INVENTUM ENGINEERING, P.C.

Remedial Investigation Work Plan

3821 River Road, Inc.

Brownfield Cleanup Program Site

NYSDEC Site #C915003
3821 River Road

Tonawanda, NY 14150

August 17, 2023

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Engineering Certification

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

Respectfully Submitted,

Inventum Engineering, P.C.

Date: 8.17.2023

John P. Black, P.E.

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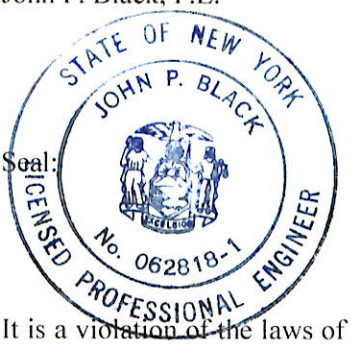

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1 Introduction

On behalf of 3821 River Road, Inc. (3821 River Road), Inventum Engineering, P.C. (Inventum) has prepared this Remedial Investigation Work Plan (RIWP) for the Brownfield Cleanup Program (BCP) Site #C915003 located at 3821 River Road (Site) in Tonawanda, Erie County, New York (Figure 1). The Site consists of 17.446 acres and the Erie County section/block/lot tax parcel number is 64.12-4-1. The location of the Site is shown on Figure 1.

The Site was originally developed by Allied Fibers and Plastics Company (Allied[1]) in the early 1950s, and was operated as a manufacturing facility through 1982. Site operations by Allied included the polymerization of ethylene into low molecular weight polyethylene (trademark: A-C Polyethylene and Co-polymers), which was finished into powder, pelleted and solid forms. Allied sold the property to Rouse Breihan, Inc. in 1985, following the shutdown of all chemical processing activities. Rouse Breihan conducted management and laboratory testing for the Tonawanda Coke Corporation (TCC) on the 3821 River Road BCP Site. A trucking firm also used a portion of the site for vehicle maintenance and parking. The Site has been vacant since 2019.

3821 River Road, Inc. purchased the Site from Rouse Breihan Inc. on August 2, 2022.

This RIWP is being submitted to the New York State Department of Environmental Conservation (NYSDEC) along with the BCP Application with the intent to begin the investigation work upon completion of a BCP Agreement between the NYSDEC and 3821 River Road. The remedial investigation will be conducted in accordance with an approved RIWP, the executed BCP Agreement, and DER-10 Technical Guidance for Site Investigation and Remediation (May 2010).

1.1 RI Program Objectives

The objectives of the RI program are to complete a comprehensive investigation of soil and groundwater conditions and provide the data required for an Alternatives Analysis (AA) for the Site, recommend the applicable Standards, Criteria, and Guidance (SCGs), Remedial Action Objectives (RAOs), Remedial Actions (RAs), and propose potential Interim Remedial Measures (IRMs) that will address environmental impacts that resulted from historical operations at the 3821 River Road BCP Site.

To achieve these goals, the following objectives will be within the focus of the program.

- Gather, compile, and evaluate existing historical investigation data;
- Complete the investigation of the 3821 River Road BCP Site, including surface and subsurface soil, sediments, groundwater, and former Allied infrastructure consisting of storage/process tanks, drums, buildings, former process piping, and equipment;
- Conduct a qualitative exposure assessment using the collective data for the Site;
- Identify and propose any IRM activities that may be appropriate to complete in advance of the AA to protect the environment and ensure continued protection of public safety and health;
- Complete an AA and identify the appropriate remedy(ies) for NYSDEC consideration and public comment, and;
- Provide a draft schedule for implementation of the proposed remedial actions

[1] AlliedSignal acquired Honeywell International, Inc. in 1999 but the merged entity retained the Honeywell name.

1.2 RIWP Organization

This RIWP has been organized in the following sections:

Section 1 - Introduction
Section 2 - Site Description and History
Section 3 - Site Investigation History
Section 4 - Initial Conceptual Site Model and Data Gaps
Section 5 - Remedial Investigation Scope of Work
Section 6 - Investigation Derived Waste Management Plan
Section 7 - Fish and Wildlife Resources Impact Analysis
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Appendix B – Health and Safety Plan
Appendix C – Community Air Monitoring Plan
Appendix D – Wetlands Databases
Appendix F – Historical Plant Layout Figure

A Community Participation Plan (CPP) will be prepared and submitted under a separate cover to the NYSDEC upon completion to the BCP Agreement. The CPP will provide information on how information generated on behalf of 3821 River Road and the NYSDEC will be made available and how the Owner of the Site and NYSDEC will inform and involve the public during the investigation and remediation of the BCP Site.

Anticipated key contact information for Inventum and NYSDEC is provided below for reference:

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2 BCP Site Description and History

2.1 BCP Site Background

The 3821 River Road BCP Site was originally developed by Allied in the early 1950s, and was operated as a manufacturing facility through 1982. Site operations included the polymerization of ethylene into low molecular weight polyethylene (trademark: A-C Polyethylene and Co-polymers), which was finished into powder, pelleted and solid forms.

2.1.1 Operational History

Allied sold the property to Rouse Breihan, Inc. in 1985. After the change in ownership, several of the Site buildings were used for office and laboratory space, vehicle maintenance, and warehousing by the Tonawanda Coke Corporation (TCC) up until the shutdown of TCC operations in October 2018. TCC was the previous property owner and site operator of the adjoining property to the north and east of the Site. The former TCC property is now owned by the Riverview Innovation & Technology Campus (RITC). A trucking firm previously leased space at the Site from Rouse-Breihan for offices, truck maintenance and repair. Approximately 27 buildings (Figure 2) are present on the Site and 12 aboveground storage tanks (ASTs) with aboveground and below grade piping located in the center portion of the Site. The remaining buildings are unoccupied and unmaintained. The site has been vacant since 2019.

3821 River Road has applied to the NYS BCP as a volunteer, recognizing that 3821 River Road has never operated any of the plant's equipment that had possibly caused releases to the environment, never disposed any waste on or from the Site, and have never conducted any commercial or industrial operations on the property.

The former Allied facility buildings, laboratory, equipment, and other infrastructure are in various states of maintenance as there was no apparent interest to maintain the facility's infrastructure after the TCC shutdown in October 2018. The laboratory was clearly (there is a TCC logo mounted in the office building) operated by Rouse Breihan/TCC following the sale from Allied. Since the transfer of ownership of the Site in August 2022, 3821 River Road has taken significant actions to secure the Site and protect the environment:

- Site Security – Changed gate access codes and installed security cameras. Cameras are monitored 24/7;
- Secured drums and containers that were stored incorrectly, unstable or unsafe;
- Segregated incompatible laboratory chemicals;
- Moved flammable laboratory chemicals to a flammable materials cabinet;
- Repaired dangerous electrical circuits; and
- Conducts daily perimeter fence and security inspections.

In addition, 3821 is developing plans and engaging contractors for:

- Vegetation Management;
- Utilities – upgrades and security;
- Hazardous Materials (HazMats) Management and Control;
- ACM Management; and
- Waste Management and proper disposal.

2.1.2 Previous Investigations

Brief descriptions of previous investigations are provided for context, additional detail of the investigations can be found in Section 3.

During the summer 1981, approximately 500 cubic yards (CY) of "tar" and soils were excavated and removed from an area approximately 100-feet by 10 to 20-feet wide located in the eastern portion of the Site along the southern property boundary. The 0.07 acre "Former Coal Tar Site" (NYSDEC Inactive Hazardous Waste Site 915003C) consisted of an area of the plant property where pools of what was described as "coal tar", from spillage and leakage during product-transfer operations, were located. The tar removal was completed by the TCC, under agreement with Allied, as part of the demolition of the idle facility termed the "tar storage" terminal.

The 3821 River Road property was sampled by the United States Geological Survey (U.S.G.S.) in July of 1982 and in May of 1983 under the Niagara River Toxics Investigation. Chromium and lead exceeded concentrations when compared to samples taken from "undisturbed" soils in the Tonawanda area. Twenty-one (21) organic priority pollutants were detected in the soil samples and all concentrations were below 10 parts per billion (ppb). A Phase I Investigation (Note: the term Phase I as used here is for an initial investigation, not an All Appropriate Inquiry Phase I) was completed in 1983 and an investigation was carried out at the end of 1988. Soil samples collected inside the pit (later registered as the Former Blowdown Pit Site #915003B) detected "high" concentrations of chromium and elevated concentrations of lead. Sediment from an onsite catch basin showed elevated metals concentrations. Sampling and analysis of five off-site sewer samples showed no migration from this source. To further progress the investigation, up-gradient monitoring wells and four additional wells were installed. Sampling of the monitoring wells over one year showed groundwater exceedances for cyanide, benzene, ethylbenzene, toluene, xylene, and numerous polycyclic aromatic hydrocarbons (PAH) compounds.

In 1991, Allied excavated an area at the west end of the property where spent and off-specification batches of magnesium chromate catalyst were allegedly disposed/released. The excavation was completed under a Consent Order between Allied and NYSDEC. This area has historically been referenced as the "Blow Down Pit" and was in use from 1958 to 1962. The 0.02 acre Blow Down Pit was approximately 40-feet in diameter.

NYSDEC notified Allied in May 1995 that the 0.02 acre Former Blowdown Pit Site[2] was delisted from the NYSDEC Registry of Inactive Hazardous Waste Disposal Sites. The NYSDEC Inactive Hazardous Waste Site number is 915003B.

In July of 1998, NYSDEC notified Allied that subsequent investigations had identified the presence of groundwater contamination upgradient of the Former Blow-down Pit Site. In November 1998, NYSDEC acknowledged Allied's agreement to voluntarily proceed with additional investigations and identified specific investigation focus areas.

Additional investigation activities were completed at the Tonawanda Plastics Site (NYSDEC RCRA Site No. 915003C) in Tonawanda, New York (the 3821 BCP Site [#C915003]) between 2018 and 2021. The work was largely completed under two Work Plans approved by the NYSDEC.

The Storm Sewer Investigation Work Plan (Parsons, 2017) was submitted by letter dated December 27, 2017, and approved by NYSDEC by letter dated January 31, 2018. The investigation was conducted

[2] Note: In some previous documents this was also referred to as the chromium blow-down removal area.

between February 2018 and July 2018 and focused on the 36-inch storm sewer which traverses the western portion of the Site.

2.2 BCP Site Location and Description

The property is located at 3821 River Road in the Town of Tonawanda, Erie County, New York (Figure 1). The Site encompasses approximately 17.446 acres of land, and the center of the site is approximately 1.05 miles west of I-190 and located along the east side of River Road. The Niagara River is located approximately 0.45 miles to the west from the center of the Site. The surrounding properties are primarily former industrial use, electrical transmission rights of way, or vacant. The RITC BCP Site (NYSDEC #C915353, formerly TCC) is adjacent to the Site to the east and north. The adjacent property to the north of the 3821 BCP Site is Operable Unit 2 of NYSDEC Site #915055, also known as Site 109. The adjacent property to the south is an electrical transmission corridor and is owned by Niagara Mohawk Power Corporation (National Grid). River Road is directly adjacent to the west boundary of the Site and primary access to the Site is from an entrance at River Road. Secondary access roads are from the RITC property.

