19/85	589.39	25.0	0.0	589.39	17.0	17.0	572.39	5.0	22.0	567.39	> 3.0	----	-------	----	----	----
B-5	02/21/85	589.89	24.0	0.0	589.89	> 24.0	See Note 1			----	-------	----	----	-------	----	----	----
B-7	02/20/85	593.29	28.0	0.0	593.29	22.0	See Note 1			22.0	571.29	> 6.0	----	-------	----	----	----
B-8	02/20/85	591.29	26.0	0.0	591.29	18.0	See Note 1			18.0	573.29	> 8.0	----	-------	----	----	----
B-9	02/19/85	591.79	26.0	0.0	591.79	20.0	See Note 1			20.0	571.79	> 6.0	----	-------	----	----	----
B-11	02/21/85	591.19	24.0	0.0	591.19	18.0	See Note 1			18.0	573.19	> 6.0	----	-------	----	----	----
B-12	02/20/85	591.49	26.4	0.0	591.49	10.0	See Note 1			10.0	581.49	> 16.4	----	-------	----	----	----
B-14	02/21/85	590.19	30.0	0.0	590.19	20.0	20.0	570.19	> 10.0	----	-------	----	----	-------	----	----	----
B-15	02/20/85	589.99	30.0	0.0	589.99	26.0	26.0	563.99	> 4.0	----	-------	----	----	-------	----	----	----
B-17	02/20/85	-----	24.0	0.0	N/A	14.0	See Note 1			14.0	N/A	> 10.0	----	-------	----	----	----
B-18	02/20/85	-----	28.0	0.0	N/A	23.0	23.0	N/A	3.0	26.0	N/A	> 2.0	----	-------	----	----	----
B-19	02/21/85	-----	25.5	0.5	N/A	3.5	----	-------	----	4.0	N/A	> 21.5	----	-------	----	----	----

Table 5-3
Stratigraphic Summary of the Iroquois Gas/Westwood Pharmaceuticals Site
NYSDEC Remedial Investigation
31 Tonawanda Street Off-Site Area, Site No. C915299A
Buffalo, New York

Boring or Test Pit Number	Date Completed	Ground ** Surface Elevation (ft amsl)	Total Boring Depth (ft bgs)	Miscellaneous Fill Including Crushed Stone & Asphalt Paving			Brownish-Grey to Grey Silty Sand & Silty Clay (Alluvium)			Native Reddish Brown Silty Clay			Native Sand and Gravel (Glacial Till)			Bedrock	
				Depth (ft bgs)	Surface * Elevation	Thickness (ft)	Depth (ft bgs)	Surface * Elevation	Thickness (ft)	Depth (ft bgs)	Surface * Elevation	Thickness (ft)	Depth (ft bgs)	Surface * Elevation	Thickness (ft)	Depth (ft bgs)	Surface * Elevation
Iroquois Gas/Westwood Pharmaceuticals Site (Site No. 915141A)																	
B-20	02/21/85	-----	25.5	0.0	N/A	4.0	----	-------	----	4.0	N/A	> 21.5	----	-------	----	----	-------
TB-4	12/28/85	592.60	71.0	0.0	592.60	21.5	----	-------	----	21.5	571.10	38.5	60.0	532.60	2.8	62.8	529.80
TB-10	02/06/85	592.69	96.0	0.3	592.44	19.8	20.0	572.69	10.0	30.0	562.69	38.0	68.0	524.69	21.0	89.0	503.69
TB-2	01/31/85	593.00	97.0	0.0	593.00	20.0	----	-------	----	20.0	573.00	43.0	63.0	530.00	28.0	91.0	502.00
TB-6	12/21/84	592.89	96.5	0.0	592.89	20.0	20.0	572.89	7.0	27.0	565.89	46.0	73.0	519.89	15.5	88.5	504.39
TB-13	02/05/85	590.89	92.0	0.0	590.89	27.0		See Note 1		27.0	563.89	48.0	75.0	515.89	17.0	92.0	498.89
TB-16	12/26/84	590.19	92.3	0.0	590.19	18.0	18.0	572.19	2.0	20.0	570.19	47.0	67.0	523.19	18.3	85.3	504.89
TP-1	02/25/85	-----	6.0	0.0	N/A	> 6.0	----	-------	----	----	-------	----	----	-------	----	----	----
TP-2	02/25/85	-----	6.5	0.0	N/A	> 6.5	----	-------	----	----	-------	----	----	-------	----	----	----
TP-3	02/25/85	-----	4.5	0.0	N/A	> 4.5	----	-------	----	----	-------	----	----	-------	----	----	----
TP-4	02/25/85	-----	6.7	0.0	N/A	> 6.7	----	-------	----	----	-------	----	----	-------	----	----	----
TP-5	02/25/85	-----	7.0	0.0	N/A	> 7.0	----	-------	----	----	-------	----	----	-------	----	----	----
TP-6	02/25/85	-----	6.5	0.0	N/A	> 6.5	----	-------	----	----	-------	----	----	-------	----	----	----
TP-7	02/25/85	-----	8.0	0.0	N/A	> 8.0	----	-------	----	----	-------	----	----	-------	----	----	----
TP-8	02/25/85	-----	7.5	0.0	N/A	> 7.5	----	-------	----	----	-------	----	----	-------	----	----	----
TP-9	02/25/85	-----	6.0	0.0	N/A	> 6.0	----	-------	----	----	-------	----	----	-------	----	----	----
TP-10	02/25/85	-----	7.5	0.0	N/A	> 7.5	----	-------	----	----	-------	----	----	-------	----	----	----
PB-4	1973	587.99	21.5	0.0	587.99	2.5	----	-------	----	2.5	585.49	> 19.0	----	-------	----	----	----
PB-5A	1973	588.59	20.0	0.0	588.59	10.0	----	-------	----	10.0	578.59	> 10.0	----	-------	----	----	----
PB-7	1973	589.49	15.0	0.0	589.49	1.0	----	-------	----	1.0	588.49	> 14.0	----	-------	----	----	----
PB-8	1973	589.49	20.0	0.0	589.49	2.0	----	-------	----	2.0	587.49	> 18.0	----	-------	----	----	----
PB-9	1973	589.49	25.0	0.0	589.49	18.5	----	-------	----	18.5	570.99	> 6.5	----	-------	----	----	----
PB-10	1973	589.79	26.5	0.0	589.79	7.5	----	-------	----	7.5	582.29	> 19.0	----	-------	----	----	----
PB-11	1973	588.99	16.5	0.0	588.99	2.5	----	-------	----	2.5	586.49	> 14.0	----	-------	----	----	----
PB-12	1973	589.19	15.0	0.0	589.19	1.0	----	-------	----	1.0	588.19	> 14.0	----	-------	----	----	----
PB-13	1973	589.19	15.0	0.0	589.19	5.5	----	-------	----	5.5	583.69	> 9.5	----	-------	----	----	----
PB-14	1973	589.49	35.0	0.0	589.49	19.0	----	-------	----	19.0	570.49	> 16.0	----	-------	----	----	----
PB-15	1973	588.39	30.0	0.0	588.39	10.0	----	-------	----	10.0	578.39	> 20.0	----	-------	----	----	----
PB-16	1973	587.99	20.0	0.0	587.99	7.5	----	-------	----	7.5	580.49	> 12.5	----	-------	----	----	----
PB-17	1973	589.39	15.0	0.0	589.39	1.0	----	-------	----	1.0	588.39	> 14.0	----	-------	----	----	----
PB-18	1973	589.39	10.0	0.0	589.39	> 10.0	----	-------	----	----	-------	----	----	-------	----	----	----
PB-19	1973	588.39	26.5	0.0	588.39	18.0	----	-------	----	18.0	570.39	> 8.5	----	-------	----	----	----
PB-20	1973	588.39	21.5	0.0	588.39	19.0	----	-------	----	19.0	569.39	> 2.5	----	-------	----	----	----
SM-10	12/19/56	587.55	76.7	----	-------	----	0.0	587.55	19.0	19.0	568.55	49.0	68.0	519.55	3.7	71.7	515.89
SM-13	12/14/56	589.27	78.3	0.0	589.27	13.0	----	-------	----	13.0	576.27	52.0	65.0	524.27	5.5	70.5	518.77
SM-15	10/19/56	593.56	85.6	0.0	593.56	20.0	20.0	573.56	5.0	25.0	568.56	43.0	68.0	525.56	3.2	71.2	522.39

Table 5-3
Stratigraphic Summary of the Iroquois Gas/Westwood Pharmaceuticals Site
NYSDEC Remedial Investigation
31 Tonawanda Street Off-Site Area, Site No. C915299A
Buffalo, New York

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Boring or Test Pit Number	Date Completed	Ground ** Surface Elevation (ft amsl)	Total Boring Depth (ft bgs)	Miscellaneous Fill Including Crushed Stone & Asphalt Paving			Brownish-Grey to Grey Silty Sand & Silty Clay (Alluvium)			Native Reddish Brown Silty Clay			Native Sand and Gravel (Glacial Till)			Bedrock	
				Depth (ft bgs)	Surface * Elevation	Thickness (ft)	Depth (ft bgs)	Surface * Elevation	Thickness (ft)	Depth (ft bgs)	Surface * Elevation	Thickness (ft)	Depth (ft bgs)	Surface * Elevation	Thickness (ft)	Depth (ft bgs)	Surface * Elevation
Iroquois Gas/Westwood Pharmaceuticals Site (Site No. 915141A)																	
SM-18	10/29/56	593.98	77.1	0.0	593.98	10.0	10.0	583.98	10.0	20.0	573.98	50.0	70.0	523.98	2.1	72.1	521.90
SM-20	10/25/56	590.84	75.4	0.0	590.84	20.0	----	-------	----	20.0	570.84	45.0	65.0	525.84	1.7	66.7	524.13
MWF-1	04/17/92	591.41	49.0	See the boring log for PS-1 for the lithologic description						----	-------	----	----	-------	----	----	-------
MWF-2	04/17/92	590.47	28.0	0.0	590.47	18.0	18.0	572.47	8.0	26.0	564.47	> 2.0	----	-------	----	----	-------
MWF-3	N/A	591.02	N/A	There is no log for this well						----	-------	----	----	-------	----	----	----
MWF-4	N/A	590.25	N/A	There is no log for this well						----	-------	----	----	-------	----	----	----
MWF-5	N/A	589.84	N/A	There is no log for this well						----	-------	----	----	-------	----	----	----
MWS-1	04/10/92	589.13	72.3	0.0	589.13	10.0	----	-------	----	10.0	579.13	50.5	60.5	528.63	11.8	72.3	516.83
MWS-2	04/09/92	591.03	86.0	0.0	591.03	18.0	18.0	573.03	6.0	24.0	567.03	40.0	64.0	527.03	20.0	84.0	507.03
MWS-3	04/23/92	590.11	84.0	0.0	590.11	26.0	26.0	564.11	3.0	29.0	561.11	44.5	73.5	516.61	10.5	84.0	506.11
MWS-4	04/20/92	591.19	82.0	0.0	591.19	10.0	10.0	581.19	2.0	12.0	579.19	52.0	64.0	527.19	18.0	82.0	509.19
PF-1	04/10/92	590.00	18.0	0.0	590.00	4.0	----	-------	----	4.0	586.00	> 14.0	----	-------	----	----	----
PF-2	N/A	591.27	N/A	There is no log for this well							-------	----	----	-------	----	----	----
PF-3	04/15/92	591.05	32.0	0.0	591.05	24.0	24.0	567.05	7.0	31.0	560.05	> 1.0	----	-------	----	----	----
PF-4	04/16/92	590.65	30.0	0.0	590.65	24.0	24.0	566.65	5.0	29.0	561.65	> 1.0	----	-------	----	----	----
PF-6	04/20/92	591.22	28.0	0.0	591.22	24.4	24.4	566.82	> 3.6	----	-------	----	----	-------	----	----	----
PS-1	04/24/92	591.31	49.0	0.3	590.98	1.7	2.0	589.31	22.0	24.0	567.31	15.0	39.0	552.31	5.0	44.0	547.31
PS-2	04/30/92	591.48	89.2	0.5	590.98	14.5	Not logged 8' - 15' depth			15.0	576.48	49.0	64.0	527.48	20.0	84.0	507.48
SB-1	04/07/92	590.00	15.5	0.0	590.00	> 15.5	----	-------	----	----	-------	----	----	-------	----	----	----
SB-2	04/08/92	590.00	16.0	0.0	590.00	14.0	14.0	576.00	> 2.0	----	-------	----	----	-------	----	----	----
SB-3	04/07/92	590.00	18.0	0.0	590.00	----	Log not descriptive enough to determine stratigraphic contacts						----	-------	----	----	----
SB-4	04/09/92	590.00	20.0	0.0	590.00	14.0	----	-------	----	14.0	576.00	> 6.0	----	-------	----	----	----
SB-5	04/08/92	590.00	18.0	0.0	590.00	----	Log not descriptive enough to determine stratigraphic contacts						----	-------	----	----	----
SB-6	04/09/92	590.00	26.0	0.0	590.00	20.0	Might be present			20.0	570.00	> 6.0	----	-------	----	----	----
SB-7	04/13/92	590.00	32.0	0.0	590.00	16.0	16.0	574.00	11.0	27.0	563.00	> 5.0	----	-------	----	----	----
SB-8	04/13/92	590.00	22.0	0.0	590.00	----	Log not descriptive enough to determine stratigraphic contacts						----	-------	----	----	----
SB-9	04/21/92	590.00	18.0	0.5	589.50	12.6	----	-------	----	13.1	576.90	> 4.9	----	-------	----	----	----
SB-10	04/22/92	590.00	14.0	0.5	589.50	11.5	----	-------	----	12.0	578.00	> 2.0	----	-------	----	----	----
SB-11	05/05/92	589.00	12.0	0.5	588.50	10.5	----	-------	----	11.0	578.00	> 1.0	----	-------	----	----	----

Notes:
* = Surface elevations in feet above mean sea level.
** = Elevations adjusted to mean sea level using a conversion factor of 490.59 feet.
● = Indicates that a monitoring well was installed.
amsl = above mean sea level.
bgs = Below ground surface.
NS = Not Surveyed.
N/A = Not Available.

Notes (continued):

- Green shaded depths: The log listed this unit as fill but the description matches that of the recent alluvium deposit.
- Orange shaded elevations are from Tables 2-3 or 3-2 of the GeoTrans RI Report.
- Purple shaded depths: The log listed this unit as fill but the description matches that of the native silty clay deposit.
- Yellow shaded depths and elevations are suspect.
- Note 1: Log is not descriptive enough to determine if the recent alluvium is present.

Table 5-4
Stratigraphic Summary of DOT Soil Borings for the Scajaquada Expressway Ramps
NYSDEC Remedial Investigation
31 Tonawanda Street Off-Site Area, Site No. C915299A
Buffalo, New York

Boring or Test Pit Number	Date Completed	New York State Plane Coordinates		Ground Surface Elevation	Total Boring Depth	Miscellaneous Fill			Black or Gray Silt, Red Sand or Red Silt (Alluvium)			Native Reddish Brown Silty Clay			Native Gray Sand and Gravel (Glacial Till)			Bedrock	
		Easting (x)	Northing (y)	(ft amsl)	(ft bgs)	Depth (ft bgs)	Surface * Elevation	Thickness (ft)	Depth (ft bgs)	Surface * Elevation	Thickness (ft)	Depth (ft bgs)	Surface * Elevation	Thickness (ft)	Depth (ft bgs)	Surface * Elevation	Thickness (ft)	Depth (ft bgs)	Surface * Elevation
DOT Soil Borings for the Scajaquada Expressway Ramps (Site No. N/A)																			
BH-31	11/20/56	1063681.4000	1067466.6700	571.11	83.66	----	-------	----	4.0	567.11	14.0	18.0	553.11	49.0	67.0	504.11	6.66	73.66	497.45
BH-32	11/12/56	1063686.5500	1067403.7300	571.82	85.08	----	-------	----	3.5	568.32	11.5	15.0	556.82	56.0	71.0	500.82	4.08	75.08	496.74
BH-33	11/26/56	1063727.8200	1067254.5900	575.29	81.33	0.0	575.29	7.0	7.0	568.29	12.0	19.0	556.29	53.8	----	-------	----	72.83	502.46
BH-64	11/13/56	1063852.6400	1067482.0600	585.87	92.42	**Cased Probing - No Samples Taken**												87.42	498.45
BH-65	11/15/56	1063913.3300	1067341.4500	587.05	92.75	0.0	587.05	11.0	11.0	576.05	2.0	13.0	574.05	65.0	78.0	509.05	9.75	87.75	499.30

Notes:
*** = Surface elevations in feet above mean sea level.**
amsl = above mean sea level.
bgs = below ground surface.

Table 5-5
Stratigraphic Summary of the Former Buffalo Gas Light/Iroquois Gas Corporation Site
NYSDEC Remedial Investigation
31 Tonawanda Street Off-Site Area, Site No. C915299A
Buffalo, New York

Boring or Test Pit Number	Date Completed	New York State Plane Coordinates		Ground Surface Elevation (ft amsl)	Total Depth (ft bgs)	Miscellaneous Fill Including Concrete Slabs & Asphalt Paving			Brown Clay or Silty Clay (Possibly Reworked)			Brownish-Grey Silty Sand & Silty Clay (Alluvium) ●			Native Reddish Brown Silty Clay		
		Easting (x)	Northing (y)			Depth (ft bgs)	Surface * Elevation	Thickness (ft)	Depth (ft bgs)	Surface * Elevation	Thickness (ft)	Depth (ft bgs)	Surface * Elevation	Thickness (ft)	Depth (ft bgs)	Surface * Elevation	Thickness (ft)
Former Buffalo Gas Light/Iroquois Gas Corporation Site (Site No. 915351)																	
MW-LSC-1	11/01/21	1064647.7100	1067490.1600	585.76	24.0	0.0	585.76	17.0	-----	-----	-----	17.0	568.76	5.0	22.0	563.76	> 2.0
MW-LSC-2	11/01/21	1064471.1100	1067487.3100	582.46	40.0	0.0	582.46	16.0	-----	-----	-----	16.0	566.46	12.0	28.0	554.46	> 12.0
MW-LSC-3	11/08/21	1064262.8500	1067270.1400	584.19	32.0	0.0	584.19	14.0	14.0	570.19	5.5	19.5	564.69	4.5	24.0	560.19	> 8.0
MW-LSC-4	11/08/21	1064261.6000	1067415.4900	582.37	32.0	0.0	582.37	12.0	-----	-----	-----	12.0	570.37	15.0	27.0	555.37	> 5.0
MW-LSC-5	01/04/22	1064113.4600	1067444.8800	582.72	42.0	0.0	582.72	10.0	-----	-----	-----	10.0	572.72	20.0	30.0	552.72	> 12.0
MW-BGL-1	11/11/21	1063933.2000	1067341.1200	582.17	28.0	-----	-----	-----	0.0	582.17	8.0	-----	-----	-----	8.0	574.17	> 20.0
MW-BGL-3	11/09/21	1063785.9400	1067420.6200	576.88	28.0	0.0	576.88	19.0	-----	-----	-----	-----	-----	-----	19.0	557.88	> 9.0
SED-LSC-1	11/09/21	1063771.2100	1067767.7350	567.56	22.5	-----	-----	-----	-----	-----	-----	0.0	567.56	14.8	14.8	552.76	> 7.7
SED-LSC-2	11/09/21	1063839.9450	1067693.1300	568.06	20.0	-----	-----	-----	-----	-----	-----	0.0	568.06	13.5	13.5	554.56	> 6.5
SED-LSC-3	11/09/21	1063918.7850	1067521.9500	566.30	21.5	-----	-----	-----	-----	-----	-----	0.0	566.30	11.5	11.5	554.80	> 10.0
SED-LSC-4	11/10/21	1063986.9800	1067407.5550	564.66	16.0	-----	-----	-----	-----	-----	-----	0.0	564.66	5.0	5.0	559.66	> 11.0
SED-LSC-5	11/10/21	1064081.2500	1067331.5050	565.16	17.0	-----	-----	-----	-----	-----	-----	0.0	565.16	6.0	6.0	559.16	> 11.0
SED-LSC-6	11/03/21	1064316.9100	1067382.3700	564.71	16.0	-----	-----	-----	-----	-----	-----	0.0	564.71	11.5	11.5	553.21	> 4.5
SED-LSC-7	11/02/21	1064456.7800	1067563.8100	565.81	16.0	-----	-----	-----	-----	-----	-----	0.0	565.81	11.0	11.0	554.81	> 5.0
SED-LSC-8	11/01/21	1064582.1450	1067749.9450	566.56	12.2	-----	-----	-----	-----	-----	-----	0.0	566.56	10.0	10.0	556.56	> 2.2
SED-BGL-1	11/10/21	1063785.4050	1067369.1750	563.16	11.5	-----	-----	-----	-----	-----	-----	0.0	563.16	0.2	0.2	562.96	> 11.3

Notes:
*** = Surface elevations in feet above mean sea level.**
● = Includes the thickness of Recent Fluvial Deposits.
amsl = above mean sea level.
bgs = below ground surface.

Table 6-1
Summary of Subsurface Soil Analytical Results from the Bike Path Soil Borings
NYSDEC Remedial Investigation
31 Tonawanda Street Off-Site Area, Site No. C915299A
Buffalo, New York

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Sample Point Sample Type Depth (ft) Sample Date	NYSDEC Part 375 Unrestricted SCOs ●	NYSDEC Restricted Residential SCOs ●	NYSDEC Part 375 Commercial SCOs ●	Part 375 Groundwater Protection SCOs ●	SB-100 Silty Clay 26.0' - 27.0' 09/18/20	SB-103 Sand 22.0' - 22.5' 09/18/20	SB-106 Foundry Sand 17.0' - 18.0' 09/18/20
Volatile Organic Compounds (µg/kg)							
1,1,1-Trichloroethane	680.0	100,000	500,000	680.0			
1,1,2-Trichloroethane	NS	NS	NS	NS			
1,1,2,2-Tetrachloroethane	NS	35,000 **	NS	600.0			
1,1-Dichloroethane	270.0	26,000	240,000	270.0			
1,1-Dichloroethene	330.0	100,000	500,000	330.0			
1,2-Dichloroethane	20.0	3,100	30,000	20.0			
cis-1,2-Dichloroethene	250.0	100,000	500,000	250.0			
trans-1,2-Dichloroethene	190.0	100,000	500,000	190.0			
1,4-Dioxane	100.0	13,000	130,000	100.0			
Acetone	50.0	100,000	500,000	50.0			
Benzene	60.0	4,800	44,000	60.0	**29,000**	**390 J**	
Carbon Disulfide	NS	100,000 **	NS	2,700			
Chloroethane	NS	NS	NS	NS			
Cyclohexane	NS	NS	NS	NS			
Ethylbenzene	1,000	41,000	390,000	1,000	**240,000**	**26,000**	
Isopropylbenzene	NS	100,000 **	NS	NS	7,900	2,300	
Methyl ethyl ketone	120.0	100,000	500,000	120.0			
Methylcyclohexane	NS	NS	NS	NS			
Methylene chloride	50.0	100,000	500,000	50.0			**3,800 B**
Naphthalene (PAH)	12,000	100,000	500,000	12,000			
n-Propylbenzene	3,900	100,000	500,000	3,900			
n-Butylbenzene	NS	NS	NS	NS			
p-Isopropyltoluene	NS	NS	NS	NS			
sec-Butylbenzene	11,000	100,000	500,000	11,000			
Styrene	NS	NS	NS	NS	18,000		
Tetrachloroethene	1,300	19,000	150,000	1,300			
Toluene	700.0	100,000	500,000	700.0	**110,000**	500 J	

Table 6-1
Summary of Subsurface Soil Analytical Results from the Bike Path Soil Borings
NYSDEC Remedial Investigation
31 Tonawanda Street Off-Site Area, Site No. C915299A
Buffalo, New York

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Sample Point Sample Type Depth (ft) Sample Date	NYSDEC Part 375 Unrestricted SCOs ●	NYSDEC Restricted Residential SCOs ●	NYSDEC Part 375 Commercial SCOs ●	Part 375 Groundwater Protection SCOs ●	SB-100 Silty Clay 26.0' - 27.0' 09/18/20	SB-103 Sand 22.0' - 22.5' 09/18/20	SB-106 Foundry Sand 17.0' - 18.0' 09/18/20
Volatile Organic Compounds (continued)							
Trichloroethene	470.0	21,000	200,000	470.0			
1,2,4-Trimethylbenzene	3,600	52,000	190,000	3,600			
1,3,5-Trimethylbenzene	8,400	52,000	190,000	8,400			
Vinyl chloride	20.0	900.0	13,000	20.0			
m,p-Xylene	NS	NS	NS	NS			
o-Xylene	NS	NS	NS	NS			
Xylene (Total)	260.0	100,000	500,000	1,600	**190,000**	**18,000**	
Semi-Volatile Organic Compounds (µg/kg)							
2,4-Dinitrotoluene	NS	NS	NS	NS			
2-Methylnaphthalene (PAH)	NS	410 **	NS	36,400	**870,000**	**110,000**	**2,200 J**
Acenaphthene (PAH)	20,000	100,000	500,000	98,000	**110,000**	**59,000**	**17,000**
Acenapthylene (PAH)	100,000	100,000	500,000	107,000	**380,000**	7,100	790 J
Anthracene (PAH)	100,000	100,000	500,000	1,000,000	**240,000**	33,000	18,000
Benzo[a]anthracene (PAH)	1,000	1,000	5,600	1,000	**130,000**	**18,000**	**18,000**
Benzo[a]pyrene (PAH)	1,000	1,000	1,000	22,000	**130,000**	**17,000**	**16,000**
Benzo[b]fluoranthene (PAH)	1,000	1,000	5,600	1,700	**66,000**	**9,100**	**16,000**
Benzo[g,h,i]perylene (PAH)	100,000	100,000	500,000	1,000,000	51,000	6,700	7,100
Benzo[k]fluoranthene (PAH)	800.0	3,900	56,000	1,700	**30,000**	**4,200**	**7,200**
Biphenyl	NS	NS	NS	NS	130,000	17,000	
Bis(2-ethylhexyl) phthalate	NS	50,000 **	NS	435,000			
Carbazole	NS	NS	NS	NS	2,800 J	330 J	4,500
Chrysene (PAH)	1,000	3,900	56,000	1,000	**110,000**	**13,000**	**18,000**
Dibenzo[a,h]anthracene (PAH)	330.0	330.0	560.0	1,000,000	**12,000 J**	**1,600 J**	**2,000 J**
Dibenzofuran	7,000	59,000	350,000	210,000		4,400	**10,000**
Fluoranthene (PAH)	100,000	100,000	500,000	1,000,000	**220,000**	29,000	61,000
Fluorene (PAH)	30,000	100,000	500,000	386,000	**200,000**	26,000	16,000
Indeno[1,2,3-cd]pyrene (PAH)	500.0	500.0	5,600	8,200	**34,000**	**4,500**	**5,800**

Table 6-1
Summary of Subsurface Soil Analytical Results from the Bike Path Soil Borings
NYSDEC Remedial Investigation
31 Tonawanda Street Off-Site Area, Site No. C915299A
Buffalo, New York

Sample Point Sample Type Depth (ft) Sample Date	NYSDEC Part 375 Unrestricted SCOs ●	NYSDEC Restricted Residential SCOs ●	NYSDEC Part 375 Commercial SCOs ●	Part 375 Groundwater Protection SCOs ●	SB-100 Silty Clay 26.0' - 27.0' 09/18/20	SB-103 Sand 22.0' - 22.5' 09/18/20	SB-106 Foundry Sand 17.0' - 18.0' 09/18/20
Semi-Volatile Organic Compounds (continued)							
Naphthalene (PAH)	12,000	100,000	500,000	12,000	**1,100,000**	**130,000**	2,800 J
N-Nitrosodiphenylamine	NS	NS	NS	NS			
Phenanthrene (PAH)	100,000	100,000	500,000	1,000,000	**840,000**	**110,000**	78,000
Pyrene (PAH)	100,000	100,000	500,000	1,000,000	**480,000**	62,000	51,000

Notes:

● = 6 NYCRR Part 375: Environmental Remediation Programs, Unrestricted & Residential Soil Cleanup Objectives, NYSDEC, 2006.
**** = Residential soil cleanup objective from Commissioner's Policy CP-51 entitled "Soil Cleanup Guidance", NYSDEC, 2010.**
µg/kg = micrograms per kilogram or parts per billion.
B = Analyte detected in the associated blank, as well as in the sample (organics).
F1 = MS and/or MSD recovery is outside accptance limits.
J = Compound is positively identified and reported at an estimated concentration below the reporting limit.
M = Matrix spike recoveries outside QC limits. Matrix bias indicated.
P = Concentration differs by more than 40% between the primary and secondary analytical columns.
NA = Not analyzed.
NS = No standard given in 6 NYCRR Part 375 or Commissioner Policy CP-51.
Blanks = Contaminant analyzed for but not detected at or above the laboratory detection limit.
Blue shaded values exceed the 6 NYCRR Part 375 unrestricted soil cleanup objectives but not the restricted residential soil cleanup objectives.
Yellow shaded values exceed the 6 NYCRR Part 375 restricted residential soil cleanup objectives but not the commercial soil cleanup objectives.
Orange shaded values exceed the 6 NYCRR Part 375 commercial soil cleanup objectives.
Red shaded values exceed the CP-51 residential soil cleanup objectives.

Table 6-2
Summary of Subsurface Soil Analytical Results from the 1660 & 1675 Niagara Street Soil Borings
NYSDEC Remedial Investigation
31 Tonawanda Street Off-Site Area, Site No. C915299A
Buffalo, New York

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Sample Point Sample Type Depth (ft) Sample Date	NYSDEC Part 375 Unrestricted SCOs ●	NYSDEC Restricted Residential SCOs ●	NYSDEC Part 375 Commercial SCOs ●	Part 375 Groundwater Protection SCOs ●	1675-MW-1 Sand 28.8' - 29.8' 09/15/20	1660-SB-1 Sand 21.4' - 22.0' 09/18/20	MW-3R Sand 26.0' - 27.0' 09/14/20	MW-5R Sand 23.7' - 25.8' 09/14/20	MW-5R Silty Clay 27.0' - 28.0' 09/14/20	1660-MW-8 Sand 32.0' - 34.0' 09/18/20
Volatile Organic Compounds (µg/kg)										
1,1,1-Trichloroethane	680.0	100,000	500,000	680.0		**11,000 J**				
1,1,2-Trichloroethane	NS	NS	NS	NS						
1,1,2,2-Tetrachloroethane	NS	35,000 **	NS	600.0						
1,1-Dichloroethane	270.0	26,000	240,000	270.0						
1,1-Dichloroethene	330.0	100,000	500,000	330.0						
1,2-Dichloroethane	20.0	3,100	30,000	20.0						
cis-1,2-Dichloroethene	250.0	100,000	500,000	250.0	**1,100**	**54,000**	110.0	**19,000**	**25,000**	**62,000**
trans-1,2-Dichloroethene	190.0	100,000	500,000	190.0	30 J					
1,4-Dioxane	100.0	13,000	130,000	100.0						
Acetone	50.0	100,000	500,000	50.0			17 J			
Benzene	60.0	4,800	44,000	60.0	**590.0**	**5,800 J**	11.0	**870 J**	**790 J**	
Carbon Disulfide	NS	100,000 **	NS	2,700						
Chloroethane	NS	NS	NS	NS						
Cyclohexane	NS	NS	NS	NS			1.9 J			
Ethylbenzene	1,000	41,000	390,000	1,000		**120,000**	0.57 J	**11,000**	**4,000**	**85,000**
Isopropylbenzene	NS	100,000 **	NS	NS						
Methyl ethyl ketone (2-Butanone)	120.0	100,000	500,000	120.0						
Methylcyclohexane	NS	NS	NS	NS			2.7 J			
Methylene chloride	50.0	100,000	500,000	50.0			6.5 J			
Naphthalene (PAH)	12,000	100,000	500,000	12,000		**1,400,000**		**140,000**	**38,000**	**950,000**
n-Propylbenzene	3,900	100,000	500,000	3,900						
n-Butylbenzene	NS	NS	NS	NS						
p-Isopropyltoluene	NS	NS	NS	NS						
sec-Butylbenzene	11,000	100,000	500,000	11,000						
Styrene	NS	NS	NS	NS					740 J	9,900 J
Tetrachloroethene	1,300	19,000	150,000	1,300						
Toluene	700.0	100,000	500,000	700.0	37 J	**17,000 J**	2.5 J	**2,000 J**	**1,800**	**15,000 J**

Table 6-2
Summary of Subsurface Soil Analytical Results from the 1660 & 1675 Niagara Street Soil Borings
NYSDEC Remedial Investigation
31 Tonawanda Street Off-Site Area, Site No. C915299A
Buffalo, New York

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Sample Point Sample Type Depth (ft) Sample Date	NYSDEC Part 375 Unrestricted SCOs ●	NYSDEC Restricted Residential SCOs ●	NYSDEC Part 375 Commercial SCOs ●	Part 375 Groundwater Protection SCOs ●	1675-MW-1 Sand 28.8' - 29.8' 09/15/20	1660-SB-1 Sand 21.4' - 22.0' 09/18/20	MW-3R Sand 26.0' - 27.0' 09/14/20	MW-5R Sand 23.7' - 25.8' 09/14/20	MW-5R Silty Clay 27.0' - 28.0' 09/14/20	1660-MW-8 Sand 32.0' - 34.0' 09/18/20
Volatile Organic Compounds (continued)										
Trichloroethene	470.0	21,000	200,000	470.0	260.0		3.2 J	**2,500 J**	**14,000**	
1,2,4-Trimethylbenzene	3,600	52,000	190,000	3,600	55 J	**56,000**		**5,700**	1,300	**40,000**
1,3,5-Trimethylbenzene	8,400	52,000	190,000	8,400		**19,000 J**		2,000 J	450 J	**14,000 J**
Vinyl chloride	20.0	900.0	13,000	20.0	**270.0**		**41.0**			
m,p-Xylene	NS	NS	NS	NS		61,000	2.0 J		2,600	42,000 J
o-Xylene	NS	NS	NS	NS	120.0	28,000			1,100 J	20,000 J
Xylene (Total)	260.0	100,000	500,000	1,600	120 J	**89,000**	2.0 J		**3,700**	**62,000**
Semi-Volatile Organic Compounds (µg/kg)										
2,4-Dinitrotoluene	NS	NS	NS	NS		8,900				3,700
2-Methylnaphthalene (PAH)	NS	410 **	NS	36,400		**940,000**		**400,000**	**4,500**	**390,000**
Acenaphthene (PAH)	20,000	100,000	500,000	98,000		**130,000**		**40,000**	600.0	**50,000**
Acenapthylene (PAH)	100,000	100,000	500,000	107,000		**210,000**		**130,000**	2,000	**110,000**
Anthracene (PAH)	100,000	100,000	500,000	1,000,000		**190,000**		85,000	1,700	78,000
Benzo[a]anthracene (PAH)	1,000	1,000	5,600	1,000		**110,000**	62 J	**47,000**	1,000	**44,000**
Benzo[a]pyrene (PAH)	1,000	1,000	1,000	22,000		**100,000**	50 J	**47,000**	**1,100**	**46,000**
Benzo[b]fluoranthene (PAH)	1,000	1,000	5,600	1,700		**63,000**	52 J	**25,000**	550.0	**28,000**
Benzo[g,h,i]perylene (PAH)	100,000	100,000	500,000	1,000,000		43,000		18,000	400.0	16,000
Benzo[k]fluoranthene (PAH)	800.0	3,900	56,000	1,700		**22,000**		**10,000 J**	240.0	**9,100**
Biphenyl	NS	NS	NS	NS		120,000		51,000	670.0	50,000
Bis(2-ethylhexyl) phthalate	NS	50,000 **	NS	435,000	410.0		360.0			
Carbazole	NS	NS	NS	NS		2,300 J				850.0
Chrysene (PAH)	1,000	3,900	56,000	1,000		**82,000**	56 J	**38,000**	830.0	**38,000**
Dibenzo[a,h]anthracene (PAH)	330.0	330.0	560.0	1,000,000		**10,000**		**4,200 J**	100 J	**4,400 J**
Dibenzofuran	7,000	59,000	350,000	210,000		**32,000**		**15,000**	240.0	**13,000**
Fluoranthene (PAH)	100,000	100,000	500,000	1,000,000		**180,000**	87 J	82,000	1,800	76,000
Fluorene (PAH)	30,000	100,000	500,000	386,000		**180,000**		**79,000**	1,400	**83,000**
Indeno[1,2,3-cd]pyrene (PAH)	500.0	500.0	5,600	8,200		**30,000**		**11,000**	270.0	**12,000**

Table 6-2
Summary of Subsurface Soil Analytical Results from the 1660 & 1675 Niagara Street Soil Borings
NYSDEC Remedial Investigation
31 Tonawanda Street Off-Site Area, Site No. C915299A
Buffalo, New York

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Sample Point Sample Type Depth (ft) Sample Date	NYSDEC Part 375 Unrestricted SCOs ●	NYSDEC Restricted Residential SCOs ●	NYSDEC Part 375 Commercial SCOs ●	Part 375 Groundwater Protection SCOs ●	1675-MW-1 Sand 28.8' - 29.8' 09/15/20	1660-SB-1 Sand 21.4' - 22.0' 09/18/20	MW-3R Sand 26.0' - 27.0' 09/14/20	MW-5R Sand 23.7' - 25.8' 09/14/20	MW-5R Silty Clay 27.0' - 28.0' 09/14/20	1660-MW-8 Sand 32.0' - 34.0' 09/18/20
Semi-Volatile Organic Compounds (continued)										
Naphthalene (PAH)	12,000	100,000	500,000	12,000	63 J	**1,300,000**		**520,000**	5,300	**470,000**
N-Nitrosodiphenylamine	NS	NS	NS	NS		9,200				4,500
Phenanthrene (PAH)	100,000	100,000	500,000	1,000,000		**690,000**	47 J	**330,000**	6,000	**290,000**
Pyrene (PAH)	100,000	100,000	500,000	1,000,000		**370,000**	83 J	**180,000**	3,800	**160,000**

Notes:

● = 6 NYCRR Part 375: Environmental Remediation Programs, Unrestricted & Residential Soil Cleanup Objectives, NYSDEC, 2006.
** = Residential soil cleanup objective from Commissioner's Policy CP-51 entitled "Soil Cleanup Guidance", NYSDEC, 2010.
µg/kg = micrograms per kilogram or parts per billion.
B = Analyte detected in the associated blank, as well as in the sample (organics).
F1 = MS and/or MSD recovery is outside accptance limits.
J = Compound is positively identified and reported at an estimated concentration below the reporting limit.
M = Matrix spike recoveries outside QC limits. Matrix bias indicated.
P = Concentration differs by more than 40% between the primary and secondary analytical columns.
NA = Not analyzed.
NS = No standard given in 6 NYCRR Part 375 or Commissioner Policy CP-51.
Blanks = Contaminant analyzed for but not detected at or above the laboratory detection limit.
Blue shaded values exceed the 6 NYCRR Part 375 unrestricted soil cleanup objectives but not the restricted residential soil cleanup objectives. Blue shaded values also exceed the 6 NYCRR Part 375 protection of groundwater soil cleanup objectives.
Green shaded values exceed the 6 NYCRR Part 375 unrestricted soil cleanup objectives but not the restricted residential or protection of groundwater soil cleanup objectives.
Yellow shaded values exceed the 6 NYCRR Part 375 restricted residential soil cleanup objectives but not the commercial soil cleanup objectives.
Orange shaded values exceed the 6 NYCRR Part 375 commercial soil cleanup objectives.
Purple shaded values exceed the CP-51 residential soil cleanup objectives.