For purposes of managing the different conditions at the BCP Site and for the identification of specific areas of investigation within RIWP, the BCP Site has been covered with a grid (Figure 3) and consistent with previous investigations, subdivided into three Areas of Investigation (AOIs, Figure 4):

- AOI 1 – West – The West Area is parallel to River Road and has no above grade structures present. The former inactive chromium blow-down pit (NYSDEC Inactive Hazardous Waste Site 915003B) was located in AOI 1. The blow-down pit was remediated in 1991. The materials recovered from the blow-down pit area were managed as hazardous waste, and the location was "delisted' in 1995. A 36-inch diameter concrete storm sewer pipe crosses beneath this portion of the site from south to north, conveying stormwater from the National Grid and Energy Transfer properties south of the Site; and in the northeast corner of AOI 1, the 48-inch diameter storm sewer pipe enters AOI 1 from AOI 2 which also conveys water from the neighboring property to the south. An 8-inch storm sewer pipe is parallel to the 36-inch storm sewer pipe. The exact source of flows to the 8-inch storm sewer pipe is/are unknown. All three storm sewer pipes discharge to a drainage ditch along the northern property boundary in AOI 1. There are twelve (12) groundwater monitoring wells (MW-1 through MW-10, MW-11R, and MW-12R) that were installed along and on either side of the 36-inch storm sewer and within the vicinity and south of the former inactive chromium blow-down pit in this AOI. There is an elongated berm of soil along River Road and the western property boundary in AOI 1. The height of the berm ranges from approximately 7-feet to 11-feet above the adjacent grade of the Site.

- AOI 2 – Center Plant Area – The Center Plant Area is where the previous primary plant manufacturing and research and development operations existed. Approximately 27 buildings and 12 ASTs with associated piping are present in this area. Several concrete slabs which are typical of former large AST (one was a gas holder) foundations are also present. A 48-inch diameter storm sewer pipe crosses beneath this portion of the Site from the south at a northwestern angle conveying storm water from the National Grid property south of the Site, and potentially some contribution from the BCP Site. This stormwater pipe is believed to be the pipe that crosses River Road and Site 108 of the RITC property, discharging to the Niagara River in the northwest corner of Site 108 or to the Town of Tonawanda sewage collection system. There is a meter/flow monitoring station adjacent to the pipe and a camera survey of a portion of the storm sewer is pending under the terms

of a RIWP for Site 108 (west of River Road). One shallow monitoring well (MW-13) is present in the eastern portion of the Center Plant Area AOI.

- AOI 3 – East – The East Area is located along the east side of the main onsite access road and appears to have been subdivided from the former TCC property. This portion of the Site is currently undeveloped with the exception of a former flare structure. Historical use consisted of railroad tracks to move product from the TCC facility area to the west. A flare that is no longer in operation is present along with several AST foundation slabs. It had been reported that during a Site walk with the NYSDEC in 2016, a tar like material was observed on the ground surface near the site access road and the northern property limits. 3821 River Road representatives confirmed there is tar on the ground surface in this section of the BCP Site. The NYSDEC Inactive Hazardous Waste Site 915003C where approximately 500 CY of "tar" and soil material were removed from this portion of the Site in 1981 is located in south center of AOI 3 along the southern property border. One shallow monitoring well (MW-14) is present in the northeast portion of AOI 3.

2.2.1 Land Use

The property (Figure 1) is in a heavily industrial area and approximately 0.45 mile east of the Niagara River. The 3821 River Road BCP Site is bordered by:

- RITC property (formerly TCC) is adjacent to the Site to the east and north. The portion of RITC property north of AOI 1 and AOI 2 is TCC Operable Unit 2, Site 109, NYS Superfund Site #915055. The RITC property located north and east of AOI 3 is a NYS BCP Site (#C915353).
- The adjacent property to the south is an electrical transmission corridor and is owned by Niagara Mohawk Power Corporation (National Grid).
- River Road is directly adjacent to the west boundary of the Site and access to the Site is from an entrance along River Road. Beyond River Road to the west is Site 108, an operable unit of the TCC NYS Superfund Site (#915055), that is on property owned by RITC. Site 108 is undeveloped with the exception of a pump house, utilities and a section of an abandoned conveyor system.

An aerial image of the surrounding properties can be viewed on Figure 2.

2.3 Topography

A topographic survey of the Site was conducted in April 2022 by Niagara Boundary and Mapping Services, a New York State licensed surveyor (Figure 5). The natural elevation of the Site is generally flat in the center and east with slight downslope sections (predominately in the west) from east to west and north to south. Natural elevations range from approximately 600 feet above mean sea level (ft. AMSL) on the eastern boundary (AOI 3) of the Site to 578 ft. ASML on the western boundary (AOI 1) near River Road. In AOI 1, there is an elongated berm of soil along River Road and the western property boundary. The height of the berm ranges from approximately 7-feet to 11-feet. above the adjacent grade of the 3821 River Road BCP Site. The elevation of the former plant area (AOI 2) ranges from approximately 586-feet AMSL along the east to 581-feet AMSL to the western limits.

2.4 Geology

Surficial geology at the Site has been characterized by a dense, massive, reddish glaciolacustrine clay overlain by fill material, clay, sand, and gravel. Perched groundwater on top of the clay has been observed within four feet of the ground surface (Parsons 2015, 2017 and 2021). Glacial lacustrine clay deposit consisting primarily of silt, sand, and clay and glacial till consisting of poorly-sorted, non-stratified mixtures of sand, silt, clay, gravel and rock fragments appear to be the most widespread natural overburden deposits

in the area of the RITC property that was investigated adjacent to the north and east boundaries of the Site. During the Remedial Investigation for the RITC property, Inventum could make a distinction between the clay and till deposits across the RITC site based on stiffness, field estimation of moisture content, and plasticity. The upper clay generally extends across the RITC site below the fill to depths of 20 to 30-feet below the ground surface (bgs). The upper clay was typically described as a reddish brown to brown, very firm to stiff, dry to moist, low to medium plasticity, silty clay (lean clay [CL]). The lower clay extends below the upper clay to the top of the bedrock between 50 and 54-feet bgs. The lower clay was typically described as reddish brown to brown, soft to very soft, moist to saturated, high to very high plasticity, clay with trace rounded gravels. The bedrock encountered below the RITC site is consistent with the regional description of the Camillus Shale formation. The upper 10-feet of the bedrock was described as a brownish thinly bedded shale with isolated gypsum lenses. The rock-quality designations (RQDs) of the recovered cores were good to excellent.

The borings logs for MW-9, MW-10, MW-11R and MW-12R in AOI 1 show that there is fill material at those locations to a depth of approximately 10-feet below ground surface (bgs) which is consistent with the depth of the 36-inch sewer (Parsons, 2017). At monitoring well locations MW-13 (AOI 2) and MW-14 (AOI 3), fill was observed at a foot or less over the native clay soil (Parsons, 2021).

The general groundwater flow across the site is to the west or northwest based on observed groundwater elevations (Parsons, 2021).

2.5 Surface Water Hydrology

Surface water on the 3821 River Road BCP Site flows to a series of catch basins, in small surface drainage ditches and to the surface drainage ditch on the adjacent Site 109. National Grid PLC owns and maintains an electrical power transmission corridor to the south and immediately south of the National Grid corridor is the Energy Transfer facility with bulk ASTs used for petroleum storage. The stormwater runoff from the Energy Transfer facility discharges to a series of concrete stormwater pipes that run under the site and discharge to a drainage swale on the RITC Site 109 that subsequently flows under River Road to a ditch that leads to the Niagara River.

Surface water drainage flow in AOI 1 is to the north to Site 109, divided by the elongated berm. Within AOI 2, the surface water leaves the Site by a series of drop inlets that are assumed to connect to the 48-inch storm water pipe. In AOI 3, surface water flow is towards the southwest portion of AOI 3.

The closest surface water body to the Site is the Niagara River to the west which is approximately 0.26-miles from the Site's entrance along River Road.

2.6 Wetlands and Waterways

Inventum reviewed the U.S. Fish and Wildlife Service (USFWS) National Wetland Inventory (NWI) maps for the potential presence of Waters and Wetlands of the United States (WOUS) and the NYSDEC Environmental Resource Mapper for the potential presence of NYS Freshwater Wetlands on the BCP Site (Appendix D).

Based on the NWI maps, there appears to be no potential WOUS on the Site; however, Inventum recognizes the NWI are not a substitute for a site-specific jurisdictional wetland delineation. An approximately 41.3-acre NYS Freshwater wetland (ID: BW-6) is identified to the east and southeast of the Site; however, the wetland does not connect to the Site.

A delineation of WOUS and NYS Freshwater Wetlands is proposed for the Site as described more fully in Section 5.5.

2.7 Groundwater

The general groundwater flow across the site is to the west or northwest based on observed groundwater elevations (Parsons, 2021).

Groundwater flow has the potential to occur in three water bearing units in the area of the BCP Site as evidenced by regional groundwater flow studies (NYSDEC 2007), site investigations on adjacent properties, and historical knowledge and experience of the area.

The fill layer observed in AOI 1 and AOI 2 of the Site can be characterized as an unconfined or perched aquifer depending on the presence and thickness of the underlying clay and is likely the primary unit for the potential transport of any related constituents. At monitoring well locations MW-13 (AOI 2) and MW-14 (AOI 3), fill was observed at one foot or less above the native clay soil (Parsons, 2021), therefore; shallow groundwater flow in the eastern portion of the Site has not been defined.

Groundwater also occurs in the underlying clay deposits, which can be characterized as an aquitard, confining groundwater from the underlying bedrock. There is likely a very low east to west gradient of groundwater flow across the Site given the topography and low permeability of the water bearing overburden units.

References suggest the hydraulic conductivity of the clay unit is extremely low, typically ranging from 10^{-6} to 10^{-8} centimeters per second. As noted in Section 2.4, the upper most portion of the clay unit is typically described as dryer and may contain vertical desiccation cracks, the presence of which, may allow for some localized vertical flow. However, the horizontal groundwater flow within the clay unit underlying the Site is described on a regional level as generally not water bearing and yielding only small quantities of water. The limited potential for horizontal groundwater flow in the clay unit can possibly be associated with thin seams of silt and sand but while limited is likely predominately toward the west.

Regionally, the uppermost Camillus Shale bedrock unit is characterized as a confined aquifer and is considered a productive water producing system. Groundwater within the bedrock unit occurs primarily in weathered surface fractures, horizontal gypsum dissolution beds, vertical joints, and small cavities.

Groundwater is not utilized as a source of drinking water in the Town of Tonawanda or the larger Tonawanda area due to the low productivity of the overburden units (fluvial/lacustrine fill and clay deposits), the naturally occurring high mineral content of groundwater in the bedrock unit, and the close proximity of the Niagara River. There are no municipal or known private drinking water wells within a 1-mile radius of the BCP Site (EDR 2022).

3 Site Investigation and Remediation History

Historical investigations have been conducted on the Site and much of the data that is available is focused on the areas that have historically been referenced as the "coal tar site" (NYSDEC Inactive Hazardous Waste Site 915003C) and the "blow-down pit" (NYSDEC Inactive Hazardous Waste Site 915003B) and the storm sewers that cross beneath the Site in AOI 1. A summary of the historical remediation, investigations and data that was available and relevant to the Site and development of this RIWP is presented in the sections below.

3.1 Former Coal Tar Site - NYSDEC Inactive Hazardous Waste Site 915003C

During the summer of 1981, approximately 500 CY of "tar" and soils were excavated and removed from the eastern portion of the Site. The 0.07 Acre Former Coal Tar Site (NYSDEC Inactive Hazardous Waste Site 915003C) consisted of an area of the plant property where pools of what was described as "coal tar", from spillage and leakage during product-transfer operations, were located. The removal was completed by the TCC, under agreement with Allied, as part of the demolition of the idle tar storage terminal. Removal was completed to the underlying clay layer. In addition to the "tar" and soil removal, a buried coal tar pipeline was also removed to the property limits. As part of the pipeline removal, an underground tank which was used as a blow-down tank for the transfer line, was removed.

NYSDEC informed Allied in October 1981 that no further remediation was necessary in the Former Coal Tar Site.

3.2 Former Blow Down Pit - NYSDEC Inactive Hazardous Waste Site 915003B

In 1991, Allied excavated an area at the west end of the property where spent and off-specification batches of magnesium chromate catalyst were disposed. The excavation was completed under a Consent Order between Allied and NYSDEC. This area has historically been referenced as the blow-down pit (NYSDEC Inactive Hazardous Waste Site 915003B).

Prior to the 1991 remedial excavation of the blow-down pit, a 0.02 Acre section of the 3821 River Road property was sampled by the U.S.G.S. in July of 1982 and in May of 1983 under the Niagara River Toxics Investigation. Chromium and lead exceeded concentrations in samples taken from undisturbed soils in the Tonawanda area. Twenty-one organic priority pollutants were detected in the soil samples. All concentrations were below 10 ppb. A Phase I Investigation was completed in 1983. An investigation was carried out at the end of 1988. Soil samples collected inside the blow down pit showed "high" concentrations of chromium and elevated concentrations of lead. Sediment samples from an onsite catch basin showed elevated metals concentrations. Off-site sewer samples showed no migration from this source. To further investigate the source of organics contamination in the up-gradient monitoring wells, four additional wells were installed. Sampling and analysis of five monitoring wells (MW-1 through MW-5) on the 3821 River Road property over a one-year period was completed. Groundwater samples have contained concentrations in excess of the Class GA criteria for cyanide, benzene, ethylbenzene, toluene, xylene, and numerous polycyclic aromatic hydrocarbons (PAHs) compounds.

NYSDEC notified Allied in May 1995 that the Former Blow Down Pit Site was delisted from the NYSDEC Registry of Inactive Hazardous Waste Disposal Sites.

3.3 RCRA Corrective Action, 1988 - 2016

In July of 1998, NYSDEC notified Allied that subsequent investigations had identified the presence of groundwater contamination upgradient of the chromium pit blow-down removal area, and that further Site

investigations would be required. In November 1998, NYSDEC acknowledged Allied's agreement to voluntarily proceed with additional investigations and identified specific investigation focus areas.

Continuing investigations were completed by O'Brien and Gere in 1999 and 2001 to document groundwater, subsurface soil and sewer conditions with the investigation reports being submitted to NYSDEC.

By letter dated October 2013, the NYSDEC responded to the 2001 investigation report and requested that Honeywell continue investigations. In December 2015, Honeywell submitted a report to the NYSDEC detailing the results of additional investigations which included the results of sampling efforts conducted in October 2014 and April 2015.

The investigations completed between 2014 and 2016 show that groundwater quality has not significantly changed when compared to 2001 analytical data and no evidence of impact migration is apparent. The 2014 and 2015 sampling did not provide evidence of apparent migration from groundwater to the storm sewer. Groundwater modeling presented in Parsons' report to the NYSDEC, dated December 2015, concluded that the plume is in a steady state, is not migrating off site and no sensitive receptors are present (Parsons 2017).

3.4 Investigation Summary Report, October 2017

In October 2017, Parsons submitted an Investigation Summary Report (Parsons, 2017) to the NYSDEC in response to comments received from NYSDEC following the review of the 2015 Investigation Summary Report. The following is a summary of Parsons' scope of work and findings:

- Existing monitoring wells MW-11 contained insufficient water to collect a sample and MW-12 was damaged. Monitoring wells MW-11R and MW-12R were drilled and installed to replace the decommissioned wells. Borings at both locations were advanced to auger refusal, which occurred at approximately 44-feet below ground surface (bgs) at MW-11R and approximately 36.4 feet bgs at MW-12R. The borings were completed as groundwater monitoring wells with the screened intervals corresponding to the first encountered water bearing zone.
- Water levels and total well depths were measured and recorded for each monitoring well prior to groundwater sampling. Regionally, groundwater flow direction is to the west toward the north flowing Niagara River. Information provided in historical reports indicates that groundwater in the vicinity is perched in alluvial/lacustrine sediments, which primarily consist of graded silts and clay. Subsurface information gathered from the newly installed monitoring wells (MW-11R and MW-12R) did not indicate a perched groundwater layer, but groundwater was encountered in the zone directly above auger refusal.
- The groundwater monitoring wells were sampled by the low-flow sampling method. If the monitoring well purged dry, the monitoring well was allowed to recharge, and groundwater samples collected within 24 hours. Samples were analyzed for volatile organic compounds (VOCs), semi-volatile organics (SVOCS), and inorganic parameters (metals).
- During the 2016 groundwater sampling event, VOCs exceeding the Class GA Ambient Water Quality Standards and Guidance values were detected in monitoring wells MW-1, MW-4, MW-5, MW-6, MW-7, and MW-9. SVOCs exceedances over the Class GA Ambient Water Quality Standards and Guidance values were detected in samples from monitoring wells, MW-1, MW-5, MW-6, MW-7, MW-8, MW-9 and MW-10, MW-11R, and MW-12R. Metals exceeding the Class GA Ambient Water Quality Standards and Guidance values were detected in each of the twelve (12) monitoring wells and a mercury exceedance were detected in a sample from MW-9. Cyanide exceeded the Class GA Ambient Water Quality Standards and Guidance values in samples from

shallow wells MW-1 through MW-10. Cyanide was not detected in the deeper monitoring wells, MW-11R and MW-12R.

- Benzene, toluene, ethylbenzene, and xylene (BTEX) compounds were detected at concentrations above the Class GA Standards in samples collected from MW-1, MW-6, MW-7, MW-9 and MW-10. The highest benzene concentrations detected during 2014, 2015 and 2016 sampling events were in wells MW-6 (92 ug/L) and MW-7 (50 ug/L). Benzene concentrations in these five noted wells remain virtually unchanged when compared to concentrations reported in 2001 samples.
- During the 2016 groundwater sampling event, naphthalene was detected at a concentration above the Class GA Standard ranging from 98 ug/L to 1,700 ug/L in samples collected from MW-1, MW-6, MW-7, and MW-9. These wells are located directly south to southeast of the Former Blow Down Pit site and the naphthalene concentration has decreased in each of these wells since the previous April 2015 sampling event.
- The groundwater samples from the 2014, 2015 and 2016 sampling events detected chlorinated VOCs with concentrations above the Class GA were detected in MW-4 (cis-1,2-dichloroethene, trichloroethene, and vinyl chloride), MW-5 (vinyl chloride), MW-7 (1,2-dichloroethane) and MW-9 (cis-1,2-dichloroethene, vinyl chloride). The analytical results from the 2016 sampling event are summarized in Table 3 and the Class GA Ambient Water Quality Standards and Guidance values exceedances for each monitoring well is shown on Figure 8. The surveyed monitoring well elevations and depth to the bottom of the monitoring wells are listed in Table 7.
- Additional investigation work completed during this investigation included a soil vapor intrusion (SVI) study and a storm sewer and sediment sampling event. The SVI was conducted in November 2016 for the former TCC office building and laboratory building. The SVI sample locations are shown on Figure 3 Historical Sample Locations. 3821 River Road does not plan to use these buildings for occupancy and it should be noted the laboratory was in use and many laboratory chemicals were being handled during this SVI investigation
    - The 2016 SVI results were compared to the May 2017 NYSDOH SVI Decision Matrices A, B, and C which provides direction on whether no further action is required, resampling, monitoring, or mitigation based comparing the indoor air concentration of an analyte to the sub-slab vapor concentration of the same analyte. The guidance provided by these matrices is limited to a select list of analytes for each matrix.
        - For Soil Vapor / Indoor Air Matrix A results indicated No Further Action for the analytes with the exception of Trichloroethene (TCE). TCE was detected at 0.79 micrograms per cubic meter of air ($\mu g/m^3$) J (a J value refers to the reported result as an estimate. The value is less than the minimum calibration level but greater than the estimated detection limit) in the SE Lab Air (indoor air) sample and SE Lab Slap Air (sub-slab) sample result was 26 $\mu g/m^3$ which indicates the sampled space should be Monitored.
        - The results for the analytes for the Soil Vapor / Indoor Air Matrix B were within the recommendation of No Further Action.
        - Soil Vapor / Indoor Air Matrix C is limited to vinyl chloride (VC) as the only analyte. The indoor air results for VC at each of the four sample locations was not detected in the sample above the estimated detection limit and the sub-slab results at the four locations were J values and all reported at less the action standard of 6 $\mu g/m^3$.
- The storm sewer sampling event consisted of collecting an influent and effluent water sample from the 38-inch and 48-inch storm sewers and a sediment sample from the inlet of each storm sewer

pipe. The analytical results showed no VOCs were detected with concentrations exceeding the NYSDEC Class A Surface Water Standards in samples collected at the 36-inch and 48-inch storm sewer influent locations. Four VOCs (benzene, acetone, cis-1,2-dichloroethene and carbon disulfide) were detected in the effluent from the 36-inch storm sewer. Three of these compounds (benzene, cis-1,2-dichlorothene, and carbon disulfide) were not detected at the influent location. The concentration of benzene in the 36-inch storm sewer effluent (1.5 µg/L) was above the New York State Class A Surface Water Standard of 1 µg/L. No SVOCs were detected in the surface water samples collected at the storm sewer influent locations. Four PAHs (benzo-a-anthracene, benzo(b)anthracene, fluoranthene, and phenanthrene) were identified in the sediment samples collected from the 36-inch sewer inlet and 48-inch sewer inlet (Parsons, 2017).

3.5 Draft Site Investigation Summary Report, September 2021

In September 2021, Parsons submitted a Draft Site Investigation Summary Report to the NYSDEC which described investigation activities completed between 2018 and 2021 (Parsons, 2021). The site activities described in this report consisted of:

- Measure the volume of water flowing through the 36-inch sewer;
- Sample influent and effluent flow from the sewer;
- Groundwater level monitoring events;
- Installation of monitoring wells MW-13 and MW-14;
- Soil investigation to determine if previously unidentified impacted soils remain onsite.

In 2018, Parsons conducted a storm sewer sampling program that was designed to represent three different seasonal conditions consisting of:

- High flow snow melt in February 2018;
- Storm event in April 2018;
- Low flow event in July 2018

The April 2018 storm water outlet sample report included benzene and naphthalene detections above the NYSDEC Class A Surface Water Standard. Benzene was reported at an estimated concentration of 1.4 µg/L compared to standard of 1 µg/L, and naphthalene was reported at 23 µg/L compared to a standard of 10 µg/L. The inlet sample results from the April sampling event were reported not detected for benzene and naphthalene.