Table 6-3
Summary of Overburden Groundwater Analytical Results from Bike Path Wells
NYSDEC Remedial Investigation
31 Tonawanda Street Off-Site Area, Site No. C915299A
Buffalo, New York

Well Number Sample Date Well Screen Interval (ft bgs) Screened Unit	NYSDEC Ground-water Standard ●	MW-100 11/05/20 13.6 - 28.6 Fill & Sand	MW-103 11/05/20 8.6 - 23.6 Fill & Sand	MW-106 11/05/20 8.6 - 23.6 Fill & Sand
Volatile Organic Compounds (ug/L)				
1,1,1-Trichloroethane	5.0			
1,1,2-Trichloroethane	1.0			
1,1,2,2-Tetrachloroethane	5.0			
1,1-Dichloroethane	5.0			
1,1-Dichloroethene	5.0			
1,2-Dichlorobenzene	3.0			
1,2-Dichloroethane	0.6			
1,2,4-Trichlorobenzene	5.0			
cis-1,2-Dichloroethene	5.0			
trans-1,2-Dichloroethene	5.0			
Acetone	50.0 G			
Benzene	1.0	**11,000**	**18 J**	
Carbon Disulfide	NS			
Chloroethane	5.0			
Chloroform	7.0			
Ethylbenzene	5.0	**5,100**	**170.0**	**200.0**
Isopropylbenzene	5.0			**16 J**
Methyl ethyl ketone	50.0 G			
Methylene chloride	5.0			
Styrene	5.0	**220.0**		
Tetrachloroethene	5.0			
Toluene	5.0	**4,000**	**10 J**	
Trichloroethene	5.0			
Vinyl chloride	2.0			
Xylene (Total)	5.0	**3,200**	**110.0**	**74.0**

Table 6-3
Summary of Overburden Groundwater Analytical Results from Bike Path Wells
NYSDEC Remedial Investigation
31 Tonawanda Street Off-Site Area, Site No. C915299A
Buffalo, New York

Well Number Sample Date Well Screen Interval (ft bgs) Screened Unit	NYSDEC Ground-water Standard ●	MW-100 11/05/20 13.6 - 28.6 Fill & Sand	MW-103 11/05/20 8.6 - 23.6 Fill & Sand	MW-106 11/05/20 8.6 - 23.6 Fill & Sand
Semi-Volatile Organic Compounds (ug/L)				
2,4-Dimethylphenol	50.0 G	26 J		
4-Methylphenol	1.0 *			
Acenaphthene (PAH)	20.0 G	**340.0**	**110.0**	**130.0**
Acenapthylene (PAH)	NS	770.0	12.0	5.6
Acetophenone	NS			3.9 J
Anthracene (PAH)	50.0 G	**330.0**	17.0	17.0
Benzo[a]anthracene (PAH)	0.002 G	**170 J**	**0.68 J**	**0.53 J**
Benzo[a]pyrene (PAH)	ND	**200 J**	**0.52 J**	
Benzo[b]fluoranthene (PAH)	0.002 G	**110 J**	**0.34 J**	
Benzo[g,h,i]perylene (PAH)	NS	84 J		
Benzo[k]fluoranthene (PAH)	0.002 G	**48 J**		
Biphenyl	5.0	**340.0**		**27.0**
Bis(2-ethylhexyl) phthalate	5.0			
Carbazole	NS	16 J	1.5 J	1.8 J
Chrysene (PAH)	0.002 G	**140 J**	**0.53 J**	**0.46 J**
Dibenzo[a,h]anthracene (PAH)	NS	24 J		
Dibenzofuran	NS	76 J	7.2 J	4.5 J
Diethylphthalate	50.0			
Di-n-butylphthalate	50.0			
Fluoranthene (PAH)	50.0 G	**330.0**	7.0	6.1
Fluorene (PAH)	50.0 G	**400.0**	42.0	44.0
Hexachlorobenzene	0.040			
Indeno[1,2,3-cd]pyrene (PAH)	0.002 G	**57 J**		
2-Methylnaphthalene (PAH)	NS	3,000	81.0	
Naphthalene (PAH)	10.0 G	**12,000**	**27.0**	
Phenanthrene (PAH)	50.0 G	**1,200**	**77.0**	**71.0**
Phenol	1.0	**39 J**	**1.9 J**	0.5 J
Pyrene (PAH)	50.0 G	**620.0**	10.0	10.0

Table 6-3
Summary of Overburden Groundwater Analytical Results from Bike Path Wells
NYSDEC Remedial Investigation
31 Tonawanda Street Off-Site Area, Site No. C915299A
Buffalo, New York

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Well Number Sample Date Well Screen Interval (ft bgs) Screened Unit	NYSDEC Ground-water Standard ●	MW-100 11/05/20 13.6 - 28.6 Fill & Sand	MW-103 11/05/20 8.6 - 23.6 Fill & Sand	MW-106 11/05/20 8.6 - 23.6 Fill & Sand
Pesticides (ug/L)				
4,4'-DDD	0.3			
4,4'-DDE	0.2			
4,4'-DDT	0.2			0.085 B
Aldrin	ND			
alpha-BHC	0.01			
alpha or cis-Chlordane	0.05			
beta-BHC	0.04			
delta-BHC	0.04			**0.0880**
Dieldrin	0.004			
Endosulfan I	NS			
Endosulfan II	NS			
Endosulfan Sulfate	NS			
Endrin	ND			
Endrin Aldehyde	5.0			0.051 B
Endrin Ketone	5.0			0.020 J
gamma-BHC (Lindane)	0.05		0.016 JB	**0.11 B**
gamma or trans-Chlordane	0.05			
Heptachlor	0.04			**0.10**
Heptachlor epoxide	0.03			
Methoxychlor	35.0			
PCBs (ug/L)				
Aroclor-1248				
Aroclor-1254				
Aroclor-1260				
Total PCBs	0.09			

Table 6-3
Summary of Overburden Groundwater Analytical Results from Bike Path Wells
NYSDEC Remedial Investigation
31 Tonawanda Street Off-Site Area, Site No. C915299A
Buffalo, New York

Well Number Sample Date Well Screen Interval (ft bgs) Screened Unit	NYSDEC Ground-water Standard ●	MW-100 11/05/20 13.6 - 28.6 Fill & Sand	MW-103 11/05/20 8.6 - 23.6 Fill & Sand	MW-106 11/05/20 8.6 - 23.6 Fill & Sand
Metals (ug/L)				
Aluminum	NS	2,800	210.0	280.0
Antimony ■	3.0			
Arsenic ■	25.0			
Barium	1,000	680.0	53.0	270.0
Beryllium ■	3.0			
Cadmium ■	5.0	0.91 J		
Calcium	NS	217,000	102,000	209,000
Chromium ■	50.0	6.0		1.1 J
Cobalt	NS	2.7 J		
Copper ■	200.0	18.0	2.2 J	6.1 J
Cyanide	200.0	NA	NA	NA
Iron	300.0	**4,900**	**2,000**	**7,500**
Lead ■	25.0	**37.0**	7.0 J	12.0
Magnesium	35,000 G	**166,000**	32,500	**57,500**
Manganese	300.0	**370.0**	**890.0**	**2,000**
Mercury ■	0.7			
Nickel	100.0	3.5 J		
Potassium	NS	9,900	9,200	10,000
Selenium ■	10.0			
Silver ■	50.0			
Sodium	20,000	**173,000**	**50,900**	**79,600**
Vanadium	NS	10.0		
Zinc ■	2,000 G	62.0	5.1 J	25.0

Notes:

● = NYSDEC Ambient Water Quality Standards and Guidance Values, June 1998, with addenda through 2004.
*** = Applies to sum of phenolic compounds.**
B = Analyte detected in the associated blank, as well as in the sample (organics); value is greater

Notes (continued):

than or equal to the instrument detection limit, but less than the contract required detection limit (inorganics).

D = Sample, laboratory control sample, or matrix spike duplicate results above relative percent difference limit.

J = Result estimated between the quantitation limit and half the quantitation limit.

M = Matrix spike recoveries outside QC limits. Matrix bias indicated.

NA = Not analyzed.

NS = No standard or guidance value available.

P = Concentration differs by more than 40% between the primary and secondary analytical columns.

ug/L = micrograms per liter or parts per billion.

Blanks = Contaminant analyzed for but not detected at or above the laboratory detection limit.

Yellow shaded values exceed NYSDEC groundwater standards or guidance values.

Table 6-4
Summary of Overburden Groundwater Analytical Results from the 57-71 Tonawanda Street BCP Site
2020 BCP Remedial Investigation Report
31 Tonawanda Street Off-Site Area, Site No. C915299A
Buffalo, New York

Well Number Sample Date Well Screen Interval (ft bgs) Screened Unit	NYSDEC Ground-water Standard ●	57-MW-1 01/22/20 5.0 - 15.0 Fill & Clay	57-MW-2 01/22/20 5.0 - 15.0 Clay	57-MW-3 01/22/20 5.0 - 15.0 Clay	57-MW-4 01/23/20 10.0 - 30.0 Clay	57-MW-5 01/23/20 10.0 - 30.0 Clay
Volatile Organic Compounds (ug/L)						
1,1,1-Trichloroethane	5.0	1.0	**14.7**			
1,1,2-Trichloroethane	1.0					
1,1,2,2-Tetrachloroethane	5.0					
1,1-Dichloroethane	5.0		**57.0**			
1,1-Dichloroethene	5.0					
1,2-Dichlorobenzene	3.0					
1,2-Dichloroethane	0.6					
1,2,4-Trichlorobenzene	5.0					
cis-1,2-Dichloroethene	5.0	2.58	**55.4**			
trans-1,2-Dichloroethene	5.0					
Acetone	50.0 G	17.4	**408.0**	**157.0**	**409.0**	9.73
Benzene	1.0					
Carbon Disulfide	NS					
Chloroethane	5.0					
Chloroform	7.0					
Ethylbenzene	5.0					
Methyl ethyl ketone	50.0 G					
Methylene chloride	5.0					
Tetrachloroethene	5.0					
Toluene	5.0					
Trichloroethene	5.0	**13.0**	**22.5**	1.27	**7,370**	1.28
Vinyl chloride	2.0		**35.3**			
Xylene (Total)	5.0					
Semi-Volatile Organic Compounds (ug/L)						
4-Methylphenol	1.0 *					
Acenaphthene (PAH)	20.0 G					
Acenapthylene (PAH)	NS					

Table 6-4
Summary of Overburden Groundwater Analytical Results from the 57-71 Tonawanda Street BCP Site
2020 BCP Remedial Investigation Report
31 Tonawanda Street Off-Site Area, Site No. C915299A
Buffalo, New York

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Well Number Sample Date Well Screen Interval (ft bgs) Screened Unit	NYSDEC Ground-water Standard ●	57-MW-1 01/22/20 5.0 - 15.0 Fill & Clay	57-MW-2 01/22/20 5.0 - 15.0 Clay	57-MW-3 01/22/20 5.0 - 15.0 Clay	57-MW-4 01/23/20 10.0 - 30.0 Clay	57-MW-5 01/23/20 10.0 - 30.0 Clay
Semi-Volatile Organic Compounds (continued)						
Anthracene (PAH)	50.0 G					
Benzo[a]anthracene (PAH)	0.002 G					
Benzo[a]pyrene (PAH)	ND					
Benzo[b]fluoranthene (PAH)	0.002 G					
Benzo[g,h,i]perylene (PAH)	NS					
Benzo[k]fluoranthene (PAH)	0.002 G					
Bis(2-ethylhexyl) phthalate	5.0					
Chrysene (PAH)	0.002 G					
Dibenzo[a,h]anthracene (PAH)	NS					
Dibenzofuran	NS					
Diethylphthalate	50.0					
Di-n-butylphthalate	50.0					
Fluoranthene (PAH)	50.0 G					
Fluorene (PAH)	50.0 G					
Hexachlorobenzene	0.040					
Indeno[1,2,3-cd]pyrene (PAH)	0.002 G					
2-Methylnaphthalene (PAH)	NS					
Naphthalene (PAH)	10.0 G					
Phenanthrene (PAH)	50.0 G					
Phenol	1.0					
Pyrene (PAH)	50.0 G					
Pesticides (ug/L)						
4,4'-DDD	0.3					
4,4'-DDE	0.2					
4,4'-DDT	0.2					
Aldrin	ND					
alpha-BHC	0.01					

Table 6-4
Summary of Overburden Groundwater Analytical Results from the 57-71 Tonawanda Street BCP Site
2020 BCP Remedial Investigation Report
31 Tonawanda Street Off-Site Area, Site No. C915299A
Buffalo, New York

Well Number Sample Date Well Screen Interval (ft bgs) Screened Unit	NYSDEC Ground-water Standard ●	57-MW-1 01/22/20 5.0 - 15.0 Fill & Clay	57-MW-2 01/22/20 5.0 - 15.0 Clay	57-MW-3 01/22/20 5.0 - 15.0 Clay	57-MW-4 01/23/20 10.0 - 30.0 Clay	57-MW-5 01/23/20 10.0 - 30.0 Clay
Pesticides (continued)						
alpha or cis-Chlordane	0.05					
beta-BHC	0.04					
delta-BHC	0.04					
Dieldrin	0.004					
Endosulfan I	NS					
Endosulfan II	NS					
Endosulfan Sulfate	NS					
Endrin	ND					
Endrin Aldehyde	5.0					
Endrin Ketone	5.0					
gamma-BHC (Lindane)	0.05					
gamma or trans-Chlordane	0.05					
Heptachlor	0.04					
Heptachlor epoxide	0.03					
Methoxychlor	35.0					
PCBs (ug/L)						
Aroclor-1248						
Aroclor-1254						
Aroclor-1260						
Total PCBs	0.09					
Metals (ug/L)						
Aluminum	NS	NA	NA	NA	NA	NA
Antimony ■	3.0	NA	NA	NA	NA	NA
Arsenic ■	25.0				24.3	12.6
Barium	1,000	66.5	144.0	175.0		
Beryllium ■	3.0					
Cadmium ■	5.0					

Table 6-4
Summary of Overburden Groundwater Analytical Results from the 57-71 Tonawanda Street BCP Site
2020 BCP Remedial Investigation Report
31 Tonawanda Street Off-Site Area, Site No. C915299A
Buffalo, New York

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Well Number Sample Date Well Screen Interval (ft bgs) Screened Unit	NYSDEC Ground-water Standard ●	57-MW-1 01/22/20 5.0 - 15.0 Fill & Clay	57-MW-2 01/22/20 5.0 - 15.0 Clay	57-MW-3 01/22/20 5.0 - 15.0 Clay	57-MW-4 01/23/20 10.0 - 30.0 Clay	57-MW-5 01/23/20 10.0 - 30.0 Clay
Metals (continued)						
Calcium	NS	NA	NA	NA	NA	NA
Chromium ■	50.0					
Cobalt	NS	NA	NA	NA	NA	NA
Copper ■	200.0					
Cyanide	200.0					
Iron	300.0	NA	NA	NA	NA	NA
Lead ■	25.0	7.0		**42.7**		
Magnesium	35,000 G	NA	NA	NA	NA	NA
Manganese	300.0	31.6	**694.0**	**2,690**	**321.0**	**365.0**
Mercury ■	0.7					0.14
Nickel	100.0					
Potassium	NS	NA	NA	NA	NA	NA
Selenium ■	10.0		**15.4**	**18.3**	**16.3**	
Silver ■	50.0					
Sodium	20,000	NA	NA	NA	NA	NA
Vanadium	NS	NA	NA	NA	NA	NA
Zinc ■	2,000 G	256.0				

Notes:

● = NYSDEC Ambient Water Quality Standards and Guidance Values, June 1998, with addenda through 2004.
* = Applies to sum of phenolic compounds.
B = Analyte detected in the associated blank, as well as in the sample (organics); value is greater than or equal to the instrument detection limit, but less than the contract required detection limit (inorganics).
J = Result estimated between the quantitation limit and half the quantitation limit.
NA = Not analyzed.
NS = No standard or guidance value available.
ug/L = micrograms per liter or parts per billion.
Blanks = Contaminant analyzed for but not detected at or above the laboratory detection limit.
Yellow shaded values exceed NYSDEC groundwater standards or guidance values.

Table 6-5
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Well Number Sample Date Well Screen Interval (ft bgs) Screened Unit	NYSDEC Ground-water Standard ●	RI-MW-1 06/01/17 10.0 - 20.0 Silty Clay	RI-MW-2 06/01/17 10.0 - 20.0 Fill & SC	RI-MW-3 06/01/17 10.0 - 20.0 Fill & SC	RI-MW-3 01/17/19 10.0 - 20.0 Fill & SC	RI-MW-4 06/01/17 10.0 - 20.0 Fill & SC	RI-MW-4 01/16/19 10.0 - 20.0 Fill & SC
Volatile Organic Compounds (ug/L)							
1,1,1-Trichloroethane	5.0						
1,1,2-Trichloroethane	1.0						
1,1,2,2-Tetrachloroethane	5.0						
1,1-Dichloroethane	5.0			1.2 J			
1,1-Dichloroethene	5.0						
1,2-Dichloroethane	0.6						
cis-1,2-Dichloroethene	5.0	4.3 J		0.94 J			
trans-1,2-Dichloroethene	5.0						
1,2,4-Trichlorobenzene	5.0				NA	**44.4 J**	NA
1,2,4-Trimethylbenzene	5.0				NA	8.9 J	NA
1,3,5-Trimethylbenzene	5.0				NA	5.3 J	NA
Acetone	50.0 G	25.6	30.2	10.8 J			
Benzene	1.0		**6.1**			**900 J**	**1,100**
Carbon Disulfide	60.0 G			0.41 J			
Chloroethane	5.0						
Chloroform	7.0						
Ethylbenzene	5.0		0.65 J			**12.5 J**	
Isopropylbenzene	5.0		1.3 J		NA	**24.0**	NA
p-Isopropyltoluene	5.0		2.9 J		NA		NA
Methyl ethyl ketone (2-Butanone)	50.0 G	3.5 J	4.8 J				
Methyl tert-butyl ether	10.0 G						
Methylcyclohexane	NS		1.7 J		NA		NA
Methylene Chloride	5.0					**18.1 J**	
n-Propylbenzene	5.0		2.9 J		NA	**18.9 J**	NA
Tetrachloroethene	5.0						
Toluene	5.0		1.3 J				
Trichloroethene	5.0						
Vinyl Chloride	2.0		**3.9 J**		1.0		
Xylene (Total)	5.0		1.3 J	**13.1**		**7.5 J**	**8.6**

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Well Number Sample Date Well Screen Interval (ft bgs) Screened Unit	NYSDEC Ground-water Standard ●	RI-MW-1 06/01/17 10.0 - 20.0 Silty Clay	RI-MW-2 06/01/17 10.0 - 20.0 Fill & SC	RI-MW-3 06/01/17 10.0 - 20.0 Fill & SC	RI-MW-3 01/17/19 10.0 - 20.0 Fill & SC	RI-MW-4 06/01/17 10.0 - 20.0 Fill & SC	RI-MW-4 01/16/19 10.0 - 20.0 Fill & SC
Semi-Volatile Organic Compounds (ug/L)							
1,1-Biphenyl	5.0				0.86		4.8
2-Methylphenol	1.0 *						
4-Methylphenol	1.0 *						
Acenaphthene (PAH)	20.0 G				0.70	**46.0**	**61.0**
Acenapthylene (PAH)	NS				0.88		0.85
Acetophenone	NS						
Anthracene (PAH)	50.0 G				0.25		1.7
Benzo[a]anthracene (PAH)	0.002 G				**0.07**		
Benzo[a]pyrene (PAH)	ND				0.05		
Benzo[b]fluoranthene (PAH)	0.002 G				0.04		
Benzo[g,h,i]perylene (PAH)	NS				0.03		
Benzo[k]fluoranthene (PAH)	0.002 G						
Bis(2-ethylhexyl) phthalate	5.0						2.0
Carbazole	NS						1.3
Chrysene (PAH)	0.002 G				**0.04**		
Dibenzo[a,h]anthracene (PAH)	NS						
Dibenzofuran	NS						2.3
Dimethylphthalate	50.0 G	2.1 J	2.2 J	2.8 J		3.6 J	
Di-n-butylphthalate	50.0						
Fluoranthene (PAH)	50.0 G				0.15		0.1
Fluorene (PAH)	50.0 G				0.74	8.5 J	14.0
Hexachlorobenzene	0.040						
Indeno[1,2,3-cd]pyrene (PAH)	0.002 G						
2-Methylnaphthalene (PAH)	NS				11.0	2.2 J	
Naphthalene (PAH)	10.0 G				58.0		2.6
Pentachlorophenol	1.0 *						
Phenanthrene (PAH)	50.0 G				1.1		9.8
Phenol	1.0 *						**20.0**
Pyrene (PAH)	50.0 G				0.28		0.13

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Well Number Sample Date Well Screen Interval (ft bgs) Screened Unit	NYSDEC Ground-water Standard ●	RI-MW-1 06/01/17 10.0 - 20.0 Silty Clay	RI-MW-2 06/01/17 10.0 - 20.0 Fill & SC	RI-MW-3 06/01/17 10.0 - 20.0 Fill & SC	RI-MW-3 01/17/19 10.0 - 20.0 Fill & SC	RI-MW-4 06/01/17 10.0 - 20.0 Fill & SC	RI-MW-4 01/16/19 10.0 - 20.0 Fill & SC
Pesticides (ug/L)							
4,4-DDD	0.3				NA		NA
4,4-DDE	0.2				NA		NA
4,4-DDT	0.2				NA		NA
Aldrin	ND				NA		NA
alpha-BHC	0.01				NA		NA
alpha or cis-Chlordane	0.05				NA	0.0304 JP	NA
beta-BHC	0.04				NA		NA
delta-BHC	0.04				NA		NA
Dieldrin	0.004				NA		NA
Endosulfan I	NS				NA		NA
Endosulfan II	NS				NA		NA
Endosulfan sulfate	NS				NA		NA
Endrin	ND				NA		NA
Endrin Aldehyde	5.0				NA		NA
Endrin Ketone	5.0				NA		NA
gamma-BHC (Lindane)	0.05				NA		NA
gamma or trans-Chlordane	0.05				NA	0.0168 J	NA
Heptachlor	0.04				NA		NA
Heptachlor epoxide	0.03				NA		NA
Methoxychlor	35.0				NA		NA
PCBs (ug/L)							
Aroclor 1248					NA		NA
Aroclor 1254					NA		NA
Aroclor 1260					NA		NA
Total PCBs	0.09				NA		NA

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Well Number Sample Date Well Screen Interval (ft bgs) Screened Unit	NYSDEC Ground-water Standard ●	RI-MW-1 06/01/17 10.0 - 20.0 Silty Clay	RI-MW-2 06/01/17 10.0 - 20.0 Fill & SC	RI-MW-3 06/01/17 10.0 - 20.0 Fill & SC	RI-MW-3 01/17/19 10.0 - 20.0 Fill & SC	RI-MW-4 06/01/17 10.0 - 20.0 Fill & SC	RI-MW-4 01/16/19 10.0 - 20.0 Fill & SC
Metals (ug/L)							
Aluminum	NS	137.0	337.0	95.0	NA	496.0	NA
Antimony ■	3.0	0.73 J	0.88 J	0.84 J	NA	0.74 J	NA
Arsenic ■	25.0	5.74	17.6	1.87	NA	0.99 J	NA
Barium	1,000	256.0	286.0	383.0	NA	327.0	NA
Beryllium ■	3.0	0.15 J	0.15 J	0.24 J	NA	0.19 J	NA
Cadmium ■	5.0				NA		NA
Calcium	NS	365,000	255,000	291,000	NA	242,000	NA
Chromium ■	50.0	2.04	2.74	1.15 J	NA	2.51	NA
Cobalt	NS	2.14	1.73	1.69	NA	2.28	NA
Copper ■	200.0	8.18	7.61	6.22	NA	8.31	NA
Cyanide	200.0	NA	NA	NA	NA	NA	NA
Iron	300.0	**4,110**	**11,000**	**7,550**	NA	**7,670**	NA
Lead ■	25.0	6.16	4.12	0.71 J	NA	3.35	NA
Magnesium	35,000 G	**80,900**	**64,600**	**103,000**	NA	**51,700**	NA
Manganese	300.0	**6,640**	**980.0**	**1,910**	NA	**824.0**	NA
Mercury ■	0.7				NA		NA
Nickel	100.0	5.18	4.64	3.50	NA	3.33	NA
Potassium	NS	10,600	11,200	14,200	NA	7,500	NA
Selenium ■	10.0			1.52 J	NA		NA
Silver ■	50.0	0.18 J	0.23 J	0.26 J	NA	0.2 J	NA
Sodium	20,000	**183,000**	**97,000**	**154,000**	NA	**206,000**	NA
Thallium	0.5 G			0.14 J	NA		NA
Vanadium	NS	2.04 J	4.34 J	1.62 J	NA	3.47 J	NA
Zinc ■	2,000 G	27.5	33.3	22.2	NA	23.8	NA

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Notes:

- ● = NYSDEC Ambient Water Quality Standards and Guidance Values, June 1998, with addenda through 2004.
- * = Applies to sum of phenolic compounds.
- J = Analyte was positively identified at an estimated concentration.
- NA = Not analyzed.
- NS = No standard or guidance value available.
- P = Concentration differs by more than 40% between the primary and secondary analytical columns.
- ug/L = micrograms per liter or parts per billion.
- Blanks = Contaminant analyzed for but not detected at or above the laboratory detection limit.
- (39.0) = Results from a duplicate sample.
- Yellow shaded values exceed NYSDEC groundwater standards or guidance values.

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Well Number Sample Date Well Screen Interval (ft bgs) Screened Unit	NYSDEC Ground-water Standard ●	RI-MW-5 06/01/17 10.0 - 20.0 Fill & SC	RI-MW-5 01/17/19 10.0 - 20.0 Fill & SC	RI-MW-6 06/01/17 10.0 - 20.0 Fill & SC	RI-MW-6 08/24/17 10.0 - 20.0 Fill & SC	RI-MW-6 01/16/19 10.0 - 20.0 Fill & SC	RI-MW-7 08/24/17 14.0 - 24.0 Fill & SC	RI-MW-7 01/16/19 14.0 - 24.0 Fill & SC
Volatile Organic Compounds (ug/L)								
1,1,1-Trichloroethane	5.0			**830 JD**	**860 JD (860 J)**	**1,100**	**970 J**	**1,100**
1,1,2-Trichloroethane	1.0			**3.6 J**				
1,1,2,2-Tetrachloroethane	5.0							
1,1-Dichloroethane	5.0	**10.2 J (10.1 J)**	**12.0**	**1,200 D**	**1,100 JD (1,200 JD)**	**1,400**	**1,200 J**	**1,300**
1,1-Dichloroethene	5.0		**1.9**	**560 JD**	**420 J (420 J)**	**540.0**		**150.0**
1,2-Dichloroethane	0.6							
cis-1,2-Dichloroethene	5.0	**580.0 (560.0)**	**510.0**	**91,300 D**	**73,600 D (76,700)**	**23,000 D**	**26,600**	**24,000**
trans-1,2-Dichloroethene	5.0			**100 JD**				
1,2,4-Trichlorobenzene	5.0		NA			NA		NA
1,2,4-Trimethylbenzene	5.0		NA	**220 JD**		NA	**180 J**	NA
1,3,5-Trimethylbenzene	5.0		NA	**88.7**		NA		NA
Acetone	50.0 G							
Benzene	1.0	**43.5 J (40.4 J)**	**28.0**	**2,200 JD**	**2,100 (2,300)**	**2,400**	**2,400**	**2,500**
Carbon Disulfide	60.0 G							
Chloroethane	5.0			**210 JD**		**480.0**		**780.0**
Chloroform	7.0							
Ethylbenzene	5.0			**2,000 D**	**1,600 JD (1,600)**	**2,400**	**1,800 J**	**2,500**
Isopropylbenzene	5.0		NA	**20.2**		NA		NA
p-Isopropyltoluene	5.0		NA	2.7 J		NA		NA
Methyl ethyl ketone (2-Butanone)	50.0 G							
Methyl tert-butyl ether	10.0 G							
Methylcyclohexane	NS		NA			NA		NA
Methylene Chloride	5.0	**15.5 J (17.3 J)**						
n-Propylbenzene	5.0		NA	**15.8**		NA		NA
Tetrachloroethene	5.0							
Toluene	5.0	3.9 J (ND)		**1,400 JD**	**1,300 JD (1,500 JD)**	**1,600**	**920 J**	**1,000**
Trichloroethene	5.0			**15.7**			**110 J**	**220.0**
Vinyl Chloride	2.0	**280.0 (260.0)**	**630.0**	**6,700 D**	**6,800 D (7,500 D)**	**9,400**	**3,500**	**4,400**
Xylene (Total)	5.0			**1,350 JD**	**980 J (1,410 JD)**	**1,570**	**930 J**	**1,440**

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Semi-Volatile Organic Compounds (ug/L)								
1,1-Biphenyl	5.0			**46.6**	NA	**29.0**	NA	**38.0**
2-Methylphenol	1.0 *				NA		NA	
4-Methylphenol	1.0 *				NA		NA	
Acenaphthene (PAH)	20.0 G			**31.0**	NA	**34.0**	NA	**45.0**
Acenapthylene (PAH)	NS		0.01	44.3	NA	52.0	NA	62.0
Acetophenone	NS				NA		NA	
Anthracene (PAH)	50.0 G		0.01	2.8 J	NA	3.4	NA	13.0
Benzo[a]anthracene (PAH)	0.002 G				NA		NA	**3.1**
Benzo[a]pyrene (PAH)	ND				NA		NA	2.5
Benzo[b]fluoranthene (PAH)	0.002 G				NA		NA	**1.8**
Benzo[g,h,i]perylene (PAH)	NS		0.02		NA		NA	1.3
Benzo[k]fluoranthene (PAH)	0.002 G				NA		NA	**0.4**
Bis(2-ethylhexyl) phthalate	5.0				NA		NA	4.0
Carbazole	NS			4.7 J	NA	3.4	NA	4.3
Chrysene (PAH)	0.002 G				NA		NA	**2.2**
Dibenzo[a,h]anthracene (PAH)	NS		0.02		NA		NA	0.29
Dibenzofuran	NS			7.1 J	NA	4.4	NA	6.7
Dimethylphthalate	50.0 G	2.2 J		3.8 J	NA		NA	
Di-n-butylphthalate	50.0				NA		NA	
Fluoranthene (PAH)	50.0 G				NA	1.3	NA	7.8
Fluorene (PAH)	50.0 G		0.04	23.9	NA	28.0	NA	43.0
Hexachlorobenzene	0.040				NA		NA	
Indeno[1,2,3-cd]pyrene (PAH)	0.002 G				NA		NA	**0.87**
2-Methylnaphthalene (PAH)	NS		0.05	650 D	NA	540.0	NA	590.0
Naphthalene (PAH)	10.0 G		0.41	**4,700 D**	NA	**4,400 D**	NA	**4,500 D**
Pentachlorophenol	1.0 *		**1.8**		NA		NA	
Phenanthrene (PAH)	50.0 G		0.07	23.7	NA	26.0	NA	**65.0**
Phenol	1.0 *				NA	1.0	NA	0.84
Pyrene (PAH)	50.0 G		0.04		NA	2.3	NA	16.0

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Well Number Sample Date Well Screen Interval (ft bgs) Screened Unit	NYSDEC Ground-water Standard ●	RI-MW-5 06/01/17 10.0 - 20.0 Fill & SC	RI-MW-5 01/17/19 10.0 - 20.0 Fill & SC	RI-MW-6 06/01/17 10.0 - 20.0 Fill & SC	RI-MW-6 08/24/17 10.0 - 20.0 Fill & SC	RI-MW-6 01/16/19 10.0 - 20.0 Fill & SC	RI-MW-7 08/24/17 14.0 - 24.0 Fill & SC	RI-MW-7 01/16/19 14.0 - 24.0 Fill & SC
Pesticides (ug/L)								
4,4-DDD	0.3		NA		NA	NA	NA	NA
4,4-DDE	0.2		NA		NA	NA	NA	NA
4,4-DDT	0.2		NA		NA	NA	NA	NA
Aldrin	ND		NA		NA	NA	NA	NA
alpha-BHC	0.01		NA		NA	NA	NA	NA
alpha or cis-Chlordane	0.05		NA		NA	NA	NA	NA
beta-BHC	0.04		NA		NA	NA	NA	NA
delta-BHC	0.04		NA		NA	NA	NA	NA
Dieldrin	0.004		NA		NA	NA	NA	NA
Endosulfan I	NS		NA		NA	NA	NA	NA
Endosulfan II	NS		NA		NA	NA	NA	NA
Endosulfan sulfate	NS		NA		NA	NA	NA	NA
Endrin	ND		NA		NA	NA	NA	NA
Endrin Aldehyde	5.0		NA		NA	NA	NA	NA
Endrin Ketone	5.0		NA		NA	NA	NA	NA
gamma-BHC (Lindane)	0.05		NA		NA	NA	NA	NA
gamma or trans-Chlordane	0.05		NA		NA	NA	NA	NA
Heptachlor	0.04		NA		NA	NA	NA	NA
Heptachlor epoxide	0.03		NA		NA	NA	NA	NA
Methoxychlor	35.0		NA		NA	NA	NA	NA
PCBs (ug/L)								
Aroclor 1248			NA		NA	NA	NA	NA
Aroclor 1254			NA		NA	NA	NA	NA
Aroclor 1260			NA		NA	NA	NA	NA
Total PCBs	0.09		NA		NA	NA	NA	NA

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Well Number Sample Date Well Screen Interval (ft bgs) Screened Unit	NYSDEC Ground-water Standard ●	RI-MW-5 06/01/17 10.0 - 20.0 Fill & SC	RI-MW-5 01/17/19 10.0 - 20.0 Fill & SC	RI-MW-6 06/01/17 10.0 - 20.0 Fill & SC	RI-MW-6 08/24/17 10.0 - 20.0 Fill & SC	RI-MW-6 01/16/19 10.0 - 20.0 Fill & SC	RI-MW-7 08/24/17 14.0 - 24.0 Fill & SC	RI-MW-7 01/16/19 14.0 - 24.0 Fill & SC
Metals (ug/L)								
Aluminum	NS	57.5 (101.0)	NA	28.2	NA	NA	NA	NA
Antimony ■	3.0	0.59 J (0.61 J)	NA	0.73 J	NA	NA	NA	NA
Arsenic ■	25.0	0.88 J (0.96 J)	NA	0.52 J	NA	NA	NA	NA
Barium	1,000	63.1 (61.9)	NA	488.0	NA	NA	NA	NA
Beryllium ■	3.0	0.15 J (0.12 J)	NA	0.12 J	NA	NA	NA	NA
Cadmium ■	5.0		NA		NA	NA	NA	NA
Calcium	NS	121,000 (117,000)	NA	279,000	NA	NA	NA	NA
Chromium ■	50.0	0.78 J (1.63 J)	NA	0.74 J	NA	NA	NA	NA
Cobalt	NS	0.84 J (1.02)	NA	0.47 J	NA	NA	NA	NA
Copper ■	200.0	5.29 (5.86)	NA	4.59	NA	NA	NA	NA
Cyanide	200.0	NA	NA	NA	NA	NA	NA	NA
Iron	300.0	**2,950 (3,410)**	NA	**2,890**	NA	NA	NA	NA
Lead ■	25.0	0.39 J (0.51 J)	NA	0.12 J	NA	NA	NA	NA
Magnesium	35,000 G	23,000 (22,300)	NA	**74,700**	NA	NA	NA	NA
Manganese	300.0	**1,550 (1,530)**	NA	**741**	NA	NA	NA	NA
Mercury ■	0.7		NA		NA	NA	NA	NA
Nickel	100.0	2.52 (3.14)	NA	0.26	NA	NA	NA	NA
Potassium	NS	4,720 (4,710)	NA	5,580	NA	NA	NA	NA
Selenium ■	10.0	6.77 (6.79)	NA	1.8 J	NA	NA	NA	NA
Silver ■	50.0	0.18 J (0.17 J)	NA	0.24 J	NA	NA	NA	NA
Sodium	20,000	**62,000 (61,400)**	NA	**524,000**	NA	NA	NA	NA
Thallium	0.5 G		NA		NA	NA	NA	NA
Vanadium	NS	1.01 J (1.19 J)	NA	1.05 J	NA	NA	NA	NA
Zinc ■	2,000 G	27.6 (30.9)	NA	8.18	NA	NA	NA	NA

Notes:

- ● = NYSDEC Ambient Water Quality Standards and Guidance Values, June 1998, with addenda through 2004.
- * = Applies to sum of phenolic compounds.
- D = Result obtained from an analysis at a secondary dilution factor.
- J = Analyte was positively identified at an estimated concentration.
- NA = Not analyzed.
- NS = No standard or guidance value available.
- ug/L = micrograms per liter or parts per billion.
- Blanks = Contaminant analyzed for but not detected at or above the laboratory detection limit.
- (39.0) = Results from a duplicate sample.
- Yellow shaded values exceed NYSDEC groundwater standards or guidance values.