Several inorganic compounds were detected in both inlet and outlet samples with concentrations above the Standard during the three sampling events. These include aluminum, iron, manganese, magnesium, sodium, vanadium, and cyanide. Concentrations were typically higher in the outlet samples for those instances where there was an inorganic exceedance (Parsons, 2021). The detections from the storm sewer sampling event are summarized in Table 2 and sample locations and exceedances are shown on Figure 9.

In November 2020, monitoring wells MW-13 and MW-14 were drilled and installed in AOI 2 and AOI 3 by Parsons. The locations of the monitoring wells are shown on Figure 3. The monitoring well borings were drilled using a track-mounted Geoprobe and the boring was advanced using hollow-stem auger drilling methods. Split-spoon samples were continuously collected for soil classification and screened with a photo-ionization detector (PID) and no PID readings over 0 PPM were observed. The monitoring wells were installed to 10-feet below ground surface (ft bgs) and 11.5 ft bgs in MW-13 and MW-14, respectively. The monitoring wells were completed using 2-inch diameter, schedule 40 polyvinyl chloride (PVC) riser with 5 feet and 10 feet of 0.01-inch slotted screen respectively. Both wells were completed with stick-up

protective casings and developed prior to sampling. During December 2020, a groundwater sample could not be collected from MW-13 due to the monitoring well not producing a sufficient volume of water. For MW-14, VOCs and SVOCs were not detected above the laboratory reporting limit in the sample collected by low-flow sampling. Total cyanide was estimated at a concentration of 0.005 milligrams per liter (mg/L) in the duplicate sample collected. Chromium was detected in the groundwater sample from MW-14 at 0.0094 mg/L. The detected concentrations of chromium and cyanide were below the NYSDEC Class GA Groundwater Standards.

In November of 2020, Parsons completed soil borings B-1 through B-30 in AOI 2 and AOI 3. Borings B-1 through B-20 were advanced using a track-mounted, direct-push Geoprobe rig, while Borings B-21 through B-30 were completed using hand-augers due to the terrain at those locations being inaccessible by the Geoprobe. A total of 9 soil borings were completed in AOI 2, and 21 soil borings were completed in AOI 3. Borings were advanced to a minimum of 6-inches into native soil and collected soil samples were screened with a PID fitted with an 11.7 electronvolt (eV) lamp. The sampled boring locations and sampled depth are shown on Figure 7 along with exceedances over Part 375 Soil Cleanup Objective (SCOs) for Unrestricted Use, Commercial, and Industrial are shown on Figure 7 and the sample results are summarized in Table 1.

In AOI 2 boring B-9, VOCs were detected in samples from three intervals (0.5 - 1-feet, 2.0 - 2.5-feet and 9.5– 10-feet) that exceed the Unrestricted and Commercial SCOs. In AOI 3, VOCs (primarily BTEX compounds) exceeded Unrestricted SCOs in four samples at four locations (B-14, B-16, B-18, and B-30-1) but were never detected at concentrations exceeding Commercial SCOs. Chromium exceeded the Unrestricted SCOs in one sample at B-29. SVOCs were detected above the Industrial SCOs in five samples at four locations (B-14, B-16, B-18, and B-30-1).

A site inspection and the results from the soil borings, surface and subsurface, indicated tar is present in the western end of AOI 3. The location of the observed surface tar is shown on Figure 4. It was also reported that tar was observed these boring locations:

- B-4 at 1 – 1.3-feet
- B-16 at 0.4 – 1.7-feet
- B-18 at 0.9 – 1.8-feet
- B-30 at 0.5 – 1.5 feet

The locations of these borings are shown on Figure 7.

4 Initial Conceptual Site Model and Data Gaps

4.1 Initial CSM

An initial Conceptual Site Model (CSM) for the Site was developed incorporating Inventum's knowledge of the former plant operations, previous investigations, and the historical investigation data available. The initial CSM describes the conditions anticipated at the BCP Site and form the basis of the investigations required to verify or refine the model. The initial CSM establishes as the baseline:

- Environmental media on the 3821 River Road BCP Site have been impacted by historical operations;
- Historic production management practices contributed to the development of potential source areas at various locations within AOI 1, AOI 2 and AOI 3;
- The potential COCs across the Site are known and understood based on long term experience with similar manufacturing process and remediation of similar plants;
- The cessation of manufacturing operations eliminated the potential for future operational releases from processes and process equipment in the 1980s;
- The use of the site for truck parking and maintenance may have contributed to petroleum hydrocarbon impacts after the acquisition from Allied;
- The laboratories were simply abandoned without any management or securing of samples or laboratory chemicals. The laboratory chemicals may have affected the SVI testing;
- The ongoing maintenance by the 3821 River Road eliminates the potential for releases from the non-operational facilities, material storage, and equipment on the 3821 River Road BCP Site;
- Outside of AOI 1 and the western portion of AOI 2, groundwater is not expected to be widely or significantly impacted on the 3821 River Road BCP Site due the nature of the operations in those areas, the potential COCs associated with the historic uses and the nature and extent of the low permeability clay unit limits the risk for potential offsite groundwater receptors;
- The presence of utilities in the former plant area and along the 36-inch storm sewer beneath AOI 1 may have altered the shallow groundwater conditions;
- Shallow soils (0 to 1-feet bgs) with COCs at concentrations above applicable industrial use standards are likely ubiquitous across the Site where plant operations have occurred which includes;
    - AOI 1 near the former blow down pit and near the plant operation area;
    - AOI 2 within the vicinity of the former plant and ASTs;
    - AOI 3 along the former rail corridor along the southern property boundary and areas of observed tar.

The CSM is described in terms of the Site for purposes of this RIWP. Following the RI and data analysis it is expected that a CSM will be developed for each AOI as their historical use and therefore characteristics are significantly different.

4.2 Data Gaps

The CSM is used to identify conditions to be verified and specific data gaps where further investigation is proposed in order to either complete a comprehensive delineation, or if necessary, fine-tune and adjust the CSM as an aid to development of potential remedial alternatives in the AA. The RI scope of work (Section 5) is proposed to address these data gaps and complete the test pits not completed in the previous investigation. The following conditions to be evaluated and data gaps were identified as shown in italics beneath each component of the CSM:

- Historical operations have impacted environmental media on the Site in sections of each AOI;
    - *The extent and mobility of the potential impacts must be defined.*
- Historic production management and material handling practices contributed to the development of potential source areas at various locations within the plant area and advancing along the former rail and AST area along the south side of AOI 3;
    - *The management of process materials may have contributed to environmental impacts.*
    - *Sampling in proximity to the plant, conveyance piping, former USTs, and ASTs areas with the potential for a release is required.*
- The potential constituents-of-concern (COCs) across the Sites are known and understood based on available site investigation data and experience with similar types of plant operations;
    - *A comprehensive and site-wide investigation and testing program is necessary, incorporating the full-suite of DER-10 RI analytical parameters and emerging contaminants.*
- The cessation of manufacturing operations has eliminated the potential for future releases to soil and groundwater;
    - *Limited investigation data is available to delineate the nature and extent of contamination from the historical operations in the plant area in AOI 2 and the extent of impacts in the area of observed tar and SCO exceedances in AOI 3.*
    - *The contents and waste characterization profile of materials left in drums, storage tanks, secondary containment areas, and former process transfer piping are undefined. These will be investigated and managed in a series of IRMs.*
    - *Sampling in proximity to the infrastructure is necessary.*
- Groundwater is not expected to be significantly impacted on the Site due the nature of the potential COCs and the nature and extent of the low permeability clay unit limits the risk for potential offsite groundwater receptors;
    - *Investigation data for medium depth monitoring wells (MW-11R, MW-12R, and M-14) is available to confirm the assumed thickness of the confining clay unit. Additional specific data is required to confirm the conditions uniformly below the Site, including the occurrence of groundwater, the permeability of the clay unit, and the potential for horizontal flow in the clay unit;*
    - *The network of monitoring wells in AOI 1 and the two monitoring wells in MW-13 and MW-14 located east of plant area is insufficient to adequately characterize horizontal and vertical groundwater flow in, and between, the fill, clay, and bedrock water bearing strata;*
    - *Groundwater conditions will be analyzed in collaboration with water level measurements the adjacent state superfund (Site 109) and BCP Site (RITC).*
- The presence of underground utilities and piping in the plant area may have altered groundwater conditions in AOI 1 and the western limits of AOI 2;
    - *Limited investigation data is available from AOI 2 to characterize and delineate the nature and extent of any contamination from historical subsurface utilities (pipes, pits and sumps).*

5 Remedial Investigation Scope of Work

The RI scope of work was designed to eliminate the data gaps identified in Section 4.2. All investigation work will be conducted in accordance with the following supplemental documents:

- Community Participation Plan (CPP) – the CPP will outline the steps that will be taken to convey information to the public. Scheduled to be completed within 15 days of execution of the BCP Agreement.
- Quality Assurance Project Plan (QAPP) – Appendix A – defines the data quality objectives, sampling and analytical method requirements, QA/QC sample collection frequency, quality control requirements, data management, and data review, validation, and verification requirements to be followed during completion of the RI.
- Health and Safety Plan (HASP) – Appendix B – defines the appropriate health and safety requirements and designated protocols to be followed during completion of the RI.
- Community Air Monitoring Plan (CAMP) – Appendix C – defines the appropriate air monitoring requirements and designated protocols to be followed to monitor the air quality emanating from work areas (personal air monitoring is covered by the HASP) during completion of the RI.

As described previously, Inventum has segregated the Site into three areas of investigation (AOIs; Figure 4) based on previous investigations and the historical use of the property. The intent of the AOI designations is to provide a common division of the Site across all plans, efficiency to the RI work and, if appropriate, facilitate development of separate CSMs and Alternatives Analyses. Each AOI is summarized in the sections below and includes a description of the former use, anticipated COCs, and sampling program summary.

Figures 6 shows the proposed sampling program in each AOI. Tables 5 through 7 summarize the sampling program for each AOI and includes information on proposed sample type, sample depth, and rationale for sample location. Inventum established a 50-foot by 50-foot grid across the entire Site as shown on Figure 4. Sample cell locations tied to this grid are also referenced on Tables 4 through 7.

5.1 Areas of Investigation (AOI)

5.1.1 AOI 1 – West Area

This AOI is 3.36-acres in the western portion of the Site which is undeveloped with no structures and located between River Road and buildings and infrastructure of the former plant. The former blow down pit was located in AOI 1. A 36-inch diameter concrete storm sewer pipe crosses beneath this portion of the site, from south to north conveying storm water from the National Grid and Energy Transfer properties south of the Site, and within the northeast corner of AOI 1, the 48-inch diameter storm sewer pipe enters AOI 1 from AOI 2 that also conveys water from the neighboring property to the south. An 8-inch storm sewer pipe is parallel to the 36-inch storm sewer pipe. The exact origin of the 8-inch storm sewer pipe is not well-defined currently. All three storm sewer pipes discharge to a drainage ditch along the northern property boundary in AOI 1.

Limited manufacturing operation occurred within this AOI based on review of historical aerial imagery and available drawings (Appendix E). Existing monitoring wells MW-1 through MW-10, MW-11R and MW-12R are located in the center to southern portion of AOI 1 and have been installed during previous site investigations to evaluate material around the storm sewer and to document groundwater conditions. The most recent sampling of these monitoring wells took place in 2016 (Figure 8 and Table 3).

The anticipated COCs in AOI 1 are VOCs, SVOCs, cyanide and metals in shallow soils. In addition, this is the downgradient property boundary and therefore the most appropriate location for perimeter monitoring.

Seven (7) monitoring wells will be installed at two (2) clustered locations in the grassed area between River Road and the plant:

- The MW-PBCP-05 cluster will include a shallow, medium depth, and medium deep[3] depth well downgradient of the plant at the northwest near the perimeter corner of the Site and will be located close to the center of the alignment of the 36-inch and 48-inch storm sewers near the outfalls. The northwest portion of AOI 1 has not previously been investigated.
- The MW-PBCP-06 cluster will include a shallow, medium depth, medium deep depth, and deep depth wells down gradient of the of the plant and existing wells with VOCs, SVOCs, and metal exceedances at the west perimeter of the property. A thin-walled tube sampler will be advanced approximately 10-feet below the top of clay at the boring for MW-PBCP-06B and between 30-feet to 38-feet bgs in the boring for MW-PBCP-06C to collect samples for permeability analysis (permeability, moisture content, grain-size analysis, and unit weight testing).

Groundwater samples will be collected from each of the existing monitoring wells MW-1 through MW-10, MW-11R and MW-12R for VOCs, SVOCs, metals, cyanide and mercury (Table 7). Monitoring well MW-12R will also be sampled for ammonia. These existing wells will be inspected to confirm there is no visible damage prior to gauging and sampling. The elevations and installed depths of the existing monitoring wells are provided in Table 7.

The MW-PBCP-05 and MW-PBCP-06 well clusters will be sampled (Table 4) for VOCs, SVOCs, metals, cyanide, and mercury. Monitoring wells MW-PBCP-05A, MW-PBCP-05B, MW-PBCP-06A, MW-PBCP-06B, MW-BCP-06C, and MW-PBCP-06D will be sampled for ammonia.

Two (2) soil grab samples from 0 to 2-feet bgs will be collected at the east and west side of the 36-inch sewer pipe to assess the potential influence of the pipe flow on this location. The grab samples will be analyzed for VOCs, SVOCs, metals, cyanide, and mercury (Table 6).

Test pit TP-PBCP-20 will be installed in the berm soil near the center of AOI 1 to assess the soil that was placed in the berm and, if possible, to confirm the top of clay (Table 5). Test Pit TP-PBCP-22 will be advanced across the former location of a building that was identified as the pentane shed and across a location that was identified as a pentane UST. The area has three existing monitoring wells and several sewers, so the location and orientation of the test pit will be adjusted as necessary.

Test pit TP-PBCP-23 will be advanced in an area that had a former above ground storage tank farm and test pit TP-PBCP-25 will be advanced to the south of existing monitoring well MW-10 to determine if there is visual or olfactory evidence as a source of impact to the shallow groundwater in the vicinity MW-10 (Figure 6).

Surficial soil samples will be collected at each of the two (2) shallow monitoring well locations and three (3) test pit locations. Samples will be analyzed for VOCs, SVOCs, metals, cyanide, and mercury at each monitoring well and sampled for PCBs, pesticides, herbicides, PFAS, and 1,4-Dioxane at the shallow wells

[3] The nomenclature to be used for the monitoring wells is shallow (within the fill above the clay – "A" wells), medium depth (within the clay, less than 25 feet below ground surface – "B" wells), medium deep depth wells (within the clay between 25- and 50-feet below ground surface – "C" wells) and a deep well (through the clay – "D" well).

MW-BCP-05A and MW-PBCP-06A (Table 4). Additionally, the surficial (0- to 1-foot) soil samples from the shallow monitoring wells and test pit TP-PBCP-20 samples will also be analyzed for PCBs, pesticides, herbicides, PFAS and 1,4-Dioxane. Samples from the soil boring for MW-PBCP-05 and MW-PBCP-06 (Table 4) and test pits TP-BCP-22 and TP-PBCP-23 (Table 5) will be analyzed for ammonia.

Nine (9) subsurface soil samples will be collected from the monitoring well boring locations. Samples will be selected from the intervals with the highest PiD measurements or those locations with the most visual or olfactory evidence of potential impact. Monitoring well borings will be carefully logged to identify the thickness of the surface fill, character of the clay, and to identify any indications of desiccation or seams. Soil samples will be analyzed for VOCs, SVOCs, metals, cyanide, and mercury (Table 4). Selected samples (Table 4) will be analyzed for PCBs and ammonia.

A surface water grab sample, SW-PBCP-04, will be collected from the effluent of the 48-inch storm sewer pipe and analyzed for VOCs, SVOCs, metals, cyanide, mercury, and ammonia. A influent surface water grab sample, SW-PBCP-05, will be collected from the 36-inch storm sewer and an effluent grab storm sewer sample, SW-PBCP-06, will also be collected from 36-inch storm sewer pipe. Both samples from the 36-inch storm sewer pipe will be analyzed for VOCs, SVOCs, metals, cyanide, and mercury (Table 6).

5.1.2 AOI 2 – Center Plant Area

This 9.64-acre AOI includes the center portion of the Site which includes the area where the primary plant manufacturing and research and development operations existed. Site operations by Allied included the polymerization of ethylene into low molecular weight polyethylene (trademark: A-C Polyethylene and Co-polymers), which was finished into powder, pelleted and solid forms. Approximately 27 buildings and 12 ASTs with associated piping are present in this AOI. Several concrete slabs which are indicative of former large AST (one was a gas holder) foundations are also present. An asphalt paved access road is present along the south and east perimeter of the former plant and the access located to the north of the former plant is gravel. The surface between the majority of the existing buildings is asphalt. SCO exceedances were detected at one (1) boring location during the 2020 soil investigation.

The anticipated COCs in AOI 2 are VOCs, SVOCs, cyanide and metals in shallow soils.

Twelve (12) monitoring wells will be installed at four (4) clustered locations in the former plant area (Figure 6):

- The MW-PBCP-02 cluster will include shallow, medium depth, and medium deep depth wells downgradient of the conveyance piping and water tank (Grid W-9).
- The MW-PBCP-03 cluster will include shallow, medium depth, and medium deep depth wells downgradient to cross gradient of the of the pad for the former gas holder tank, cluster of cylinder tanks, railroad tracks and former gas purifier buildings located north of Building 18[4] Northwest Storage (possibly a former wax production building, Grid O-7). Historical soil and groundwater data is not available for this area along the north center of the former plant. A thin-walled tube sampler will be advanced approximately 10-feet below the top of clay in the boring for MW-PBCP-03B to collect a sample for permeability analysis.
- The MW-PBCP-04 cluster will include shallow, medium depth, and medium deep depth wells, located in the center of the former plant (Grid O-11) and down gradient to cross gradient of the

[4] The Building Numbers are shown on Figure 2. The names on Figure 2 were as used by the previous owner, but a review of historical drawings have provided other names and historical uses, referenced herein. 3821 River Road has no direct knowledge of these uses and provides the information for completeness, if not clarity.

Buildings 20 and 21 Coke Building and Northeast Storage (possibly a former compressor building and pump house) and side gradient of Building 11 Brick Shop (former storage and machine shop). Building 18 Northwest Storage (possibly former wax production building) is located north of this location.

- The MW-PBCP-07 cluster will include shallow, medium depth, and medium deep depth wells, located in the center of the former plant (Grid I-12) and down gradient to cross gradient of the Buildings 5 and 10 (possibly former compressor building and pump house) and down gradient of Building 11 Brick Shop (possibly former storage and machine shop). Building 18 Northwest Storage (possibly former wax production building) is located north of this location.

Table 4 lists the samples to be collected from MW-PBCP-02, MW-PBCP-03, MW-PBCP-04, and MW-PBCP_07.

A groundwater sample will be collected from the existing monitoring well MW-13 for VOCs, SVOCs, metals, cyanide, mercury, and ammonia if an adequate volume of groundwater is present after the well is purged. The well will be inspected to confirm there is no visible damage prior to gauging and sampling.

Seven (7) test pits will be conducted in the former plant area:

- TP-PBCP-13 to assess limits of the VOCs detected at boring B-9 and soil impacts in the vicinity of the former railroad tracks and gas purifier.
- TP-PBCP-14 to assess the limits of tar observed at boring B-4.
- TP-PBCP-17 to assess the soil south of the former coke building and northeast storage. This area has not previously been assessed but is dominated by a large pile of process column ceramic packing material.
- TP-PBCP-18 to assess the soil in the vicinity of a former septic tank located south of the wax storage warehouse and west of the former sub-station. This area has not previously been assessed.
- TP-PBCP-19 to assess an AST and parts cleaning station inside adjacent building. This area has not previously been assessed.
- TP-PBCP-21 to assess the location of a slab next to the historic oil house.
- TP-PBCP-24 to assess conditions at the south property line.

Surficial (0- to 1-foot) soil samples will be collected at each of the four (4) shallow monitoring well locations (Table 4) and at the six (6) test pits locations (Table 5). Samples will be analyzed for VOCs, SVOCs, metals, cyanide, and mercury. Samples from TP-PBCP-14 and TP-PBCP-19 will be sampled for ammonia. Additionally, the surficial soil samples from the shallow monitoring wells, TP-PBCP-18, and TP-PBCP-19 will also be analyzed for PCBs, pesticides, herbicides, PFAS, and 1,4-Dioxane. At TP-PBCP-13 additional analysis will include pesticides, herbicides, PFAS, and 1,4-Dioxane and at TP-PBCP-14 additional analysis will include pesticides and herbicides. At TP-PBCP-17 additional analysis will include PCBs, pesticides, and herbicides (Table 4 and 5).

Fourteen (14) subsurface soil samples will be collected from the monitoring well boring locations and test pits. Monitoring well borings and test pits will be carefully logged to identify the thickness of the surface fill, character of the clay, and to identify any indications of desiccation or seams. Soil samples will be analyzed for VOCs, SVOCs, metals, cyanide, mercury, and select samples for ammonia (Tables 4 and 5).

Two (2) grab surface water samples, SW-PBCP-01 and SW-BCP-02, will be collected from the surface water access points in AOI 2 (Figure 6) to assess the stormwater quality. The grab samples will be analyzed for VOCs, SVOCs, metals, cyanide, ammonia, and mercury. A surface water grab sample, SW-PBCP-04,

will be collected from the influent of the 48-inch storm sewer pipe and analyzed for VOCs, SVOCs, metals, cyanide, mercury, and ammonia (Table 6).

Two valve pits are present in the northern center of AOI 2 and located north of the existing tank farm area. To evaluate the contents r the pits, a surface water sample SW-PBCP-07 and sediment or solid sample SD-PBCP-09 will be collected from the western valve pit. Surface water sample SW-PBCP-08 and sediment or solid sample SD-PBCP-10 will be collected from the eastern valve pit. Each grab sample will be analyzed for VOCs, SVOCs, metals, cyanide, and mercury (Table 6).