Table 6-6
Summary of Overburden Groundwater Analytical Results from the 1660 & 1675 Niagara Street Wells
NYSDEC Remedial Investigation
31 Tonawanda Street Off-Site Area, Site No. C915299A
Buffalo, New York

Well Number Sample Date Well Screen Interval (ft bgs) Screened Unit	NYSDEC Ground-water Standard ●	1675-MW-1 11/04/20 15.0 - 30.0 (see note 1)	1675-MW-2 11/04/20 3.5 - 13.5 (see note 2)	1660-MW-3R 11/04/20 14.0 - 29.0 (see note 3)	1660-MW-5R 11/04/20 13.5 - 28.5 (see note 4)	1660-MW-8 11/05/20 16.5 - 31.5 (see note 5)
Volatile Organic Compounds (ug/L)						
1,1,1-Trichloroethane	5.0		**9.6**		**2,800 (2,900)**	**1,400**
1,1,2-Trichloroethane	1.0					
1,1,2,2-Tetrachloroethane	5.0					
1,1-Dichloroethane	5.0	**120 J**	**7.6**		**1,500 J (1,500 J)**	**1,400**
1,1-Dichloroethene	5.0		1.9		**910 J (940 J)**	**500 J**
1,2-Dichloroethane	0.6					
cis-1,2-Dichloroethene	5.0	**2,200**		**1,600**	**160,000 (160,000)**	**100,000**
trans-1,2-Dichloroethene	5.0					
1,2,4-Trichlorobenzene	5.0					
1,2,4-Trimethylbenzene	5.0	NA	NA	NA	NA	NA
1,3,5-Trimethylbenzene	5.0	NA	NA	NA	NA	NA
Acetone	50.0 G					
Benzene	1.0	**890.0**		**180.0**	**4,300 (4,100)**	**3,000**
Carbon Disulfide	60.0 G					
Chloroethane	5.0					
Chloroform	7.0					
Ethylbenzene	5.0				**3,100 (3,000)**	**2,900**
Isopropylbenzene	5.0					
p-Isopropyltoluene	5.0	NA	NA	NA	NA	NA
Methyl ethyl ketone (2-Butanone)	50.0 G					
Methyl tert-butyl ether	10.0 G		0.48 J			
Methylcyclohexane	NS					
Methylene Chloride	5.0					
n-Propylbenzene	5.0	NA	NA	NA	NA	NA
Tetrachloroethene	5.0		0.42 J			
Toluene	5.0				**2,600 (2,500)**	**2,100**
Trichloroethene	5.0		0.68 J		**5,900 (6,200)**	
Vinyl Chloride	2.0	**4,200**		**1,300**	**5,800 (6,100)**	**5,600**
Xylene (Total)	5.0				**1,600 J (1,600 J)**	**2,300**

Table 6-6
Summary of Overburden Groundwater Analytical Results from the 1660 & 1675 Niagara Street Wells
NYSDEC Remedial Investigation
31 Tonawanda Street Off-Site Area, Site No. C915299A
Buffalo, New York

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Well Number Sample Date Well Screen Interval (ft bgs) Screened Unit	NYSDEC Ground-water Standard ●	1675-MW-1 11/04/20 15.0 - 30.0 (see note 1)	1675-MW-2 11/04/20 3.5 - 13.5 (see note 2)	1660-MW-3R 11/04/20 14.0 - 29.0 (see note 3)	1660-MW-5R 11/04/20 13.5 - 28.5 (see note 4)	1660-MW-8 11/05/20 16.5 - 31.5 (see note 5)
Semi-Volatile Organic Compounds (ug/L)						
1,1-Biphenyl	5.0				**110.0 (130.0)**	
2-Methylphenol	1.0 *					**4.2 J**
4-Methylphenol	1.0 *	**5.5 J**				0.74 J
Acenaphthene (PAH)	20.0 G				**67.0 (80 J)**	
Acenapthylene (PAH)	NS			0.81 J	390.0 (450.0)	170 J
Acetophenone	NS				6.5 J (ND)	5.3
Anthracene (PAH)	50.0 G				22 J (40 J)	10.0
Benzo[a]anthracene (PAH)	0.002 G				**ND (12 J)**	
Benzo[a]pyrene (PAH)	ND				ND (15 J)	
Benzo[b]fluoranthene (PAH)	0.002 G				**ND (8.9 J)**	
Benzo[g,h,i]perylene (PAH)	NS				ND (7.3 J)	
Benzo[k]fluoranthene (PAH)	0.002 G					
Bis(2-ethylhexyl) phthalate	5.0					
Carbazole	NS				9.5 J (10 J)	8.8
Chrysene (PAH)	0.002 G				**ND (10 J)**	
Dibenzo[a,h]anthracene (PAH)	NS					
Dibenzofuran	NS				19 J (24 J)	14.0
Dimethylphthalate	50.0 G					
Di-n-butylphthalate	50.0					
Fluoranthene (PAH)	50.0 G				9.5 J (27 J)	3.2 J
Fluorene (PAH)	50.0 G			0.46 J	**80.0 (100.0)**	**52.0**
Hexachlorobenzene	0.040					
Indeno[1,2,3-cd]pyrene (PAH)	0.002 G					
2-Methylnaphthalene (PAH)	NS			0.84 J	1,500 (1,700)	880 J
Naphthalene (PAH)	10.0 G		1.8 J	1.4 J	**8,700 (8,700)**	**5,700**
Pentachlorophenol	1.0 *					
Phenanthrene (PAH)	50.0 G			1.8 J	**100.0 (180.0)**	**58.0**
Phenol	1.0 *	**7.7**		**2.9 J**		**15.0**
Pyrene (PAH)	50.0 G			0.50 J	**18 J (52 J)**	5.3

Table 6-6
Summary of Overburden Groundwater Analytical Results from the 1660 & 1675 Niagara Street Wells
NYSDEC Remedial Investigation
31 Tonawanda Street Off-Site Area, Site No. C915299A
Buffalo, New York

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Well Number Sample Date Well Screen Interval (ft bgs) Screened Unit	NYSDEC Ground-water Standard ●	1675-MW-1 11/04/20 15.0 - 30.0 (see note 1)	1675-MW-2 11/04/20 3.5 - 13.5 (see note 2)	1660-MW-3R 11/04/20 14.0 - 29.0 (see note 3)	1660-MW-5R 11/04/20 13.5 - 28.5 (see note 4)	1660-MW-8 11/05/20 16.5 - 31.5 (see note 5)
Pesticides (ug/L)						
4,4-DDD	0.3				0.11 J (0.11 J)	0.021 J
4,4-DDE	0.2					
4,4-DDT	0.2	0.028 JB	0.029 JB	0.032 JB	0.15 JB (ND)	
Aldrin	ND				**0.12 J (0.11 J)**	**0.098**
alpha-BHC	0.01			**0.011 J**	**0.25 (0.23 J)**	**0.14**
alpha or cis-Chlordane	0.05					
beta-BHC	0.04					
delta-BHC	0.04	0.013 J	0.013 J	0.013 J	**0.067 J (0.065 J)**	0.022 J
Dieldrin	0.004					
Endosulfan I	NS					
Endosulfan II	NS					
Endosulfan sulfate	NS					
Endrin	ND					
Endrin Aldehyde	5.0					
Endrin Ketone	5.0				0.097 J (0.062 J)	
gamma-BHC (Lindane)	0.05			0.0093 JB	**0.077 JB (0.081 JB)**	0.015 JB
gamma or trans-Chlordane	0.05					
Heptachlor	0.04	0.011 J				
Heptachlor epoxide	0.03				**0.065 J (ND)**	
Methoxychlor	35.0				0.21 J (0.21 J)	0.045 J
PCBs (ug/L)						
Aroclor 1248						
Aroclor 1254						
Aroclor 1260						
Total PCBs	0.09					

Table 6-6
Summary of Overburden Groundwater Analytical Results from the 1660 & 1675 Niagara Street Wells
NYSDEC Remedial Investigation
31 Tonawanda Street Off-Site Area, Site No. C915299A
Buffalo, New York

Well Number Sample Date Well Screen Interval (ft bgs) Screened Unit	NYSDEC Ground-water Standard ●	1675-MW-1 11/04/20 15.0 - 30.0 (see note 1)	1675-MW-2 11/04/20 3.5 - 13.5 (see note 2)	1660-MW-3R 11/04/20 14.0 - 29.0 (see note 3)	1660-MW-5R 11/04/20 13.5 - 28.5 (see note 4)	1660-MW-8 11/05/20 16.5 - 31.5 (see note 5)
Metals (ug/L)						
Aluminum	NS	1,300		350.0	19,500 (20,500)	66 J
Antimony ■	3.0					
Arsenic ■	25.0					
Barium	1,000	200 ^	68 ^	180 ^	780 ^ (780 ^)	510 ^
Beryllium ■	3.0 G				0.79 J (0.75 J)	
Cadmium ■	5.0					
Calcium	NS	393,000	136,000	348,000	363,000 (365,000)	310,000
Chromium ■	50.0	1.8 J	6.2	3.0 J	27.0 (28.0)	
Cobalt	NS	0.76 J	1.4 J	0.90 J	11.0 (11.0)	
Copper ■	200.0		7.0 J	1.9 J	24.0 (24.0)	
Cyanide	200.0	NA	NA	NA	NA (NA)	NA
Iron	300.0	**18,000**	**870**	**12,600**	**31,900 (32,800)**	**4,300**
Lead ■	25.0	7.4 J	4.3 J	5.6 J	**36.0 (38.0)**	5.3 J
Magnesium	35,000 G	**185,000**	33,100	**125,000**	**116,000 (118,000)**	**82,400**
Manganese	300.0	**780.0**	**590.0**	**890.0**	**1,100 (1,200)**	**690.0**
Mercury ■	0.7					
Nickel ■	100.0		6.4 J	1.4 J	24.0 (25.0)	
Potassium	NS	4,300	8,300	6,700	12,400 (12,900)	7,300
Selenium ■	10.0					
Silver ■	50.0					
Sodium	20,000	**389,000**	**50,600**	**121,000**	**745,000 (744,000)**	**623,000**
Thallium	0.5 G					
Vanadium	NS	1.6 J			41.0 (44.0)	
Zinc ■	2,000 G	4.9 J	4.9 J	2.2 J	94.0 (98.0)	1.9 J

Notes:

● = NYSDEC Ambient Water Quality Standards and Guidance Values, June 1998, with addenda through 2004.
*** = Applies to sum of phenolic compounds.**
^ = Instrument related QC is outside acceptance limits.
B = Analyte was detected in the associated blank, as well as in the sample (organics); value is greater than or equal to the instrument detection limit, but less than the contract required detection limit (inorganics).

Notes (continued):

- D = Result obtained from an analysis at a secondary dilution factor.
- J = Analyte was positively identified at an estimated concentration.
- NA = Not analyzed.
- NS = No standard or guidance value available.
- ND = Not detected; contaminant was analyzed for but not detected at or above the laboratory detection limit.
- ug/L = micrograms per liter or parts per billion.
- Blanks = Contaminant was analyzed for but not detected at or above the laboratory detection limit.
- (39.0) = Results from a duplicate sample.
- Yellow shaded values exceed NYSDEC groundwater standards or guidance values.
- (1) = Silty clay; silty fine sand; sand & gravel.
- (2) = Fill; silty clay.
- (3) = Silty clay; silty fine sand; sand & gravel.
- (4) = Silty fine sand; sand & gravel.
- (5) = Silty fine sand; sand & gravel.

Table 6-7
Summary of Analytical Results for Drilling Water
NYSDEC Remedial Investigation
31 Tonawanda Street Off-Site Area, Site No. C915299A
Buffalo, New York

Sample Number Sample Type Sample Date	NYSDEC Groundwater Standard ●	DW-1 * Potable Water 09/17/20	
Volatile Organic Compounds (µg/L)			
1,1,1-Trichloroethane	5.0		
1,1,2-Trichloroethane	1.0		
1,1,2,2-Tetrachloroethane	5.0		
1,1-Dichloroethane	5.0		
1,1-Dichloroethene	5.0		
1,2-Dichloroethane	0.6		
cis-1,2-Dichloroethene	5.0		
trans-1,2-Dichloroethene	5.0		
1,4-Dioxane	1.0		
Acetone	50.0 G	4.4 J	
Benzene	1.0		
Bromodichloromethane	50.0 G	11.0	
Bromoform	50.0 G		
Carbon Disulfide	NS		
Chloroethane	5.0		
Chloroform	7.0	**31.0**	
Dibromochloromethane	50.0 G	4.8	
Ethylbenzene	5.0		
Isopropylbenzene	5.0		
Methyl ethyl ketone	50.0 G		
Methylcyclohexane	NS		
Methylene chloride	5.0		
n-Propylbenzene	5.0		
n-Butylbenzene	5.0		
p-Isopropyltoluene	5.0		
sec-Butylbenzene	5.0		
Tetrachloroethene	5.0		
Toluene	5.0		
Trichloroethene	5.0		
1,2,4-Trimethylbenzene	5.0		
1,3,5-Trimethylbenzene	5.0		

Notes:
● = NYSDEC Ambient Water Quality Standards and Guidance Values, June 1998, with addenda through 2004.
*** = Sample collected from a 55-gallon drum containing potable water.**
G = Guidance value.
J = Result estimated between the quantitation limit and half the quantitation limit.
NS = No standard or guidance value available.
ug/L = micrograms per liter or parts per billion.
Blanks = Contaminant analyzed for but not detected at or above the laboratory detection limit.
Yellow shaded values exceed the groundwater standards or guidance values.

Table 6-8
Summary of NAPL Analytical Results from Sites in the Study Area
NYSDEC Remedial Investigation
31 Tonawanda Street Off-Site Area, Site No. C915299A
Buffalo, New York

Sample Number Sample Type Site Name Sample Date	MW-7 NAPL 1660 Niag. 01/15/20	MW-5R NAPL 1660 Niag. 10/28/20	MW-5R NAPL 1660 Niag. 01/14/21	MW-8 NAPL 1660 Niag. 10/29/20	MW-8 NAPL 1660 Niag. 01/14/21	B8 NAPL Westwood 05/20/92	MWF2 NAPL Westwood 05/20/92	MW-100 NAPL Bike Path 10/29/20	MW-100 NAPL Bike Path 11/05/20	MW-100 NAPL Bike Path 01/14/21
Volatile Organic Compounds (mg/kg or ppm)										
1,1,1-Trichloroethane	440.0	H	200.0	H	92.0			H		
1,1,2,2-Tetrachloroethane		H		H				H		
1,1-Dichloroethane	77 J	H	26.0	H	21.0			H		
1,1-Dichloroethene		H	28.0	H	15 J			H		
Acetone		H		H *1				H		
Benzene	220.0	H	130.0	H	83.0	750.0	250 J	H	1,500	1,000
cis-1,2-Dichloroethene	5,800	H	2,500	H	1,700			H		
trans-1,2-Dichloroethene		H		H				H		
Ethylbenzene	1,800	0.39 H	1,000	H	900.0	6,600	1,400	H	6,500 H	6,400
Isopropylbenzene (cumene)	33 J	H	18 J	H	20.0	NA	NA	H	150.0	330.0
Methylene Chloride		H	11 JB	H	7.4 JB			H		21 JB
Styrene	400.0	H	260.0	H	140.0			H	360.0	
Toluene	470.0	0.12 H	290.0	0.032 JH	220.0		480 J	H	3,200	840.0
Tetrachloroethene		H		H				H		
Trichloroethene	890.0	H	510.0	H				H		
Vinyl chloride		H	49.0	H	39.0			H		
Xylene, Total	1,500	0.32 H	850.0	H	670.0	5,200	1,370 J	H	3,500	4,000
Total BTEX	**3,990 J**	**0.83 H**	**2,270**	**0.032 JH**	**1,873**	**12,550**	**3,500 J**	**0.0 H**	**14,700 H**	**12,240**
Total VOCs	**11,630 J**	**0.83 H**	**5,872 JB**	**0.032 JH**	**3,907 JB**	**12,550**	**3,500 J**	**0.0 H**	**15,210 H**	**12,591 JB**
Semivolatile Organic Compounds (mg/kg or ppm)										
2,4-Dinitrotoluene					530 J	NA	NA			
2-Methylnaphthalene (PAH)	32,000	46,000 H	47,000	1,700 H	52,000	27,000	34,000	310 JH	41,000	42,000
2-Methylphenol		H		H				H		
Acenaphthene (PAH)	2,900 J	4,300 H	4,300	200 JH	5,500	17,000	14,000	H	4,500	13,000
Acenapthylene (PAH)	8,200	15,000 H	14,000	600 JH	14,000	1,500 J	2,500 J	130 JH	14,000	6,800
Anthracene (PAH)	5,900 J	8,500 H	8,400	360 JH	9,600	7,900	7,300	H	7,700	8,400
Benzo[a]anthracene (PAH)	3,700 J	4,500 H	4,900	210 JH	5,400	4,100 J	4,200 J	H	3,900	4,500

Table 6-8
Summary of NAPL Analytical Results from Sites in the Study Area
NYSDEC Remedial Investigation
31 Tonawanda Street Off-Site Area, Site No. C915299A
Buffalo, New York

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Sample Number Sample Type Site Name Sample Date	MW-7 NAPL 1660 Niag. 01/15/20	MW-5R NAPL 1660 Niag. 10/28/20	MW-5R NAPL 1660 Niag. 01/14/21	MW-8 NAPL 1660 Niag. 10/29/20	MW-8 NAPL 1660 Niag. 01/14/21	B8 NAPL Westwood 05/20/92	MWF2 NAPL Westwood 05/20/92	MW-100 NAPL Bike Path 10/29/20	MW-100 NAPL Bike Path 11/05/20	MW-100 NAPL Bike Path 01/14/21
Semivolatile Organic Compounds (continued)										
Benzo[a]pyrene (PAH)	3,300 J	5,200 H	4,800	210 JH	5,500	3,400 J	3,400 J	H	4,500	4,900
Benzo[b]fluoranthene (PAH)	2,500 J	3,400 JH	3,000	120 JH	3,100	1,200 J	1,300 J	H	2,200 J	2,700
Benzo[g,h,i]perylene (PAH)	1,300 J	2,600 JH	2,100	120 JH*	2,300			H *	2,300 J*	2,000
Benzo[k]fluoranthene (PAH)		H	960	H	1,400	1,900 J	1,700 J	H	1,200 J	1,500
Biphenyl	4,000 J	5,500 H	6,300	200 JH	6,800	NA	NA	H	5,200	5,800
Bis(2-ethylhexyl)phthalate		H		H				H		
Carbazole		H	110 J	H	110 J	NA	NA	H		110 J
Chrysene (PAH)	2,900 J	3,500 JH	3,700	H	4,300	3,800 J	4,000 J	H	3,400 J	3,900
Dibenzo(a,h)anthracene (PAH)		H *	480 J	H *	550 J			H *		440 J
Dibenzofuran		H	1,600	H	1,600	970 J	1,000 J	H	1,400 J	1,300
Diethyl phthalate		H		H				H		
Fluoranthene (PAH)	6,000 J	9,300 H	8,200	380 JH	9,000	8,700	7,900	73 JH	8,100	7,800
Fluorene (PAH)	5,500 J	9,100 H	8,900	360 JH	9,900	8,100	8,600	75 JH	7,800	7,900
Indeno(1,2,3-cd)pyrene (PAH)		1,600 JH	1,400	H *	1,500			H *	1,500 J*	1,400
Naphthalene (PAH)	50,000	70,000 H	75,000	2,600 H	81,000	57,000	66,000	550 H	71,000	74,000
Phenanthrene (PAH)	22,000	30,000 H	30,000	1,300 H	34,000	25,000	25,000	280 JH	27,000	28,000
Phenol (total)		H		H				H		
Pyrene (PAH)	13,000	16,000 H	16,000	660 JH	18,000	14,000	13,000	130 JH	14,000	15,000
Total PAH	**159,200 J**	**229,000 JH**	**233,140 J**	**8,820 JH**	**257,050 J**	**180,600 J**	**192,900 J**	**1,548 JH**	**214,100 J**	**224,240 J**
Total SVOCs	**163,200 J**	**234,500 JH**	**241,150 J**	**9,020 JH**	**266,090 J**	**181,570 J**	**193,900 J**	**1,548 JH**	**220,700 J**	**231, 450 J**
Pesticides (mg/kg or ppm)										
4,4'-DDD	NA	H		H		NA	NA	H		
4,4'-DDE	"	H		H		"	"	H		
4,4'-DDT	"	1.1 JH		H		"	"	H	1.7 J	
Aldrin	"	H		H		"	"	H		
alpha-BHC	"	H		H		"	"	H		
alpha or cis-Chlordane	"	H		H		"	"	H		

Table 6-8
Summary of NAPL Analytical Results from Sites in the Study Area
NYSDEC Remedial Investigation
31 Tonawanda Street Off-Site Area, Site No. C915299A
Buffalo, New York

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Sample Number Sample Type Site Name Sample Date	MW-7 NAPL 1660 Niag. 01/15/20	MW-5R NAPL 1660 Niag. 10/28/20	MW-5R NAPL 1660 Niag. 01/14/21	MW-8 NAPL 1660 Niag. 10/29/20	MW-8 NAPL 1660 Niag. 01/14/21	B8 NAPL Westwood 05/20/92	MWF2 NAPL Westwood 05/20/92	MW-100 NAPL Bike Path 10/29/20	MW-100 NAPL Bike Path 11/05/20	MW-100 NAPL Bike Path 01/14/21
Pesticides (continued)										
beta-BHC	NA	H		H		NA	NA	H		
delta-BHC	"	H		0.089 JHB		"	"	H		
Endosulfan I	"	H		H		"	"	H		
Endosulfan II	"	H		H		"	"	H		
Endosulfan Sulfate	"	H		H		"	"	H		
Endrin	"	H		H		"	"	H		
Endrin Aldehyde	"	H		H		"	"	H		
Endrin Ketone	"	H		H		"	"	H		
gamma-BHC (Lindane)	"	H		H		"	"	H		
gamma or trans-Chlordane	"	0.80 JH		H		"	"	H		
Heptachlor	"	H		H		"	"	H		
Heptachlor epoxide	"	H		H		"	"	H		
Methoxychlor	"	3.4 JH		H		"	"	H	3.7 J	
PCBs (mg/kg or ppm)										
Aroclor 1242						NA	NA			
Aroclor 1248						"	"			
Aroclor 1254						"	"			
Aroclor 1260						"	"			
Aroclor 1262						"	"			
Aroclor 1268						"	"			
Total PCBs						"	"			
Metals (mg/kg or ppm)										
Aluminum	NA	39.3		5.9 J		NA	NA		23.9	
Antimony ■	"					"	"			
Arsenic ■	"	1.5 J				"	"		0.93 J	
Barium	"	0.50 J ^		0.28 J ^		"	"	0.28 J ^	0.58 ^	
Beryllium ■	"					"	"			

Table 6-8
Summary of NAPL Analytical Results from Sites in the Study Area
NYSDEC Remedial Investigation
31 Tonawanda Street Off-Site Area, Site No. C915299A
Buffalo, New York

Sample Number Sample Type Site Name Sample Date	MW-7 NAPL 1660 Niag. 01/15/20	MW-5R NAPL 1660 Niag. 10/28/20	MW-5R NAPL 1660 Niag. 01/14/21	MW-8 NAPL 1660 Niag. 10/29/20	MW-8 NAPL 1660 Niag. 01/14/21	B8 NAPL Westwood 05/20/92	MWF2 NAPL Westwood 05/20/92	MW-100 NAPL Bike Path 10/29/20	MW-100 NAPL Bike Path 11/05/20	MW-100 NAPL Bike Path 01/14/21
Metals (continued)										
Cadmium ■	NA					NA	NA			
Calcium	"	267 B		277 B		"	"	169 B	105 B	
Chromium ■	"	0.26 J				"	"		0.25 J	
Cobalt	"					"	"			
Copper ■	"	0.82 J				"	"		0.52 J	
Iron	"	101.0				"	"		39.7	
Lead ■	"	0.39 J				"	"		0.64 J	
Magnesium	"	102.0		80.1		"	"	166.0	34.4	
Manganese	"	1.6 B		0.63 B		"	"	0.20 B	0.8	
Mercury ■	"					"	"			
Nickel	"					"	"			
Potassium	"					"	"			
Selenium ■	"					"	"			
Silver ■	"					"	"			
Sodium	"			380.0		"	"	174.0		
Strontium	"	0.64 ^		4.9 ^		"	"	8.4 ^	NA	
Thallium	"					"	"			
Tin	"	0.82 J				"	"		NA	
Titanium	"	3.6		0.12 J		"	"		NA	
Vanadium	"	0.7				"	"		0.5	
Zinc ■	"	0.89 J				"	"		0.89 J	
Miscellaneous Compounds										
Viscosity (centipoise)	NA	NA		NA		68.75	44.35	NA	NA	
Specific Gravity (g/mL)	"	0.9887		1.0013		NA	NA	1.0017	1.0275	
Density (g/cc)	"	NA		NA		1.031	1.054	NA	NA	

Notes:

■ = Environmental Protection Agency priority pollutant metal.

mg/kg = milligrams per kilogram or parts per million.

* = LCS or LCSD is outside acceptance limits.

B = Analyte detected in the associated blank, as well as in the sample (organics); value is greater than or equal to the instrument detection limit, but less than the contract required detection limit (inorganics).

H = Sample was prepped or analyzed beyond the specified holding time.

J = Analyte is positively identified with concentration qualified as estimated value.

^ = Instrument related QC is outside acceptance limits.

NA = Not analyzed.

PAH = Polycyclic aromatic hydrocarbon.

Blanks = compound not detected.

Samples from Westwood for density and viscosity analysis were collected on May 13, 1993.

Density and viscosity samples from Westwood were analyzed at 25°C.

Table 6-9A
Summary of the 2015 Sediment Analytical Results from the Scajaquada Creek Slip
NYSDEC Remedial Investigation
31 Tonawanda Street Off-Site Area, Site No. C915299A
Buffalo, New York

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Sample Number Sample Type Depth Interval (ft) Sample Date	Sediment Guidance Values Class A *	Sediment Guidance Values Class B **	Sediment Guidance Values Class C +	Sediment Guidance Values for PAHs ++	S-1 Sediment 3.6' - 10.0' 01/21/15	S-2 Sediment 3.6' - 10.0' 01/21/15	S-3 Sediment 3.0' - 7.0' 01/21/15	S-4 Sediment 3.0' - 7.0' 01/21/15	S-5 Sediment 3.0' - 8.0' 01/21/15	S-6 Sediment 3.0' - 8.0' 01/21/15
Volatile Organic Compounds (µg/kg)										
1,1,2,2-Tetrachloroethane	< 2,800	2,800 – 5,400	> 5,400	NA						1,400
1,2,4-Trimethylbenzene	< 3,400	3,400 – 30,000	> 30,000	NA	**8,300**	**150,000**		590.0	210.0	370.0
1,2-Dibromo-3-Chloropropane	NS	NS	NS	NA						
1,3,5-Trimethylbenzene	NS	NS	NS	NA	1,900	43,000		130 J	71 J	100 J
4-Isopropyltoluene	NS	NS	NS	NA	370 J	13,000				
Benzene	< 530	530 – 1,900	> 1,900	NA	**2,300**	**9,400**		51 J		
Ethylbenzene	< 430	430 – 3,700	> 3,700	NA	**1,500**	**240,000**		63 J		
Isopropylbenzene (cumene)	< 210	210 – 1,800	> 1,800	NA	**3,100**	**32,000**		180.0	44 J	120 J
Methyl acetate	NS	NS	NS	NA				180.0		
Methylcyclohexane	NS	NS	NS	NA				200.0		110 J
Methylene Chloride	NS	NS	NS	68 ●		**1,300 J**				
Naphthalene (PAH)	NS	NS	NS	7,700	5,700	**3,100,000**	160 J	550.0	240.0	130 J
n-Butylbenzene	NS	NS	NS	NA	1,400	24,000		260.0	81 J	96 J
N-Propylbenzene	NS	NS	NS	NA	1,700	13,000		73 J		
sec-Butylbenzene	NS	NS	NS	NA						
Toluene	< 930	930 – 4,500	> 4,500	NA		**1,600 J**				
Xylene, Total	< 590	590 – 5,200	> 5,200	NA	**1,100 J**	**110,000**			41 J	44 J
Total VOCs	**NS**	**NS**	**NS**	**NA**	**27,370 J**	**3,737,300 J**	**160 J**	**2,277 J**	**687 J**	**2,370 J**
Semivolatile Organic Compounds (µg/kg)										
2-Methylnaphthalene (PAH)	NS	NS	NS	NA	220,000	5,000,000			29,000	
2-Methylphenol	NS	NS	NS	NA						
2,4-Dimethylphenol	NS	NS	NS	3,600 ●						
4-Nitrophenol	NS	NS	NS	NA						
Acenaphthene (PAH)	NS	NS	NS	9,820	**110,000**	**2,200,000**		**10,000 J**	**60,000**	
Acenapthylene (PAH)	NS	NS	NS	9,040	5,400 J	**110,000**		4,200 J	6,800 J	
Acetophenone	NS	NS	NS	NA		9,500 J				
Anthracene (PAH)	NS	NS	NS	11,880	**47,000**	**690,000**		**13,000 J**	**35,000**	

Table 6-9A
Summary of the 2015 Sediment Analytical Results from the Scajaquada Creek Slip
NYSDEC Remedial Investigation
31 Tonawanda Street Off-Site Area, Site No. C915299A
Buffalo, New York

New York State of Opportunity | Department of Environmental Conservation

Sample Number Sample Type Depth Interval (ft) Sample Date	Sediment Guidance Values Class A *	Sediment Guidance Values Class B **	Sediment Guidance Values Class C +	Sediment Guidance Values for PAHs ++	S-1 Sediment 3.6' - 10.0' 01/21/15	S-2 Sediment 3.6' - 10.0' 01/21/15	S-3 Sediment 3.0' - 7.0' 01/21/15	S-4 Sediment 3.0' - 7.0' 01/21/15	S-5 Sediment 3.0' - 8.0' 01/21/15	S-6 Sediment 3.0' - 8.0' 01/21/15
Semivolatile Organic Compounds (continued)										
Benzo[a]anthracene (PAH)	NS	NS	NS	16,820	**24,000**	**420,000**	10,000 J	15,000	**27,000**	7,500 J
Benzo[a]pyrene (PAH)	NS	NS	NS	19,280	**21,000**	**360,000**	11,000 J	16,000	**26,000**	7,900 J
Benzo[b]fluoranthene (PAH)	NS	NS	NS	19,580	13,000 J	**230,000**	9,800 J	12,000 J	**22,000**	7,400 J
Benzo[g,h,i]perylene (PAH)	NS	NS	NS	21,900	7,800 J	**89,000**	4,400 J	6,300 J	9,200 J	3,000 J
Benzo[k]fluoranthene (PAH)	NS	NS	NS	19,600	7,000 J	**120,000**	4,600 J	6,500 J	11,000 J	
Biphenyl	NS	NS	NS	NA	26,000	590,000			6,100 J	
Bis(2-ethylhexyl)phthalate	< 360,000	> 360,000	NS	NA						
Carbazole	NS	NS	NS	NA		8,000 J				
Chrysene (PAH)	NS	NS	NS	16,860	**23,000**	**330,000**	10,000 J	15,000	**25,000**	7,600 J
Dibenzo(a,h)anthracene (PAH)	NS	NS	NS	22,440						
Dibenzofuran	NS	NS	NS	NA	6,400 J	120,000			5,000 J	
Fluoranthene (PAH)	NS	NS	NS	14,160	**47,000**	**600,000**	**17,000 J**	**24,000**	**46,000**	11,000 J
Fluorene (PAH)	NS	NS	NS	10,780	**40,000**	**640,000**		6,800 J	**26,000**	
Indeno(1,2,3-cd)pyrene (PAH)	NS	NS	NS	22,300	5,300 J	**68,000**	3,900 J	4,500 J	6,600 J	
Naphthalene (PAH)	NS	NS	NS	7,700	**96,000**	**6,400,000**			**15,000 J**	
Phenanthrene (PAH)	NS	NS	NS	11,940	**160,000**	**3,400,000**	**12,000 J**	**38,000**	**110,000**	11,000 J
Pyrene (PAH)	NS	NS	NS	13,960	**100,000**	**1,900,000**	**27,000**	**45,000**	**90,000**	**21,000 J**
Total PAH	**< 4,000**	**4,000 – 35,000**	**> 35,000**	**NS**	**926,500 J**	**22,557,000 J**	**109,700 J**	**216,300 J**	**544,600 J**	**76,400 J**
Total SVOCs	**NS**	**NS**	**NS**	**NS**	**958,900 J**	**23,284,500 J**	**109,700 J**	**216,300 J**	**555,700 J**	**76,400 J**
Pesticides (µg/kg)										
Aldrin	NS	NS	NS	NA	NA	NA	NA	NA	NA	NA
alpha-BHC	NS	NS	NS	0.21 ●	"	"	"	"	"	"
beta-BHC	NS	NS	NS	0.84 ●	"	"	"	"	"	"
delta-BHC	NS	NS	NS	0.81 ●	"	"	"	"	"	"
gamma-BHC (Lindane)	< 47	47 - 78	> 78	NA	"	"	"	"	"	"
alpha-Chlordane	< 68	68 - 38,000	> 38,000	NA	"	"	"	"	"	"
gamma-Chlordane	< 68	68 - 38,000	> 38,000	NA	"	"	"	"	"	"

Table 6-9A
Summary of the 2015 Sediment Analytical Results from the Scajaquada Creek Slip
NYSDEC Remedial Investigation
31 Tonawanda Street Off-Site Area, Site No. C915299A
Buffalo, New York

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Sample Number Sample Type Depth Interval (ft) Sample Date	Sediment Guidance Values Class A *	Sediment Guidance Values Class B **	Sediment Guidance Values Class C +	Sediment Guidance Values for PAHs ++	S-1 Sediment 3.6' - 10.0' 01/21/15	S-2 Sediment 3.6' - 10.0' 01/21/15	S-3 Sediment 3.0' - 7.0' 01/21/15	S-4 Sediment 3.0' - 7.0' 01/21/15	S-5 Sediment 3.0' - 8.0' 01/21/15	S-6 Sediment 3.0' - 8.0' 01/21/15
Pesticides (continued)										
4,4'-DDD	NS	NS	NS	1.4 ●	NA	NA	NA	NA	NA	NA
4,4'-DDE	NS	NS	NS	0.62 ●	"	"	"	"	"	"
4,4'-DDT	< 44	44 - 48,000	> 48,000	NA	"	"	"	"	"	"
Dieldrin	< 180	180 - 780	> 780	NA	"	"	"	"	"	"
Endosulfan I	< 1	1 - 20	> 20	NA	"	"	"	"	"	"
Endosulfan II	NS	NS	NS	NA	"	"	"	"	"	"
Endosulfan Sulfate	NS	NS	NS	NA	"	"	"	"	"	"
Endrin	< 90	90 - 220	> 220	NA	"	"	"	"	"	"
Endrin Ketone	NS	NS	NS	NA	"	"	"	"	"	"
Heptachlor	< 75	75 - 10,000	> 10,000	NA	"	"	"	"	"	"
Heptachlor Epoxide	< 15	15 - 2,100	> 2,100	NA	"	"	"	"	"	"
PCBs (µg/kg)										
Aroclor 1242					2,000	NA	NA	NA	NA	8,400
Aroclor 1248						"	"	"	"	
Aroclor 1254						"	"	"	"	
Aroclor 1260					170 J	"	"	"	"	610.0
Total PCBs	< 100	100 - 1,000	> 1,000	NA	**2,170 J**	NA	NA	NA	NA	**9,010**
Metals (mg/kg or ppm)										
Aluminum	NS	NS	NS	NA	NA	NA	NA	NA	NA	NA
Antimony ■	NS	NS	NS	NA	"	"	"	"	"	"
Arsenic ■	< 10	10 - 33	> 33	NA	"	"	"	"	"	"
Barium	NS	NS	NS	NA	"	"	"	"	"	"
Beryllium ■	NS	NS	NS	NA	"	"	"	"	"	"
Cadmium ■	< 1	1 - 5	> 5	NA	"	"	"	"	"	"
Calcium	NS	NS	NS	NA	"	"	"	"	"	"
Chromium ■	< 43	43 - 110	> 110	NA	"	"	"	"	"	"
Cobalt	NS	NS	NS	NA	"	"	"	"	"	"

Table 6-9A
Summary of the 2015 Sediment Analytical Results from the Scajaquada Creek Slip
NYSDEC Remedial Investigation
31 Tonawanda Street Off-Site Area, Site No. C915299A
Buffalo, New York

Sample Number Sample Type Depth Interval (ft) Sample Date	Sediment Guidance Values Class A *	Sediment Guidance Values Class B **	Sediment Guidance Values Class C +	Sediment Guidance Values for PAHs ++	S-1 Sediment 3.6' - 10.0' 01/21/15	S-2 Sediment 3.6' - 10.0' 01/21/15	S-3 Sediment 3.0' - 7.0' 01/21/15	S-4 Sediment 3.0' - 7.0' 01/21/15	S-5 Sediment 3.0' - 8.0' 01/21/15	S-6 Sediment 3.0' - 8.0' 01/21/15
Metals (continued)										
Copper ■	< 32	32 - 150	> 150	NA	NA	NA	NA	NA	NA	NA
Iron	NS	NS	NS	NA	"	"	"	"	"	"
Lead ■	< 36	36 - 130	> 130	NA	"	"	"	"	"	"
Magnesium	NS	NS	NS	NA	"	"	"	"	"	"
Manganese	NS	NS	NS	NA	"	"	"	"	"	"
Mercury ■	< 0.2	0.2 - 1	> 1	NA	"	"	"	"	"	"
Nickel	< 23	23 - 49	> 49	NA	"	"	"	"	"	"
Potassium	NS	NS	NS	NA	"	"	"	"	"	"
Selenium ■	NS	NS	NS	NA	"	"	"	"	"	"
Silver ■	< 1	1 - 2.2	> 2.2	NA	"	"	"	"	"	"
Sodium	NS	NS	NS	NA	"	"	"	"	"	"
Thallium	NS	NS	NS	NA	"	"	"	"	"	"
Vanadium	NS	NS	NS	NA	"	"	"	"	"	"
Zinc ■	< 120	120 - 460	> 460	NA	"	"	"	"	"	"
Miscellaneous Compounds										
Motor Oil (mg/kg)	NS	NS	NS	NA	6,800	NA	NA	NA	NA	3,900
Fuel Oil #6 (mg/kg)	NS	NS	NS	NA	10,000	"	"	"	"	4,600
Total Organic Carbon (%)	NS	NS	NS	NA	NA	"	"	"	"	NA

Notes:

* = Sediment is considered to present a low risk to aquatic life.
** = Sediment is considered to be moderately contaminated.
+ = Sediment is considered highly contaminated and likely to present a high risk to aquatic life.
++ = PAH sediment guidance value at 2% TOC.
● = Sediment criteria for the protection of human health bioaccumulation at 2% TOC. Used when no other guidance value was available.
■ = Environmental Protection Agency priority pollutant metal.
mg/kg = milligrams per kilogram or parts per million.
ug/kg = micrograms per kilogram or parts per billion.
J = Analyte is positively identified with concentration qualified as estimated value.
NA = Not applicable (for standards) or not analyzed (for results).
NS = No standard or guidance value available.

Notes (continued):

PAH = Polycyclic aromatic hydrocarbon.
Blanks = compound not detected.
Yellow shaded results exceed the NYSDEC Class B sediment guidance values.
Orange shaded results exceed the NYSDEC Class C sediment guidance values.
Pink shaded results exceed the PAH sediment guidance values.
Gray shaded results exceed the human health bioaccumulation sediment guidance values.