A former sump and Oil Water Separator (OWS) is present near the center of AOI 2. To evaluate the contents of the sump, a surface water sample SW-PBCP-11 and sediment or solid sample SD-PBCP-13 will be collected from sump. To evaluate the contents of the OWS, a surface water sample SW-PBCP-12 and sediment or solid sample SD-PBCP-14 will be collected from OWS. Each grab sample will be analyzed for VOCs, SVOCs, metals, cyanide, and mercury (Table 6).

5.1.3 AOI 3 – East Area

This 4.31-acre AOI is located along the east side of the main onsite access road. This portion of the Site is currently undeveloped. Historical use consisted of railroad tracks to move product from the TCC facility area to the west. A flare that is no longer in operation is present along with several AST foundation slabs. It had been reported that during a Site walk with the NYSDEC in 2016, a tar like material was observed on the ground surface near the site access road, the former TCC water treatment tanks, and the northern property limits. 3821 River Road representatives confirmed there is tar on the ground surface in this section of the 3821 River Road BCP Site. The NYSDEC Inactive Hazardous Waste Site 915003C where approximately 500 CY of “tar” and soil material were removed from in 1981 is located in south center of AOI 3 along the southern property border. Additionally, SCO exceedances were detected at five (5) boring locations during the 2020 soil investigation (Figure 7 and Table 1). One shallow monitoring well (MW-14) is present in this portion of the Site.

Three (3) monitoring wells will be installed in one (1) clustered location along the southern property boundary:

- The MW-PBCP-01 cluster will include a shallow, medium depth, and medium deep depth well downgradient of the Inactive Hazardous Waste Site 915003C along the southern property perimeter.

The MW-PBCP-01 well cluster monitoring wells will be sampled for VOCs, SVOCs, metals, cyanide, and mercury and for PCBs, pesticides, herbicides, PFAS, and 1,4-Dioxane and ammonia from the shallow well MW-BCP-01A (Table 4). Monitoring Wells on the adjacent RITC BCP Site (#C915353) will provide groundwater elevation data to allow contouring of the gradient with the data from the MW-PBCP-01 cluster.

A groundwater sample will be collected from the existing monitoring well MW-14 for VOCs, SVOCs, metals, cyanide and mercury if an adequate volume of groundwater is present after the well is purged. The well will be inspected to confirm there is no visible damage prior to gauging and sampling.

Ten (10) test pits will be advanced in the east area AOI:

- TP-PBCP-01 to assess the eastern boundary of the Site in the vicinity of the former rail tracks. The conditions will be interpolated between this test pit and MW-BCP-17A and TP-BCP-52 on the RITC Site.

- TP-PBCP-03 to assess the limits of chromium exceedances at boring B-29.
- TP-PBCP-04 and TP-PBCP-05 to assess the limits of VOCs and SVOCs exceedances and observed tar at B-30.
- TP-PBCP-06 to assess the limits of VOCs and SVOCs exceedances at boring B-18.
- TP-PBCP-07 to assess the former coal tar site removal limits.
- TP-PBCP-08 and TP-PBCP-09 to assess the limits of VOCs and SVOCs exceedances at boring B-14.
- TP-PBCP-10 and TP-BCP-12 to assess the limits of observed tar on the ground surface.
- TP-PBCP-16 to assess the limits of VOCs and SVOCs exceedances at boring B-16.

Surficial (0- to 1-foot) soil samples will be collected at the one (1) shallow monitoring well location and at the five (14) test pits locations. Samples will be analyzed for VOCs, SVOCs, metals, cyanide, and mercury. Additionally, the surficial soil samples from the shallow monitoring well and TP-BCP-PBCP-01 will also be analyzed for PCBs, pesticides, herbicides, PFAS, and 1,4-Dioxane. At TP-PBCP-04, TP-PBCP-06, TP-PBCP-08 analysis will include PFAS and 1,4-Dioxane, and at TP-PBCP-11 analysis will include pesticides and herbicides (Tables 4 and 5).

Eleven (11) subsurface soil samples will be collected from the monitoring well boring locations and test pits. Monitoring well borings and test pits will be carefully logged to identify the thickness of the surface fill, character of the clay, and to identify any variations in clay composition. Soil samples will be analyzed for VOCs, SVOCs, metals, cyanide, and mercury (Tables 4 and 5).

5.2 Monitoring Well Installation

The groundwater investigation program proposed in Section 5.1 includes the installation of six (6) clustered well pairs of monitoring wells across the identified AOIs (Figure 6, Table 4). Monitoring wells are proposed to target specific monitoring intervals and will be constructed in accordance with the guidance below. Monitoring wells in each cluster will be offset from other wells in the same cluster by a minimum of 5-feet. All wells will be completed within an above ground or flush mount surface steel casing. The locations and elevation of the measuring point of each well will be measured by a New York State licensed surveyor. The well data will be added to the Site survey and topographic base map.

Borings will be advanced at each proposed location using hollow-stem auger (HSA) or roller bit downhole tools. All downhole equipment will be decontaminated before use on the property and between borings. Unconsolidated material samples will be continuously collected with a split-barrel sampler driven through the augers for observation, lithological characterization, and screening with a PID equipped with a 10.6eV lamp in a continuous interval over the total depth of the deepest boring in each cluster. Soil samples for laboratory analysis will be selected based on the observations and PID readings.

All wells will be developed a minimum of two weeks prior to collection of water samples. The depth to water in the wells will be manually measured using an oil/water interface probe prior to development. Wells will be developed by removing three well volumes of water, purging the wells until dry, or purging and surging the wells. Water quality measurements for pH, temperature, conductivity, dissolved oxygen, oxidative-reductive potential (ORP), and turbidity will be recorded periodically during the development process.

5.2.1 Shallow Depth – “A” Monitoring Wells

Six (6) shallow depth monitoring wells are proposed. Shallow wells will be installed to monitor groundwater flow and quality in the fill layer assumed to be present across most of the Site. These wells

will be screened within the fill above the clay. If the thickness of the fill is less than 3-feet, the shallow depth wells will not be constructed, but the depth to water will be noted.

Shallow wells will be completed with a 2-inch diameter Schedule 40 polyvinyl chloride (PVC) well casing and 2 to 3-feet of 0.010-inch slotted screen depending on the depth of the boring (estimated at 5-feet on average across the BCP Site). A sand filter pack will be placed from the bottom of the screened interval to a minimum of 1 foot above the top of the screen. The remaining annular space will be completed with a bentonite seal to within 6 inches of the ground surface. The well locations will be completed with a concrete collar to protect the casings.

5.2.2 Medium Depth - "B" Monitoring Wells

Six (6) medium depth monitoring wells are proposed to investigate the upper portion of the clay unit at depths less than 25-feet bgs.

Medium depth wells will be completed with a 2-inch diameter Schedule 40 PVC well casing and 10 feet of 0.010-inch slotted screen. A sand filter pack will be placed 6-inches below the screen, across the entire screened interval to a minimum of 2-feet above the top of the screen. A 2-foot bentonite seal will be placed on top of the filter pack and the remaining annular space will be completed with a bentonite-cement grout (Portland Type I cement with 3 to 5 percent bentonite). The well seal construction plan may be adjusted as necessary to ensure that a minimum of 2-feet of bentonite-cement grout is emplaced below the fill/clay transition.

The need to install a double cased well to limit the potential for developing a preferential migration pathway between the overlying fill and the clay unit is not anticipated to be necessary. If grossly contaminated material is encountered in the fill or upper clay interval, then the boring will not be advanced without installing a double cased well. Borings for a doubled cased well will progress until the top of clay is encountered and then advanced 1 foot into the clay, enabling the placement of, at minimum, an 8-inch diameter steel casing to be sealed into the top of the clay unit.

The steel casing will be set in place with placement of grout into the annular space between the casing and borehole by positive displacement using a tremie pipe. A portion of the grout mixture will be poured into the inside of the casing to create a plug at the base of the casing and allowed to set for a minimum of 24-hours. The borings will then be advanced through the plug to the total depth of the boring. Monitoring wells will be installed following the sample procedures outlined in this section.

5.2.3 Medium Deep Depth - "C" Monitoring Wells

Six (6) medium deep depth monitoring wells are proposed. Medium deep depth wells will be installed to monitor the lower portion of the clay at depths greater than 25-feet bgs. The estimated total depth of the borings for the proposed medium deep depth wells is approximately 40 feet bgs.

Medium-deep depth wells will be completed with a 2-inch diameter Schedule 40 PVC well casing and 10 feet of 0.010-inch slotted screen. A sand filter pack will be placed 6-inches below the screen, across the entire screened interval to a minimum of 2-feet above the top of the screen. A 2-foot bentonite seal will be placed on top of the filter pack and the remaining annular space will be completed with a bentonite-cement grout (Portland Type I cement with 3 to 5 percent bentonite). The well seal construction plan may be adjusted as necessary to ensure that a minimum of 2-feet of bentonite-cement grout is emplaced below the fill/clay transition.

The need to install a double cased well to limit the potential for developing a preferential migration pathway between the overlying fill and the clay unit is not anticipated to be necessary. If grossly contaminated material is encountered in the fill or upper clay interval, then the boring will not be advanced without installing a double cased well. Borings for a doubled cased well will progress until the top of clay is encountered and then advanced 1 foot into the clay, enabling the placement of, at minimum, an 8-inch diameter steel casing to be sealed into the top of the clay unit.

The steel casing will be set in place with placement of grout into the annular space between the casing and borehole by positive displacement using a tremie pipe. A portion of the grout mixture will be poured into the inside of the casing to create a plug at the base of the casing and allowed to set for a minimum of 24-hours. The borings will then be advanced through the plug to the total depth of the boring. Monitoring wells will be installed following the sample procedures outlined in this section.

5.2.4 Deep Depth – "D" Monitoring Well

One (1) deep depth monitoring well (MW-PBCP-06D) is proposed for the southwestern corner (downgradient) (AOI 1 West) to measure the thickness of the clay, to allow lithologic mapping of the clay, and to investigate the upper bedrock. The rock core will be advanced a minimum of 5 feet below the soil/rock interface. The rock core will be advanced as much as ten feet into the rock if the recovered core suggests there may be little to no groundwater flow. The rock core will be logged based on lithology, color and fracture condition. The rock quality will be logged in accordance with ASTM Standard Test Method D6032/D6032M-17 "Standard Test Method for Determining Rock Quality Designation (RQD) of Rock Core". The estimated total depth of the boring is approximately 60 feet.

The deep well will be triple cased to limit the potential for developing a preferential migration pathway. Borings for this well will progress until the top of clay is encountered and then advanced 1 foot into the clay, enabling the placement of, at minimum, an 8-inch diameter steel casing to be sealed into the top of the clay unit.

The steel casing will be set in place with placement of grout into the annular space between the casing and borehole by positive displacement using a tremie pipe. A portion of the grout mixture will be poured into the inside of the casing to create a plug at the base of the casing and allowed to set for a minimum of 24-hours. The boring will then be progressed through the plug until the top of bedrock is encountered. After bedrock is encountered, a core barrel will be used to drill approximately 1 to 2 feet into the bedrock, enabling placement of a 4-inch diameter steel casing to be sealed into the top of the bedrock unit.