Table 6-9B
Summary of the 2015 Sediment Analytical Results from the Scajaquada Creek Slip
NYSDEC Remedial Investigation
31 Tonawanda Street Off-Site Area, Site No. C915299A
Buffalo, New York

Sample Number Sample Type Depth Interval (ft) Sample Date	Sediment Guidance Values Class A *	Sediment Guidance Values Class B **	Sediment Guidance Values Class C +	Sediment Guidance Values for PAHs ++	S-7 Sediment 2.5' - 6.0' 01/21/15	S-8 Sediment 2.5' - 6.0' 01/21/15	S-9 Sediment 2.0' - 6.0' 01/21/15	S-10 Sediment 2.5' - 5.0' 01/21/15		
Volatile Organic Compounds (µg/kg)										
1,1,2,2-Tetrachloroethane	< 2,800	2,800 – 5,400	> 5,400	NA						
1,2,4-Trimethylbenzene	< 3,400	3,400 – 30,000	> 30,000	NA	**8,900**	**4,200**	690.0	74 J		
1,2-Dibromo-3-Chloropropane	NS	NS	NS	NA	670.0					
1,3,5-Trimethylbenzene	NS	NS	NS	NA	2,800	980 J	200.0			
4-Isopropyltoluene	NS	NS	NS	NA	910.0					
Benzene	< 530	530 – 1,900	> 1,900	NA	390 J		97 J			
Ethylbenzene	< 430	430 – 3,700	> 3,700	NA	**1,800**	**7,200**	61 J	75 J		
Isopropylbenzene (cumene)	< 210	210 – 1,800	> 1,800	NA	**1,700**	**970 J**	210.0	41 J		
Methyl acetate	NS	NS	NS	NA			150 J	210.0		
Methylcyclohexane	NS	NS	NS	NA	280 J		96 J	100 J		
Methylene Chloride	NS	NS	NS	68 ●						
Naphthalene (PAH)	NS	NS	NS	7,700	**26,000**	**59,000**	1,100	360.0		
n-Butylbenzene	NS	NS	NS	NA	1,600	690 J	190.0	110 J		
N-Propylbenzene	NS	NS	NS	NA	710.0	920 J	89 J			
sec-Butylbenzene	NS	NS	NS	NA	160 J		68 J			
Toluene	< 930	930 – 4,500	> 4,500	NA	110 J					
Xylene, Total	< 590	590 – 5,200	> 5,200	NA	**3,700**	**1,500 J**	110 J	210 J		
Total VOCs	**NS**	**NS**	**NS**	**NA**	**49,730 J**	**75,460 J**	**3,061 J**	**1,180 J**		
Semivolatile Organic Compounds (µg/kg)										
2-Methylnaphthalene (PAH)	NS	NS	NS	NA						
2-Methylphenol	NS	NS	NS	NA						
2,4-Dimethylphenol	NS	NS	NS	3,600 ●						
4-Nitrophenol	NS	NS	NS	NA						
Acenaphthene (PAH)	NS	NS	NS	9,820	7,100 J	9,400 J		5,500 J		
Acenapthylene (PAH)	NS	NS	NS	9,040						
Acetophenone	NS	NS	NS	NA						
Anthracene (PAH)	NS	NS	NS	11,880		9,800 J				

Table 6-9B
Summary of the 2015 Sediment Analytical Results from the Scajaquada Creek Slip
NYSDEC Remedial Investigation
31 Tonawanda Street Off-Site Area, Site No. C915299A
Buffalo, New York

Sample Number Sample Type Depth Interval (ft) Sample Date	Sediment Guidance Values Class A *	Sediment Guidance Values Class B **	Sediment Guidance Values Class C +	Sediment Guidance Values for PAHs ++	S-7 Sediment 2.5' - 6.0' 01/21/15	S-8 Sediment 2.5' - 6.0' 01/21/15	S-9 Sediment 2.0' - 6.0' 01/21/15	S-10 Sediment 2.5' - 5.0' 01/21/15		
Semivolatile Organic Compounds (continued)										
Benzo[a]anthracene (PAH)	NS	NS	NS	16,820	16,000 J	10,000 J	9,600 J	13,000 J		
Benzo[a]pyrene (PAH)	NS	NS	NS	19,280	16,000 J	9,100 J	8,000 J	12,000 J		
Benzo[b]fluoranthene (PAH)	NS	NS	NS	19,580	13,000 J	9,400 J		9,900 J		
Benzo[g,h,i]perylene (PAH)	NS	NS	NS	21,900	6,700 J	4,000 J		5,100 J		
Benzo[k]fluoranthene (PAH)	NS	NS	NS	19,600	5,800 J			5,800 J		
Biphenyl	NS	NS	NS	NA						
Bis(2-ethylhexyl)phthalate	< 360,000	> 360,000	NS	NA						
Carbazole	NS	NS	NS	NA						
Chrysene (PAH)	NS	NS	NS	16,860	15,000 J	11,000 J		12,000 J		
Dibenzo(a,h)anthracene (PAH)	NS	NS	NS	22,440						
Dibenzofuran	NS	NS	NS	NA						
Fluoranthene (PAH)	NS	NS	NS	14,160	**20,000 J**	**19,000 J**	12,000 J	**19,000 J**		
Fluorene (PAH)	NS	NS	NS	10,780		8,000 J				
Indeno(1,2,3-cd)pyrene (PAH)	NS	NS	NS	22,300	5,700 J					
Naphthalene (PAH)	NS	NS	NS	7,700						
Phenanthrene (PAH)	NS	NS	NS	11,940	**25,000 J**	**33,000 J**	**20,000 J**	**22,000 J**		
Pyrene (PAH)	NS	NS	NS	13,960	**42,000 J**	**34,000 J**	**24,000 J**	**33,000 J**		
Total PAH	**< 4,000**	**4,000 – 35,000**	**> 35,000**	**NS**	**172,300 J**	**156,700 J**	**73,600 J**	**137,300 J**		
Total SVOCs	**NS**	**NS**	**NS**	**NS**	**172,300 J**	**156,700 J**	**73,600 J**	**137,300 J**		
Pesticides (µg/kg)										
Aldrin	NS	NS	NS	NA	NA	NA	NA	NA		
alpha-BHC	NS	NS	NS	0.21 ●	"	"	"	"		
beta-BHC	NS	NS	NS	0.84 ●	"	"	"	"		
delta-BHC	NS	NS	NS	0.81 ●	"	"	"	"		
gamma-BHC (Lindane)	< 47	47 - 78	> 78	NA	"	"	"	"		
alpha-Chlordane	< 68	68 - 38,000	> 38,000	NA	"	"	"	"		
gamma-Chlordane	< 68	68 - 38,000	> 38,000	NA	"	"	"	"		

Table 6-9B
Summary of the 2015 Sediment Analytical Results from the Scajaquada Creek Slip
NYSDEC Remedial Investigation
31 Tonawanda Street Off-Site Area, Site No. C915299A
Buffalo, New York

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Sample Number Sample Type Depth Interval (ft) Sample Date	Sediment Guidance Values Class A *	Sediment Guidance Values Class B **	Sediment Guidance Values Class C +	Sediment Guidance Values for PAHs ++	S-7 Sediment 2.5' - 6.0' 01/21/15	S-8 Sediment 2.5' - 6.0' 01/21/15	S-9 Sediment 2.0' - 6.0' 01/21/15	S-10 Sediment 2.5' - 5.0' 01/21/15		
Pesticides (continued)										
4,4'-DDD	NS	NS	NS	1.4 ●	NA	NA	NA	NA		
4,4'-DDE	NS	NS	NS	0.62 ●	"	"	"	"		
4,4'-DDT	< 44	44 - 48,000	> 48,000	NA	"	"	"	"		
Dieldrin	< 180	180 - 780	> 780	NA	"	"	"	"		
Endosulfan I	< 1	1 - 20	> 20	NA	"	"	"	"		
Endosulfan II	NS	NS	NS	NA	"	"	"	"		
Endosulfan Sulfate	NS	NS	NS	NA	"	"	"	"		
Endrin	< 90	90 - 220	> 220	NA	"	"	"	"		
Endrin Ketone	NS	NS	NS	NA	"	"	"	"		
Heptachlor	< 75	75 - 10,000	> 10,000	NA	"	"	"	"		
Heptachlor Epoxide	< 15	15 - 2,100	> 2,100	NA	"	"	"	"		
PCBs (µg/kg)										
Aroclor 1242					NA	NA	NA	1,300		
Aroclor 1248					"	"	"			
Aroclor 1254					"	"	"			
Aroclor 1260					"	"	"	1,700		
Total PCBs	< 100	100 - 1,000	> 1,000	NA	NA	NA	NA	**3,000**		
Metals (mg/kg or ppm)										
Aluminum	NS	NS	NS	NA	NA	NA	NA	NA		
Antimony ■	NS	NS	NS	NA	"	"	"	"		
Arsenic ■	< 10	10 - 33	> 33	NA	"	"	"	"		
Barium	NS	NS	NS	NA	"	"	"	"		
Beryllium ■	NS	NS	NS	NA	"	"	"	"		
Cadmium ■	< 1	1 - 5	> 5	NA	"	"	"	"		
Calcium	NS	NS	NS	NA	"	"	"	"		
Chromium ■	< 43	43 - 110	> 110	NA	"	"	"	"		
Cobalt	NS	NS	NS	NA	"	"	"	"		

Table 6-9B
Summary of the 2015 Sediment Analytical Results from the Scajaquada Creek Slip
NYSDEC Remedial Investigation
31 Tonawanda Street Off-Site Area, Site No. C915299A
Buffalo, New York

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Sample Number Sample Type Depth Interval (ft) Sample Date	Sediment Guidance Values Class A *	Sediment Guidance Values Class B **	Sediment Guidance Values Class C +	Sediment Guidance Values for PAHs ++	S-7 Sediment 2.5' - 6.0' 01/21/15	S-8 Sediment 2.5' - 6.0' 01/21/15	S-9 Sediment 2.0' - 6.0' 01/21/15	S-10 Sediment 2.5' - 5.0' 01/21/15		
Metals (continued)										
Copper ■	< 32	32 - 150	> 150	NA	NA	NA	NA	NA		
Iron	NS	NS	NS	NA	"	"	"	"		
Lead ■	< 36	36 - 130	> 130	NA	"	"	"	"		
Magnesium	NS	NS	NS	NA	"	"	"	"		
Manganese	NS	NS	NS	NA	"	"	"	"		
Mercury ■	< 0.2	0.2 - 1	> 1	NA	"	"	"	"		
Nickel	< 23	23 - 49	> 49	NA	"	"	"	"		
Potassium	NS	NS	NS	NA	"	"	"	"		
Selenium ■	NS	NS	NS	NA	"	"	"	"		
Silver ■	< 1	1 - 2.2	> 2.2	NA	"	"	"	"		
Sodium	NS	NS	NS	NA	"	"	"	"		
Thallium	NS	NS	NS	NA	"	"	"	"		
Vanadium	NS	NS	NS	NA	"	"	"	"		
Zinc ■	< 120	120 - 460	> 460	NA	"	"	"	"		
Miscellaneous Compounds										
Motor Oil (mg/kg)	NS	NS	NS	NA	NA	NA	NA	4,800		
Fuel Oil #6 (mg/kg)	NS	NS	NS	NA	"	"	"	5,300		
Total Organic Carbon (%)	NS	NS	NS	NA	"	"	"	NA		

Notes:

*** = Sediment is considered to present a low risk to aquatic life.**
**** = Sediment is considered to be moderately contaminated.**
+ = Sediment is considered highly contaminated and likely to present a high risk to aquatic life.
++ = PAH sediment guidance value at 2% TOC.
● = Sediment criteria for the protection of human health bioaccumulation at 2% TOC. Used when no other guidance value is available.
■ = Environmental Protection Agency priority pollutant metal.
mg/kg = milligrams per kilogram or parts per million.
ug/kg = micrograms per kilogram or parts per billion.
J = Analyte is positively identified with concentration qualified as estimated value.
NA = Not applicable (for standards) or not analyzed (for results).
NS = No standard or guidance value available.

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Notes (continued):

PAH = Polycyclic aromatic hydrocarbon.
Blanks = compound not detected.
Yellow shaded results exceed the NYSDEC Class B sediment guidance values.
Orange shaded results exceed the NYSDEC Class C sediment guidance values.
Pink shaded results exceed the PAH sediment guidance values.
Gray shaded results exceed the human health bioaccumulation sediment guidance values.

Table 6-10A
Summary of the 2017 Sediment Analytical Results from the Scajaquada Creek Slip
NYSDEC Remedial Investigation
31 Tonawanda Street Off-Site Area, Site No. C915299A
Buffalo, New York

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Sample Number Sample Type Depth Interval (ft) Sample Date	Sediment Guidance Values Class A *	Sediment Guidance Values Class B **	Sediment Guidance Values Class C +	Sediment Guidance Values for PAHs ++	SCJ-01-01-38 Sediment 0.0' - 3.2' 03/28/17	SCJ-01-02-48 Sediment 3.2' - 4.0' 03/28/17	SCJ-02-01-27 Sediment 0.0' - 2.25' 03/28/17	SCJ-03-01-24 Sediment 0.0' - 2.0' 03/29/17	SCJ-03-01-30 Sediment 0.0' - 2.5' 03/29/17
Volatile Organic Compounds (µg/kg)									
1,1,2,2-Tetrachloroethane	< 2,800	2,800 – 5,400	> 5,400	NA	NA	NA			
1,2-Dibromo-3-Chloropropane	NS	NS	NS	NA	"	"			
Acetone	NS	NS	NS	NA	"	"			
Benzene	< 530	530 – 1,900	> 1,900	NA	"	"	**2,000**	**5,700**	**4,200**
Ethylbenzene	< 430	430 – 3,700	> 3,700	NA	"	"	**5,700**	**76,000**	**26,000**
Isopropylbenzene (cumene)	< 210	210 – 1,800	> 1,800	NA	"	"	**910.0**	**5,000 J**	**3,200**
Methyl acetate	NS	NS	NS	NA	"	"			
Methylcyclohexane	NS	NS	NS	NA	"	"			
Methylene Chloride	NS	NS	NS	68 ●	"	"		**2,200 JB**	
Toluene	< 930	930 – 4,500	> 4,500	NA	"	"			
Xylene, Total	< 590	590 – 5,200	> 5,200	NA	"	"	**4,400**	**24,000**	**13,000**
Total VOCs	**NS**	**NS**	**NS**	**NA**	**NA**	**NA**	**13,010**	**112,900 J**	**46,400**
Semivolatile Organic Compounds (µg/kg)									
2-Methylnaphthalene (PAH)	NS	NS	NS	NA	140,000	51,000	210,000	540,000	1,100,000
2-Methylphenol	NS	NS	NS	NA					
2,4-Dimethylphenol	NS	NS	NS	3,600 ●					
4-Nitrophenol	NS	NS	NS	NA					
Acenaphthene (PAH)	NS	NS	NS	9,820	**91,000**	**29,000**	**150,000**	**310,000**	**530,000**
Acenapthylene (PAH)	NS	NS	NS	9,040	**13,000**	1,900	**20,000**	**29,000**	**42,000**
Acetophenone	NS	NS	NS	NA					
Anthracene (PAH)	NS	NS	NS	11,880	**69,000**	**13,000**	**100,000**	**190,000**	**280,000**
Benzo[a]anthracene (PAH)	NS	NS	NS	16,820	**47,000**	9,200	**68,000**	**120,000**	**160,000**
Benzo[a]pyrene (PAH)	NS	NS	NS	19,280	**45,000**	6,700	**64,000**	**110,000**	**130,000**
Benzo[b]fluoranthene (PAH)	NS	NS	NS	19,580	**34,000**	6,500	**42,000**	**74,000**	**77,000**
Benzo[g,h,i]perylene (PAH)	NS	NS	NS	21,900	**25,000**	4,300	**33,000**	**57,000**	**68,000**
Benzo[k]fluoranthene (PAH)	NS	NS	NS	19,600	8,600	2,200	14,000	19,000	**45,000**
Biphenyl	NS	NS	NS	NA	19,000	4,100 J	30,000	87,000	150,000

Table 6-10A
Summary of the 2017 Sediment Analytical Results from the Scajaquada Creek Slip
NYSDEC Remedial Investigation
31 Tonawanda Street Off-Site Area, Site No. C915299A
Buffalo, New York

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Sample Number Sample Type Depth Interval (ft) Sample Date	Sediment Guidance Values Class A *	Sediment Guidance Values Class B **	Sediment Guidance Values Class C +	Sediment Guidance Values for PAHs ++	SCJ-01-01-38 Sediment 0.0' - 3.2' 03/28/17	SCJ-01-02-48 Sediment 3.2' - 4.0' 03/28/17	SCJ-02-01-27 Sediment 0.0' - 2.25' 03/28/17	SCJ-03-01-24 Sediment 0.0' - 2.0' 03/29/17	SCJ-03-01-30 Sediment 0.0' - 2.5' 03/29/17
Semivolatile Organic Compounds (continued)									
Bis(2-ethylhexyl)phthalate	< 360,000	> 360,000	NS	NA	12,000 J		7,900 J		
Carbazole	NS	NS	NS	NA					
Chrysene (PAH)	NS	NS	NS	16,860	**41,000**	9,300	**60,000**	**100,000**	**130,000**
Dibenzo(a,h)anthracene (PAH)	NS	NS	NS	22,440	4,500	1,200	7,600	11,000	15,000
Dibenzofuran	NS	NS	NS	NA	6,700 J	2,100 J	12,000 J	24,000	38,000
Diethyl phthalate	NS	NS	NS	NA			3,000 JB		
Fluoranthene (PAH)	NS	NS	NS	14,160	**82,000**	**18,000**	**120,000**	**200,000**	**270,000**
Fluorene (PAH)	NS	NS	NS	10,780	**39,000**	**13,000**	**70,000**	**150,000**	**220,000**
Indeno(1,2,3-cd)pyrene (PAH)	NS	NS	NS	22,300	15,000	2,900	21,000	**32,000**	**43,000**
Naphthalene (PAH)	NS	NS	NS	7,700	**87,000**	**100,000**	**150,000**	**620,000**	**1,500,000**
Phenanthrene (PAH)	NS	NS	NS	11,940	**220,000**	**45,000**	**340,000**	**610,000**	**960,000**
Pyrene (PAH)	NS	NS	NS	13,960	**150,000**	**24,000**	**240,000**	**380,000**	**580,000**
Total PAH	**< 4,000**	**4,000 – 35,000**	**> 35,000**	**NS**	**1,111,100 J**	**337,200 J**	**1,709,600 J**	**3,552,000 J**	**6,150,000 J**
Total SVOCs	**NS**	**NS**	**NS**	**NS**	**1,148,800 J**	**343,400 J**	**1,762,500 J**	**3,663,000 J**	**6,338,000 J**
Pesticides (µg/kg)									
Aldrin	NS	NS	NS	NA					10 P
alpha-BHC	NS	NS	NS	0.21 ●					
beta-BHC	NS	NS	NS	0.84 ●					
delta-BHC	NS	NS	NS	0.81 ●	**73 P**		**17.0**	**7.6 P F1 F2**	
gamma-BHC (Lindane)	< 47	47 - 78	> 78	NA					
alpha-Chlordane	< 68	68 - 38,000	> 38,000	NA	**210.0**	0.52 J	30.0	5.9 P F1 F2	44.0
gamma-Chlordane	< 68	68 - 38,000	> 38,000	NA	**240.0**	0.54 JP	47.0	11 F1 F2	62.0
oxy-Chlordane	< 68	68 - 38,000	> 38,000	NA	27.0				
4,4'-DDD	NS	NS	NS	1.4 ●	**160 P**	1.3 P	**110 P**	**7.2 P F1 F2**	**37 P**
4,4'-DDE	NS	NS	NS	0.62 ●	**47 P**		**53 P**	**5.6 P F1 F2**	**21 P**
4,4'-DDT	< 44	44 - 48,000	> 48,000	NA		0.21 JP			
Dieldrin	< 180	180 - 780	> 780	NA					5.2 P

Table 6-10A
Summary of the 2017 Sediment Analytical Results from the Scajaquada Creek Slip
NYSDEC Remedial Investigation
31 Tonawanda Street Off-Site Area, Site No. C915299A
Buffalo, New York

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Sample Number Sample Type Depth Interval (ft) Sample Date	Sediment Guidance Values Class A *	Sediment Guidance Values Class B **	Sediment Guidance Values Class C +	Sediment Guidance Values for PAHs ++	SCJ-01-01-38 Sediment 0.0' - 3.2' 03/28/17	SCJ-01-02-48 Sediment 3.2' - 4.0' 03/28/17	SCJ-02-01-27 Sediment 0.0' - 2.25' 03/28/17	SCJ-03-01-24 Sediment 0.0' - 2.0' 03/29/17	SCJ-03-01-30 Sediment 0.0' - 2.5' 03/29/17
Pesticides (continued)									
Endosulfan I	< 1	1 - 20	> 20	NA					
Endosulfan II	NS	NS	NS	NA					7.3 P
Endosulfan Sulfate	NS	NS	NS	NA					
Endrin	< 90	90 - 220	> 220	NA					
Endrin Ketone	NS	NS	NS	NA					
Heptachlor	< 75	75 - 10,000	> 10,000	NA					
Heptachlor Epoxide	< 15	15 - 2,100	> 2,100	NA	**53 P**	0.13 JP	**23 P**	7.2 P F1 F2	**16 P**
PCBs (µg/kg)									
Aroclor 1242									
Aroclor 1248					8,100	120.0	2,600	2,100	1,900
Aroclor 1254					3,900	32.0	2,100	1,500	1,000
Aroclor 1260					1,800		1,100	1,100	630.0
Aroclor 1262									
Aroclor 1268					150 J		130.0	120.0	45.0
Total PCBs	< 100	100 - 1,000	> 1,000	NA	**13,950**	**152.0**	**5,930**	**4,820**	**3,575**
Metals (mg/kg or ppm)									
Aluminum	NS	NS	NS	NA	12,600	9,550	10,700	8,160	8,380
Antimony ■	NS	NS	NS	NA	1.7	1.2	2.4	2.9 F1	2.7
Arsenic ■	< 10	10 - 33	> 33	NA	**14.6**	**10.2**	**22.4**	**17.7**	**16.8**
Barium	NS	NS	NS	NA	189.0	131.0	334.0	252 F1 F2	206.0
Beryllium ■	NS	NS	NS	NA	0.76	0.49	0.63	0.50	0.52
Cadmium ■	< 1	1 - 5	> 5	NA	**9.6**	**1.2**	**10.6**	**8.3 F1 F2**	**7.2**
Calcium	NS	NS	NS	NA	49,500	37,600	43,000	42,700	39,700
Chromium ■	< 43	43 - 110	> 110	NA	**119.0**	20.8	**179.0**	**157 F2**	**128.0**
Cobalt	NS	NS	NS	NA	11.7	7.5	12.6	9.4	9.4
Copper ■	< 32	32 - 150	> 150	NA	**320.0**	**190.0**	**544.0**	**667 F2**	**518.0**
Iron	NS	NS	NS	NA	33,600	22,600	34,300	24,500	27,400

Table 6-10A
Summary of the 2017 Sediment Analytical Results from the Scajaquada Creek Slip
NYSDEC Remedial Investigation
31 Tonawanda Street Off-Site Area, Site No. C915299A
Buffalo, New York

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Sample Number Sample Type Depth Interval (ft) Sample Date	Sediment Guidance Values Class A *	Sediment Guidance Values Class B **	Sediment Guidance Values Class C +	Sediment Guidance Values for PAHs ++	SCJ-01-01-38 Sediment 0.0' - 3.2' 03/28/17	SCJ-01-02-48 Sediment 3.2' - 4.0' 03/28/17	SCJ-02-01-27 Sediment 0.0' - 2.25' 03/28/17	SCJ-03-01-24 Sediment 0.0' - 2.0' 03/29/17	SCJ-03-01-30 Sediment 0.0' - 2.5' 03/29/17
Metals (continued)									
Lead ■	< 36	36 - 130	> 130	NA	**603 ^**	**305 ^**	**807 ^**	**718 ^ F2**	**654 ^**
Magnesium	NS	NS	NS	NA	11,100	9,020	9,050	7,400	7,740
Manganese	NS	NS	NS	NA	329.0	249.0	341.0	280.0	318.0
Mercury ■	< 0.2	0.2 - 1	> 1	NA	**0.83**	**1.3**	**1.3**	**1.2**	**1.6**
Nickel	< 23	23 - 49	> 49	NA	**51.4**	21.2	**49.7**	**37.1**	**37.9**
Potassium	NS	NS	NS	NA	2,060	1,210	1,730	1,270	1,290
Selenium ■	NS	NS	NS	NA	4.0	1.8	3.5	2.6 F1	2.8
Silver ■	< 1	1 - 2.2	> 2.2	NA	**3.4**	**1.0**	**6.8**	**5.4 F1**	**4.6**
Sodium	NS	NS	NS	NA	1,380	256.0	704.0	340.0	335.0
Thallium	NS	NS	NS	NA	0.39	0.26	0.46	0.37	0.37
Vanadium	NS	NS	NS	NA	32.7	23.0	30.9	23.7	24.6
Zinc ■	< 120	120 - 460	> 460	NA	**1,100**	**611.0**	**1,430**	**1,310**	**1,270**
Miscellaneous Compounds									
Motor Oil (mg/kg)	NS	NS	NS	NA	NA	NA	NA	NA	NA
Fuel Oil #6 (mg/kg)	NS	NS	NS	NA	"	"	"	"	"
Percent Moisture (%)	NS	NS	NS	NA	73.3	46.4	63.4	54.5	57.9
Total Volatile Solids (%)	NS	NS	NS	NA	17.5	9.2	16.4	19.8	13.3
Total Organic Carbon (%)	NS	NS	NS	NA	10.00 ^	4.26 ^	5.43 ^	11.80 F1	10.30

Notes:

*** = Sediment is considered to present a low risk to aquatic life.**
**** = Sediment is considered to be moderately contaminated.**
+ = Sediment is considered highly contaminated and likely to present a high risk to aquatic life.
++ = PAH sediment guidance value at 2% TOC.
● = Sediment criteria for the protection of human health bioaccumulation at 2% TOC. Used when no other guidance value was available.
■ = Environmental Protection Agency priority pollutant metal.
mg/kg = milligrams per kilogram or parts per million.
ug/kg = micrograms per kilogram or parts per billion.
J = Analyte is positively identified with concentration qualified as estimated value.
^ = Instrument related QC is outside acceptance limits.
F1 = MS and/or MSD Recovery is outside acceptance limits.

Notes (continued):

- F2 = MS/MSD RPD exceeds control limits
- NA = Not applicable (for standards) or not analyzed (for results).
- NS = No standard or guidance value available.
- P = The %RPD between the primary and confirmation column/detector is >40%. The lower value has been reported.
- PAH = Polycyclic aromatic hydrocarbon.
- Blanks = compound not detected.
- Yellow shaded results exceed the NYSDEC Class B sediment guidance values.
- Orange shaded results exceed the NYSDEC Class C sediment guidance values.
- Pink shaded results exceed the PAH sediment guidance values.
- Gray shaded results exceed the human health bioaccumulation sediment guidance values.

Table 6-10B
Summary of the 2017 Sediment Analytical Results from the Scajaquada Creek Slip
NYSDEC Remedial Investigation
31 Tonawanda Street Off-Site Area, Site No. C915299A
Buffalo, New York

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Sample Number Sample Type Depth Interval (ft) Sample Date	Sediment Guidance Values Class A *	Sediment Guidance Values Class B **	Sediment Guidance Values Class C +	Sediment Guidance Values for PAHs ++	SCJ-04-01-28 Sediment 0.0' - 2.3' 03/29/17	SCJ-05-01-20 Sediment 0.0' - 1.7' 03/29/17	SCJ-06-01-36 Sediment 0.0' - 3.0' 03/29/17	SCJ-07-01-36 Sediment 0.0' - 3.0' 03/29/17	
Volatile Organic Compounds (µg/kg)									
1,1,2,2-Tetrachloroethane	< 2,800	2,800 – 5,400	> 5,400	NA					
1,2-Dibromo-3-Chloropropane	NS	NS	NS	NA					
Acetone	NS	NS	NS	NA	45 J	23 J			
Benzene	< 530	530 – 1,900	> 1,900	NA	10 J	12.0			
Ethylbenzene	< 430	430 – 3,700	> 3,700	NA	7.4 J	51.0	**2,700**	**22,000**	
Isopropylbenzene (cumene)	< 210	210 – 1,800	> 1,800	NA	46.0	23.0			
Methyl acetate	NS	NS	NS	NA					
Methylcyclohexane	NS	NS	NS	NA	6.7 J				
Methylene Chloride	NS	NS	NS	68 ●			**1,000 J**		
Toluene	< 930	930 – 4,500	> 4,500	NA					
Xylene, Total	< 590	590 – 5,200	> 5,200	NA	57.0	25.0	**3,600 J**	**11,000**	
Total VOCs	**NS**	**NS**	**NS**	**NA**	**172.1 J**	**134 J**	**7,300 J**	**33,000**	
Semivolatile Organic Compounds (µg/kg)									
2-Methylnaphthalene (PAH)	NS	NS	NS	NA	62,000	7,400	340,000	300,000	
2-Methylphenol	NS	NS	NS	NA					
2,4-Dimethylphenol	NS	NS	NS	3,600 ●					
4-Nitrophenol	NS	NS	NS	NA					
Acenaphthene (PAH)	NS	NS	NS	9,820	**120,000**	**25,000**	**150,000**	**150,000**	
Acenapthylene (PAH)	NS	NS	NS	9,040	**21,000**	4,800	**22,000**	**22,000**	
Acetophenone	NS	NS	NS	NA					
Anthracene (PAH)	NS	NS	NS	11,880	**96,000**	**19,000**	**94,000**	**97,000**	
Benzo[a]anthracene (PAH)	NS	NS	NS	16,820	**70,000**	14,000	**51,000**	**69,000**	
Benzo[a]pyrene (PAH)	NS	NS	NS	19,280	**65,000**	11,000	**45,000**	**59,000**	
Benzo[b]fluoranthene (PAH)	NS	NS	NS	19,580	**44,000**	7,500	**29,000**	**42,000**	
Benzo[g,h,i]perylene (PAH)	NS	NS	NS	21,900	**35,000**	6,400	**23,000**	**32,000**	
Benzo[k]fluoranthene (PAH)	NS	NS	NS	19,600	16,000	4,000	8,300	**20,000**	
Biphenyl	NS	NS	NS	NA	5,200 J	1,400 J	39,000	36,000	

Table 6-10B
Summary of the 2017 Sediment Analytical Results from the Scajaquada Creek Slip
NYSDEC Remedial Investigation
31 Tonawanda Street Off-Site Area, Site No. C915299A
Buffalo, New York

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Sample Number Sample Type Depth Interval (ft) Sample Date	Sediment Guidance Values Class A *	Sediment Guidance Values Class B **	Sediment Guidance Values Class C +	Sediment Guidance Values for PAHs ++	SCJ-04-01-28 Sediment 0.0' - 2.3' 03/29/17	SCJ-05-01-20 Sediment 0.0' - 1.7' 03/29/17	SCJ-06-01-36 Sediment 0.0' - 3.0' 03/29/17	SCJ-07-01-36 Sediment 0.0' - 3.0' 03/29/17	
Semivolatile Organic Compounds (continued)									
Bis(2-ethylhexyl)phthalate	< 360,000	> 360,000	NS	NA	6,600 J	4,700 J	13,000 J	7,000 J	
Carbazole	NS	NS	NS	NA					
Chrysene (PAH)	NS	NS	NS	16,860	**64,000**	12,000	**43,000**	**57,000**	
Dibenzo(a,h)anthracene (PAH)	NS	NS	NS	22,440	6,600	1,500	5,700	6,000	
Dibenzofuran	NS	NS	NS	NA	8,200 J	2,100 J	13,000 J	13,000 J	
Diethyl phthalate	NS	NS	NS	NA		610 JB			
Fluoranthene (PAH)	NS	NS	NS	14,160	**110,000**	**24,000**	**98,000**	**120,000**	
Fluorene (PAH)	NS	NS	NS	10,780	**62,000**	**13,000**	**65,000**	**69,000**	
Indeno(1,2,3-cd)pyrene (PAH)	NS	NS	NS	22,300	22,000	4,100	14,000	21,000	
Naphthalene (PAH)	NS	NS	NS	7,700	**17,000**	**8,200**	**420,000**	**310,000**	
Phenanthrene (PAH)	NS	NS	NS	11,940	**290,000**	**65,000**	**310,000**	**340,000**	
Pyrene (PAH)	NS	NS	NS	13,960	**210,000**	**44,000**	**170,000**	**210,000**	
Total PAH	**< 4,000**	**4,000 – 35,000**	**> 35,000**	**NS**	**1,310,600 J**	**270,900 J**	**1,888,000 J**	**1,924,000 J**	
Total SVOCs	**NS**	**NS**	**NS**	**NS**	**1,330,600 J**	**279,710 J**	**1,953,000 J**	**1,980,000 J**	
Pesticides (µg/kg)									
Aldrin	NS	NS	NS	NA					
alpha-BHC	NS	NS	NS	0.21 ●					
beta-BHC	NS	NS	NS	0.84 ●					
delta-BHC	NS	NS	NS	0.81 ●	**58 P**	**41 P**	**20 P**	**82 P**	
gamma-BHC (Lindane)	< 47	47 - 78	> 78	NA					
alpha-Chlordane	< 68	68 - 38,000	> 38,000	NA	39 P	27 P	13 P	23 P	
gamma-Chlordane	< 68	68 - 38,000	> 38,000	NA	**83.0**	58.0			
oxy-Chlordane	< 68	68 - 38,000	> 38,000	NA		10 P		13 P	
4,4'-DDD	NS	NS	NS	1.4 ●	**56 P**	**52 P**	**61 P**	**120 P**	
4,4'-DDE	NS	NS	NS	0.62 ●	**56 P**	**35 P**	**24 P**	**47 P**	
4,4'-DDT	< 44	44 - 48,000	> 48,000	NA					
Dieldrin	< 180	180 - 780	> 780	NA					

Table 6-10B
Summary of the 2017 Sediment Analytical Results from the Scajaquada Creek Slip
NYSDEC Remedial Investigation
31 Tonawanda Street Off-Site Area, Site No. C915299A
Buffalo, New York

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Sample Number Sample Type Depth Interval (ft) Sample Date	Sediment Guidance Values Class A *	Sediment Guidance Values Class B **	Sediment Guidance Values Class C +	Sediment Guidance Values for PAHs ++	SCJ-04-01-28 Sediment 0.0' - 2.3' 03/29/17	SCJ-05-01-20 Sediment 0.0' - 1.7' 03/29/17	SCJ-06-01-36 Sediment 0.0' - 3.0' 03/29/17	SCJ-07-01-36 Sediment 0.0' - 3.0' 03/29/17	
Pesticides (continued)									
Endosulfan I	< 1	1 - 20	> 20	NA					
Endosulfan II	NS	NS	NS	NA					
Endosulfan Sulfate	NS	NS	NS	NA					
Endrin	< 90	90 - 220	> 220	NA					
Endrin Ketone	NS	NS	NS	NA					
Heptachlor	< 75	75 - 10,000	> 10,000	NA					
Heptachlor Epoxide	< 15	15 - 2,100	> 2,100	NA	**95.0**	**52 P**	**25 P**	**130.0**	
PCBs (µg/kg)									
Aroclor 1242									
Aroclor 1248					6,400	8,800	3,100	8,500	
Aroclor 1254					2,800	3,000	1,700	2,600	
Aroclor 1260					1,600	1,700	1,500	1,400	
Aroclor 1262									
Aroclor 1268					160.0	81 J	81.0	70 J	
Total PCBs	< 100	100 - 1,000	> 1,000	NA	**10,960**	**13,581 J**	**6,381**	**12,570 J**	
Metals (mg/kg or ppm)									
Aluminum	NS	NS	NS	NA	11,400	10,500	8,490	9,130	
Antimony ■	NS	NS	NS	NA	2.0	1.4	2.2	4.1	
Arsenic ■	< 10	10 - 33	> 33	NA	**17.2**	**12.9**	**11.0**	**13.7**	
Barium	NS	NS	NS	NA	243.0	162.0	180.0	267.0	
Beryllium ■	NS	NS	NS	NA	0.74	0.77	0.63	0.65	
Cadmium ■	< 1	1 - 5	> 5	NA	**9.7**	**5.0**	**6.5**	**7.0**	
Calcium	NS	NS	NS	NA	56,300	43,900	52,300	49,500	
Chromium ■	< 43	43 - 110	> 110	NA	**138.0**	**87.4**	**80.1**	**115.0**	
Cobalt	NS	NS	NS	NA	11.3	11.9	8.3	9.6	
Copper ■	< 32	32 - 150	> 150	NA	**440.0**	**233.0**	**278.0**	**461.0**	
Iron	NS	NS	NS	NA	31,200	41,800	26,000	27,700	

Table 6-10B
Summary of the 2017 Sediment Analytical Results from the Scajaquada Creek Slip
NYSDEC Remedial Investigation
31 Tonawanda Street Off-Site Area, Site No. C915299A
Buffalo, New York

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Sample Number Sample Type Depth Interval (ft) Sample Date	Sediment Guidance Values Class A *	Sediment Guidance Values Class B **	Sediment Guidance Values Class C +	Sediment Guidance Values for PAHs ++	SCJ-04-01-28 Sediment 0.0' - 2.3' 03/29/17	SCJ-05-01-20 Sediment 0.0' - 1.7' 03/29/17	SCJ-06-01-36 Sediment 0.0' - 3.0' 03/29/17	SCJ-07-01-36 Sediment 0.0' - 3.0' 03/29/17	
Metals (continued)									
Lead ■	< 36	36 - 130	> 130	NA	**895 ^**	**862 ^**	**899 ^**	**1,450 ^**	
Magnesium	NS	NS	NS	NA	10,100	9,920	10,300	9,170	
Manganese	NS	NS	NS	NA	382.0	531.0	423.0	475.0	
Mercury ■	< 0.2	0.2 - 1	> 1	NA	**0.68**	**1.3**	**0.78**	**1.5**	
Nickel	< 23	23 - 49	> 49	NA	**49.3**	**41.1**	**40.8**	**49.4**	
Potassium	NS	NS	NS	NA	1,750	1,760	1,190	1,370	
Selenium ■	NS	NS	NS	NA	3.7	2.8	2.4	2.3	
Silver ■	< 1	1 - 2.2	> 2.2	NA	**5.2**	**2.7**	**2.0**	**4.4**	
Sodium	NS	NS	NS	NA	399.0	317.0	348.0	674.0	
Thallium	NS	NS	NS	NA	0.43	0.30	0.27	0.32	
Vanadium	NS	NS	NS	NA	32.5	38.3	24.1	28.3	
Zinc ■	< 120	120 - 460	> 460	NA	**1,350**	**986.0**	**1,070**	**1,610**	
Miscellaneous Compounds									
Motor Oil (mg/kg)	NS	NS	NS	NA	NA	NA	NA	NA	
Fuel Oil #6 (mg/kg)	NS	NS	NS	NA	"	"	"	"	
Percent Moisture (%)	NS	NS	NS	NA	64.5	52.5	48.9	51.7	
Total Volatile Solids (%)	NS	NS	NS	NA	14.0	10.8	12.3	13.5	
Total Organic Carbon (%)	NS	NS	NS	NA	7.07	5.51	6.33	5.05 ^	

Notes:

- * = Sediment is considered to present a low risk to aquatic life.
- ** = Sediment is considered to be moderately contaminated.
- + = Sediment is considered highly contaminated and likely to present a high risk to aquatic life.
- ++ = PAH sediment guidance value at 2% TOC.
- ● = Sediment criteria for the protection of human health bioaccumulation at 2% TOC. Used when no other guidance value is available.
- ■ = Environmental Protection Agency priority pollutant metal.
- mg/kg = milligrams per kilogram or parts per million.
- ug/kg = micrograms per kilogram or parts per billion.
- J = Analyte is positively identified with concentration qualified as estimated value.
- ^ = Instrument related QC is outside acceptance limits.
- F1 = MS and/or MSD Recovery is outside acceptance limits.

Notes (continued):

- F2 = MS/MSD RPD exceeds control limits
- NA = Not applicable (for standards) or not analyzed (for results).
- NS = No standard or guidance value available.
- P = The %RPD between the primary and confirmation column/detector is >40%. The lower value has been reported.
- PAH = Polycyclic aromatic hydrocarbon.
- Blanks = compound not detected.
- Yellow shaded results exceed the NYSDEC Class B sediment guidance values.
- Orange shaded results exceed the NYSDEC Class C sediment guidance values.
- Pink shaded results exceed the PAH sediment guidance values.
- Gray shaded results exceed the human health bioaccumulation sediment guidance values.

Table 6-11
Summary of the 2017 NYSDEC Sediment Analytical Results from Scajaquada Creek Downstream of West Avenue
NYSDEC Remedial Investigation
31 Tonawanda Street Off-Site Area, Site No. C915299A
Buffalo, New York

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Sample Number Sample Type Depth Interval (ft) Sample Date	Sediment Guidance Values Class A *	Sediment Guidance Values Class B **	Sediment Guidance Values Class C +	Sediment Guidance Values for PAHs ++	SCJ-08-01-22 Sediment 0.0' - 1.8' 03/29/17	SCJ-09-01-17 Sediment 0.0' - 1.4' 03/30/17	SCJ-10-01-09 Sediment 0.0' - 0.75' 03/30/17	SCJ-11-01-09 Sediment 0.0' - 0.75' 03/30/17	SCJ-12-01-02 Sediment 0.0' - 0.2' 03/30/17
Volatile Organic Compounds (µg/kg)									
1,1,2,2-Tetrachloroethane	< 2,800	2,800 – 5,400	> 5,400	NA				NA	NA
1,2-Dibromo-3-Chloropropane	NS	NS	NS	NA				"	"
Acetone	NS	NS	NS	NA	35 J			"	"
Benzene	< 530	530 – 1,900	> 1,900	NA	48.0			"	"
Ethylbenzene	< 430	430 – 3,700	> 3,700	NA	120.0		10.0	"	"
Isopropylbenzene (cumene)	< 210	210 – 1,800	> 1,800	NA	49.0			"	"
Methyl acetate	NS	NS	NS	NA				"	"
Methylcyclohexane	NS	NS	NS	NA	13 J			"	"
Methylene Chloride	NS	NS	NS	68 ●		1.2 J	0.92 J	"	"
Toluene	< 930	930 – 4,500	> 4,500	NA				"	"
Xylene, Total	< 590	590 – 5,200	> 5,200	NA	91.0			"	"
Total VOCs	**NS**	**NS**	**NS**	**NA**	**356 J**	**1.2 J**	**10.92 J**	**NA**	**NA**
Semivolatile Organic Compounds (µg/kg)									
2-Methylnaphthalene (PAH)	NS	NS	NS	NA	8,700	13 J	100 J	50,000	NA
2-Methylphenol	NS	NS	NS	NA					"
2,4-Dimethylphenol	NS	NS	NS	3,600 ●					"
4-Nitrophenol	NS	NS	NS	NA				650 J	"
Acenaphthene (PAH)	NS	NS	NS	9,820	7,000	190.0	770.0	**24,000**	"
Acenapthylene (PAH)	NS	NS	NS	9,040	2,700	190.0	130 J	1,300	"
Acetophenone	NS	NS	NS	NA					"
Anthracene (PAH)	NS	NS	NS	11,880	6,900	260.0	440.0	10,000	"
Benzo[a]anthracene (PAH)	NS	NS	NS	16,820	8,600	400.0	590.0	5,300	"
Benzo[a]pyrene (PAH)	NS	NS	NS	19,280	8,900	360.0	440.0	4,100	"
Benzo[b]fluoranthene (PAH)	NS	NS	NS	19,580	9,200	250.0	430.0	2,800	"
Benzo[g,h,i]perylene (PAH)	NS	NS	NS	21,900	6,400	200.0	290.0	2,000	"
Benzo[k]fluoranthene (PAH)	NS	NS	NS	19,600	3,100	110.0	210.0	900.0	"
Biphenyl	NS	NS	NS	NA	1,100 J	9.9 J	110 J	6,200	"

Table 6-11
Summary of the 2017 NYSDEC Sediment Analytical Results from Scajaquada Creek Downstream of West Avenue
NYSDEC Remedial Investigation
31 Tonawanda Street Off-Site Area, Site No. C915299A
Buffalo, New York

Sample Number Sample Type Depth Interval (ft) Sample Date	Sediment Guidance Values Class A *	Sediment Guidance Values Class B **	Sediment Guidance Values Class C +	Sediment Guidance Values for PAHs ++	SCJ-08-01-22 Sediment 0.0' - 1.8' 03/29/17	SCJ-09-01-17 Sediment 0.0' - 1.4' 03/30/17	SCJ-10-01-09 Sediment 0.0' - 0.75' 03/30/17	SCJ-11-01-09 Sediment 0.0' - 0.75' 03/30/17	SCJ-12-01-02 Sediment 0.0' - 0.2' 03/30/17
Semivolatile Organic Compounds (continued)									
Bis(2-ethylhexyl)phthalate	< 360,000	> 360,000	NS	NA	6,800 J	99 J			NA
Carbazole	NS	NS	NS	NA	360 J		50 J	180 J	"
Chrysene (PAH)	NS	NS	NS	16,860	9,400	360.0	650.0	4,500	"
Dibenzo(a,h)anthracene (PAH)	NS	NS	NS	22,440	1,100	56.0	99 J	420.0	"
Dibenzofuran	NS	NS	NS	NA	630 J	20 J	81 J	1,800	"
Diethyl phthalate	NS	NS	NS	NA	930 JB				"
Fluoranthene (PAH)	NS	NS	NS	14,160	**16,000**	570.0	1,500	9,800	"
Fluorene (PAH)	NS	NS	NS	10,780	3,900		150 J	10,000	"
Indeno(1,2,3-cd)pyrene (PAH)	NS	NS	NS	22,300	4,300	130.0	220.0	1,300	"
Naphthalene (PAH)	NS	NS	NS	7,700	4,800	18.0	460.0	**57,000**	"
Phenanthrene (PAH)	NS	NS	NS	11,940	**22,000**	340.0	1,200	**38,000**	"
Pyrene (PAH)	NS	NS	NS	13,960	**23,000**	1,100	2,200	**19,000**	"
Total PAH	**< 4,000**	**4,000 – 35,000**	**> 35,000**	**NS**	**146,000 J**	**4,547 J**	**9,879 J**	**240,420 J**	**NA**
Total SVOCs	**NS**	**NS**	**NS**	**NS**	**155,820 J**	**4,675.9 J**	**10,120 J**	**249,250 J**	**NA**
Pesticides (µg/kg)									
Aldrin	NS	NS	NS	NA					
alpha-BHC	NS	NS	NS	0.21 ●					
beta-BHC	NS	NS	NS	0.84 ●					
delta-BHC	NS	NS	NS	0.81 ●		**1.6 JP**			**2.4 J**
gamma-BHC (Lindane)	< 47	47 - 78	> 78	NA	1.6 JP				
alpha-Chlordane	< 68	68 - 38,000	> 38,000	NA	18 P				
gamma-Chlordane	< 68	68 - 38,000	> 38,000	NA				0.40 JP	
oxy-Chlordane	< 68	68 - 38,000	> 38,000	NA	20 P				
4,4'-DDD	NS	NS	NS	1.4 ●	**48 P**	**1.4 JP**	0.95 JP	0.64 JP	**1.6 JP**
4,4'-DDE	NS	NS	NS	0.62 ●	**33 P**	**1.0 JP**			**1.4 JP**
4,4'-DDT	< 44	44 - 48,000	> 48,000	NA					
Dieldrin	< 180	180 - 780	> 780	NA			0.38 JP		0.84 JP

Table 6-11
Summary of the 2017 NYSDEC Sediment Analytical Results from Scajaquada Creek Downstream of West Avenue
NYSDEC Remedial Investigation
31 Tonawanda Street Off-Site Area, Site No. C915299A
Buffalo, New York

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Sample Number Sample Type Depth Interval (ft) Sample Date	Sediment Guidance Values Class A *	Sediment Guidance Values Class B **	Sediment Guidance Values Class C +	Sediment Guidance Values for PAHs ++	SCJ-08-01-22 Sediment 0.0' - 1.8' 03/29/17	SCJ-09-01-17 Sediment 0.0' - 1.4' 03/30/17	SCJ-10-01-09 Sediment 0.0' - 0.75' 03/30/17	SCJ-11-01-09 Sediment 0.0' - 0.75' 03/30/17	SCJ-12-01-02 Sediment 0.0' - 0.2' 03/30/17
Pesticides (continued)									
Endosulfan I	< 1	1 - 20	> 20	NA					
Endosulfan II	NS	NS	NS	NA					
Endosulfan Sulfate	NS	NS	NS	NA					
Endrin	< 90	90 - 220	> 220	NA					
Endrin Ketone	NS	NS	NS	NA					
Heptachlor	< 75	75 - 10,000	> 10,000	NA					
Heptachlor Epoxide	< 15	15 - 2,100	> 2,100	NA	**99 P**	1.7 JP	0.55 JP		0.72 JP
PCBs (µg/kg)									
Aroclor 1242									
Aroclor 1248					3,900	110.0	76.0		180.0
Aroclor 1254					1,900	45.0	32.0	2.6 J	100.0
Aroclor 1260					1,200	34.0	26.0		62.0
Aroclor 1262									
Aroclor 1268					64.0				
Total PCBs	< 100	100 - 1,000	> 1,000	NA	**7,064**	**189.0**	**134.0**	2.6 J	**342.0**
Metals (mg/kg or ppm)									
Aluminum	NS	NS	NS	NA	11,200	9,250	5,300	5,680	5,600
Antimony ■	NS	NS	NS	NA	1.7	0.15	0.13	0.41	0.40
Arsenic ■	< 10	10 - 33	> 33	NA	**11.2**	2.5	3.4	5.6	2.3
Barium	NS	NS	NS	NA	173.0	102.0	41.2	61.5	46.4
Beryllium ■	NS	NS	NS	NA	0.63	0.50	0.93	0.39	0.41
Cadmium ■	< 1	1 - 5	> 5	NA	**5.2**	0.19	0.23	0.34	0.16
Calcium	NS	NS	NS	NA	55,100	67,100	97,700	56,100	90,700
Chromium ■	< 43	43 - 110	> 110	NA	**103.0**	17.9	7.1	12.7	19.4
Cobalt	NS	NS	NS	NA	11.2	9.7	2.5	5.4	1.8
Copper ■	< 32	32 - 150	> 150	NA	**316.0**	19.0	**81.5**	**52.3**	21.0
Iron	NS	NS	NS	NA	31,800	20,800	8,330	17,700	10,300

Table 6-11
Summary of the 2017 NYSDEC Sediment Analytical Results from Scajaquada Creek Downstream of West Avenue
NYSDEC Remedial Investigation
31 Tonawanda Street Off-Site Area, Site No. C915299A
Buffalo, New York

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Sample Number Sample Type Depth Interval (ft) Sample Date	Sediment Guidance Values Class A *	Sediment Guidance Values Class B **	Sediment Guidance Values Class C +	Sediment Guidance Values for PAHs ++	SCJ-08-01-22 Sediment 0.0' - 1.8' 03/29/17	SCJ-09-01-17 Sediment 0.0' - 1.4' 03/30/17	SCJ-10-01-09 Sediment 0.0' - 0.75' 03/30/17	SCJ-11-01-09 Sediment 0.0' - 0.75' 03/30/17	SCJ-12-01-02 Sediment 0.0' - 0.2' 03/30/17
Metals (continued)									
Lead ■	< 36	36 - 130	> 130	NA	**1,540 ^**	**42.9 ^**	**42.3 ^**	**108 ^**	**278 ^**
Magnesium	NS	NS	NS	NA	10,900	20,100	32,000	16,400	9,180
Manganese	NS	NS	NS	NA	423.0	520.0	898.0	437.0	410.0
Mercury ■	< 0.2	0.2 - 1	> 1	NA	**0.66**	0.11	0.027	0.16	**0.26**
Nickel	< 23	23 - 49	> 49	NA	**48.3**	21.3	7.4	13.8	6.0
Potassium	NS	NS	NS	NA	1,780	2,390	557.0	1,090	324.0
Selenium ■	NS	NS	NS	NA	3.0	1.2	0.92	1.1	0.78
Silver ■	< 1	1 - 2.2	> 2.2	NA	**3.2**	0.060 J	0.040 J	0.088	0.055 J
Sodium	NS	NS	NS	NA	404.0	920.0	325.0	187.0	421.0
Thallium	NS	NS	NS	NA	0.31	0.12	0.051 J	0.097	0.026 J
Vanadium	NS	NS	NS	NA	32.1	22.5	6.5	16.5	5.2
Zinc ■	< 120	120 - 460	> 460	NA	**1,810**	87.5	52.7	**148.0**	68.9
Miscellaneous Compounds									
Motor Oil (mg/kg)	NS	NS	NS	NA	NA	NA	NA	NA	NA
Fuel Oil #6 (mg/kg)	NS	NS	NS	NA	"	"	"	"	"
Percent Moisture (%)	NS	NS	NS	NA	64.6	28.0	17.5	13.3	24.4
Total Volatile Solids (%)	NS	NS	NS	NA	12.6	3.7	2.0	3.4	NA
Total Organic Carbon (%)	NS	NS	NS	NA	5.47 ^	1.62	1.39	1.54	"

Notes:

*** = Sediment is considered to present a low risk to aquatic life.**
**** = Sediment is considered to be moderately contaminated.**
+ = Sediment is considered highly contaminated and likely to present a high risk to aquatic life.
++ = PAH sediment guidance value at 2% TOC.
● = Sediment criteria for the protection of human health bioaccumulation at 2% TOC. Used when no other guidance value is available.
■ = Environmental Protection Agency priority pollutant metal.
mg/kg = milligrams per kilogram or parts per million.
ug/kg = micrograms per kilogram or parts per billion.
J = Analyte is positively identified with concentration qualified as estimated value.
^ = Instrument related QC is outside acceptance limits.
F1 = MS and/or MSD Recovery is outside acceptance limits.

Notes (continued):

- F2 = MS/MSD RPD exceeds control limits
- NA = Not applicable (for standards) or not analyzed (for results).
- NS = No standard or guidance value available.
- P = The %RPD between the primary and confirmation column/detector is >40%. The lower value has been reported.
- PAH = Polycyclic aromatic hydrocarbon.
- Blanks = compound not detected.
- Yellow shaded results exceed the NYSDEC Class B sediment guidance values.
- Orange shaded results exceed the NYSDEC Class C sediment guidance values.
- Pink shaded results exceed the PAH sediment guidance values.
- Gray shaded results exceed the human health bioaccumulation sediment guidance values.

Table 6-12A
Summary of the 2017 USACOE Sediment Analytical Results from Scajaquada Creek Downstream of West Avenue
NYSDEC Remedial Investigation
31 Tonawanda Street Off-Site Area, Site No. C915299A
Buffalo, New York

Sample Number Sample Type Depth Interval (ft) Sample Date	Sediment Guidance Values Class A *	Sediment Guidance Values Class B **	Sediment Guidance Values Class C +	SJ-1-A Sediment 0.0' - 0.5' 09/25/17	SJ-1-B Sediment 0.0' - 0.5' 09/25/17	SJ-1-C Sediment 0.0' - 0.5' 09/25/17	SJ-1-D Sediment 0.0' - 0.5' 09/25/17	SJ-1-E Sediment 0.0' - 0.5' 09/25/17
Metals (mg/kg or ppm)								
Aluminum	NS	NS	NS	14,700	13,000	15,000	15,300	18,400
Antimony ■	NS	NS	NS					
Arsenic ■	< 10	10 - 33	> 33	7.7	7.5	**10.3**	8.6	8.9
Barium	NS	NS	NS	119.0	101.0	139.0	125.0	146.0
Beryllium ■	NS	NS	NS	0.72	0.61	0.92	0.70	0.90
Cadmium ■	< 1	1 - 5	> 5	**1.8**	**1.3**	**1.7**	**1.7**	**2.2**
Calcium	NS	NS	NS	66,300	155,000	80,600	56,300	76,600
Chromium ■	< 43	43 - 110	> 110	**50.6**	**48.9**	**64.9**	**50.6**	**59.3**
Cobalt	NS	NS	NS	10.6 J	11.3	13.4 J	9.9 J	10.9 J
Copper ■	< 32	32 - 150	> 150	**128.0**	**103.0**	**229.0**	**115.0**	**140.0**
Iron	NS	NS	NS	29,100	28,500	34,700	30,800	32,400
Lead ■	< 36	36 - 130	> 130	**188.0**	**156.0**	**224.0**	**152.0**	**184.0**
Magnesium	NS	NS	NS	11,100	25,300	14,500	11,200	14,200
Manganese	NS	NS	NS	359.0	471.0	536.0	471.0	448.0
Mercury ■	< 0.2	0.2 - 1	> 1	0.19	0.16	0.13	**0.22**	**0.27**
Nickel	< 23	23 - 49	> 49	**34.4**	**33.9**	**39.0**	**31.1**	**36.5**
Potassium	NS	NS	NS	3,040	2,770	2,940	3,140	3,830
Selenium ■	NS	NS	NS					
Silver ■	< 1	1 - 2.2	> 2.2				0.39 J	
Sodium	NS	NS	NS	401 J	1,470 J	434 J	275 J	364 J
Thallium	NS	NS	NS	0.32 J	0.29 J	0.34 J	0.33 J	0.42 J
Vanadium	NS	NS	NS	32.5	26.4	35.4	30.3	39.7
Zinc ■	< 120	120 - 460	> 460	**512.0**	**404.0**	**613.0**	**499.0**	**650.0**
Miscellaneous Compounds								
Percent Moisture (%) ♠	NS	NS	NS	61.4	55.6	63.2	55.3	64.3
Percent Solids (%)	NS	NS	NS	38.6	44.4	36.8	44.7	35.7
Total Organic Carbon (%)	NS	NS	NS	6.92	5.22	4.30	5.57	6.38

Notes:

All samples were collected with a ponar dredge and arbitrarily assigned a sample depth of 0.0 to 0.5 feet.
* = Sediment is considered to present a low risk to aquatic life.
** = Sediment is considered to be moderately contaminated.
+ = Sediment is considered highly contaminated and likely to present a high risk to aquatic life.
■ = Environmental Protection Agency priority pollutant metal.
♠ = Percent moisture calculated from percent solids.
mg/kg = milligrams per kilogram or parts per million.
J = Analyte is positively identified with concentration qualified as estimated value.
NA = Not analyzed.
NS = No standard or guidance value available.
Blanks = compound not detected.
Yellow shaded results exceed the NYSDEC Class B sediment guidance values.
Orange shaded results exceed the NYSDEC Class C sediment guidance values.

Table 6-12B
Summary of the 2017 USACOE Sediment Analytical Results from Scajaquada Creek Downstream of West Avenue
NYSDEC Remedial Investigation
31 Tonawanda Street Off-Site Area, Site No. C915299A
Buffalo, New York

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Sample Number Sample Type Depth Interval (ft) Sample Date	Sediment Guidance Values Class A *	Sediment Guidance Values Class B **	Sediment Guidance Values Class C +	SJ-2-A Sediment 0.0' - 0.5' 09/25/17	SJ-2-B Sediment 0.0' - 0.5' 09/25/17	SJ-2-C Sediment 0.0' - 0.5' 09/25/17	SJ-2-D Sediment 0.0' - 0.5' 09/25/17	SJ-2-E Sediment 0.0' - 0.5' 09/25/17
Metals (mg/kg or ppm)								
Aluminum	NS	NS	NS	14,900	15,700	13,700	18,600	16,400
Antimony ■	NS	NS	NS					
Arsenic ■	< 10	10 - 33	> 33	7.2	7.6	7.2	**10.5**	9.6
Barium	NS	NS	NS	130.0	133.0	113.0	198.0	166.0
Beryllium ■	NS	NS	NS	0.67	0.74	0.63	0.90	0.92
Cadmium ■	< 1	1 - 5	> 5	**2.0**	**2.2**	**1.8**	**2.7**	**2.3**
Calcium	NS	NS	NS	61,400	74,700	61,700	85,100	90,800
Chromium ■	< 43	43 - 110	> 110	**48.5**	**62.6**	**49.8**	**93.1**	**76.4**
Cobalt	NS	NS	NS	8.8 J	10.1 J	8.0 J	12.2 J	11.2 J
Copper ■	< 32	32 - 150	> 150	**124.0**	**155.0**	**122.0**	**202.0**	**247.0**
Iron	NS	NS	NS	27,300	29,600	25,900	38,400	37,200
Lead ■	< 36	36 - 130	> 130	**213.0**	**199.0**	**212.0**	**654.0**	**660.0**
Magnesium	NS	NS	NS	12,000	13,300	12,800	15,800	15,200
Manganese	NS	NS	NS	299.0	367.0	277.0	473.0	531.0
Mercury ■	< 0.2	0.2 - 1	> 1	**0.23**	**0.34**	**0.38**	**0.36**	**0.40**
Nickel	< 23	23 - 49	> 49	**29.1**	**35.3**	**27.3**	**45.6**	**38.6**
Potassium	NS	NS	NS	2,970	3,160 J	2,880	3,820 J	3,240
Selenium ■	NS	NS	NS					
Silver ■	< 1	1 - 2.2	> 2.2	**1.3**			**2.2**	**1.6**
Sodium	NS	NS	NS	315 J	388 J	309 J	473 J	568 J
Thallium	NS	NS	NS	0.33 J	0.40 J	0.33 J	0.44 J	0.36 J
Vanadium	NS	NS	NS	27.3	33.3	30.7	40.4	36.7
Zinc ■	< 120	120 - 460	> 460	**595.0**	**684.0**	**595.0**	**831.0**	**829.0**
Miscellaneous Compounds								
Percent Moisture (%) ♠	NS	NS	NS	55.2	68.7	62.9	74.3	66.9
Percent Solids (%)	NS	NS	NS	44.8	31.3	37.1	25.7	33.1
Total Organic Carbon (%)	NS	NS	NS	5.67	6.16	5.96	8.57	7.65

Table 6-12B
Summary of the 2017 USACOE Sediment Analytical Results from Scajaquada Creek Downstream of West Avenue
NYSDEC Remedial Investigation
31 Tonawanda Street Off-Site Area, Site No. C915299A
Buffalo, New York

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Notes:

All samples were collected with a ponar dredge and arbitrarily assigned a sample depth of 0.0 to 0.5 feet.
* = Sediment is considered to present a low risk to aquatic life.
** = Sediment is considered to be moderately contaminated.
+ = Sediment is considered highly contaminated and likely to present a high risk to aquatic life.
■ = Environmental Protection Agency priority pollutant metal.
♠ = Percent moisture calculated from percent solids.
mg/kg = milligrams per kilogram or parts per million.
J = Analyte is positively identified with concentration qualified as estimated value.
NA = Not analyzed.
NS = No standard or guidance value available.
Blanks = compound not detected.
Yellow shaded results exceed the NYSDEC Class B sediment guidance values.
Orange shaded results exceed the NYSDEC Class C sediment guidance values.

Table 6-12C
Summary of the 2017 USACOE Sediment Analytical Results from Scajaquada Creek Downstream of West Avenue
NYSDEC Remedial Investigation
31 Tonawanda Street Off-Site Area, Site No. C915299A
Buffalo, New York

Sample Number Sample Type Depth Interval (ft) Sample Date	Sediment Guidance Values Class A *	Sediment Guidance Values Class B **	Sediment Guidance Values Class C +	SJ-4-D Sediment 0.0' - 0.5' 09/25/17	SJ-5-A Sediment 0.0' - 0.5' 09/25/17	SJ-5-C Sediment 0.0' - 0.5' 09/25/17	SJ-5-D Sediment 0.0' - 0.5' 09/25/17	SJ-5-E Sediment 0.0' - 0.5' 09/25/17
Metals (mg/kg or ppm)								
Aluminum	NS	NS	NS	12,400	19,100	9,300	7,520	21,400
Antimony ■	NS	NS	NS				2.0 J	
Arsenic ■	< 10	10 - 33	> 33	8.7	9.2	3.9	8.2	**10.0**
Barium	NS	NS	NS	170.0	160.0	245.0	95.6	168.0
Beryllium ■	NS	NS	NS	1.3	0.86	0.92	0.49	0.98
Cadmium ■	< 1	1 - 5	> 5	**2.0**	**2.3**	0.82	**2.1**	**3.0**
Calcium	NS	NS	NS	101,000	91,700	114,000	153,000	92,800
Chromium ■	< 43	43 - 110	> 110	33.7	**60.8**	**54.5**	**45.6**	**68.3**
Cobalt	NS	NS	NS	6.3 J	12.0 J	5.3 J	6.4 J	12.5 J
Copper ■	< 32	32 - 150	> 150	**430.0**	**146.0**	**35.3**	**664.0**	**161.0**
Iron	NS	NS	NS	20,200	35,000	31,400	26,700	37,300
Lead ■	< 36	36 - 130	> 130	**441.0**	**261.0**	**152.0**	**416.0**	**256.0**
Magnesium	NS	NS	NS	12,000	16,700	15,100	12,600	16,900
Manganese	NS	NS	NS	639.0	468.0	677.0	363.0	500.0
Mercury ■	< 0.2	0.2 - 1	> 1	**0.65**	**0.24**	0.020 J	0.19	**0.32**
Nickel	< 23	23 - 49	> 49	21.2	**40.4**	15.5	**24.3**	**40.9**
Potassium	NS	NS	NS	1,490 J	4,000	781 J	1,640 J	4,560
Selenium ■	NS	NS	NS					
Silver ■	< 1	1 - 2.2	> 2.2	0.69 J				
Sodium	NS	NS	NS	419 J	599 J	349 J	364 J	591 J
Thallium	NS	NS	NS	0.21 J	0.37 J	0.10 J	0.19 J	0.41 J
Vanadium	NS	NS	NS	15.6	36.3	11.8	17.1	46.1
Zinc ■	< 120	120 - 460	> 460	**593.0**	**706.0**	**324.0**	**8,310**	**785.0**
Miscellaneous Compounds								
Percent Moisture (%) ♠	NS	NS	NS	35.6	71.1	29.1	46.9	69.5
Percent Solids (%)	NS	NS	NS	64.4	28.9	70.9	53.1	30.5
Total Organic Carbon (%)	NS	NS	NS	4.27	6.49	1.65	4.50	6.83

Notes:

All samples were collected with a ponar dredge and arbitrarily assigned a sample depth of 0.0 to 0.5 feet.
* = Sediment is considered to present a low risk to aquatic life.
** = Sediment is considered to be moderately contaminated.
+ = Sediment is considered highly contaminated and likely to present a high risk to aquatic life.
■ = Environmental Protection Agency priority pollutant metal.
♠ = Percent moisture calculated from percent solids.
mg/kg = milligrams per kilogram or parts per million.
J = Analyte is positively identified with concentration qualified as estimated value.
NA = Not analyzed.
NS = No standard or guidance value available.
Blanks = compound not detected.
Yellow shaded results exceed the NYSDEC Class B sediment guidance values.
Orange shaded results exceed the NYSDEC Class C sediment guidance values.

Table 6-13
Summary of the 2020 & 2021 Sediment Analytical Results from the Scajaquada Creek Slip
NYSDEC Remedial Investigation
31 Tonawanda Street Off-Site Area, Site No. C915299A
Buffalo, New York

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Sample Number Sample Type Depth Interval (ft) Sample Date	Sediment Guidance Values Class A *	Sediment Guidance Values Class B **	Sediment Guidance Values Class C +	Sediment Guidance Values for PAHs ++	BSA-SED-1 Sediment 0.0' - 0.3' 01/15/20	BSA-SED-2 Sediment 0.0' - 0.3' 01/15/20	BPH-Out Sediment 0.0' - 0.3' 11/18/21		BPH-Sump Sediment ≈ 19 11/18/21
Volatile Organic Compounds (µg/kg)									
1,1,2,2-Tetrachloroethane	< 2,800	2,800 – 5,400	> 5,400	NA					
1,2,4-Trimethylbenzene	< 3,400	3,400 – 30,000	> 30,000	NA					**33,000**
cis-1,2-Dichloroethene	NS	NS	NS	NA			9.0		
Acetone	NS	NS	NS	NA					
Benzene	< 530	530 – 1,900	> 1,900	NA					
Ethylbenzene	< 430	430 – 3,700	> 3,700	NA	**660.0**				**50,000**
Isopropylbenzene (cumene)	< 210	210 – 1,800	> 1,800	NA	110.0				
Methyl acetate	NS	NS	NS	NA					
Methylcyclohexane	NS	NS	NS	NA					
Methylene Chloride	NS	NS	NS	68 ●	53 J	12.0			
Toluene	< 930	930 – 4,500	> 4,500	NA	39 J				
Xylene, Total	< 590	590 – 5,200	> 5,200	NA	**700.0**				**13,000**
Total VOCs	**NS**	**NS**	**NS**	**NA**	**1,562 J**	**12.0**	**NA**		**10.92 J**
Semivolatile Organic Compounds (µg/kg)									
2-Methylnaphthalene (PAH)	NS	NS	NS	NA	1,900,000	2,500	100,000		330,000
2-Methylphenol	NS	NS	NS	NA					
2,4-Dimethylphenol	NS	NS	NS	3,600 ●					
4-Nitrophenol	NS	NS	NS	NA					
Acenaphthene (PAH)	NS	NS	NS	9,820	**790,000**	6,300	**250,000**		**120,000**
Acenapthylene (PAH)	NS	NS	NS	9,040	**700,000**	**32,000**	**410,000**		**28,000**
Anthracene (PAH)	NS	NS	NS	11,880	**1,000,000**	**19,000**	**620,000**		**85,000**
Benzo[a]anthracene (PAH)	NS	NS	NS	16,820	**790,000**	**48,000**	**880,000**		**54,000**
Benzo[a]pyrene (PAH)	NS	NS	NS	19,280	**710,000**	**50,000**	**850,000**		**53,000**
Benzo[b]fluoranthene (PAH)	NS	NS	NS	19,580	**360,000**	**33,000**	**550,000**		**37,000**
Benzo[g,h,i]perylene (PAH)	NS	NS	NS	21,900	**350,000**	**30,000**	**440,000**		20,000
Benzo[k]fluoranthene (PAH)	NS	NS	NS	19,600	**160,000**	8,900	**180,000**		15,000
Biphenyl	NS	NS	NS	NA	300,000	1,100 J			

Table 6-13
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NYSDEC Remedial Investigation
31 Tonawanda Street Off-Site Area, Site No. C915299A
Buffalo, New York

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Sample Number Sample Type Depth Interval (ft) Sample Date	Sediment Guidance Values Class A *	Sediment Guidance Values Class B **	Sediment Guidance Values Class C +	Sediment Guidance Values for PAHs ++	BSA-SED-1 Sediment 0.0' - 0.3' 01/15/20	BSA-SED-2 Sediment 0.0' - 0.3' 01/15/20	BPH-Out Sediment 0.0' - 0.3' 11/18/21		BPH-Sump Sediment ≈ 19 11/18/21
Semivolatile Organic Compounds (continued)									
Bis(2-ethylhexyl)phthalate	< 360,000	> 360,000	NS	NA			9,700		4,900
Carbazole	NS	NS	NS	NA		520 J			
Chrysene (PAH)	NS	NS	NS	16,860	**570,000**	**38,000**	**760,000**		**44,000**
Dibenzo(a,h)anthracene (PAH)	NS	NS	NS	22,440	**86,000**	6,900	**110,000**		4,400
Dibenzofuran	NS	NS	NS	NA	130,000	850 J	52,000		19,000
Diethyl phthalate	NS	NS	NS	NA					
Fluoranthene (PAH)	NS	NS	NS	14,160	**1,300,000**	**57,000**	**1,500,000**		**99,000**
Fluorene (PAH)	NS	NS	NS	10,780	**800,000**	8,000	**540,000**		**84,000**
Indeno(1,2,3-cd)pyrene (PAH)	NS	NS	NS	22,300	**240,000**	21,000	**370,000**		18,000
Naphthalene (PAH)	NS	NS	NS	7,700	**870,000**	1,500	**19,000**		**380,000**
Phenanthrene (PAH)	NS	NS	NS	11,940	**2,600,000**	**36,000**	**2,700,000**		**300,000**
Pyrene (PAH)	NS	NS	NS	13,960	**2,700,000**	**120,000**	**3,700,000**		**210,000**
Total PAH	**< 4,000**	**4,000 – 35,000**	**> 35,000**	**NS**	**15,926,000**	**518,100 J**	**13,979,000**		**1,881,400**
Total SVOCs	**NS**	**NS**	**NS**	**NS**	**16,356,000**	**518,100 J**	**14,040,700**		**1,905,300**
Pesticides (µg/kg)									
Aldrin	NS	NS	NS	NA	NA	NA	NA		NA
alpha-BHC	NS	NS	NS	0.21 ●	"	"	"		"
beta-BHC	NS	NS	NS	0.84 ●	"	"	"		"
delta-BHC	NS	NS	NS	0.81 ●	"	"	"		"
gamma-BHC (Lindane)	< 47	47 - 78	> 78	NA	"	"	"		"
alpha-Chlordane	< 68	68 - 38,000	> 38,000	NA	"	"	"		"
gamma-Chlordane	< 68	68 - 38,000	> 38,000	NA	"	"	"		"
oxy-Chlordane	< 68	68 - 38,000	> 38,000	NA	"	"	"		"
4,4'-DDD	NS	NS	NS	1.4 ●	"	"	"		"
4,4'-DDE	NS	NS	NS	0.62 ●	"	"	"		"
4,4'-DDT	< 44	44 - 48,000	> 48,000	NA	"	"	"		"
Dieldrin	< 180	180 - 780	> 780	NA	"	"	"		"

Table 6-13
Summary of the 2020 & 2021 Sediment Analytical Results from the Scajaquada Creek Slip
NYSDEC Remedial Investigation
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Buffalo, New York

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Sample Number Sample Type Depth Interval (ft) Sample Date	Sediment Guidance Values Class A *	Sediment Guidance Values Class B **	Sediment Guidance Values Class C +	Sediment Guidance Values for PAHs ++	BSA-SED-1 Sediment 0.0' - 0.3' 01/15/20	BSA-SED-2 Sediment 0.0' - 0.3' 01/15/20	BPH-Out Sediment 0.0' - 0.3' 11/18/21		BPH-Sump Sediment ≈ 19 11/18/21
Pesticides (continued)									
Endosulfan I	< 1	1 - 20	> 20	NA	NA	NA	NA		NA
Endosulfan II	NS	NS	NS	NA	"	"	"		"
Endosulfan Sulfate	NS	NS	NS	NA	"	"	"		"
Endrin	< 90	90 - 220	> 220	NA	"	"	"		"
Endrin Ketone	NS	NS	NS	NA	"	"	"		"
Heptachlor	< 75	75 - 10,000	> 10,000	NA	"	"	"		"
Heptachlor Epoxide	< 15	15 - 2,100	> 2,100	NA	"	"	"		"
PCBs (µg/kg)									
Aroclor 1242									
Aroclor 1248									
Aroclor 1254									110.0
Aroclor 1260					310.0	170.0			
Aroclor 1262									
Aroclor 1268									
Total PCBs	< 100	100 - 1,000	> 1,000	NA	**310.0**	**170.0**			**110.0**
Metals (mg/kg or ppm)									
Aluminum	NS	NS	NS	NA	NA	NA	4,000		4,000
Antimony ■	NS	NS	NS	NA	"	"	20.0		25.0
Arsenic ■	< 10	10 - 33	> 33	NA	"	"	**18.0**		**15.0**
Barium	NS	NS	NS	NA	"	"	53.0		110.0
Beryllium ■	NS	NS	NS	NA	"	"	0.40		0.41
Cadmium ■	< 1	1 - 5	> 5	NA	"	"	0.84		**1.4**
Calcium	NS	NS	NS	NA	"	"	160,000		150,000
Chromium ■	< 43	43 - 110	> 110	NA	"	"	**82.0**		**120.0**
Cobalt	NS	NS	NS	NA	"	"	4.7		4.9
Copper ■	< 32	32 - 150	> 150	NA	"	"	**66.0**		**110.0**
Iron	NS	NS	NS	NA	"	"	56,000		43,000

Table 6-13
Summary of the 2020 & 2021 Sediment Analytical Results from the Scajaquada Creek Slip
NYSDEC Remedial Investigation
31 Tonawanda Street Off-Site Area, Site No. C915299A
Buffalo, New York

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Sample Number Sample Type Depth Interval (ft) Sample Date	Sediment Guidance Values Class A *	Sediment Guidance Values Class B **	Sediment Guidance Values Class C +	Sediment Guidance Values for PAHs ++	BSA-SED-1 Sediment 0.0' - 0.3' 01/15/20	BSA-SED-2 Sediment 0.0' - 0.3' 01/15/20	BPH-Out Sediment 0.0' - 0.3' 11/18/21		BPH-Sump Sediment ≈ 19 11/18/21
Metals (continued)									
Lead ■	< 36	36 - 130	> 130	NA	NA	NA	**290.0**		**380.0**
Magnesium	NS	NS	NS	NA	"	"	40,000		36,000
Manganese	NS	NS	NS	NA	"	"	700.0		660.0
Mercury ■	< 0.2	0.2 - 1	> 1	NA	"	"	0.054		0.047
Nickel	< 23	23 - 49	> 49	NA	"	"	**25.0**		**23.0**
Potassium	NS	NS	NS	NA	"	"	1,400		870.0
Selenium ■	NS	NS	NS	NA	"	"			
Silver ■	< 1	1 - 2.2	> 2.2	NA	"	"	0.69		
Sodium	NS	NS	NS	NA	"	"	370.0		330.0
Thallium	NS	NS	NS	NA	"	"			
Vanadium	NS	NS	NS	NA	"	"	20.0		16.0
Zinc ■	< 120	120 - 460	> 460	NA	"	"	**370.0**		**500.0**
Miscellaneous Compounds									
Gasoline (mg/kg)	NS	NS	NS	NA			NA		16,000
Percent Moisture (%)	NS	NS	NS	NA	57.6	54.1	NA		NA
Total Organic Carbon (%)	NS	NS	NS	NA	21.10	8.21	NA		NA

Notes:

*** = Sediment is considered to present a low risk to aquatic life.**
**** = Sediment is considered to be moderately contaminated.**
+ = Sediment is considered highly contaminated and likely to present a high risk to aquatic life.
++ = PAH sediment guidance value at 2% TOC.
● = Sediment criteria for the protection of human health bioaccumulation at 2% TOC. Used when no other guidance value is available.
■ = Environmental Protection Agency priority pollutant metal.
mg/kg = milligrams per kilogram or parts per million.
ug/kg = micrograms per kilogram or parts per billion.
J = Analyte is positively identified with concentration qualified as estimated value.
^ = Instrument related QC is outside acceptance limits.
F1 = MS and/or MSD Recovery is outside acceptance limits.
F2 = MS/MSD RPD exceeds control limits
NA = Not applicable (for standards) or not analyzed (for results).

Notes (continued):

NS = No standard or guidance value available.
P = The %RPD between the primary and confirmation column/detector is >40%. The lower value has been reported.
PAH = Polycyclic aromatic hydrocarbon.
Blanks = compound not detected.
Yellow shaded results exceed the NYSDEC Class B sediment guidance values.
Orange shaded results exceed the NYSDEC Class C sediment guidance values.
Pink shaded results exceed the PAH sediment guidance values.
Gray shaded results exceed the human health bioaccumulation sediment guidance values.

Table 6-14A
Summary of Surface Water Analytical Results
NYSDEC Remedial Investigation
31 Tonawanda Street Off-Site Area, Site No. C915299A
Buffalo, New York

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Sample Number Sample Date Sample Depth (ft bgs) Sample Location	NYSDEC Surface Water Standard ●	31-SW-1 09/14/20 N/A Pipe at 31 Ton.	DI6-N 09/06/22 N/A Pipe in C.B.	DI6-E 09/06/22 N/A Pipe in C.B.	DI6-S 09/06/22 N/A Pipe in C.B.	MH1 09/06/22 N/A Center Niag. St.	MH2 09/06/22 N/A Center Niag. St.	MH3 09/06/22 N/A Center Niag. St.
Volatile Organic Compounds (ug/L)								
1,1,1-Trichloroethane	5.0		**16.0**	**9.4**	**6.0**			**8.4**
1,1,2-Trichloroethane	1.0							
1,1,2,2-Tetrachloroethane	0.2 G							
1,1-Dichloroethane	5.0		**11.0**	**10.0**	**6.5**		**8.1**	**8.2**
1,1-Dichloroethene	0.7 G		0.34 J	0.51 J				
1,2-Dichlorobenzene	3.0							
1,2-Dichloroethane	0.6							
cis-1,2-Dichloroethene	5.0		**41.0**	0.22 J	**25.0**		**15.0**	**24.0**
trans-1,2-Dichloroethene	5.0		0.80 J		0.60 J			0.46 J
1,2,4-Trichlorobenzene	5.0 G							
1,2,4-Trimethylbenzene	5.0							
1,3,5-Trimethylbenzene	5.0							
Acetone	50.0 G					5.7 J		
Benzene	1.0		**1.8 J**		0.84 J		**3.7 J**	1.0 J
Carbon Disulfide	60.0 G							
Chloroethane	5.0 G							
Chloroform	7.0							
Ethylbenzene	5.0							
Isopropylbenzene	5.0 G							
p-Isopropyltoluene	5.0							
Methyl Acetate	NS							
Methyl ethyl ketone (2-Butanone)	50.0 G							
Methyl tert-butyl ether	10.0 G							
Methylcyclohexane	NS							
Methylene Chloride	5.0							
Naphthalene (PAH)	13.0 G	NA	NA	NA	NA	NA	NA	NA
n-Propylbenzene	5.0							
Styrene	5.0 G							

Table 6-14A
Summary of Surface Water Analytical Results
NYSDEC Remedial Investigation
31 Tonawanda Street Off-Site Area, Site No. C915299A
Buffalo, New York

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Sample Number Sample Date Sample Depth (ft bgs) Sample Location	NYSDEC Surface Water Standard ●	31-SW-1 09/14/20 N/A Pipe at 31 Ton.	DI6-N 09/06/22 N/A Pipe in C.B.	DI6-E 09/06/22 N/A Pipe in C.B.	DI6-S 09/06/22 N/A Pipe in C.B.	MH1 09/06/22 N/A Center Niag. St.	MH2 09/06/22 N/A Center Niag. St.	MH3 09/06/22 N/A Center Niag. St.
Volatile Organic Compounds (continued)								
Tetrachloroethene	0.7 G							
Toluene	5.0							
Trichloroethene	5.0		0.98 J					0.48 J
Vinyl Chloride	0.3 G		**5.7**		**4.0**		**7.3 J**	**6.7**
Xylene (Total)	5.0							
Semi-Volatile Organic Compounds (ug/L)								
1,1-Biphenyl	5.0 G	NA						
2,4-Dimethylphenol	50.0 G	"						
2-Methylnaphthalene (PAH)	4.7	"						
2-Methylphenol	1.0 *	"						
2-Nitroaniline	5.0 G	"						
4-Chloro-3-Methylphenol	NS	"						
4-Methylphenol	1.0 *	"						
Acenaphthene (PAH)	20.0	"						
Acenapthylene (PAH)	NS	"						
Acetophenone	NS	"						
Anthracene (PAH)	50.0 G	"						
Benzo[a]anthracene (PAH)	0.002 G	"						
Benzo[a]pyrene (PAH)	0.002 G	"						
Benzo[b]fluoranthene (PAH)	0.002 G	"						
Benzo[g,h,i]perylene (PAH)	NS	"						
Benzo[k]fluoranthene (PAH)	0.002 G	"						
Bis(2-chloroethoxy)methane	5.0 G	"						
Bis(2-ethylhexyl) phthalate	5.0	"						
Carbazole	NS	"						
Chrysene (PAH)	0.002 G	"						
Dibenzo[a,h]anthracene (PAH)	NS	"						
Dibenzofuran	NS	"						

Table 6-14A
Summary of Surface Water Analytical Results
NYSDEC Remedial Investigation
31 Tonawanda Street Off-Site Area, Site No. C915299A
Buffalo, New York

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Sample Number Sample Date Sample Depth (ft bgs) Sample Location	NYSDEC Surface Water Standard ●	31-SW-1 09/14/20 N/A Pipe at 31 Ton.	DI6-N 09/06/22 N/A Pipe in C.B.	DI6-E 09/06/22 N/A Pipe in C.B.	DI6-S 09/06/22 N/A Pipe in C.B.	MH1 09/06/22 N/A Center Niag. St.	MH2 09/06/22 N/A Center Niag. St.	MH3 09/06/22 N/A Center Niag. St.
Semi-Volatile Organic Compounds (continued)								
Diethylphthalate	50.0 G	"						
Dimethylphthalate	50.0 G	"						
Di-n-butylphthalate	50.0 G	"						
Fluoranthene (PAH)	50.0 G	"						
Fluorene (PAH)	50.0 G	"						
Hexachlorobenzene	0.0	"						
Hexachloroethane	5.0	"						
Indeno[1,2,3-cd]pyrene (PAH)	0.002 G	"						
Naphthalene (PAH)	13.0 G	"						
Pentachlorophenol	1.0 *	"						
Phenanthrene (PAH)	50.0 G	"						
Phenol	1.0 *	"						
Pyrene (PAH)	50.0 G	"						
Pesticides (ug/L)								
4,4-DDD	0.3	NA	NA	NA	NA	NA	NA	NA
4,4-DDE	0.2	"	"	"	"	"	"	"
4,4-DDT	0.2	"	"	"	"	"	"	"
Aldrin	0.002 G	"	"	"	"	"	"	"
alpha-BHC	0.01	"	"	"	"	"	"	"
alpha or cis-Chlordane	0.05	"	"	"	"	"	"	"
beta-BHC	0.04	"	"	"	"	"	"	"
delta-BHC	0.04	"	"	"	"	"	"	"
Dieldrin	0.004	"	"	"	"	"	"	"
Endosulfan I	NS	"	"	"	"	"	"	"
Endosulfan II	NS	"	"	"	"	"	"	"
Endosulfan sulfate	NS	"	"	"	"	"	"	"
Endrin	0.2	"	"	"	"	"	"	"
Endrin Aldehyde	5.0 G	"	"	"	"	"	"	"

Table 6-14A
Summary of Surface Water Analytical Results
NYSDEC Remedial Investigation
31 Tonawanda Street Off-Site Area, Site No. C915299A
Buffalo, New York

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Sample Number Sample Date Sample Depth (ft bgs) Sample Location	NYSDEC Surface Water Standard ●	31-SW-1 09/14/20 N/A Pipe at 31 Ton.	DI6-N 09/06/22 N/A Pipe in C.B.	DI6-E 09/06/22 N/A Pipe in C.B.	DI6-S 09/06/22 N/A Pipe in C.B.	MH1 09/06/22 N/A Center Niag. St.	MH2 09/06/22 N/A Center Niag. St.	MH3 09/06/22 N/A Center Niag. St.
Pesticides (continued)								
Endrin Ketone	5.0 G	NA	NA	NA	NA	NA	NA	NA
gamma-BHC (Lindane)	0.05	"	"	"	"	"	"	"
gamma or trans-Chlordane	0.05	"	"	"	"	"	"	"
Heptachlor	0.04	"	"	"	"	"	"	"
Heptachlor epoxide	0.03	"	"	"	"	"	"	"
Methoxychlor	35.0	"	"	"	"	"	"	"
PCBs (ug/L)								
Aroclor 1248		NA	NA	NA	NA	NA	NA	NA
Aroclor 1254		"	"	"	"	"	"	"
Aroclor 1260		"	"	"	"	"	"	"
Total PCBs	0.09	"	"	"	"	"	"	"
Metals (ug/L)								
Aluminum	100.0	NA	NA	NA	NA	NA	NA	**NA**
Antimony ■	3.0	"	"	"	"	"	"	"
Arsenic ■	50.0	"	"	"	"	"	"	"
Barium	1,000	"	"	"	"	"	"	"
Beryllium ■	3.0 G	"	"	"	"	"	"	"
Cadmium ■	5.0	"	"	"	"	"	"	"
Calcium	NS	"	"	"	"	"	"	"
Chromium ■	50.0	"	"	"	"	"	"	"
Cobalt	5.0	"	"	"	"	"	"	"
Copper ■	200.0	"	"	"	"	"	"	"
Cyanide	200.0	"	"	"	"	"	"	"
Iron	300.0	"	"	"	"	"	"	"
Lead ■	50.0	"	"	"	"	"	"	"
Magnesium	35,000	"	"	"	"	"	"	"
Manganese	300.0	"	"	"	"	"	"	"
Mercury ■	0.7	"	"	"	"	"	"	"

Table 6-14A
Summary of Surface Water Analytical Results
NYSDEC Remedial Investigation
31 Tonawanda Street Off-Site Area, Site No. C915299A
Buffalo, New York

New York State of Opportunity | Department of Environmental Conservation

Sample Number Sample Date Sample Depth (ft bgs) Sample Location	NYSDEC Surface Water Standard ●	31-SW-1 09/14/20 N/A Pipe at 31 Ton.	DI6-N 09/06/22 N/A Pipe in C.B.	DI6-E 09/06/22 N/A Pipe in C.B.	DI6-S 09/06/22 N/A Pipe in C.B.	MH1 09/06/22 N/A Center Niag. St.	MH2 09/06/22 N/A Center Niag. St.	MH3 09/06/22 N/A Center Niag. St.
Metals (continued)								
Nickel	100.0	NA	NA	NA	NA	NA	NA	**NA**
Potassium	NS	"	"	"	"	"	"	"
Selenium ■	10.0	"	"	"	"	"	"	"
Silver ■	50.0	"	"	"	"	"	"	"
Sodium	NS	"	"	"	"	"	"	"
Thallium	0.5 G	"	"	"	"	"	"	"
Vanadium	14.0	"	"	"	"	"	"	"
Zinc ■	2,000 G	"	"	"	"	"	"	"
Miscellaneous Compounds (ug/L)								
1,4-Dioxane	0.35 G	NA	**23.0**	**0.47**	**17.0**		**73.0**	**16.0**

Notes:

Other than sample 31-SW-1, the remaining samples are associated with the Niagara Street Pump House storm water sewer system. These samples are tabulated from roughly up-sewer to down-sewer locations.
● = NYSDEC Ambient Water Quality Standards and Guidance Values, June 1998, with addenda through 2021.
*** = Applies to sum of phenolic compounds.**
B = Analyte was detected in the associated blank, as well as in the sample (organics); value is greater than or equal to the instrument detection limit, but less contract required than the detection limit (inorganics).
C.B. = Catch basin.
D = Result obtained from an analysis at a secondary dilution factor.
J = Analyte was positively identified at an estimated concentration.
NA = Not analyzed.
N/A = Not applicable.
NS = No standard or guidance value available.
ug/L = micrograms per liter or parts per billion.
Blanks = Contaminant was analyzed for but not detected at or above the laboratory detection limit.
Yellow shaded values exceed NYSDEC surface water standards or guidance values.