The bedrock casing will be set in place with the placement of grout into the annular space between the casing and borehole by positive displacement using a tremie pipe. A portion of the grout mixture will be poured into the casing to create a plug at the base of the casing and allowed to set for a minimum of 24-hours. After the casing has set, the bedrock will be cored a minimum of 5-feet past the bottom of the casing and the well be completed as an open borehole.

5.2.5 Groundwater Sampling

Liquid level measurements will be collected from all the 3821 River Road monitoring wells, Site 109 monitoring wells, and the MW-BCP-16 and MW-BCP-17 monitoring well clusters on the RITC BCP Site prior to the collection of any analytical samples. The depth to water and overall total depth of the wells will be collected using an oil/water interface probe and recorded in the field notebook. The total depth of the well will be verified to ensure it has not accumulated sediment. Correlation of water levels in clay across

the sites will be based on screen elevation, in effect a "B'-zone monitoring well in the west end of the 3821 Site may be in the same relative position as a "C" zone monitoring well on the RITC Site.

A minimum of three well volumes will be purged from the 3821 River Road monitoring wells using a bailer or peristaltic pump or the well be purged dry prior to collecting groundwater samples from the A, B, and C wells. Field measurements of pH, temperature, conductivity, turbidity, dissolved oxygen, and oxygen reduction potential (ORP) will be recorded at three intervals during the purging process for standard purge. Groundwater samples will be collected with a bailer or with dedicated polyethylene tubing and a peristaltic pump.

The D well (MW-PBCP-06D) will be sampled by the low-flow (minimal drawdown) sample method.

5.2.6 Test Pits

Test pits will be advanced using traditional excavation equipment. The proposed target depths and minimum lengths are given in Table 5. The depths are based on the estimated depth to the top of clay. Where possible, all test pits will be advanced to the top of clay, which will be confirmed with no less than one over excavation approximately 12-inches into the clay. Wherever groundwater inflow, a foundation or a utility obstructs the advance of a test pit, a second attempt will be made within 10 feet of the source of the groundwater flow (typically rail bed materials) or obstruction.

Careful attention will be followed so that no more than two vertical feet of soil is removed with each scoop of the excavator. Observation of excavated soils and screening with a 10.6eV PID will be made directly from bucket load samples. After screening, soils will be temporarily stockpiled adjacent to the excavation and at a minimum of 2-feet from the edge. Samples that are submitted for analytical characterization will be collected directly from the sidewalls of the test pits that are less than 3-feet deep if stable or from the bucket of the excavator using a dedicated disposable stainless-steel spoon. Under no circumstances will anyone be allowed to enter the test pits that are greater than three feet deep or that have flowing water.

Photographs of each test pit will be taken. Photographs of any significant features exposed by the test pit (ex. buried debris, mobile tar seeps, etc.) will be collected after the final depth is reached. All pertinent information will be recorded in the field notebook or on test pit logs.

5.2.7 Survey

Monitoring wells will be surveyed by a surveyor licensed in the state of New York consistent with standard technical practices. Horizontal locations will reference the North American Datum of 1983 and the New York State Plane system and be accurate to within ±0.1 foot. Vertical elevations from the ground surface and top of casing (TOC) will be referenced to the North American Vertical Datum of 1988 and reported in feet above mean sea level. Vertical measurements will be accurate to within ±0.01 foot.

Soil sample and test pit locations will be measured with onsite GPS equipment. The Topcon GPS equipment used at the site is accurate within 0.01 foot (0.08 inch) horizontally and 0.01 foot (0.09 inch) vertically at 300 meters from the base station.

5.3 Community Air Monitoring Program

The air monitoring program during the RI will be conducted in accordance with the Community Air Monitoring Plan (CAMP) provided in Appendix C. Should the action level of 150 mcg/m^3 above the upwind monitoring concentration be exceeded after corrective actions are taken, work must stop and NYSDEC and NYSDOH must be notified within 24-hours by either phone or email. The notification shall include a description of the control measures implemented to prevent further exceedances.

In addition to the requirements of the CAMP, perimeter air monitoring during completion of RI field activities will be conducted at two (2) downwind locations on the perimeter of the Site. The location of the perimeter air monitors will be adjusted as necessary as the work area shifts and/or with noticeably sustained shifts in prevalent wind directions. Ribbon will be installed near the work area as a guide to determine prevalent wind direction if it appears different than monitored by the Site 109 wind vane and the nearby windmills. The prevalent wind direction and the location of the air monitors will be documented daily in the field notebook.

5.4 Field Modification Notifications

The NYSDEC BCP PM, or their designated representative, will be notified via electronic mail and telephone if the following conditions occur:

- Field activities are delayed and/or rescheduled due to unsafe or unsuitable weather conditions and/or equipment malfunctions.
- Proposed test pit locations must be relocated more than 25-feet from the location shown in the RIWP due to surface or subsurface conditions preventing completion of the test pit to the desired depth or unforeseen hazardous overhead conditions.
- Proposed monitoring well clusters must be relocated more than 25-feet from the location shown in the RIWP due to surface, subsurface or overhead conditions preventing completion of the boring and installation of a representative well.

5.5 Wetland Assessment

Inventum will conduct a wetland delineation of the Site in accordance with the U.S. Army Corps of Engineers (USACoE) 1987 Wetland delineation manual, the appropriate USACoE Northcentral and Northeast regional supplement, and New York State Freshwater Wetland guidelines. A Wetland Delineation and Stream Identification Report will be prepared and included as an appendix to the Remedial Investigation Report (RIR) with a summary of findings incorporated into the RI assessment.

5.6 Engineered Stormwater Conveyance

To confirm the previous data sets and provide a basis for assessing future remedial alternatives, surface water data at the inlet and outlet of the stormwater pipes crossing the site will be collected in conjunction with a precipitation event within 30 days of the proposed groundwater sampling event. The six (6) surface water samples (Table 6 and Figure 6) will be analyzed for VOCs, SVOCs, metals, cyanide and ammonia.

5.7 Above -Grade Structures

There are above grade structures, tanks and process piping, drums and containers, and dozens of buildings on the property. These above grade structures are not included in the RI as they will be addressed through a series of IRMs, abatement, and demolition work plans. The assessment of all buildings to be demolished will be assessed and those that have been significantly contaminated by past site operations will be included in a draft demolition IRM Work Plan. The justification for inclusion in the IRM Work Plan will be detailed in the work plan document.

All relevant data produced from these activities will be incorporated into the RIR and associated Construction Completion Reports (CCRs).

6 Investigation Derived Waste Management Plan

The following Investigation Derived Waste (IDW) management procedures will be followed during completion of the RI.

6.1 Soils

Soils excavated from test pits that do not exhibit any gross contamination will be placed back in the cavity after completion of the test pit. The fill will be segregated from clay excavated from a test pit and the clay will be replaced in the bottom of the cavity. Gross contamination is defined for these purposes as soils exhibiting the presence of mobile tar and/or free oils.

Soils from test pits that exhibit gross contamination will be stockpiled in the designated IDW Storage Area (Figure 6). Grossly contaminated soils will be stockpiled and staged on plastic sheeting (10 mil min) and covered with 6 mil. minimum plastic sheeting to protect against precipitation, or alternatively, containerized in a double lined (10 mil min.) roll-off container. Stockpile volumes on plastic sheeting shall not exceed 100-cubic yards. Additional waste characterization samples may be collected as necessary and separate stockpiles may be used to segregate clearly grossly contaminated material of different characteristics. One (1) waste characterization sample will be collected for every 100-cubic yards of stockpiled material. Waste characterization sample analysis shall include the full suite of toxicity characteristics:

- Toxicity Characteristic Leaching Procedure (TCLP) VOCs, SVOCs, and Metals
- PCBs
- Flash Point and Paint Filter Test
- pH
- Reactivity, Cyanide
- Reactivity, Sulfide

A record of which test pit soil is in each stockpile, where they are stockpiled, and which waste characterization results represent that material will be kept in the field notebook and included in the RIR.

Soils from borings conducted for monitoring well installation will be stockpiled, containerized in Department of Transportation (DOT)-compliant 55-gallon open topped steel drums and stored in the IDW Storage Location or containerized in a double lined (10-mil [min]) roll-off container. One (1) waste characterization sample will be collected for every 100-cubic yards of stockpiled or drummed materials.

6.2 Water

Monitoring well purge water and equipment decontamination water will be containerized in 300-gallon totes in the IDW Storage Area and discharged to the Town of Tonawanda POTW under specific approval or a site-specific Industrial Waste Discharge Permit.

6.3 Personal Protective and Disposable Sampling Equipment

Personal Protective Equipment (PPE), disposal sampling equipment (ex. bailers and rope), and general trash that may come in contact with potentially impacted soils/water generated during completion of the RI will be containerized in DOT-compliant 55-gallon open top steel drums or a roll-off container and stored in the IDW Storage Area. These materials will be secured and labeled as non-hazardous waste and disposed of accordingly.

7 Fish and Wildlife Resources Impact Analysis

Inventum will conduct Step I (Site Description) of a Fish and Wildlife Resources Impact Analysis (FWRIA) in accordance with DER-10 and the October 1994 NYSDEC guidance document *Fish and Wildlife Impact Analysis for Inactive Hazardous Waste Sites*. The Step I findings will be presented in the RIR and will include the required Appendix 3C Decision Key, site maps, description(s) of fish and wildlife resources, and a description(s) of fish and wildlife resource value.

8 Interim Remedial Measures

Inventum has identified multiple IRMs that may be warranted to address known and ongoing conditions. None of the conditions pose an immediate risk to human health or the environment; however, they impact 3821 River Road's ability to provide a safe and secure means to conduct the proposed RI, access the locations necessary to conduct the RI, eliminate conditions that could mask Site related conditions, and comply with other Site related permits.

The general scope and objective of each currently anticipated IRM is described in the sections below. Independent IRM work plans will be submitted to NYSDEC for review and approval under separate cover. The justification and technical basis for inclusion of the IRMs under the BCP will be provided with each IRM Work Plan.

8.1 Site Management

The Site Management IRM is intended to include the required Site security, site controls and management of materials on the surface that are obstructing the ability to safely conduct site security, RI activities and manage runoff. The primary potential threats are associated with runoff and potential releases from the impacted buildings and process equipment. The Site Management IRM will provide the controls to reduce the potential for a release from the 3821 River Road BCP Site prior to completion of the other IRMs and the Remedial Actions. The previous owner abandoned numerous drums, containers, laboratory chemicals and other potentially hazardous materials on the property.

8.2 Drums and Containers

Oils, lubricants, laboratory samples and chemicals, and other materials were left on the property by the previous owner. The IRM will allow 3821 River Road to properly inventory, store, inspect, and gain approval for offsite disposal. The laboratories are full of chemicals and samples of suspected TCC origin. Parts washing stations will be emptied and decontaminated. Known materials will be reused or properly recycled. Laboratory chemicals and unknown materials will be segregated, characterized and properly managed. The former laboratory manager has been located and contacted and is willing to assist the identification and proper management of the laboratory chemicals. Drums and containers throughout the site pose a potential risk as the containers deteriorate. Some containers had been exposed to the atmosphere for years. The containers will be properly stored, characterized and transported offsite for disposal or reuse.