Table 6-14B
Summary of Surface Water Analytical Results
NYSDEC Remedial Investigation
31 Tonawanda Street Off-Site Area, Site No. C915299A
Buffalo, New York

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Sample Number Sample Date Sample Depth (ft bgs) Sample Location	NYSDEC Surface Water Standard ●	MH4 09/06/22 N/A Center Niag. St.	MH21 09/06/22 N/A Manhole 21	MH21 12/07/22 N/A Manhole 21	BPH-MH 11/18/21 ≈ 9 Manhole 23	MH23 09/06/22 ≈ 9 Manhole 23	MH23 12/07/22 ≈ 9 Manhole 23	
Volatile Organic Compounds (ug/L)								
1,1,1-Trichloroethane	5.0		**24.0**	0.88 J	**38.0**	**23.0**	3.0 J	
1,1,2-Trichloroethane	1.0							
1,1,2,2-Tetrachloroethane	0.2 G							
1,1-Dichloroethane	5.0		**120.0**	1.2	**110.0**	**120.0**	**36.0**	
1,1-Dichloroethene	0.7 G		**6.8 J**		**8.6 J**	**5.8 J**	**1.2 J**	
1,2-Dichlorobenzene	3.0							
1,2-Dichloroethane	0.6							
cis-1,2-Dichloroethene	5.0	1.1 J	**1,100**	4.9	**1,200**	**930.0**	**250.0**	
trans-1,2-Dichloroethene	5.0		1.9 J			1.7 J		
1,2,4-Trichlorobenzene	5.0 G							
1,2,4-Trimethylbenzene	5.0				**30.0**			
1,3,5-Trimethylbenzene	5.0				**9.8 J**			
Acetone	50.0 G			12.0 J			20.0 J	
Benzene	1.0		**79.0**		**120.0**	**100.0**	**32.0**	
Carbon Disulfide	60.0 G							
Chloroethane	5.0 G		**46.0**		**36 J**	**44.0**	**18.0**	
Chloroform	7.0			0.74 J			0.72 J	
Ethylbenzene	5.0				**200.0**	**130.0**	**27.0**	
Isopropylbenzene	5.0 G				4.2 J	3.3 J	0.80 J	
p-Isopropyltoluene	5.0							
Methyl Acetate	NS				24.0			
Methyl ethyl ketone (2-Butanone)	50.0 G				**100 J**		25.0 J	
Methyl tert-butyl ether	10.0 G							
Methylcyclohexane	NS							
Methylene Chloride	5.0							
Naphthalene (PAH)	13.0 G	NA	NA	NA	**510.0**	NA	NA	
n-Propylbenzene	5.0							
Styrene	5.0 G				3.6 J			

Table 6-14B
Summary of Surface Water Analytical Results
NYSDEC Remedial Investigation
31 Tonawanda Street Off-Site Area, Site No. C915299A
Buffalo, New York

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Sample Number Sample Date Sample Depth (ft bgs) Sample Location	NYSDEC Surface Water Standard ●	MH4 09/06/22 N/A Center Niag. St.	MH21 09/06/22 N/A Manhole 21	MH21 12/07/22 N/A Manhole 21	BPH-MH 11/18/21 ≈ 9 Manhole 23	MH23 09/06/22 ≈ 9 Manhole 23	MH23 12/07/22 ≈ 9 Manhole 23	
Volatile Organic Compounds (continued)								
Tetrachloroethene	0.7 G							
Toluene	5.0				**71.0**	**45.0**	**13.0**	
Trichloroethene	5.0		3.6 J	**9.6**		**5.5 J**	**8.4**	
Vinyl Chloride	0.3 G	0.94 J	**320.0**	**0.95 J**	**210.0**	**330.0**	**87.0**	
Xylene (Total)	5.0				**133.0**	**79.0**	**19.0**	
Semi-Volatile Organic Compounds (ug/L)								
1,1-Biphenyl	5.0 G				NA			
2,4-Dimethylphenol	50.0 G				4.4 J	4.9 J		
2-Methylnaphthalene (PAH)	4.7							
2-Methylphenol	1.0 *							
2-Nitroaniline	5.0 G		0.69 J					
4-Chloro-3-Methylphenol	NS		0.89 J					
4-Methylphenol	1.0 *							
Acenaphthene (PAH)	20.0		1.0 J		1.5 J	1.2 J		
Acenapthylene (PAH)	NS							
Acetophenone	NS				2.0 J			
Anthracene (PAH)	50.0 G				0.63 J	0.58 J		
Benzo[a]anthracene (PAH)	0.002 G					**0.47 J**		
Benzo[a]pyrene (PAH)	0.002 G							
Benzo[b]fluoranthene (PAH)	0.002 G							
Benzo[g,h,i]perylene (PAH)	NS							
Benzo[k]fluoranthene (PAH)	0.002 G							
Bis(2-chloroethoxy)methane	5.0 G		1.0 J					
Bis(2-ethylhexyl) phthalate	5.0							
Carbazole	NS				0.48 J			
Chrysene (PAH)	0.002 G							
Dibenzo[a,h]anthracene (PAH)	NS							
Dibenzofuran	NS							

Table 6-14B
Summary of Surface Water Analytical Results
NYSDEC Remedial Investigation
31 Tonawanda Street Off-Site Area, Site No. C915299A
Buffalo, New York

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Sample Number Sample Date Sample Depth (ft bgs) Sample Location	NYSDEC Surface Water Standard ●	MH4 09/06/22 N/A Center Niag. St.	MH21 09/06/22 N/A Manhole 21	MH21 12/07/22 N/A Manhole 21	BPH-MH 11/18/21 ≈ 9 Manhole 23	MH23 09/06/22 ≈ 9 Manhole 23	MH23 12/07/22 ≈ 9 Manhole 23	
Semi-Volatile Organic Compounds (continued)								
Diethylphthalate	50.0 G							
Dimethylphthalate	50.0 G							
Di-n-butylphthalate	50.0 G							
Fluoranthene (PAH)	50.0 G		0.95 J		0.47 J	1.0 J		
Fluorene (PAH)	50.0 G		0.50 J		3.2 J	1.0 J		
Hexachlorobenzene	0.04							
Hexachloroethane	5.0		0.79 J					
Indeno[1,2,3-cd]pyrene (PAH)	0.002 G							
Naphthalene (PAH)	13.0 G							
Pentachlorophenol	1.0 *							
Phenanthrene (PAH)	50.0 G				1.6 J	0.49 J		
Phenol	1.0 *		**8.3 J**		**4.8 J**	**7.5 J**	0.66 J	
Pyrene (PAH)	50.0 G		1.3 J		0.60 J	1.8 J		
Pesticides (ug/L)								
4,4-DDD	0.3	NA	NA	NA	NA	NA	NA	
4,4-DDE	0.2	"	"	"	"	"	"	
4,4-DDT	0.2	"	"	"	"	"	"	
Aldrin	0.002 G	"	"	"	"	"	"	
alpha-BHC	0.01	"	"	"	"	"	"	
alpha or cis-Chlordane	0.05	"	"	"	"	"	"	
beta-BHC	0.04	"	"	"	"	"	"	
delta-BHC	0.04	"	"	"	"	"	"	
Dieldrin	0.004	"	"	"	"	"	"	
Endosulfan I	NS	"	"	"	"	"	"	
Endosulfan II	NS	"	"	"	"	"	"	
Endosulfan sulfate	NS	"	"	"	"	"	"	
Endrin	0.2	"	"	"	"	"	"	
Endrin Aldehyde	5.0 G	"	"	"	"	"	"	

Table 6-14B
Summary of Surface Water Analytical Results
NYSDEC Remedial Investigation
31 Tonawanda Street Off-Site Area, Site No. C915299A
Buffalo, New York

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Sample Number Sample Date Sample Depth (ft bgs) Sample Location	NYSDEC Surface Water Standard ●	MH4 09/06/22 N/A Center Niag. St.	MH21 09/06/22 N/A Manhole 21	MH21 12/07/22 N/A Manhole 21	BPH-MH 11/18/21 ≈ 9 Manhole 23	MH23 09/06/22 ≈ 9 Manhole 23	MH23 12/07/22 ≈ 9 Manhole 23	
Pesticides (continued)								
Endrin Ketone	5.0 G	NA	NA	NA	NA	NA	NA	
gamma-BHC (Lindane)	0.05	"	"	"	"	"	"	
gamma or trans-Chlordane	0.05	"	"	"	"	"	"	
Heptachlor	0.04	"	"	"	"	"	"	
Heptachlor epoxide	0.03	"	"	"	"	"	"	
Methoxychlor	35.0	"	"	"	"	"	"	
PCBs (ug/L)								
Aroclor 1248		NA	NA	NA		NA	NA	
Aroclor 1254		"	"	"		"	"	
Aroclor 1260		"	"	"		"	"	
Total PCBs	0.09	"	"	"		"	"	
Metals (ug/L)								
Aluminum	100.0	NA	NA	NA	**4,800**	NA	NA	
Antimony ■	3.0	"	"	"	1.3 B	"	"	
Arsenic ■	50.0	"	"	"	2.6	"	"	
Barium	1,000	"	"	"	150.0	"	"	
Beryllium ■	3.0 G	"	"	"	0.23 J	"	"	
Cadmium ■	5.0	"	"	"	0.093 J	"	"	
Calcium	NS	"	"	"	110,000	"	"	
Chromium ■	50.0	"	"	"	8.9	"	"	
Cobalt	5.0	"	"	"	2.7	"	"	
Copper ■	200.0	"	"	"	26.0	"	"	
Cyanide	200.0	"	"	"	NA	"	"	
Iron	300.0	"	"	"	**5,200**	"	"	
Lead ■	50.0	"	"	"	43.0	"	"	
Magnesium	35,000	"	"	"	20,000	"	"	
Manganese	300.0	"	"	"	260.0	"	"	
Mercury ■	0.7	"	"	"		"	"	

Table 6-14B
Summary of Surface Water Analytical Results
NYSDEC Remedial Investigation
31 Tonawanda Street Off-Site Area, Site No. C915299A
Buffalo, New York

Sample Number Sample Date Sample Depth (ft bgs) Sample Location	NYSDEC Surface Water Standard ●	MH4 09/06/22 N/A Center Niag. St.	MH21 09/06/22 N/A Manhole 21	MH21 12/07/22 N/A Manhole 21	BPH-MH 11/18/21 ≈ 9 Manhole 23	MH23 09/06/22 ≈ 9 Manhole 23	MH23 12/07/22 ≈ 9 Manhole 23	
Metals (continued)								
Nickel	100.0	NA	NA	NA	10.0	NA	NA	
Potassium	NS	"	"	"	8,900	"	"	
Selenium ■	10.0	"	"	"	2.2 J	"	"	
Silver ■	50.0	"	"	"	0.15 J	"	"	
Sodium	NS	"	"	"	150,000	"	"	
Thallium	0.5 G	"	"	"	0.079 J	"	"	
Vanadium	14.0	"	"	"	9.5	"	"	
Zinc ■	2,000 G	"	"	"	120.0	"	"	
Miscellaneous Compounds (ug/L)								
1,4-Dioxane	0.35 G	**0.90**	**17.0**	**1.3**	NA	**19.0**	**3.6**	

Notes:

● = NYSDEC Ambient Water Quality Standards and Guidance Values, June 1998, with addenda through 2021.
*** = Applies to sum of phenolic compounds.**
B = Analyte was detected in the associated blank, as well as in the sample (organics); value is greater than or equal to the instrument detection limit, but less contract required than the detection limit (inorganics).
D = Result obtained from an analysis at a secondary dilution factor.
J = Analyte was positively identified at an estimated concentration.
NA = Not analyzed.
N/A = Not applicable.
NS = No standard or guidance value available.
P.H. = Pump house.
ug/L = micrograms per liter or parts per billion.
Blanks = Contaminant was analyzed for but not detected at or above the laboratory detection limit.
Yellow shaded values exceed NYSDEC surface water standards or guidance values.

Table 6-14C
Summary of Surface Water Analytical Results
NYSDEC Remedial Investigation
31 Tonawanda Street Off-Site Area, Site No. C915299A
Buffalo, New York

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Sample Number Sample Date Sample Depth (ft bgs) Sample Location	NYSDEC Surface Water Standard ●	BPH-Sump 11/18/21 ≈ 14 P.H. Sump	Vault 09/06/22 ≈ 14 P.H. Sump	Vault 12/07/22 ≈ 14 P.H. Sump	BSA-SW-1 01/15/20 N/A P.H. Outfall			
Volatile Organic Compounds (ug/L)								
1,1,1-Trichloroethane	5.0	**43.0**	**30.0**	3.1 J				
1,1,2-Trichloroethane	1.0							
1,1,2,2-Tetrachloroethane	0.2 G							
1,1-Dichloroethane	5.0	**130.0**	**160.0**	**40.0**				
1,1-Dichloroethene	0.7 G	**8.2 J**	**8.0 J**	**1.5 J**				
1,2-Dichlorobenzene	3.0							
1,2-Dichloroethane	0.6							
cis-1,2-Dichloroethene	5.0	**1,500**	**1,400**	**280.0**	2.8			
trans-1,2-Dichloroethene	5.0							
1,2,4-Trichlorobenzene	5.0 G							
1,2,4-Trimethylbenzene	5.0	**31.0**						
1,3,5-Trimethylbenzene	5.0	**12.0 J**						
Acetone	50.0 G		48 J	20.0 J				
Benzene	1.0	**140.0**	**120.0**	**35.0**				
Carbon Disulfide	60.0 G							
Chloroethane	5.0 G	**45.0 J**	**61.0**	**21.0**				
Chloroform	7.0			1.1 J				
Ethylbenzene	5.0	**170.0**	**15.0 J**	**24.0**				
Isopropylbenzene	5.0 G	4.2 J		0.68 J				
p-Isopropyltoluene	5.0							
Methyl Acetate	NS	14.0 J						
Methyl ethyl ketone (2-Butanone)	50.0 G	**55.0 J**	**70.0 J**	23.0 J				
Methyl tert-butyl ether	10.0 G							
Methylcyclohexane	NS							
Methylene Chloride	5.0							
Naphthalene (PAH)	13.0 G	7.2 J	NA	NA	NA			
n-Propylbenzene	5.0							
Styrene	5.0 G	4.2 J						

Table 6-14C
Summary of Surface Water Analytical Results
NYSDEC Remedial Investigation
31 Tonawanda Street Off-Site Area, Site No. C915299A
Buffalo, New York

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Sample Number Sample Date Sample Depth (ft bgs) Sample Location	NYSDEC Surface Water Standard ●	BPH-Sump 11/18/21 ≈ 14 P.H. Sump	Vault 09/06/22 ≈ 14 P.H. Sump	Vault 12/07/22 ≈ 14 P.H. Sump	BSA-SW-1 01/15/20 N/A P.H. Outfall			
Volatile Organic Compounds (continued)								
Tetrachloroethene	0.7 G							
Toluene	5.0	**74.0**	**20 J**	**13.0**				
Trichloroethene	5.0		4.2 J	**6.4**				
Vinyl Chloride	0.3 G	**250.0**	**400.0**	**91.0**				
Xylene (Total)	5.0	**124.0**	**38.0**	**18.0**				
Semi-Volatile Organic Compounds (ug/L)								
1,1-Biphenyl	5.0 G	NA						
2,4-Dimethylphenol	50.0 G	7.7 J	5.7 J					
2-Methylnaphthalene (PAH)	4.7							
2-Methylphenol	1.0 *							
2-Nitroaniline	5.0 G							
4-Chloro-3-Methylphenol	NS							
4-Methylphenol	1.0 *	0.5 J						
Acenaphthene (PAH)	20.0		0.68 J					
Acenapthylene (PAH)	NS							
Acetophenone	NS	1.4 J						
Anthracene (PAH)	50.0 G	0.76 J	0.54 J					
Benzo[a]anthracene (PAH)	0.002 G		**1.0 J**	**0.47 J**				
Benzo[a]pyrene (PAH)	0.002 G		**0.76 J**					
Benzo[b]fluoranthene (PAH)	0.002 G		**0.51 J**					
Benzo[g,h,i]perylene (PAH)	NS							
Benzo[k]fluoranthene (PAH)	0.002 G							
Bis(2-chloroethoxy)methane	5.0 G							
Bis(2-ethylhexyl) phthalate	5.0							
Carbazole	NS	0.53 J						
Chrysene (PAH)	0.002 G		**0.82 J**					
Dibenzo[a,h]anthracene (PAH)	NS							
Dibenzofuran	NS							

Table 6-14C
Summary of Surface Water Analytical Results
NYSDEC Remedial Investigation
31 Tonawanda Street Off-Site Area, Site No. C915299A
Buffalo, New York

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Sample Number Sample Date Sample Depth (ft bgs) Sample Location	NYSDEC Surface Water Standard ●	BPH-Sump 11/18/21 ≈ 14 P.H. Sump	Vault 09/06/22 ≈ 14 P.H. Sump	Vault 12/07/22 ≈ 14 P.H. Sump	BSA-SW-1 01/15/20 N/A P.H. Outfall			
Semi-Volatile Organic Compounds (continued)								
Diethylphthalate	50.0 G		0.66 J					
Dimethylphthalate	50.0 G							
Di-n-butylphthalate	50.0 G							
Fluoranthene (PAH)	50.0 G	0.58 J	2.6 J	0.53 J				
Fluorene (PAH)	50.0 G	2.3 J						
Hexachlorobenzene	0.04							
Hexachloroethane	5.0							
Indeno[1,2,3-cd]pyrene (PAH)	0.002 G							
Naphthalene (PAH)	13.0 G							
Pentachlorophenol	1.0 *							
Phenanthrene (PAH)	50.0 G	0.50 J	1.1 J					
Phenol	1.0 *	**4.8 J**	**8.9 J**	0.91 J				
Pyrene (PAH)	50.0 G	0.93 J	3.9 J	1.2 J	0.67 J			
Pesticides (ug/L)								
4,4-DDD	0.3	NA	NA	NA	NA			
4,4-DDE	0.2	"	"	"	"			
4,4-DDT	0.2	"	"	"	"			
Aldrin	0.002 G	"	"	"	"			
alpha-BHC	0.01	"	"	"	"			
alpha or cis-Chlordane	0.05	"	"	"	"			
beta-BHC	0.04	"	"	"	"			
delta-BHC	0.04	"	"	"	"			
Dieldrin	0.004	"	"	"	"			
Endosulfan I	NS	"	"	"	"			
Endosulfan II	NS	"	"	"	"			
Endosulfan sulfate	NS	"	"	"	"			
Endrin	0.2	"	"	"	"			
Endrin Aldehyde	5.0 G	"	"	"	"			

Table 6-14C
Summary of Surface Water Analytical Results
NYSDEC Remedial Investigation
31 Tonawanda Street Off-Site Area, Site No. C915299A
Buffalo, New York

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Sample Number Sample Date Sample Depth (ft bgs) Sample Location	NYSDEC Surface Water Standard ●	BPH-Sump 11/18/21 ≈ 14 P.H. Sump	Vault 09/06/22 ≈ 14 P.H. Sump	Vault 12/07/22 ≈ 14 P.H. Sump	BSA-SW-1 01/15/20 N/A P.H. Outfall			
Pesticides (continued)								
Endrin Ketone	5.0 G	NA	NA	NA	NA			
gamma-BHC (Lindane)	0.05	"	"	"	"			
gamma or trans-Chlordane	0.05	"	"	"	"			
Heptachlor	0.04	"	"	"	"			
Heptachlor epoxide	0.03	"	"	"	"			
Methoxychlor	35.0	"	"	"	"			
PCBs (ug/L)								
Aroclor 1248			NA	NA				
Aroclor 1254			"	"				
Aroclor 1260			"	"				
Total PCBs	0.09		"	"				
Metals (ug/L)								
Aluminum	100.0	**4,800**	NA	NA	NA			
Antimony ■	3.0	1.3 B	"	"	"			
Arsenic ■	50.0	1.6	"	"	"			
Barium	1,000	150.0	"	"	"			
Beryllium ■	3.0 G	0.17 J	"	"	"			
Cadmium ■	5.0		"	"	"			
Calcium	NS	100,000	"	"	"			
Chromium ■	50.0	7.4	"	"	"			
Cobalt	5.0	2.0	"	"	"			
Copper ■	200.0	17.0	"	"	"			
Cyanide	200.0	NA	"	"	"			
Iron	300.0	**4,200**	"	"	"			
Lead ■	50.0	23.0	"	"	"			
Magnesium	35,000	22,000	"	"	"			
Manganese	300.0	240.0	"	"	"			
Mercury ■	0.7		"	"	"			

Table 6-14C
Summary of Surface Water Analytical Results
NYSDEC Remedial Investigation
31 Tonawanda Street Off-Site Area, Site No. C915299A
Buffalo, New York

Sample Number Sample Date Sample Depth (ft bgs) Sample Location	NYSDEC Surface Water Standard ●	BPH-Sump 11/18/21 ≈ 14 P.H. Sump	Vault 09/06/22 ≈ 14 P.H. Sump	Vault 12/07/22 ≈ 14 P.H. Sump	BSA-SW-1 01/15/20 N/A P.H. Outfall			
Metals (continued)								
Nickel	100.0	8.3	NA	NA	NA			
Potassium	NS	8,100	"	"	"			
Selenium ■	10.0	2.1 J	"	"	"			
Silver ■	50.0	0.14 J	"	"	"			
Sodium	NS	160,000	"	"	"			
Thallium	0.5 G	0.087 J	"	"	"			
Vanadium	14.0	8.5	"	"	"			
Zinc ■	2,000 G	73.0	"	"	"			
Miscellaneous Compounds (ug/L)								
1,4-Dioxane	0.35 G	NA	**19.0**	**4.4**	NA			

Notes:
● = NYSDEC Ambient Water Quality Standards and Guidance Values, June 1998, with addenda through 2021.
* = Applies to sum of phenolic compounds.
B = Analyte was detected in the associated blank, as well as in the sample (organics); value is greater than or equal to the instrument detection limit, but less contract required than the detection limit (inorganics).
D = Result obtained from an analysis at a secondary dilution factor.
J = Analyte was positively identified at an estimated concentration.
NA = Not analyzed.
N/A = Not applicable.
NS = No standard or guidance value available.
P.H. = Pump house.
ug/L = micrograms per liter or parts per billion.
Blanks = Contaminant was analyzed for but not detected at or above the laboratory detection limit.
Yellow shaded values exceed NYSDEC surface water standards or guidance values.

Table 6-14D
Summary of Surface Water Analytical Results from Scajaquada Creek and the Black Rock Canal
NYSDEC Remedial Investigation
31 Tonawanda Street Off-Site Area, Site No. C915299A
Buffalo, New York

Sample Number Sample Date Sample Depth (ft bgs) Sample Location	NYSDEC Surface Water Standard ●	SC-SW-East 08/29/22 N/A At West Ave.	SC-SW-West 08/29/22 N/A At Mouth	Inlet-SW-North 08/29/22 N/A At 1660 Niag.	BSA-SW-1 01/15/20 N/A P.H. Outfall	Inlet-SW-South 08/29/22 N/A Near Channel	BR-SW-North 08/29/22 N/A Downstream	BR-SW-South 08/29/22 N/A Upstream
Volatile Organic Compounds (ug/L)								
1,1,1-Trichloroethane	5.0							
1,1,2-Trichloroethane	1.0							
1,1,2,2-Tetrachloroethane	0.2 G							
1,1-Dichloroethane	5.0			0.39 J				
1,1-Dichloroethene	0.7 G							
1,2-Dichlorobenzene	3.0							
1,2-Dichloroethane	0.6							
cis-1,2-Dichloroethene	5.0			2.4	2.8	0.86 J		
trans-1,2-Dichloroethene	5.0							
1,2,4-Trichlorobenzene	5.0 G							
1,2,4-Trimethylbenzene	5.0							
1,3,5-Trimethylbenzene	5.0							
Acetone	50.0 G			2.6 J				
Benzene	1.0							
Carbon Disulfide	60.0 G							
Chloroethane	5.0 G							
Chloroform	7.0							
Ethylbenzene	5.0							
Isopropylbenzene	5.0 G							
p-Isopropyltoluene	5.0							
Methyl Acetate	NS							
Methyl ethyl ketone (2-Butanone)	50.0 G							
Methyl tert-butyl ether	10.0 G							
Methylcyclohexane	NS							
Methylene Chloride	5.0							
Naphthalene (PAH)	13.0 G	NA	NA	NA	NA	NA	NA	NA
n-Propylbenzene	5.0							
Styrene	5.0 G							

Table 6-14D
Summary of Surface Water Analytical Results from Scajaquada Creek and the Black Rock Canal
NYSDEC Remedial Investigation
31 Tonawanda Street Off-Site Area, Site No. C915299A
Buffalo, New York

Sample Number Sample Date Sample Depth (ft bgs) Sample Location	NYSDEC Surface Water Standard ●	SC-SW-East 08/29/22 N/A At West Ave.	SC-SW-West 08/29/22 N/A At Mouth	Inlet-SW-North 08/29/22 N/A At 1660 Niag.	BSA-SW-1 01/15/20 N/A P.H. Outfall	Inlet-SW-South 08/29/22 N/A Near Channel	BR-SW-North 08/29/22 N/A Downstream	BR-SW-South 08/29/22 N/A Upstream
Volatile Organic Compounds (continued)								
Tetrachloroethene	0.7 G							
Toluene	5.0							
Trichloroethene	5.0							
Vinyl Chloride	0.3 G							
Xylene (Total)	5.0							
Semi-Volatile Organic Compounds (ug/L)								
1,1-Biphenyl	5.0 G							
2,4-Dimethylphenol	50.0 G							
2-Methylnaphthalene (PAH)	4.7							
2-Methylphenol	1.0 *							
2-Nitroaniline	5.0 G							
4-Chloro-3-Methylphenol	NS							
4-Methylphenol	1.0 *							
Acenaphthene (PAH)	20.0							
Acenapthylene (PAH)	NS							
Acetophenone	NS							
Anthracene (PAH)	50.0 G							
Benzo[a]anthracene (PAH)	0.002 G							
Benzo[a]pyrene (PAH)	0.002 G							
Benzo[b]fluoranthene (PAH)	0.002 G							
Benzo[g,h,i]perylene (PAH)	NS							
Benzo[k]fluoranthene (PAH)	0.002 G							
Bis(2-chloroethoxy)methane	5.0 G							
Bis(2-ethylhexyl) phthalate	5.0							
Carbazole	NS							
Chrysene (PAH)	0.002 G							
Dibenzo[a,h]anthracene (PAH)	NS							
Dibenzofuran	NS							

Table 6-14D
Summary of Surface Water Analytical Results from Scajaquada Creek and the Black Rock Canal
NYSDEC Remedial Investigation
31 Tonawanda Street Off-Site Area, Site No. C915299A
Buffalo, New York

Sample Number Sample Date Sample Depth (ft bgs) Sample Location	NYSDEC Surface Water Standard •	SC-SW-East 08/29/22 N/A At West Ave.	SC-SW-West 08/29/22 N/A At Mouth	Inlet-SW-North 08/29/22 N/A At 1660 Niag.	BSA-SW-1 01/15/20 N/A P.H. Outfall	Inlet-SW-South 08/29/22 N/A Near Channel	BR-SW-North 08/29/22 N/A Downstream	BR-SW-South 08/29/22 N/A Upstream
Semi-Volatile Organic Compounds (continued)								
Diethylphthalate	50.0 G							
Dimethylphthalate	50.0 G							
Di-n-butylphthalate	50.0 G							
Fluoranthene (PAH)	50.0 G							
Fluorene (PAH)	50.0 G							
Hexachlorobenzene	0.04							
Hexachloroethane	5.0							
Indeno[1,2,3-cd]pyrene (PAH)	0.002 G							
Naphthalene (PAH)	13.0 G							
Pentachlorophenol	1.0 *							
Phenanthrene (PAH)	50.0 G							
Phenol	1.0 *							
Pyrene (PAH)	50.0 G				0.67 J			
Pesticides (ug/L)								
4,4-DDD	0.3				NA			
4,4-DDE	0.2				"			
4,4-DDT	0.2				"			
Aldrin	0.002 G				"			
alpha-BHC	0.01				"			
alpha or cis-Chlordane	0.05				"			
beta-BHC	0.04				"			
delta-BHC	0.04				"			
Dieldrin	0.004				"			
Endosulfan I	NS				"			
Endosulfan II	NS				"			
Endosulfan sulfate	NS				"			
Endrin	0.2				"			
Endrin Aldehyde	5.0 G				"			

Table 6-14D
Summary of Surface Water Analytical Results from Scajaquada Creek and the Black Rock Canal
NYSDEC Remedial Investigation
31 Tonawanda Street Off-Site Area, Site No. C915299A
Buffalo, New York

Sample Number Sample Date Sample Depth (ft bgs) Sample Location	NYSDEC Surface Water Standard ●	SC-SW-East 08/29/22 N/A At West Ave.	SC-SW-West 08/29/22 N/A At Mouth	Inlet-SW-North 08/29/22 N/A At 1660 Niag.	BSA-SW-1 01/15/20 N/A P.H. Outfall	Inlet-SW-South 08/29/22 N/A Near Channel	BR-SW-North 08/29/22 N/A Downstream	BR-SW-South 08/29/22 N/A Upstream
Pesticides (continued)								
Endrin Ketone	5.0 G				NA			
gamma-BHC (Lindane)	0.05				"			
gamma or trans-Chlordane	0.05				"			
Heptachlor	0.04				"			
Heptachlor epoxide	0.03				"			
Methoxychlor	35.0				"			
PCBs (ug/L)								
Aroclor 1248								
Aroclor 1254								
Aroclor 1260								
Total PCBs	0.09							
Metals (ug/L)								
Aluminum	100.0	17.0 J	34.0 J	49.0 J	NA	19.0 J	31.0 J	35.0 J
Antimony ■	3.0	**10.0 J**	**9.9 J**	**14.0 J**	"	**14.0 J**		
Arsenic ■	50.0				"			
Barium	1,000	43.0 J	24.0 J	30.0 J	"	29.0 J	24.0 J	24.0 J
Beryllium ■	3.0 G				"			
Cadmium ■	5.0				"			
Calcium	NS	160,000	32,000	53,000	"	63,000	33,000	32,000
Chromium ■	50.0				"			
Cobalt	5.0				"			
Copper ■	200.0	5.6 J		6.0 J	"	6.0 J	4.9 J	
Cyanide	200.0				"			
Iron	300.0	100.0	77.0	140.0	"	87.0	72.0	72.0
Lead ■	50.0				"			
Magnesium	35,000	18,000	8,500	10,000	"	11,000	8,500	8,600
Manganese	300.0	14.0	12.0	24.0	"	16.0	12.0	13.0
Mercury ■	0.7				"			

Table 6-14D
Summary of Surface Water Analytical Results from Scajaquada Creek and the Black Rock Canal
NYSDEC Remedial Investigation
31 Tonawanda Street Off-Site Area, Site No. C915299A
Buffalo, New York

Sample Number Sample Date Sample Depth (ft bgs) Sample Location	NYSDEC Surface Water Standard ●	SC-SW-East 08/29/22 N/A At West Ave.	SC-SW-West 08/29/22 N/A At Mouth	Inlet-SW-North 08/29/22 N/A At 1660 Niag.	BSA-SW-1 01/15/20 N/A P.H. Outfall	Inlet-SW-South 08/29/22 N/A Near Channel	BR-SW-North 08/29/22 N/A Downstream	BR-SW-South 08/29/22 N/A Upstream
Metals (continued)								
Nickel	100.0				NA			
Potassium	NS	3,500	1,500 J	1,900 J	"	2,000	1,500 J	1, 500 J
Selenium ■	10.0				"			
Silver ■	50.0				"			
Sodium	NS	98,000	13,000	28,000	"	36,000	13,000	13,000
Thallium	0.5 G				"			
Vanadium	14.0	6.0 J		3.9 J	"			
Zinc ■	2,000 G	5.1 J		11.0	"	4.8 J	4.7 J	
Miscellaneous Compounds (ug/L)								
1,4-Dioxane	0.35 G	0.087 J			NA			

Notes:

● = NYSDEC Ambient Water Quality Standards and Guidance Values, June 1998, with addenda through 2021.
* = Applies to sum of phenolic compounds.
B = Analyte was detected in the associated blank, as well as in the sample (organics); value is greater than or equal to the instrument detection limit, but less contract required than the detection limit (inorganics).
D = Result obtained from an analysis at a secondary dilution factor.
J = Analyte was positively identified at an estimated concentration.
NA = Not analyzed.
N/A = Not applicable.
NS = No standard or guidance value available.
P.H. = Pump house.
ug/L = micrograms per liter or parts per billion.
Blanks = Contaminant was analyzed for but not detected at or above the laboratory detection limit.
Yellow shaded values exceed NYSDEC surface water standards or guidance values.

Table 6-15
Summary of SVI Analytical Results and Matrix Comparisons for 1675 Niagara Street
NYSDEC Remedial Investigation
31 Tonawanda Street Off-Site Area, Site No. C915299A
Buffalo, New York

Contaminant	Room 1		NYSDOH (1)	NYSDOH (1)
	Sub Slab 03/20/20	Indoor Air 03/20/20	Matrix ID	Decision Matrix Action Required
Volatile Organic Compounds (ug/m3)				
Carbon Tetrachloride	0.55	NA	A	Unknown
1,1-Dichloroethene	ND	NA	A	Unknown
cis-1,2-Dichloroethene	ND	NA	A	Unknown
Trichloroethene	0.60	NA	A	Unknown
Methylene Chloride	ND	NA	B	Unknown
Tetrachloroethene	1.0	NA	B	Unknown
1,1,1-Trichloroethane	4.3	NA	B	Unknown
Vinyl Chloride	ND	NA	C	Unknown

Contaminant	Room 1 Garage		NYSDOH (1)	NYSDOH (1)
	Sub Slab 04/20/20	Indoor Air 04/20/20	Matrix ID	Decision Matrix Action Required
Volatile Organic Compounds (ug/m3)				
Carbon Tetrachloride	2.3	NA	A	Unknown
1,1-Dichloroethene	ND	NA	A	Unknown
cis-1,2-Dichloroethene	ND	NA	A	Unknown
Trichloroethene	ND	NA	A	Unknown
Methylene Chloride	ND	NA	B	Unknown
Tetrachloroethene	ND	NA	B	Unknown
1,1,1-Trichloroethane	210	NA	B	Unknown
Vinyl Chloride	ND	NA	C	Unknown

Contaminant	Room 2		NYSDOH (1)	NYSDOH (1)
	Sub Slab 03/20/20	Indoor Air 03/20/20	Matrix ID	Decision Matrix Action Required
Volatile Organic Compounds (ug/m3)				
Carbon Tetrachloride	NA	0.51	A	Unknown
1,1-Dichloroethene	NA	ND	A	Unknown
cis-1,2-Dichloroethene	NA	ND	A	Unknown
Trichloroethene	NA	ND	A	Unknown
Methylene Chloride	NA	ND	B	Unknown
Tetrachloroethene	NA	1.1	B	Unknown
1,1,1-Trichloroethane	NA	2.2	B	Unknown
Vinyl Chloride	NA	ND	C	Unknown

Contaminant	Room 2		NYSDOH (1)	NYSDOH (1)
	Sub Slab 04/20/20	Indoor Air 04/20/20	Matrix ID	Decision Matrix Action Required
Volatile Organic Compounds (ug/m3)				
Carbon Tetrachloride	ND	ND	A	No Further Action
1,1-Dichloroethene	ND	ND	A	No Further Action
cis-1,2-Dichloroethene	ND	ND	A	No Further Action
Trichloroethene	ND	ND	A	No Further Action
Methylene Chloride	ND	ND	B	No Further Action
Tetrachloroethene	ND	ND	B	No Further Action
1,1,1-Trichloroethane	57.0	16.0	B	**Identify Source(s) & Resample or Mitigate**
Vinyl Chloride	ND	ND	C	No Further Action

Table 6-15
Summary of SVI Analytical Results and Matrix Comparisons for 1675 Niagara Street
NYSDEC Remedial Investigation
31 Tonawanda Street Off-Site Area, Site No. C915299A
Buffalo, New York

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Contaminant	Room 5		NYSDOH (1)	NYSDOH (1)
	Sub Slab 04/20/20	Indoor Air 04/20/20	Matrix ID	Decision Matrix Action Required
Volatile Organic Compounds (ug/m3)				
Carbon Tetrachloride	ND	NA	A	Unknown
1,1-Dichloroethene	ND	NA	A	Unknown
cis-1,2-Dichloroethene	ND	NA	A	Unknown
Trichloroethene	ND	NA	A	Unknown
Methylene Chloride	ND	NA	B	Unknown
Tetrachloroethene	ND	NA	B	Unknown
1,1,1-Trichloroethane	15.0	NA	B	Unknown
Vinyl Chloride	ND	NA	C	Unknown

Contaminant	Room 6		NYSDOH (1)	NYSDOH (1)
	Sub Slab 04/20/20	Indoor Air 04/20/20	Matrix ID	Decision Matrix Action Required
Volatile Organic Compounds (ug/m3)				
Carbon Tetrachloride	ND (1,100)	ND	A	(2)
1,1-Dichloroethene	ND (860)	ND	A	(2)
cis-1,2-Dichloroethene	ND (860)	ND	A	(2)
Trichloroethene	ND (1,000)	ND	A	(2)
Methylene Chloride	ND (7,500)	ND	B	(2)
Tetrachloroethene	ND (2,900)	ND	B	(2)
1,1,1-Trichloroethane	ND (2,400)	44.0	B	**(2) and (4)**
Vinyl Chloride	ND (550)	ND	C	(2)

Contaminant	Room 8 Garage		NYSDOH (1)	NYSDOH (1)
	Sub Slab 04/20/20	Indoor Air 04/20/20	Matrix ID	Decision Matrix Action Required
Volatile Organic Compounds (ug/m3)				
Carbon Tetrachloride	ND	ND	A	No Further Action
1,1-Dichloroethene	2.9	ND	A	No Further Action
cis-1,2-Dichloroethene	ND	ND	A	No Further Action
Trichloroethene	2.4	ND	A	No Further Action
Methylene Chloride	ND	ND	B	No Further Action
Tetrachloroethene	ND	ND	B	No Further Action
1,1,1-Trichloroethane	920 D	26.0	B	**Mitigate**
Vinyl Chloride	ND	ND	C	No Further Action

Contaminant	Room 10		NYSDOH (1)	NYSDOH (1)
	Sub Slab 03/20/20	Indoor Air 03/20/20	Matrix ID	Decision Matrix Action Required
Volatile Organic Compounds (ug/m3)				
Carbon Tetrachloride	0.69	0.52	A	No Further Action
1,1-Dichloroethene	290 D	1.9	A	**Mitigate (3)**
cis-1,2-Dichloroethene	0.61	ND	A	No Further Action
Trichloroethene	1.6	1.8	A	**Identify Source(s) & Resample or Mitigate**
Methylene Chloride	ND	ND	B	No Further Action
Tetrachloroethene	2.3	2.0	B	No Further Action
1,1,1-Trichloroethane	2,400 D	39.0	B	**Mitigate (3)**
Vinyl Chloride	ND	ND	C	No Further Action

Table 6-15
Summary of SVI Analytical Results and Matrix Comparisons for 1675 Niagara Street
NYSDEC Remedial Investigation
31 Tonawanda Street Off-Site Area, Site No. C915299A
Buffalo, New York

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Contaminant	Room 12		NYSDOH (1) Matrix ID	NYSDOH (1) Decision Matrix Action Required
	Sub Slab 04/20/20	Indoor Air 04/20/20		
Volatile Organic Compounds (ug/m3)				
Carbon Tetrachloride	ND	ND	A	No Further Action
1,1-Dichloroethene	150	4.1	A	**Mitigate (3)**
cis-1,2-Dichloroethene	ND	ND	A	No Further Action
Trichloroethene	410	**3.7**	A	**Mitigate (3)**
Methylene Chloride	ND	ND	B	No Further Action
Tetrachloroethene	ND	ND	B	No Further Action
1,1,1-Trichloroethane	6,000	67.0	B	**Mitigate (3)**
Vinyl Chloride	ND	ND	C	No Further Action

Contaminant	Main Hallway		NYSDOH (1) Matrix ID	NYSDOH (1) Decision Matrix Action
	Sub Slab 04/20/20	Indoor Air 04/20/20		
Volatile Organic Compounds (ug/m3)				
Carbon Tetrachloride	ND	ND	A	No Further Action
1,1-Dichloroethene	2.6	ND	A	No Further Action
cis-1,2-Dichloroethene	ND	ND	A	No Further Action
Trichloroethene	2.1	ND	A	No Further Action
Methylene Chloride	ND	ND	B	No Further Action
Tetrachloroethene	ND	ND	B	No Further Action
1,1,1-Trichloroethane	96.0	29.0	B	**Identify Source(s) & Resample or Mitigate**
Vinyl Chloride	ND	ND	C	No Further Action

Contaminant	Lobby Outside Church		NYSDOH (1) Matrix ID	NYSDOH (1) Decision Matrix Action
	Sub Slab 03/20/20	Indoor Air 03/20/20		
Volatile Organic Compounds (ug/m3)				
Carbon Tetrachloride	0.60	0.55	A	No Further Action
1,1-Dichloroethene	120 D	1.6	A	**Mitigate (3)**
cis-1,2-Dichloroethene	ND	ND	A	No Further Action
Trichloroethene	1.1	1.4	A	**Identify Source(s) & Resample or Mitigate**
Methylene Chloride	ND	ND	B	No Further Action
Tetrachloroethene	2.1	1.5	B	No Further Action
1,1,1-Trichloroethane	80.0	28.0	B	**Identify Source(s) & Resample or Mitigate**
Vinyl Chloride	ND	ND	C	No Further Action

Contaminant	Utility Room		NYSDOH (1) Matrix ID	NYSDOH (1) Decision Matrix Action Required
	Sub Slab 04/20/20	Indoor Air 04/20/20		
Volatile Organic Compounds (ug/m3)				
Carbon Tetrachloride	ND	ND	A	No Further Action
1,1-Dichloroethene	280	4.2	A	**Mitigate (3)**
cis-1,2-Dichloroethene	ND	ND	A	No Further Action
Trichloroethene	140	**2.6**	A	**Mitigate (3)**
Methylene Chloride	ND	ND	B	No Further Action
Tetrachloroethene	ND	ND	B	No Further Action
1,1,1-Trichloroethane	7,500	67.0	B	**Mitigate (3)**
Vinyl Chloride	ND	ND	C	No Further Action

Notes:
NA = Not applicable - no test conducted.
ND = Non-detect. The reporting limits for Room 6 are given in parentheses.
D = Sample results are obtained from a dilution.
(1) = New York State Department of Health (NYSDOH), Guidance for Evaluating Soil Vapor Intrusion in the State of New York, October 2006 and subsequent updates.
(2) = Reporting limits for the sub-slab sample from Room 6 were extremely elevated because trichlorofluoromethane was detected at 2,100,000 ug/m3.

Notes (continued):
(3) = The concentration in the sub slab soil vapor samples would require mitigation in all 3 matrix scenarios.
(4) = Identify source(s) and resample or mitigate.
Green shaded concentrations exceed the Air Guideline Value of 2 ug/m3 for indoor air.
Orange shaded actions identify the Mitigate scenarios.

Table 6-16
Summary of Overburden Groundwater Analytical Results from GEI Wells
NYSDEC Remedial Investigation
31 Tonawanda Street Off-Site Area, Site No. C915299A
Buffalo, New York

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Well Number Sample Date Well Screen Interval (ft bgs) Screened Unit	NYSDEC Ground-water Standard ●	MW-LSC-5 01/19/22 23.0 - 33.0 Sand & SC	MW-PS-1 08/22/22 Unknown Unknown	MW-PS-2 08/22/22 Unknown Unknown
Volatile Organic Compounds (ug/L)				
1,1,1-Trichloroethane	5.0			
1,1,2-Trichloroethane	1.0			
1,1,2,2-Tetrachloroethane	5.0			
1,1-Dichloroethane	5.0			**110.0**
1,1-Dichloroethene	5.0			
1,2-Dichlorobenzene	3.0			
1,2-Dichloroethane	0.6			
1,2,4-Trichlorobenzene	5.0			
cis-1,2-Dichloroethene	5.0			
trans-1,2-Dichloroethene	5.0			
Acetone	50.0 G			
Benzene	1.0	**420.0**	**740.0**	**1,900**
Carbon Disulfide	NS			
Chloroethane	5.0		**37.0**	**400.0**
Chloroform	7.0			
Ethylbenzene	5.0	**400.0**	**860.0**	**970.0**
Isopropylbenzene	5.0	**64.0**	**58.0**	**49.0 J**
Methyl ethyl ketone	50.0 G			
Methylene chloride	5.0			
Styrene	5.0			
Tetrachloroethene	5.0			
Toluene	5.0	**5.7 J**	**13.0**	**110.0**
Trichloroethene	5.0			
Vinyl chloride	2.0	0.81 J		**79.0**
Xylene (Total)	5.0	**212.0**	**177.0**	**320.0**

Table 6-16
Summary of Overburden Groundwater Analytical Results from GEI Wells
NYSDEC Remedial Investigation
31 Tonawanda Street Off-Site Area, Site No. C915299A
Buffalo, New York

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Well Number Sample Date Well Screen Interval (ft bgs) Screened Unit	NYSDEC Ground-water Standard ●	MW-LSC-5 01/19/22 23.0 - 33.0 Sand & SC	MW-PS-1 08/22/22 Unknown Unknown	MW-PS-2 08/22/22 Unknown Unknown
Semi-Volatile Organic Compounds (ug/L)				
2,4-Dimethylphenol	50.0 G			
4-Methylphenol	1.0 *	0.83 J		
Acenaphthene (PAH)	20.0 G	**150.0**	**150.0**	**72.0**
Acenapthylene (PAH)	NS	60.0	1.7	2.2
Acetophenone	NS			
Anthracene (PAH)	50.0 G	9.6	4.9	0.42
Benzo[a]anthracene (PAH)	0.002 G		**0.13**	**0.03 J**
Benzo[a]pyrene (PAH)	ND			
Benzo[b]fluoranthene (PAH)	0.002 G			
Benzo[g,h,i]perylene (PAH)	NS			
Benzo[k]fluoranthene (PAH)	0.002 G			
Biphenyl	5.0	**36.0 J**	**39.0**	**9.6**
Bis(2-ethylhexyl) phthalate	5.0		1.5 J	
Carbazole	NS	3.6	2.8	2.3
Chrysene (PAH)	0.002 G		**0.09 J**	**0.01 J**
Dibenzo[a,h]anthracene (PAH)	NS			
Dibenzofuran	NS	8.3	7.3	2.2
Diethylphthalate	50.0			
Di-n-butylphthalate	50.0			
Fluoranthene (PAH)	50.0 G		2.7	0.17
Fluorene (PAH)	50.0 G	41.0	37.0	10.0
Hexachlorobenzene	0.040			
Indeno[1,2,3-cd]pyrene (PAH)	0.002 G			
2-Methylnaphthalene (PAH)	NS	620.0	240.0	96.0
Naphthalene (PAH)	10.0 G	**1,700**	**990.0**	**610.0**
Phenanthrene (PAH)	50.0 G	49.0	**64.0**	3.1
Phenol	1.0	0.70 J	**2.8 J**	**14.0**
Pyrene (PAH)	50.0 G	4.0	4.4	0.31

Table 6-16
Summary of Overburden Groundwater Analytical Results from GEI Wells
NYSDEC Remedial Investigation
31 Tonawanda Street Off-Site Area, Site No. C915299A
Buffalo, New York

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Well Number Sample Date Well Screen Interval (ft bgs) Screened Unit	NYSDEC Ground- water Standard ●	MW-LSC-5 01/19/22 23.0 - 33.0 Sand & SC	MW-PS-1 08/22/22 Unknown Unknown	MW-PS-2 08/22/22 Unknown Unknown
Pesticides (ug/L)				
4,4'-DDD	0.3		NA	NA
4,4'-DDE	0.2		"	"
4,4'-DDT	0.2		"	"
Aldrin	ND		"	"
alpha-BHC	0.01		"	"
alpha or cis-Chlordane	0.05		"	"
beta-BHC	0.04		"	"
delta-BHC	0.04		"	"
Dieldrin	0.004		"	"
Endosulfan I	NS		"	"
Endosulfan II	NS		"	"
Endosulfan Sulfate	NS		"	"
Endrin	ND		"	"
Endrin Aldehyde	5.0		"	"
Endrin Ketone	5.0		"	"
gamma-BHC (Lindane)	0.05		"	"
gamma or trans-Chlordane	0.05		"	"
Heptachlor	0.04		"	"
Heptachlor epoxide	0.03		"	"
Methoxychlor	35.0		"	"
PCBs (ug/L)				
Aroclor-1248				
Aroclor-1254				
Aroclor-1260				
Total PCBs	0.09			

Table 6-16
Summary of Overburden Groundwater Analytical Results from GEI Wells
NYSDEC Remedial Investigation
31 Tonawanda Street Off-Site Area, Site No. C915299A
Buffalo, New York

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Well Number Sample Date Well Screen Interval (ft bgs) Screened Unit	NYSDEC Ground-water Standard ●	MW-LSC-5 01/19/22 23.0 - 33.0 Sand & SC	MW-PS-1 08/22/22 Unknown Unknown	MW-PS-2 08/22/22 Unknown Unknown
Metals (ug/L)				
Aluminum	NS	30.0	35.0 J	71.0 J
Antimony ■	3.0	0.46 J		
Arsenic ■	25.0	0.70		6.0
Barium	1,000	285.9	358.0	557.0
Beryllium ■	3.0			
Cadmium ■	5.0			
Calcium	NS	193,000	191,000	225,000
Chromium ■	50.0	0.27 J		
Cobalt	NS	0.20 J		
Copper ■	200.0			
Cyanide	200.0	4.0 J	4.0 J	3.0 J
Iron	300.0	**854.0**	25.0 J	**930.0**
Lead ■	25.0			
Magnesium	35,000 G	**59,900**	**39,900**	**60,000**
Manganese	300.0	**608.3**	266.0	**395.0**
Mercury ■	0.7			0.20
Nickel	100.0			
Potassium	NS	3,890	8,380	6,170
Selenium ■	10.0			
Silver ■	50.0			
Sodium	20,000	**332,000**	**373,000**	**523,000**
Vanadium	NS			
Zinc ■	2,000 G			
Metals (ug/L)				
1,4-Dioxane	0.35 G	**4.23**	**5.48**	**28.9**

Table 6-16
Summary of Overburden Groundwater Analytical Results from GEI Wells
NYSDEC Remedial Investigation
31 Tonawanda Street Off-Site Area, Site No. C915299A
Buffalo, New York

Notes:

- ● = NYSDEC Ambient Water Quality Standards and Guidance Values, June 1998, with addenda through 2004.
- * = Applies to sum of phenolic compounds.
- J = Result estimated between the quantitation limit and half the quantitation limit.
- NA = Not analyzed.
- NS = No standard or guidance value available.
- P = Concentration differs by more than 40% between the primary and secondary analytical columns.
- SC = Silty clay.
- ug/L = micrograms per liter or parts per billion.
- Blanks = Contaminant analyzed for but not detected at or above the laboratory detection limit.
- Yellow shaded values exceed NYSDEC groundwater standards or guidance values.

Table 7-1
Summary of 1,1,1-Trichloroethane (TCA) Results from the Various Sites in the Study Area
Sorted by Location from Upstream to Downstream
31 Tonawanda Street Off-Site Area, Site No. C915299A
Buffalo, New York

Sampled Media	NYSDEC Standards	Number of Samples	Number of Detections	Number of Exceedances	Concentrations or Concentration Range	Notes
150 Tonawanda Street (Site No. C915299)						
Soil (mg/kg) - Fill & Native	100 ■	9	0	0	Non-Detect	
Soil (mg/kg) - Fill & Native	0.47 ♠	9	0	0	Non-Detect	
Groundwater (µg/L)	5	4	0	0	Non-Detect	
Indoor Air (µg/m3)	3 *	N/A	N/A	N/A	N/A	No building(s) on-site
Sub-Slab Vapor (µg/m3)	100 *	N/A	N/A	N/A	N/A	No building(s) on-site
68 Tonawanda Street (Site No. C915316)						
Soil (mg/kg) - Fill & Native	100 ■	14	0	0	Non-Detect	
Soil (mg/kg) - Fill & Native	0.68 ♠	14	0	0	Non-Detect	
Groundwater (µg/L)	5	5	0	0	Non-Detect	
Indoor Air (µg/m3)	3 *	2	0	0	Non-Detect	
Sub-Slab Vapor (µg/m3)	100 *	5	0	0	Non-Detect	
57-71 Tonawanda Street (Site No. C915024)						
Soil (mg/kg) - Fill & Native	100 ■	24	0	0	Non-Detect	
Soil (mg/kg) - Fill & Native	0.68 ♠	24	0	0	Non-Detect	
Groundwater (µg/L)	5	5	2	1	1.0 & 14.7	
Indoor Air (µg/m3)	3 *	N/A	N/A	N/A	N/A	Most windows in building are missing
Sub-Slab Vapor (µg/m3)	100 *	6	3	0	0.65; 15.0 & 25.0	
Bike Path						
Soil (mg/kg) - Fill & Native	100 ■	3	0	0	Non-Detect	
Soil (mg/kg) - Fill & Native	0.68 ♠	3	0	0	Non-Detect	
Groundwater (µg/L)	5	3	0	0	Non-Detect	
Indoor Air (µg/m3)	3 *	N/A	N/A	N/A	N/A	No building(s) on-site
Sub-Slab Vapor (µg/m3)	100 *	N/A	N/A	N/A	N/A	No building(s) on-site
NAPL (mg/kg)	N/A	2	0	N/A	Non-Detect	
31 Tonawanda Street (Site No. C915299)						
Soil (mg/kg) - Fill & Native	100 ■	24	11	2	0.007 to 670	
Soil (mg/kg) - Fill & Native	0.68 ♠	24	11	6	0.007 to 670	
Groundwater (µg/L)	5	6	3	2	1.21 J; 51.1 & 188,000 J	
Indoor Air (µg/m3)	3 *	5	5	4	2.8 to 1,700	
Sub-Slab Vapor (µg/m3)	100 *	6	6	2	16.0 to 350 J	

Table 7-1
Summary of 1,1,1-Trichloroethane (TCA) Results from the Various Sites in the Study Area
Sorted by Location from Upstream to Downstream
31 Tonawanda Street Off-Site Area, Site No. C915299A
Buffalo, New York

Sampled Media	NYSDEC Standards	Number of Samples	Number of Detections	Number of Exceedances	Concentrations or Concentration Range	Notes
Former Buffalo Gas Light/Iroquois Gas Corporation (Site No. 915351)						
Soil (mg/kg)	100 ■	11	0	0	Non-Detect	
Soil (mg/kg)	0.68 ♠	11	0	0	Non-Detect	
Groundwater (µg/L)	5	7	0	0	Non-Detect	
Indoor Air (µg/m3)	3 *	N/A	N/A	N/A	N/A	No building(s) on-site
Sub-Slab Vapor (µg/m3)	100 *	N/A	N/A	N/A	N/A	No building(s) on-site
NAPL (mg/kg)	N/A	N/A	N/A	N/A	N/A	Not analyzed for VOCs
Scajaquada Creek Downstream of West Avenue						
Shallow Sediment (mg/kg)	3.5 ♦	10	0	0	Non-Detect	See note 1
Deep Sediment (mg/kg)	3.5 ♦	5	0	0	Non-Detect	See note 2
Niagara Street Pumphouse & Associated Storm Sewer System (Spill No. 1406307)						
Soil (mg/kg)	100 ■	N/A	N/A	N/A	N/A	Sampled by GEI. Results are not available.
Soil (mg/kg)	0.68 ♠	N/A	N/A	N/A	N/A	Sampled by GEI. Results are not available.
Groundwater (µg/L)	5	N/A	N/A	N/A	N/A	Sampled by GEI. Results are not available.
Indoor Air (µg/m3)	3 *	N/A	N/A	N/A	N/A	Not sampled
Sub-Slab Vapor (µg/m3)	100 *	N/A	N/A	N/A	N/A	Not sampled
Sump Sediment (mg/kg)	100 ■	1	0	0	Non-Detect	
Manhole & Sump Water (µg/L)	5.0	13	9	9	6.0 to 43.0	Includes creek water at outfall
NAPL (mg/kg)	N/A	N/A	N/A	N/A	N/A	Not sampled
1660 Niagara Street (Site No. C915311)						
Soil (mg/kg) - Surface, Fill & Native	100 ■	28	1	0	11.0 J	
Soil (mg/kg) - Surface, Fill & Native	0.68 ♠	28	1	1	11.0 J	
Groundwater (µg/L)	5	19	7	7	830 J to 2,900	
Indoor Air (µg/m3)	3 *	N/A	N/A	N/A	N/A	No building(s) on-site
Sub-Slab Vapor (µg/m3)	100 *	N/A	N/A	N/A	N/A	No building(s) on-site
NAPL (mg/kg)	N/A	3	3	N/A	92.0; 200 & 440	
1675 Niagara Street						
Soil (mg/kg) - Native	100 ■	1	0	0	Non-Detect	
Soil (mg/kg) - Native	0.68 ♠	1	0	0	Non-Detect	
Groundwater (µg/L)	5	2	1	1	9.6	
Indoor Air (µg/m3)	3 *	9	9	8	2.2 to 67.0	
Sub-Slab Vapor (µg/m3)	100 *	11	10	5	4.3 to 7,500	Last sample ND (2,400)

Table 7-1
Summary of 1,1,1-Trichloroethane (TCA) Results from the Various Sites in the Study Area
Sorted by Location from Upstream to Downstream
31 Tonawanda Street Off-Site Area, Site No. C915299A
Buffalo, New York

Sampled Media	NYSDEC Standards	Number of Samples	Number of Detections	Number of Exceedances	Concentrations or Concentration Range	Notes
Scajaquada Creek Slip						
Shallow Sediment (mg/kg)	3.5 ♦	13	0	0	Non-Detect	See note 3
Deep Sediment (mg/kg)	3.5 ♦	13	0	0	Non-Detect	See note 4

References:

Guidance for Evaluating Soil Vapor Intrusion in the State of New York, NYSDOH 2006 and subsequent updates.
6 NYCRR Part 375: Environmental Remediation Programs, NYSDEC, 2006.
NYSDEC Ambient Water Quality Standards and Guidance Values, June 1998, with addenda through 2004.

Notes:

■ = Part 375 Restricted Residential Soil Cleanup Objectives.
♠ = Part 375 Protection of Groundwater Soil Cleanup Objectives.
● = Air guidance value from Table 3.1 (as addended).
♦ = Class C sediment criteria. Sediment is considered highly contaminated and likely to present a high risk to aquatic life.
*** = Minimum action level according to NYSDOH Decision Matrix B.**
J = Result estimated between the quantitation limit and half the quantitation limit.
N/A = Not applicable.
mg/kg = Milligram per killogram or parts per million (ppm).
µg/L = Micrograms per liter or parts per billion (ppb).
µg/m3 = Micrograms per cubic meter.
Orange shaded cells denote SCG exceedances except for NAPL, where orange shading denotes detections.

Note 1:
The 2017 DEC sediment samples from the Scajaquada Creek Slip ranged in depth from 0.0' to 1.8'.
The 2021 GEI shallow sediment samples from the Scajaquada Creek Slip were collected from 0.0' to 0.5' depth. Sample BGL-1 was collected from 1.0' to 3.0'.

Note 2:
The 2021 GEI deep sediment samples from the Scajaquada Creek Slip ranged in depth from 0.0' to 12.0'.

Note 3:
The 2017 DEC sediment samples from the Scajaquada Creek Slip ranged in depth from 0.0' to 3.0'.
The 2020-21 DEC sediment samples from the Scajaquada Creek Slip were collected from 0.0' to 0.3' depth.
The 2021 GEI shallow sediment samples from the Scajaquada Creek Slip were collected from 0.0' to 0.5' depth.

Note 4:
The 2015 DEC sediment samples from the Scajaquada Creek Slip ranged in depth from 2.0' to 10.0'.
The 2021 GEI deep sediment samples from the Scajaquada Creek Slip ranged in depth from 4.5' to 10.0'.

Table completed April 28, 2020. Modified August 26, 2022. Modified further on December 12, 2022.

Table 7-2
Summary of Trichloroethene (TCE) Results from the Various Sites in the Study Area
Sorted by Location from Upstream to Downstream
31 Tonawanda Street Off-Site Area, Site No. C915299A
Buffalo, New York

Sampled Media	NYSDEC Standards	Number of Samples	Number of Detections	Number of Exceedances	Concentrations or Concentration Range	Notes
150 Tonawanda Street (Site No. C915299)						
Soil (mg/kg) - Fill & Native	21 ■	9	0	0	Non-Detect	
Soil (mg/kg) - Fill & Native	0.47 ♠	9	0	0	Non-Detect	
Groundwater (µg/L)	5	4	0	0	Non-Detect	
Indoor Air (µg/m3)	2 ●	N/A	N/A	N/A	N/A	No building(s) on-site
Sub-Slab Vapor (µg/m3)	6 *	N/A	N/A	N/A	N/A	No building(s) on-site
68 Tonawanda Street (Site No. C915316)						
Soil (mg/kg) - Fill & Native	21 ■	14	0	0	Non-Detect	
Soil (mg/kg) - Fill & Native	0.47 ♠	14	0	0	Non-Detect	
Groundwater (µg/L)	5	5	0	0	Non-Detect	
Indoor Air (µg/m3)	2 ●	2	2	0	0.21 & 0.38	
Sub-Slab Vapor (µg/m3)	6 *	5	5	1	2.1 to 6.1	
57-71 Tonawanda Street (Site No. C915024)						
Soil (mg/kg) - Fill & Native	21 ■	24	17	3	0.004 to 1,980	
Soil (mg/kg) - Fill & Native	0.47 ♠	24	17	10	0.004 to 1,980	
Groundwater (µg/L)	5	5	5	3	1.27 to 7,370	
Indoor Air (µg/m3)	2 ●	N/A	N/A	N/A	N/A	Most windows in building are missing
Sub-Slab Vapor (µg/m3)	6 *	6	6	4	5.2 to 19,000	
Bike Path						
Soil (mg/kg) - Fill & Native	21 ■	3	0	0	Non-Detect	
Soil (mg/kg) - Fill & Native	0.47 ♠	3	0	0	Non-Detect	
Groundwater (µg/L)	5	3	0	0	Non-Detect	
Indoor Air (µg/m3)	3 *	N/A	N/A	N/A	N/A	No building(s) on-site
Sub-Slab Vapor (µg/m3)	100 *	N/A	N/A	N/A	N/A	No building(s) on-site
NAPL (mg/kg)	N/A	2	0	N/A	Non-Detect	
31 Tonawanda Street (Site No. C915299)						
Soil (mg/kg) - Fill & Native	21 ■	24	18	6	0.009 to 7,340	
Soil (mg/kg) - Fill & Native	0.47 ♠	24	18	13	0.009 to 7,340	
Groundwater (µg/L)	5	6	3	1	1.69 J; 4.32 & 194	
Indoor Air (µg/m3)	2 ●	5	5	5	4.4 to 230	
Sub-Slab Vapor (µg/m3)	6 *	6	6	6	40 J to 650 J	

Table 7-2
Summary of Trichloroethene (TCE) Results from the Various Sites in the Study Area
Sorted by Location from Upstream to Downstream
31 Tonawanda Street Off-Site Area, Site No. C915299A
Buffalo, New York

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Sampled Media	NYSDEC Standards	Number of Samples	Number of Detections	Number of Exceedances	Concentrations or Concentration Range	Notes
Former Buffalo Gas Light/Iroquois Gas Corporation (Site No. 915351)						
Soil (mg/kg)	21 ■	11	0	0	Non-Detect	
Soil (mg/kg)	0.47 ♠	11	0	0	Non-Detect	
Groundwater (µg/L)	5	7	0	0	Non-Detect	
Indoor Air (µg/m3)	3 *	N/A	N/A	N/A	N/A	No building(s) on-site
Sub-Slab Vapor (µg/m3)	100 *	N/A	N/A	N/A	N/A	No building(s) on-site
NAPL (mg/kg)	N/A	N/A	N/A	N/A	N/A	Not analyzed for VOCs
Scajaquada Creek Downstream of West Avenue						
Shallow Sediment (mg/kg)	8.6 ♦	10	0	0	Non-Detect	See note 1
Deep Sediment (mg/kg)	8.6 ♦	5	3	0	0.00044; 0.00062 J; 0.079	See note 2
Niagara Street Pumphouse & Associated Storm Sewer System (Spill No. 1406307)						
Soil (mg/kg)	21 ■	N/A	N/A	N/A	N/A	Sampled by GEI. Results are not available.
Soil (mg/kg)	0.47 ♠	N/A	N/A	N/A	N/A	Sampled by GEI. Results are not available.
Groundwater (µg/L)	5	N/A	N/A	N/A	N/A	Sampled by GEI. Results are not available.
Indoor Air (µg/m3)	3 *	N/A	N/A	N/A	N/A	Not sampled
Sub-Slab Vapor (µg/m3)	100 *	N/A	N/A	N/A	N/A	Not sampled
Sump Sediment (mg/kg)	100 ■	1	0	0	Non-Detect	
Manhole & Sump Water (µg/L)	5.0	13	5	1	0.48 J 50 5.5 J	Includes creek water at outfall
NAPL (mg/kg)	N/A	N/A	N/A	N/A	N/A	Not sampled
1660 Niagara Street (Site No. C915311)						
Soil (mg/kg) - Surface, Fill & Native	21 ■	28	5	0	0.0032 J to 14.0	
Soil (mg/kg) - Surface, Fill & Native	0.47 ♠	28	5	2	0.0032 J to 14.0	
Groundwater (µg/L)	5	19	4	4	15.7 to 6,200	
Indoor Air (µg/m3)	2 ●	N/A	N/A	N/A	N/A	No building(s) on-site
Sub-Slab Vapor (µg/m3)	6 *	N/A	N/A	N/A	N/A	No building(s) on-site
NAPL (mg/kg)	N/A	3	2	N/A	510 & 890	
1675 Niagara Street						
Soil (mg/kg) - Native	21 ■	1	1	0	0.26	
Soil (mg/kg) - Native	0.47 ♠	1	1	0	0.26	
Groundwater (µg/L)	5	2	1	0	0.68 J	
Indoor Air (µg/m3)	2 ●	9	4	2	1.4 to 3.7	
Sub-Slab Vapor (µg/m3)	6 *	11	7	2	0.6 to 410	

Table 7-2
Summary of Trichloroethene (TCE) Results from the Various Sites in the Study Area
Sorted by Location from Upstream to Downstream
31 Tonawanda Street Off-Site Area, Site No. C915299A
Buffalo, New York

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Sampled Media	NYSDEC Standards	Number of Samples	Number of Detections	Number of Exceedances	Concentrations or Concentration Range	Notes
Scajaquada Creek Slip						
Shallow Sediment (mg/kg)	8.6 ♦	13	0	0	Non-Detect	See note 3
Deep Sediment (mg/kg)	8.6 ♦	13	0	0	Non-Detect	See note 4

References:

Guidance for Evaluating Soil Vapor Intrusion in the State of New York, NYSDOH 2006 and subsequent updates.
6 NYCRR Part 375: Environmental Remediation Programs, NYSDEC, 2006.
NYSDEC Ambient Water Quality Standards and Guidance Values, June 1998, with addenda through 2004.

Notes:

■ = Part 375 Restricted Residential Soil Cleanup Objectives.
♠ = Part 375 Protection of Groundwater Soil Cleanup Objectives.
♦ = Class C sediment criteria. Sediment is considered highly contaminated and likely to present a high risk to aquatic life.
● = Air guidance value from Table 3.1 (as addended).
*** = Minimum action level according to NYSDOH Decision Matrix A.**
J = Result estimated between the quantitation limit and half the quantitation limit.
N/A = Not applicable.
mg/kg = Milligram per killogram or parts per million (ppm).
µg/L = Micrograms per liter or parts per billion (ppb).
µg/m3 = Micrograms per cubic meter.
Orange shaded cells denote SCG exceedances except for NAPL, where orange shading denotes detections.

Note 1:
The 2017 DEC sediment samples from the Scajaquada Creek Slip ranged in depth from 0.0' to 1.8'.
The 2021 GEI shallow sediment samples from the Scajaquada Creek Slip were collected from 0.0' to 0.5' depth. Sample BGL-1 was collected from 1.0' to 3.0'.

Note 2:
The 2021 GEI deep sediment samples from the Scajaquada Creek Slip ranged in depth from 0.0' to 12.0'.

Note 3:
The 2017 DEC sediment samples from the Scajaquada Creek Slip ranged in depth from 0.0' to 3.0'.
The 2020-21 DEC sediment samples from the Scajaquada Creek Slip were collected from 0.0' to 0.3' depth.
The 2021 GEI shallow sediment samples from the Scajaquada Creek Slip were collected from 0.0' to 0.5' depth.

Note 4:
The 2015 DEC sediment samples from the Scajaquada Creek Slip ranged in depth from 2.0' to 10.0'.
The 2021 GEI deep sediment samples from the Scajaquada Creek Slip ranged in depth from 4.5' to 10.0'.

Table completed April 28, 2020. Modified August 26, 2022. Modified further on December 12, 2022.

Table 7-3
Summary of Tetrachloroethene (PCE) Results from the Various Sites in the Study Area
Sorted by Location from Upstream to Downstream
31 Tonawanda Street Off-Site Area, Site No. C915299A
Buffalo, New York

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Sampled Media	NYSDEC Standards	Number of Samples	Number of Detections	Number of Exceedances	Concentrations or Concentration Range	Notes
150 Tonawanda Street (Site No. C915299)						
Soil (mg/kg) - Fill & Native	19 ■	9	0	0	Non-Detect	
Soil (mg/kg) - Fill & Native	1.3 ♠	9	0	0	Non-Detect	
Groundwater (µg/L)	5	4	0	0	Non-Detect	
Indoor Air (µg/m3)	30.0	N/A	N/A	N/A	N/A	No building(s) on-site
Sub-Slab Vapor (µg/m3)	100 *	N/A	N/A	N/A	N/A	No building(s) on-site
68 Tonawanda Street (Site No. C915316)						
Soil (mg/kg) - Fill & Native	19 ■	14	0	0	Non-Detect	
Soil (mg/kg) - Fill & Native	1.3 ♠	14	0	0	Non-Detect	
Groundwater (µg/L)	5	5	0	0	Non-Detect	
Indoor Air (µg/m3)	30.0	2	1	0	1.4	
Sub-Slab Vapor (µg/m3)	100 *	5	1	0	5.4	
57-71 Tonawanda Street (Site No. C915024)						
Soil (mg/kg) - Fill & Native	19 ■	24	0	0	Non-Detect	
Soil (mg/kg) - Fill & Native	1.3 ♠	24	0	0	Non-Detect	
Groundwater (µg/L)	5	5	0	0	Non-Detect	
Indoor Air (µg/m3)	30.0	N/A	N/A	N/A	N/A	Most windows in building are missing
Sub-Slab Vapor (µg/m3)	100 *	6	3	0	0.68; 1.2 & 1.8	
Bike Path						
Soil (mg/kg) - Fill & Native	100 ■	3	0	0	Non-Detect	
Soil (mg/kg) - Fill & Native	1.3 ♠	3	0	0	Non-Detect	
Groundwater (µg/L)	5	3	0	0	Non-Detect	
Indoor Air (µg/m3)	3 *	N/A	N/A	N/A	N/A	No building(s) on-site
Sub-Slab Vapor (µg/m3)	100 *	N/A	N/A	N/A	N/A	No building(s) on-site
NAPL (mg/kg)	N/A	2	0	N/A	Non-Detect	
31 Tonawanda Street (Site No. C915299)						
Soil (mg/kg) - Fill & Native	19 ■	24	2	0	0.019 J & 0.30	
Soil (mg/kg) - Fill & Native	1.3 ♠	24	2	0	0.019 J & 0.30	
Groundwater (µg/L)	5	6	0	0	Non-Detect	
Indoor Air (µg/m3)	30.0	5	1	0	1 J	
Sub-Slab Vapor (µg/m3)	100 *	6	6	4	2.1 J to 2,900 J	Highest in slab on grade part of building

Table 7-3
Summary of Tetrachloroethene (PCE) Results from the Various Sites in the Study Area
Sorted by Location from Upstream to Downstream
31 Tonawanda Street Off-Site Area, Site No. C915299A
Buffalo, New York

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Sampled Media	NYSDEC Standards	Number of Samples	Number of Detections	Number of Exceedances	Concentrations or Concentration Range	Notes
Former Buffalo Gas Light/Iroquois Gas Corporation (Site No. 915351)						
Soil (mg/kg)	100 ■	11	1	0	0.078	
Soil (mg/kg)	1.3 ♠	11	1	0	0.078	
Groundwater (µg/L)	5	7	0	0	Non-Detect	
Indoor Air (µg/m3)	3 *	N/A	N/A	N/A	N/A	No building(s) on-site
Sub-Slab Vapor (µg/m3)	100 *	N/A	N/A	N/A	N/A	No building(s) on-site
NAPL (mg/kg)	N/A	N/A	N/A	N/A	N/A	Not analyzed for VOCs
Scajaquada Creek Downstream of West Avenue						
Shallow Sediment (mg/kg)	57 ♦	10	0	0	Non-Detect	See note 1
Deep Sediment (mg/kg)	57 ♦	5	0	0	Non-Detect	See note 2
Niagara Street Pumphouse & Associated Storm Sewer System (Spill No. 1406307)						
Soil (mg/kg)	100 ■	N/A	N/A	N/A	N/A	Sampled by GEI. Results are not available.
Soil (mg/kg)	1.3 ♠	N/A	N/A	N/A	N/A	Sampled by GEI. Results are not available.
Groundwater (µg/L)	5	N/A	N/A	N/A	N/A	Sampled by GEI. Results are not available.
Indoor Air (µg/m3)	3 *	N/A	N/A	N/A	N/A	Not sampled
Sub-Slab Vapor (µg/m3)	100 *	N/A	N/A	N/A	N/A	Not sampled
Sump Sediment (mg/kg)	100 ■	1	0	0	Non-Detect	
Manhole & Sump Water (µg/L)	5.0	13	0	0	Non-Detect	Includes creek water at outfall
NAPL (mg/kg)	N/A	N/A	N/A	N/A	N/A	Not sampled
1660 Niagara Street (Site No. C915311)						
Soil (mg/kg) - Surface, Fill & Native	19 ■	28	9	2	0.0013 J to 63.1	
Soil (mg/kg) - Surface, Fill & Native	1.3 ♠	28	9	2	0.0013 J to 63.1	
Groundwater (µg/L)	5	19	0	0	Non-Detect	
Indoor Air (µg/m3)	30.0	N/A	N/A	N/A	N/A	No building(s) on-site
Sub-Slab Vapor (µg/m3)	100 *	N/A	N/A	N/A	N/A	No building(s) on-site
NAPL (mg/kg)	N/A	3	0	N/A	Non-Detect	
1675 Niagara Street						
Soil (mg/kg) - Native	19 ■	1	0	0	Non-Detect	
Soil (mg/kg) - Native	1.3 ♠	1	0	0	Non-Detect	
Groundwater (µg/L)	5	2	1	0	0.42 J	
Indoor Air (µg/m3)	30.0	9	3	0	1.1; 1.5 & 2.0	
Sub-Slab Vapor (µg/m3)	100 *	11	3	0	1.0; 2.1 & 2.3	

Table 7-3
Summary of Tetrachloroethene (PCE) Results from the Various Sites in the Study Area
Sorted by Location from Upstream to Downstream
31 Tonawanda Street Off-Site Area, Site No. C915299A
Buffalo, New York

Sampled Media	NYSDEC Standards	Number of Samples	Number of Detections	Number of Exceedances	Concentrations or Concentration Range	Notes
Scajaquada Creek Slip						
Shallow Sediment (mg/kg)	57 ♦	13	0	0	Non-Detect	See note 3
Deep Sediment (mg/kg)	57 ♦	13	0	0	Non-Detect	See note 4

References:

Guidance for Evaluating Soil Vapor Intrusion in the State of New York, NYSDOH 2006 and subsequent updates.
6 NYCRR Part 375: Environmental Remediation Programs, NYSDEC, 2006.
NYSDEC Ambient Water Quality Standards and Guidance Values, June 1998, with addenda through 2004.

Notes:

■ = Part 375 Restricted Residential Soil Cleanup Objectives.
♠ = Part 375 Protection of Groundwater Soil Cleanup Objectives.
♦ = Class C sediment criteria. Sediment is considered highly contaminated and likely to present a high risk to aquatic life.
● = Air guidance value from Table 3.1 (as addended).
*** = Minimum action level according to NYSDOH Decision Matrix B.**
J = Result estimated between the quantitation limit and half the quantitation limit.
N/A = Not applicable.
mg/kg = Milligram per killogram or parts per million (ppm).
µg/L = Micrograms per liter or parts per billion (ppb).
µg/m3 = Micrograms per cubic meter.
Orange shaded cells denote SCG exceedances except for NAPL, where orange shading denotes detections.
Note 1:
The 2017 DEC sediment samples from the Scajaquada Creek Slip ranged in depth from 0.0' to 1.8'.
The 2021 GEI shallow sediment samples from the Scajaquada Creek Slip were collected from 0.0' to 0.5' depth. Sample BGL-1 was collected from 1.0' to 3.0'.
Note 2:
The 2021 GEI deep sediment samples from the Scajaquada Creek Slip ranged in depth from 0.0' to 12.0'.
Note 3:
The 2017 DEC sediment samples from the Scajaquada Creek Slip ranged in depth from 0.0' to 3.0'.
The 2020-21 DEC sediment samples from the Scajaquada Creek Slip were collected from 0.0' to 0.3' depth.
The 2021 GEI shallow sediment samples from the Scajaquada Creek Slip were collected from 0.0' to 0.5' depth.
Note 4:
The 2015 DEC sediment samples from the Scajaquada Creek Slip ranged in depth from 2.0' to 10.0'.
The 2021 GEI deep sediment samples from the Scajaquada Creek Slip ranged in depth from 4.5' to 10.0'.
Table completed April 28, 2020. Modified August 26, 2022. Modified further on December 12, 2022.

Table 7-4
Comparison of Overburden Groundwater Analytical Results from the 1660 Niagara Street BCP Site
NYSDEC Remedial Investigation
31 Tonawanda Street Off-Site Area, Site No. C915299A
Buffalo, New York

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Well Number Sample Date Well Screen Interval (ft bgs) Screened Unit	NYSDEC Ground-water Standard ●	RI-MW-3 06/01/17 10.0 - 20.0 Fill & SC	RI-MW-3 01/17/19 10.0 - 20.0 Fill & SC	1660-MW-3R 11/04/20 14.0 - 29.0 (see note 3)	RI-MW-5 06/01/17 10.0 - 20.0 Fill & SC	RI-MW-5 01/17/19 10.0 - 20.0 Fill & SC	1660-MW-5R 11/04/20 13.5 - 28.5 (see note 4)
Volatile Organic Compounds (ug/L)							
1,1,1-Trichloroethane	5.0						**2,800 (2,900)**
1,1,2-Trichloroethane	1.0						
1,1,2,2-Tetrachloroethane	5.0						
1,1-Dichloroethane	5.0	1.2 J			**10.2 J (10.1 J)**	**12.0**	**1,500 J (1,500 J)**
1,1-Dichloroethene	5.0					1.9	**910 J (940 J)**
1,2-Dichloroethane	0.6						
cis-1,2-Dichloroethene	5.0	0.94 J		**1,600**	**580.0 (560.0)**	**510.0**	**160,000 (160,000)**
trans-1,2-Dichloroethene	5.0						
1,2,4-Trichlorobenzene	5.0		NA			NA	
1,2,4-Trimethylbenzene	5.0		NA	NA		NA	NA
1,3,5-Trimethylbenzene	5.0		NA	NA		NA	NA
Acetone	50.0 G	10.8 J					
Benzene	1.0			**180.0**	**43.5 J (40.4 J)**	**28.0**	**4,300 (4,100)**
Carbon Disulfide	60.0 G	0.41 J					
Chloroethane	5.0						
Chloroform	7.0						
Ethylbenzene	5.0						**3,100 (3,000)**
Isopropylbenzene	5.0		NA			NA	
p-Isopropyltoluene	5.0		NA	NA		NA	NA
Methyl ethyl ketone (2-Butanone)	50.0 G						
Methyl tert-butyl ether	10.0 G						
Methylcyclohexane	NS		NA			NA	
Methylene Chloride	5.0				**15.5 J (17.3 J)**		
n-Propylbenzene	5.0		NA	NA		NA	NA
Tetrachloroethene	5.0						
Toluene	5.0				3.9 J (ND)		**2,600 (2,500)**
Trichloroethene	5.0						**5,900 (6,200)**
Vinyl Chloride	2.0		1.0	**1,300**	**280.0 (260.0)**	**630.0**	**5,800 (6,100)**
Xylene (Total)	5.0	**13.1**					**1,600 J (1,600 J)**

Table 7-4
Comparison of Overburden Groundwater Analytical Results from the 1660 Niagara Street BCP Site
NYSDEC Remedial Investigation
31 Tonawanda Street Off-Site Area, Site No. C915299A
Buffalo, New York

Well Number Sample Date Well Screen Interval (ft bgs) Screened Unit	NYSDEC Ground-water Standard ●	RI-MW-3 06/01/17 10.0 - 20.0 Fill & SC	RI-MW-3 01/17/19 10.0 - 20.0 Fill & SC	1660-MW-3R 11/04/20 14.0 - 29.0 (see note 3)	RI-MW-5 06/01/17 10.0 - 20.0 Fill & SC	RI-MW-5 01/17/19 10.0 - 20.0 Fill & SC	1660-MW-5R 11/04/20 13.5 - 28.5 (see note 4)
Semi-Volatile Organic Compounds (ug/L)							
1,1-Biphenyl	5.0		0.86				**110.0 (130.0)**
2-Methylphenol	1.0 *						
4-Methylphenol	1.0 *						
Acenaphthene (PAH)	20.0 G		0.70				**67.0 (80 J)**
Acenapthylene (PAH)	NS		0.88	0.81 J		0.01	390.0 (450.0)
Acetophenone	NS						6.5 J (ND)
Anthracene (PAH)	50.0 G		0.25			0.01	22 J (40 J)
Benzo[a]anthracene (PAH)	0.002 G		**0.07**				**ND (12 J)**
Benzo[a]pyrene (PAH)	ND		0.05				ND (15 J)
Benzo[b]fluoranthene (PAH)	0.002 G		0.04				**ND (8.9 J)**
Benzo[g,h,i]perylene (PAH)	NS		0.03			0.02	ND (7.3 J)
Benzo[k]fluoranthene (PAH)	0.002 G						
Bis(2-ethylhexyl) phthalate	5.0						
Carbazole	NS						9.5 J (10 J)
Chrysene (PAH)	0.002 G		**0.04**				**ND (10 J)**
Dibenzo[a,h]anthracene (PAH)	NS					0.02	
Dibenzofuran	NS						19 J (24 J)
Dimethylphthalate	50.0 G	2.8 J			2.2 J		
Di-n-butylphthalate	50.0						
Fluoranthene (PAH)	50.0 G		0.15				9.5 J (27 J)
Fluorene (PAH)	50.0 G		0.74	0.46 J		0.04	**80.0 (100.0)**
Hexachlorobenzene	0.040						
Indeno[1,2,3-cd]pyrene (PAH)	0.002 G						
2-Methylnaphthalene (PAH)	NS		11.0	0.84 J		0.05	1,500 (1,700)
Naphthalene (PAH)	10.0 G		58.0	1.4 J		0.41	**8,700 (8,700)**
Pentachlorophenol	1.0 *					**1.8**	
Phenanthrene (PAH)	50.0 G		1.1	1.8 J		0.07	**100.0 (180.0)**
Phenol	1.0 *			**2.9 J**			
Pyrene (PAH)	50.0 G		0.28	0.50 J		0.04	**18 J (52 J)**

Table 7-4
Comparison of Overburden Groundwater Analytical Results from the 1660 Niagara Street BCP Site
NYSDEC Remedial Investigation
31 Tonawanda Street Off-Site Area, Site No. C915299A
Buffalo, New York

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Well Number Sample Date Well Screen Interval (ft bgs) Screened Unit	NYSDEC Ground-water Standard ●	RI-MW-3 06/01/17 10.0 - 20.0 Fill & SC	RI-MW-3 01/17/19 10.0 - 20.0 Fill & SC	1660-MW-3R 11/04/20 14.0 - 29.0 (see note 3)	RI-MW-5 06/01/17 10.0 - 20.0 Fill & SC	RI-MW-5 01/17/19 10.0 - 20.0 Fill & SC	1660-MW-5R 11/04/20 13.5 - 28.5 (see note 4)
Pesticides (ug/L)							
4,4-DDD	0.3		NA			NA	0.11 J (0.11 J)
4,4-DDE	0.2		NA			NA	
4,4-DDT	0.2		NA	0.032 JB		NA	0.15 JB (ND)
Aldrin	ND		NA			NA	**0.12 J (0.11 J)**
alpha-BHC	0.01		NA	**0.011 J**		NA	**0.25 (0.23 J)**
alpha or cis-Chlordane	0.05		NA			NA	
beta-BHC	0.04		NA			NA	
delta-BHC	0.04		NA	0.013 J		NA	**0.067 J (0.065 J)**
Dieldrin	0.004		NA			NA	
Endosulfan I	NS		NA			NA	
Endosulfan II	NS		NA			NA	
Endosulfan sulfate	NS		NA			NA	
Endrin	ND		NA			NA	
Endrin Aldehyde	5.0		NA			NA	
Endrin Ketone	5.0		NA			NA	0.097 J (0.062 J)
gamma-BHC (Lindane)	0.05		NA	0.0093 JB		NA	**0.077 JB (0.081 JB)**
gamma or trans-Chlordane	0.05		NA			NA	
Heptachlor	0.04		NA			NA	
Heptachlor epoxide	0.03		NA			NA	**0.065 J (ND)**
Methoxychlor	35.0		NA			NA	0.21 J (0.21 J)
PCBs (ug/L)							
Aroclor 1248			NA			NA	
Aroclor 1254			NA			NA	
Aroclor 1260			NA			NA	
Total PCBs	0.09		NA			NA	

Table 7-4
Comparison of Overburden Groundwater Analytical Results from the 1660 Niagara Street BCP Site
NYSDEC Remedial Investigation
31 Tonawanda Street Off-Site Area, Site No. C915299A
Buffalo, New York

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Well Number Sample Date Well Screen Interval (ft bgs) Screened Unit	NYSDEC Ground-water Standard ●	RI-MW-3 06/01/17 10.0 - 20.0 Fill & SC	RI-MW-3 01/17/19 10.0 - 20.0 Fill & SC	1660-MW-3R 11/04/20 14.0 - 29.0 (see note 3)	RI-MW-5 06/01/17 10.0 - 20.0 Fill & SC	RI-MW-5 01/17/19 10.0 - 20.0 Fill & SC	1660-MW-5R 11/04/20 13.5 - 28.5 (see note 4)
Metals (ug/L)							
Aluminum	NS	95.0	NA	350.0	57.5 (101.0)	NA	19,500 (20,500)
Antimony ■	3.0	0.84 J	NA		0.59 J (0.61 J)	NA	
Arsenic ■	25.0	1.87	NA		0.88 J (0.96 J)	NA	
Barium	1,000	383.0	NA	180 ^	63.1 (61.9)	NA	780 ^ (780 ^)
Beryllium ■	3.0	0.24 J	NA		0.15 J (0.12 J)	NA	0.79 J (0.75 J)
Cadmium ■	5.0		NA			NA	
Calcium	NS	291,000	NA	348,000	121,000 (117,000)	NA	363,000 (365,000)
Chromium ■	50.0	1.15 J	NA	3.0 J	0.78 J (1.63 J)	NA	27.0 (28.0)
Cobalt	NS	1.69	NA	0.90 J	0.84 J (1.02)	NA	11.0 (11.0)
Copper ■	200.0	6.22	NA	1.9 J	5.29 (5.86)	NA	24.0 (24.0)
Cyanide	200.0	NA	NA	NA	NA	NA	NA (NA)
Iron	300.0	**7,550**	NA	**12,600**	**2,950 (3,410)**	NA	**31,900 (32,800)**
Lead ■	25.0	0.71 J	NA	5.6 J	0.39 J (0.51 J)	NA	**36.0 (38.0)**
Magnesium	35,000 G	**103,000**	NA	**125,000**	23,000 (22,300)	NA	**116,000 (118,000)**
Manganese	300.0	**1,910**	NA	**890.0**	**1,550 (1,530)**	NA	**1,100 (1,200)**
Mercury ■	0.7		NA			NA	
Nickel	100.0	3.50	NA	1.4 J	2.52 (3.14)	NA	24.0 (25.0)
Potassium	NS	14,200	NA	6,700	4,720 (4,710)	NA	12,400 (12,900)
Selenium ■	10.0	1.52 J	NA		6.77 (6.79)	NA	
Silver ■	50.0	0.26 J	NA		0.18 J (0.17 J)	NA	
Sodium	20,000	**154,000**	NA	**121,000**	**62,000 (61,400)**	NA	**745,000 (744,000)**
Thallium	0.5 G	0.14 J	NA			NA	
Vanadium	NS	1.62 J	NA		1.01 J (1.19 J)	NA	41.0 (44.0)
Zinc ■	2,000 G	22.2	NA	2.2 J	27.6 (30.9)	NA	94.0 (98.0)

Notes:

● = NYSDEC Ambient Water Quality Standards and Guidance Values, June 1998, with addenda through 2004.
*** = Applies to sum of phenolic compounds.**
^ = Instrument related QC is outside acceptance limits.
B = Analyte was detected in the associated blank, as well as in the sample (organics); value is greater than or equal to the instrument detection limit, but less than the contract required detection limit (inorganics).

Notes (continued):

- D = Result obtained from an analysis at a secondary dilution factor.
- J = Analyte was positively identified at an estimated concentration.
- NA = Not analyzed.
- NS = No standard or guidance value available.
- ND = Not detected; contaminant was analyzed for but not detected at or above the laboratory detection limit.
- ug/L = micrograms per liter or parts per billion.
- Blanks = Contaminant was analyzed for but not detected at or above the laboratory detection limit.
- (39.0) = Results from a duplicate sample.
- Yellow shaded values exceed NYSDEC groundwater standards or guidance values.
- (1) = Silty clay; silty fine sand; sand & gravel.
- (2) = Fill; silty clay.
- (3) = Silty clay; silty fine sand; sand & gravel.
- (4) = Silty fine sand; sand & gravel.
- (5) = Silty fine sand; sand & gravel.

Table 7-5
Comparison of Groundwater & Surface Water Analytical Results for VOCs
NYSDEC Remedial Investigation
31 Tonawanda Street Off-Site Area, Site No. C915299A
Buffalo, New York

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Well Number Sample Date Sample Depth (ft bgs) Sample Location	NYSDEC Ground- water Standard ●	NYSDEC Surface Water Standard ●	RI-MW-7 08/24/17 14.0 - 24.0 Well MW-7	RI-MW-7 01/16/19 14.0 - 24.0 Well MW-7	MW-PS-1 08/22/22 Unknown Unknown	MW-PS-2 08/22/22 Unknown Unknown	MH21 09/06/22 N/A Manhole 21	BPH-MH 11/18/21 ≈ 9 Manhole 23	MH23 09/06/22 ≈ 9 Manhole 23
Volatile Organic Compounds (ug/L)									
1,1,1-Trichloroethane	5.0	5.0	**970 J**	**1,100**			**24.0**	**38.0**	**23.0**
1,1,2-Trichloroethane	1.0	1.0							
1,1,2,2-Tetrachloroethane	5.0	0.2 G							
1,1-Dichloroethane	5.0	5.0	**1,200 J**	**1,300**		**110.0**	**120.0**	**110.0**	**120.0**
1,1-Dichloroethene	5.0	0.7 G		**150.0**			**6.8 J**	**8.6 J**	**5.8 J**
1,2-Dichloroethane	0.6	0.6							
cis-1,2-Dichloroethene	5.0	5.0	**26,600**	**24,000**			**1,100**	**1,200**	**930.0**
trans-1,2-Dichloroethene	5.0	5.0					1.9 J		1.7 J
1,2,4-Trichlorobenzene	5.0	5.0 G		NA					
1,2,4-Trimethylbenzene	5.0	5.0	**180 J**	NA				**30.0**	
1,3,5-Trimethylbenzene	5.0	5.0		NA				**9.8 J**	
Acetone	50.0 G	50.0 G							
Benzene	1.0	1.0	**2,400**	**2,500**	**740.0**	**1,900**	**79.0**	**120.0**	**100.0**
Carbon Disulfide	60.0 G	60.0 G							
Chloroethane	5.0	5.0 G		**780.0**	**37.0**	**400.0**	**46.0**	**36 J**	**44.0**
Chloroform	7.0	7.0							
Ethylbenzene	5.0	5.0	**1,800 J**	**2,500**	**860.0**	**970.0**		**200.0**	**130.0**
Isopropylbenzene	5.0	5.0 G		NA	**58.0**	**49.0 J**		4.2 J	3.3 J
p-Isopropyltoluene	5.0	5.0		NA					
Methyl ethyl ketone (2-Butanone)	50.0 G	50.0 G						**100 J**	
Methyl tert-butyl ether	10.0 G	10.0 G							
Methylcyclohexane	NS	NS		NA					
Methylene Chloride	5.0	5.0							
n-Propylbenzene	5.0	5.0		NA					
Tetrachloroethene	5.0	0.7 G							
Toluene	5.0	5.0	**920 J**	**1,000**	**13.0**	**110.0**		**71.0**	**45.0**
Trichloroethene	5.0	5.0	**110 J**	**220.0**			3.6 J		**5.5 J**
Vinyl Chloride	2.0	0.3 G	**3,500**	**4,400**		**79.0**	**320.0**	**210.0**	**330.0**
Xylene (Total)	5.0	5.0	**930 J**	**1,440**	**177.0**	**320.0**		**133.0**	**79.0**

Table 7-5
Comparison of Groundwater & Surface Water Analytical Results for VOCs
NYSDEC Remedial Investigation
31 Tonawanda Street Off-Site Area, Site No. C915299A
Buffalo, New York

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Notes:

- ● = NYSDEC Ambient Water Quality Standards and Guidance Values, June 1998, with addenda through 2004.
- * = Applies to sum of phenolic compounds.
- J = Analyte was positively identified at an estimated concentration.
- NA = Not analyzed.
- NS = No standard or guidance value available.
- ug/L = micrograms per liter or parts per billion.
- Blanks = Contaminant analyzed for but not detected at or above the laboratory detection limit.
- Yellow shaded values exceed NYSDEC groundwater or surface water standards or guidance values.

Table 7-6
Summary of PCB Results for the 2021 GEI Sediment Samples from the Scajaquada Creek Slip
NYSDEC Remedial Investigation
31 Tonawanda Street Off-Site Area, Site No. C915299A
Buffalo, New York

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Sample Number Sample Type Depth Interval (ft) Sample Date	Sediment Guidance Values Class A *	Sediment Guidance Values Class B **	Sediment Guidance Values Class C +	SED-LSC-1 Sediment 0.0' - 0.5' 11/11/21	SED-LSC-1 Sediment 11.0' - 15.0' 11/09/21	SED-LSC-2 Sediment 0.0' - 0.5' 11/11/21	SED-LSC-2 Sediment 14.0' - 16.0' 11/09/21	SED-LSC-3 Sediment 0.0' - 0.5' 11/11/21	SED-LSC-3 Sediment 13.0' - 16.0' 11/09/21
PCBs (µg/kg)									
Aroclor 1242									
Aroclor 1248				472 J		421 J		475 J	
Aroclor 1254				294 J		327 J		487 J	780 J
Aroclor 1260				182 J		408 J		144 J	206 J
Aroclor 1262									
Aroclor 1268									
Total PCBs	< 100	100 - 1,000	> 1,000	**948 J**		**1,160 J**		**1,110 J**	**986 J**

Notes:
* = Sediment is considered to present a low risk to aquatic life.
** = Sediment is considered to be moderately contaminated.
+ = Sediment is considered highly contaminated and likely to present a high risk to aquatic life.
ug/kg = micrograms per kilogram or parts per billion.
J = Analyte is positively identified with concentration qualified as estimated value.
Blanks = compound not detected.
Yellow shaded results exceed the NYSDEC Class B sediment guidance values.
Orange shaded results exceed the NYSDEC Class C sediment guidance values.

Table 7-7
Summary of PCB Results for the 2021 GEI Sediment Samples from Scajaquada Creek Downstream of West Avenue
NYSDEC Remedial Investigation
31 Tonawanda Street Off-Site Area, Site No. C915299A
Buffalo, New York

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Sample Number Sample Type Depth Interval (ft) Sample Date	Sediment Guidance Values Class A *	Sediment Guidance Values Class B **	Sediment Guidance Values Class C +	SED-BGL-1 Sediment 0.0' - 0.5' 11/11/21	SED-BGL-1 Sediment 12.0' - 14.0' 11/10/21	SED-LSC-4 Sediment 0.0' - 0.5' 11/11/21	SED-LSC-4 Sediment 14.0' - 16.0' 11/10/21	SED-LSC-5 Sediment 0.0' - 0.5' 11/11/21	SED-LSC-5 Sediment 14.0' - 16.0' 11/10/21
PCBs (µg/kg)									
Aroclor 1242									
Aroclor 1248				90.1		628 J		313 J	
Aroclor 1254						350 J		181 J	
Aroclor 1260				36.4 J		249 J		131 J	
Aroclor 1262									
Aroclor 1268									
Total PCBs	< 100	100 - 1,000	> 1,000	**126.5 J**		**1,230 J**		**625 J**	

Sample Number Sample Type Depth Interval (ft) Sample Date	Sediment Guidance Values Class A *	Sediment Guidance Values Class B **	Sediment Guidance Values Class C +	SED-LSC-6 Sediment 0.0' - 0.5' 11/03/21	SED-LSC-6 Sediment 12.0' - 19.5' 11/03/21	SED-LSC-7 Sediment 0.0' - 0.5' 11/03/21	SED-LSC-7 Sediment 12.0' - 18.0' 11/02/21	SED-LSC-8 Sediment 0.0' - 0.5' 11/03/21	SED-LSC-8 Sediment 6.8' - 15.0' 11/01/21
PCBs (µg/kg)									
Aroclor 1242									362 J
Aroclor 1248				195 J		153 J		47.9 J	
Aroclor 1254				126 J	77.5 J	84.4 J	16.6 J	24 J	
Aroclor 1260						55.6 J		15.7 J	
Aroclor 1262									
Aroclor 1268									
Total PCBs	< 100	100 - 1,000	> 1,000	**321 J**	77.5 J	**293 J**	16.6 J	87.6 J	**362 J**

Notes:

*** = Sediment is considered to present a low risk to aquatic life.**
**** = Sediment is considered to be moderately contaminated.**
+ = Sediment is considered highly contaminated and likely to present a high risk to aquatic life.
ug/kg = micrograms per kilogram or parts per billion.
J = Analyte is positively identified with concentration qualified as estimated value.
Blanks = compound not detected.
Yellow shaded results exceed the NYSDEC Class B sediment guidance values.
Orange shaded results exceed the NYSDEC Class C sediment guidance values.

Table 7-8
Summary of PCB Results for the 2017 NYSDEC Sediment Samples from Scajaquada Creek Upstream of West Avenue
NYSDEC Remedial Investigation
31 Tonawanda Street Off-Site Area, Site No. C915299A
Buffalo, New York

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Sample Number Sample Type Depth Interval (ft) Sample Date	Sediment Guidance Values Class A *	Sediment Guidance Values Class B **	Sediment Guidance Values Class C +	SCJ-13-01-04 Sediment 0.0' - 0.33' 04/05/17	SCJ-14-01-05 Sediment 0.0' - 0.42' 04/05/17	SCJ-15-01-06 Sediment 0.0' - 0.5' 04/05/17	SCJ-16-01-12 Sediment 0.0' - 1.0' 04/05/17	SCJ-17-01-07 Sediment 0.0' - 0.58' 04/05/17	
PCBs (µg/kg)									
Aroclor 1242									
Aroclor 1248				390.0	77.0	280.0	190.0	150.0	
Aroclor 1254				240.0	40.0	170.0	88.0	97.0	
Aroclor 1260				330.0	53.0	160.0	82.0	85.0	
Aroclor 1262									
Aroclor 1268				33.0	5.7 J	14.0	15.0	7.9 J	
Total PCBs	< 100	100 - 1,000	> 1,000	**993.0**	**175.7 J**	**624.0**	**375.0**	**339.9 J**	

Sample Number Sample Type Depth Interval (ft) Sample Date	Sediment Guidance Values Class A *	Sediment Guidance Values Class B **	Sediment Guidance Values Class C +	SCJ-19-01-12 Sediment 0.0' - 1.0' 04/04/17	SCJ-19-02-24 Sediment 1.0' - 2.0' 04/04/17	SCJ-20-01-12 Sediment 0.0' - 1.0' 04/04/17	SCJ-20-02-17 Sediment 1.0' - 1.42' 04/04/17	SCJ-21-01-12 Sediment 0.0' - 1.0' 04/04/17	SCJ-21-02-16 Sediment 1.0' - 1.33' 04/04/17
PCBs (µg/kg)									
Aroclor 1242									
Aroclor 1248				47.0	13.0	160.0	18.0	280.0	92.0
Aroclor 1254				34.0	13.0	95.0	12.0	520.0	85.0
Aroclor 1260				37.0	15.0	120.0	13.0	2,400	120 F1 F2
Aroclor 1262									
Aroclor 1268				4.6 J	2.5 J	12.0		160.0	11.0
Total PCBs	< 100	100 - 1,000	> 1,000	**122.6 J**	43.5 J	**387.0**	43.0	**3,360**	**308.0**

Table 7-8
Summary of PCB Results for the 2017 NYSDEC Sediment Samples from Scajaquada Creek Upstream of West Avenue
NYSDEC Remedial Investigation
31 Tonawanda Street Off-Site Area, Site No. C915299A
Buffalo, New York

Sample Number Sample Type Depth Interval (ft) Sample Date	Sediment Guidance Values Class A *	Sediment Guidance Values Class B **	Sediment Guidance Values Class C +	SCJ-22-01-12 Sediment 0.0' - 1.0' 04/03/17	SCJ-23-01-12 Sediment 0.0' - 1.0' 04/03/17	SCJ-23-02-19 Sediment 1.0' - 1.58' 04/03/17	SCJ-24-01-12 Sediment 0.0' - 1.0' 04/03/17	SCJ-24-02-24 Sediment 1.0' - 2.0' 04/03/17	SCJ-25-01-12 Sediment 0.0' - 1.0' 04/03/17
PCBs (µg/kg)									
Aroclor 1242									
Aroclor 1248				880.0 (1,800)	30.0	4.9 J	22.0	17.0	19.0
Aroclor 1254				380.0 (720.0)	42.0	4.4 J	28.0	32.0	31.0
Aroclor 1260				270.0 (310.0)	34.0		29.0	28.0	42.0
Aroclor 1262									
Aroclor 1268				23.0 (26.0)	5.9 J		4.4 J	4.9 J	3.9 J
Total PCBs	< 100	100 - 1,000	> 1,000	**1,553 (2,856)**	**111.9 J**	9.3	83.4 J	81.9 J	95.9 J

Sample Number Sample Type Depth Interval (ft) Sample Date	Sediment Guidance Values Class A *	Sediment Guidance Values Class B **	Sediment Guidance Values Class C +	SCJ-26-01-12 Sediment 0.0' - 1.0' 04/03/17	SCJ-26-02-24 Sediment 1.0' - 2.0' 04/03/17	SCJ-27-01-12 Sediment 0.0' - 1.0' 04/03/17	SCJ-27-02-18 Sediment 1.0' - 1.5' 04/03/17	SCJ-28-01-12 Sediment 0.0' - 1.0' 04/03/17	SCJ-28-02-15 Sediment 1.0' - 1.25' 04/03/17
PCBs (µg/kg)									
Aroclor 1242									
Aroclor 1248				60.0	17.0	110.0	13.0	91.0	12.0
Aroclor 1254				47.0	29.0	98.0	25.0	92.0	16.0
Aroclor 1260				29.0	26.0	51.0	19.0	81.0	13.0
Aroclor 1262									
Aroclor 1268				4.3 J	5.0 J	10.0	5.2 J	9.1 J	
Total PCBs	< 100	100 - 1,000	> 1,000	**140.3 J**	77.0 J	**269.0**	62.2 J	**273.1 J**	41.0

Table 7-8
Summary of PCB Results for the 2017 NYSDEC Sediment Samples from Scajaquada Creek Upstream of West Avenue
NYSDEC Remedial Investigation
31 Tonawanda Street Off-Site Area, Site No. C915299A
Buffalo, New York

Sample Number Sample Type Depth Interval (ft) Sample Date	Sediment Guidance Values Class A *	Sediment Guidance Values Class B **	Sediment Guidance Values Class C +	SCJ-29-01-12 Sediment 0.0' - 1.0' 04/03/17	SCJ-29-02-27 Sediment 1.0' - 2.25' 04/03/17	SCJ-30-01-12 Sediment 0.0' - 1.0' 04/03/17	SCJ-30-02-23 Sediment 1.0' - 1.92' 04/03/17		
PCBs (µg/kg)									
Aroclor 1242									
Aroclor 1248				56.0	14.0 (16.0)	24.0	9.4		
Aroclor 1254				43.0	25.0 (29.0)	39.0	18.0		
Aroclor 1260				31.0	19.0 (25.0)	35.0	13.0		
Aroclor 1262									
Aroclor 1268				6.2 J	4.0 J (4.5 J)	5.1 J	2.6 J		
Total PCBs	< 100	100 - 1,000	> 1,000	**136.2 J**	62.0 J (74.5.0 J)	**103.1 J**	43.0 J		

Notes:
*** = Sediment is considered to present a low risk to aquatic life.**
**** = Sediment is considered to be moderately contaminated.**
+ = Sediment is considered highly contaminated and likely to present a high risk to aquatic life.
ug/kg = micrograms per kilogram or parts per billion.
J = Analyte is positively identified with concentration qualified as estimated value.
F1 = MS and/or MSD Recovery is outside acceptance limits.
F2 = MS/MSD RPD exceeds control limits
Blanks = compound not detected.
Yellow shaded results exceed the NYSDEC Class B sediment guidance values.
Orange shaded results exceed the NYSDEC Class C sediment guidance values.

Table 7-9
Comparison of Surface Water Analytical Results Before & After Sealing the Manholes
NYSDEC Remedial Investigation
31 Tonawanda Street Off-Site Area, Site No. C915299A
Buffalo, New York

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Sample Number Sample Date Sample Depth (ft bgs) Sample Location	NYSDEC Surface Water Standard ●	MH21 09/06/22 N/A Manhole 21	MH21 12/07/22 N/A Manhole 21	BPH-MH 11/18/21 ≈ 9 Manhole 23	MH23 09/06/22 ≈ 9 Manhole 23	MH23 12/07/22 ≈ 9 Manhole 23	BPH-Sump 11/18/21 ≈ 14 P.H. Sump	Vault 09/06/22 ≈ 14 P.H. Sump	Vault 12/07/22 ≈ 14 P.H. Sump
Volatile Organic Compounds (ug/L)									
1,1,1-Trichloroethane	5.0	**24.0**	0.88 J	**38.0**	**23.0**	3.0 J	**43.0**	**30.0**	3.1 J
1,1,2-Trichloroethane	1.0								
1,1,2,2-Tetrachloroethane	0.2 G								
1,1-Dichloroethane	5.0	**120.0**	1.2	**110.0**	**120.0**	**36.0**	**130.0**	**160.0**	**40.0**
1,1-Dichloroethene	0.7 G	**6.8 J**		**8.6 J**	**5.8 J**	**1.2 J**	**8.2 J**	**8.0 J**	**1.5 J**
1,2-Dichlorobenzene	3.0								
1,2-Dichloroethane	0.6								
cis-1,2-Dichloroethene	5.0	**1,100**	4.9	**1,200**	**930.0**	**250.0**	**1,500**	**1,400**	**280.0**
trans-1,2-Dichloroethene	5.0	1.9 J			1.7 J				
1,2,4-Trichlorobenzene	5.0 G								
1,2,4-Trimethylbenzene	5.0			**30.0**			**31.0**		
1,3,5-Trimethylbenzene	5.0			**9.8 J**			**12.0 J**		
Acetone	50.0 G		12.0 J			20.0 J		48.0 J	20.0 J
Benzene	1.0	**79.0**		**120.0**	**100.0**	**32.0**	**140.0**	**120.0**	**35.0**
Carbon Disulfide	60.0 G								
Chloroethane	5.0 G	**46.0**		**36.0 J**	**44.0**	**18.0**	**45.0 J**	**61.0**	**21.0**
Chloroform	7.0		0.74 J			0.72 J			1.1 J
Ethylbenzene	5.0			**200.0**	**130.0**	**27.0**	**170.0**	**15.0 J**	**24.0**
Isopropylbenzene	5.0 G			4.2 J	3.3 J	0.80 J	4.2 J		0.68 J
p-Isopropyltoluene	5.0								
Methyl Acetate	NS			24.0			14.0 J		
Methyl ethyl ketone (2-Butanone)	50.0 G			**100 J**		25.0 J	**55.0 J**	**70.0 J**	23.0 J
Methyl tert-butyl ether	10.0 G								
Methylcyclohexane	NS								
Methylene Chloride	5.0								
Naphthalene (PAH)	13.0 G	NA		**510.0**	NA		7.2 J	NA	
n-Propylbenzene	5.0								
Styrene	5.0 G			3.6 J			4.2 J		

Table 7-9
Comparison of Surface Water Analytical Results Before & After Sealing the Manholes
NYSDEC Remedial Investigation
31 Tonawanda Street Off-Site Area, Site No. C915299A
Buffalo, New York

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Sample Number Sample Date Sample Depth (ft bgs) Sample Location	NYSDEC Surface Water Standard ●	MH21 09/06/22 N/A Manhole 21	MH21 12/07/22 N/A Manhole 21	BPH-MH 11/18/21 ≈ 9 Manhole 23	MH23 09/06/22 ≈ 9 Manhole 23	MH23 12/07/22 ≈ 9 Manhole 23	BPH-Sump 11/18/21 ≈ 14 P.H. Sump	Vault 09/06/22 ≈ 14 P.H. Sump	Vault 12/07/22 ≈ 14 P.H. Sump
Volatile Organic Compounds (continued)									
Tetrachloroethene	0.7 G								
Toluene	5.0			**71.0**	**45.0**	**13.0**	**74.0**	**20 J**	**13.0**
Trichloroethene	5.0	3.6 J	**9.6**		**5.5 J**	**8.4**		4.2 J	**6.4**
Vinyl Chloride	0.3 G	**320.0**	**0.95 J**	**210.0**	**330.0**	**87.0**	**250.0**	**400.0**	**91.0**
Xylene (Total)	5.0			**133.0**	**79.0**	**19.0**	**124.0**	**38.0**	**18.0**
Semi-Volatile Organic Compounds (ug/L)									
1,1-Biphenyl	5.0 G			NA			NA		
2,4-Dimethylphenol	50.0 G			4.4 J	4.9 J		7.7 J	5.7 J	
2-Methylnaphthalene (PAH)	4.7								
2-Methylphenol	1.0 *								
2-Nitroaniline	5.0 G	0.69 J							
4-Chloro-3-Methylphenol	NS	0.89 J							
4-Methylphenol	1.0 *						0.5 J		
Acenaphthene (PAH)	20.0	1.0 J		1.5 J	1.2 J			0.68 J	
Acenapthylene (PAH)	NS								
Acetophenone	NS			2.0 J			1.4 J		
Anthracene (PAH)	50.0 G			0.63 J	0.58 J		0.76 J	0.54 J	
Benzo[a]anthracene (PAH)	0.002 G				**0.47 J**			**1.0 J**	**0.47 J**
Benzo[a]pyrene (PAH)	0.002 G							**0.76 J**	
Benzo[b]fluoranthene (PAH)	0.002 G							**0.51 J**	
Benzo[g,h,i]perylene (PAH)	NS								
Benzo[k]fluoranthene (PAH)	0.002 G								
Bis(2-chloroethoxy)methane	5.0 G	1.0 J							
Bis(2-ethylhexyl) phthalate	5.0								
Carbazole	NS			0.48 J			0.53 J		
Chrysene (PAH)	0.002 G							**0.82 J**	
Dibenzo[a,h]anthracene (PAH)	NS								
Dibenzofuran	NS								

Table 7-9
Comparison of Surface Water Analytical Results Before & After Sealing the Manholes
NYSDEC Remedial Investigation
31 Tonawanda Street Off-Site Area, Site No. C915299A
Buffalo, New York

Sample Number Sample Date Sample Depth (ft bgs) Sample Location	NYSDEC Surface Water Standard ●	MH21 09/06/22 N/A Manhole 21	MH21 12/07/22 N/A Manhole 21	BPH-MH 11/18/21 ≈ 9 Manhole 23	MH23 09/06/22 ≈ 9 Manhole 23	MH23 12/07/22 ≈ 9 Manhole 23	BPH-Sump 11/18/21 ≈ 14 P.H. Sump	Vault 09/06/22 ≈ 14 P.H. Sump	Vault 12/07/22 ≈ 14 P.H. Sump
Semi-Volatile Organic Compounds (continued)									
Diethylphthalate	50.0 G							0.66 J	
Dimethylphthalate	50.0 G								
Di-n-butylphthalate	50.0 G								
Fluoranthene (PAH)	50.0 G	0.95 J		0.47 J	1.0 J		0.58 J	2.6 J	0.53 J
Fluorene (PAH)	50.0 G	0.50 J		3.2 J	1.0 J		2.3 J		
Hexachlorobenzene	0.04								
Hexachloroethane	5.0	0.79 J							
Indeno[1,2,3-cd]pyrene (PAH)	0.002 G								
Naphthalene (PAH)	13.0 G								
Pentachlorophenol	1.0 *								
Phenanthrene (PAH)	50.0 G			1.6 J	0.49 J		0.50 J	1.1 J	
Phenol	1.0 *	**8.3 J**		**4.8 J**	**7.5 J**	0.66 J	**4.8 J**	**8.9 J**	0.91 J
Pyrene (PAH)	50.0 G	1.3 J		0.60 J	1.8 J		0.93 J	3.9 J	1.2 J
Miscellaneous Compounds (ug/L)									
1,4-Dioxane	0.35 G	**17.0**	**1.3**	NA	**19.0**	**3.6**	NA	**19.0**	**4.4**

Notes:

Other than sample 31-SW-1, the remaining samples are associated with the Niagara Street Pump House storm water sewer system. These samples are tabulated from roughly up-sewer to down-sewer locations.

● = NYSDEC Ambient Water Quality Standards and Guidance Values, June 1998, with addenda through 2021.

*** = Applies to sum of phenolic compounds.**

B = Analyte was detected in the associated blank, as well as in the sample (organics); value is greater than or equal to the instrument detection limit, but less contract required than the detection limit (inorganics).

D = Result obtained from an analysis at a secondary dilution factor.

J = Analyte was positively identified at an estimated concentration.

NA = Not analyzed.

N/A = Not applicable.

NS = No standard or guidance value available.

P.H. = Pump house.

ug/L = micrograms per liter or parts per billion.

Blanks = Contaminant was analyzed for but not detected at or above the laboratory detection limit.

Yellow shaded values exceed NYSDEC surface water standards or guidance values.