8.3 ACM

An ACM survey will be conducted on the entire property. As soon as the ACM materials on the property are identified and labeled, a management plan will be developed. In accordance with the management plan, Abatement Plans will be developed to address the ACM in the order of priority established by 3821 River Road, the DEC and the DOL. The ACM Survey will also inform OSC on those locations that may be clear for implementation of the IRMs and RI.

8.4 Required Selective Demolition

If any demolition is required to access investigation locations or underlying materials, a work plan will be prepared to document the need for the removal and the demolition plan. The buildings will be surveyed and if significantly impacted by the former operations, an IRM Work Plan will be developed to detail how the building will be demolished and how the resulting debris will be managed.

8.5 Tanks and Aboveground Piping

The remaining tanks and aboveground piping represent unknown potential sources of release to the environment. The above ground piping includes the piping to the flare and the flare itself. Anecdotal information is that the tanks and piping were emptied in the 1980s at the time of the transfer from Allied. The information must be corroborated to characterize any remaining residuals; secure the equipment; and if empty, remove and recycle. An IRM Work Plan will be prepared to detail the approach to inspecting, sampling, decontamination and disposal or recycling of the tanks and above ground piping at the 3821 River Road Site.

9 Remedial Investigation Report

A Remedial Investigation Report (RIR) will be prepared consistent with NYSDEC DER-10 and will include, at minimum, the following components:

- Introduction
- Site Description and History
- Site Physical Characteristics
- RI Scope of Work and Results Summary
- Implemented IRM Summary
- Data Validation and Usability
- Nature and Extent of Contamination
- Contaminant Fate and Transport
- Qualitative Exposure Assessment
- Cleanup Objectives
- Summary and Conclusions

The RIR will include a discussion of the RI results compared to applicable SCGs which are the Soil Cleanup Objectives (SCOs) under 6 NYCRR Part 375 and the groundwater effluent limitations for discharge to Class GA waters under 6 NYCRR Part 703.6. The discussion in the RIR on the nature and extent of contamination will be focused on any exceedances of applicable Commercial Use SCOs.

Depending on the findings of the RI, 3821 River Road may propose to submit a combined RI/AA Report at the conclusion of the RI.

10 Schedule

The Remedial Investigations are expected to begin in the third quarter 2023, followed by the Alternatives Analysis, Remedial Design, and Remediation. A Certificate of Completion is expected in the fourth quarter of 2026. While the proposed durations for the investigation and testing are appropriate, the start date of these activities is dependent on approval of this RIWP and the BCP application. The schedule as presented assumes:

- BCP Application deemed complete – January 24, 2023.
- BCA signed by applicant and BCP Fee submitted – April 20, 2023.
- BCA Executed – May 1, 2023
- Approval of the RIWP - July 2023 (estimated).
- Mobilization to begin the investigation work in the third or fourth quarter of 2023.
- Mobilization and use of one excavator for test pitting.
- Groundwater sampling no sooner than 14 days after a well is completed and developed.
- Laboratory testing will be completed in 2023.
- Draft RIR by the end of the second quarter 2024.

With the sampling scheduled into the winter season, the drilling program and overall duration could be extended by as much as two weeks.

11 Bibliography

The bibliography provides a list of documents used in conjunction with numerous site visits, discussions with USEPA and NYSDEC personnel and expertise at chemical processing facilities to develop this RIWP. Some of the documents listed below are not specific to the 3821 River Road BCP Site but were referenced to provide regional or other background information.

1. Environmental Data Resources, 2022 Radius Map Report with GeoCheck. TCC Site. 3821 River Rd, Tonawanda, NY. September 2022.

2. Inventum Engineering, PC, 2022 Draft Remedial Investigation Report Riverview Innovation & Technology Campus Brownfield Cleanup Program Site No. C915353.

3. New York State Department of Environmental Conservation, 2007, Hydrogeologic and Geochemical Investigation of the Southwestern Portion of the Town of Tonawanda, Erie County, New York. April 2007.

4. NYSDEC, September 22, 2022, Environmental Site Remediation Database Search Details, https://www.dec.ny.gov/cfmx/extapps/derexternal/haz/details.cfm

5. Niagara Boundary and Mapping Services, 2022, Site Aerial of 3821 River Road Tonawanda

6. Parsons 2021, Tonawanda Plastics Site NYSDEC ID 915003 Draft Site Investigation Summary Report.

7. Parsons 2015, Tonawanda Plastics Investigation Summary Report.

8. Parsons 2017, Tonawanda Plastics Investigation Summary Report.

9. Semet Solvay Division Plat 34, Parcel 90, Parm Lot 97, Plot Plan Tonawanda, Allied Chemical, September 1976

Tables

Table 1
2020 Soil Data
3821 River Road Tonawnada NY

Analytes		Part 375 SCOs		Units	B-1-11112020-1.5-2.0		B-4-11112020-0.8-1.3		B-4-11112020-1.5-2.0		B-5-11112020-0.6-1.1		B-7-11112020-1.7-2.2	
	Unrestricted Use	Commercial	Industrial											
			Sample Date:		11/11/2020		11/11/2020		11/11/2020		11/11/2020		11/11/2020	
			Sample Interval:		1.5'-2'		0.8'-1.3'		1.5'-2'		0.6'-1.1'		1.7'-2.2'	
			Matrix		Soil		Soil		Soil		Soil		Soil	
Acetone	50	500,000	1,000,000	Ug/kg	<20	U	<31	UJ	11	J	<20	U	9.6	J
Benzene	60	44,000	89,000	Ug/kg	<3.9	U	<0.54	J	<3.9	U	<4	U	2	J
Ethylbenzene	1,000	390,000	780,000	Ug/kg	<3.9	U	<6.2	UJ	<3.9	U	<4	U	<4.1	U
Styrene	NS	NS	NS	Ug/kg	<3.9	U	<6.2	UJ	<3.9	U	<4	U	<4.1	U
Toulene	700	500,000	1,000,000	Ug/kg	<3.9	U	1.2	J	<3.9	U	<4	U	<4.1	U
Total Xylenes	260	500,000	1,000,000	Ug/kg	<7.8	U	<12	UJ	<7.8	U	<7.9	U	<8.3	U
Acenaphthene	20,000	500,000	1,000,000	Ug/kg	<200	U	<180	U	<200	U	<200	U	<200	U
Acenaphthylene	100,000	500,000	1,000,000	Ug/kg	<200	U	<180	U	<200	U	<200	U	<200	U
Anthracene	100,000	500,000	1,000,000	Ug/kg	<200	U	<180	U	<200	U	<200	U	<200	U
Benzo(A)Anthracene	1,000	5,600	11,000	Ug/kg	21	J	26	J	<200	U	<200	U	<200	U
Benzo(A)Pyrene	1,000	1,000	1,100	Ug/kg	<200	U	<180	U	<200	U	<200	U	<200	U
Benzo(B)Fluoranthene	1,000	5,600	11,000	Ug/kg	<200	U	<180	U	<200	U	<200	U	<200	U
Benzo(G,H,I)perylene	100,000	500,000	1,000,000	Ug/kg	<200	U	<180	U	<200	U	<200	U	<200	U
Benzo(K)Fluoranthene	800	56,000	110,000	Ug/kg	<200	U	<180	U	<200	U	<200	U	<200	U
Chrysene	1,000	56,000	110,000	Ug/kg	<200	U	<180	U	<200	U	<200	U	<200	U
Dibenzo(a,h)Anthracene	330	560	1,100	Ug/kg	<200	U	<180	U	<200	U	<200	U	<200	U
Fluoranthene	100,000	500,000	1,000,000	Ug/kg	23	J	58	J	<200	U	<200	U	<200	U
Fluorene	30,000	500,000	1,000,000	Ug/kg	<200	U	<180	U	<200	U	<200	U	<200	U
Indeno(1,2,3-Cd)Pyrene	500	5,600	11,000	Ug/kg	<200	U	<180	U	<200	U	<200	U	<200	U
Naphthalene	12,000	500,000	1,000,000	Ug/kg	<200	U	<180	U	<200	U	<200	U	<200	U
Phenanthrene	100,000	500,000	1,000,000	Ug/kg	<200	U	91	J	<200	U	<200	U	<200	U
Pyrene	100,000	500,000	1,000,000	Ug/kg	<200	U	41	J	<200	U	<200	U	<200	U
Chromium	30	1,500	6,800	mg/kg	22		6.7		24.2		26.6		23.7	
Cyanide, Total	27	27	10,000	mg/kg	<1.2	U	<1	U	<1.1	U	<1.1	UJ	<1.1	U

Parsons, 2021 Tonawanda Plastics Site NYSDEC ID 915003 Draft Site Investigation Summary Report

Notes:
Tab
J - Indicates an estimated concentration
Ug/kg - Micrograms per kilogram
mg/kg - Miligrams per kilogram

Table 1
2020 Soil Data
3821 River Road Tonawnada NY

Analytes		Part 375 SCOs		Units	B-8-11112020-1.9-2.4		B-9-11112020-0.5-1.0		B-9-11112020-2.0-2.5		B-9-11112020-9.5-10.0		B-12-11102020-1.0-1.5	
	Unrestricted Use	Commercial	Industrial											
			Sample Date:		11/11/2020		11/11/2020		11/11/2020		11/11/2020		11/11/2020	
			Sample Interval:		1.9'-2.4'		0.5'-1'		2.0'-2.5'		9.5'-10'		1.0'-1.5'	
			Matrix		Soil		Soil		Soil		Soil		Soil	
Acetone	50	500,000	1,000,000	Ug/kg	<25	U	<12,000	U	<12,000	U	<13,000	U	<21	U
Benzene	60	44,000	89,000	Ug/kg	<5	U	17,000		66,000		86,000		<4.2	U
Ethylbenzene	1,000	390,000	780,000	Ug/kg	<5	U	17,000		1,500	J	1,300	J	<4.2	U
Styrene	NS	NS	NS	Ug/kg	<5	U	<2,400	U	<2,400	U	<2,500	U	<4.2	U
Toulene	700	500,000	1,000,000	Ug/kg	<5	U	14,000		83,000		54,000		<4.2	U
Total Xylenes	260	500,000	1,000,000	Ug/kg	<10	U	120,000		9,200		8,100		<8.4	U
Acenaphthene	20,000	500,000	1,000,000	Ug/kg	<190	U	<1,100	U	<190	U	<200	U	<210	U
Acenaphthylene	100,000	500,000	1,000,000	Ug/kg	<190	U	<1,100	U	<190	U	<200	U	35	J
Anthracene	100,000	500,000	1,000,000	Ug/kg	<190	U	<1,100	U	<190	U	<200	U	<210	U
Benzo(A)Anthracene	1,000	5,600	11,000	Ug/kg	<190	U	120	J	<190	U	31	J	<210	U
Benzo(A)Pyrene	1,000	1,000	1,100	Ug/kg	<190	U	<1,100	U	<190	U	34	J	<210	U
Benzo(B)Fluoranthene	1,000	5,600	11,000	Ug/kg	<190	U	<1,100	U	<190	U	46	J	<210	U
Benzo(G,H,I)perylene	100,000	500,000	1,000,000	Ug/kg	<190	U	<1,100	U	<190	U	<200	U	<210	U
Benzo(K)Fluoranthene	800	56,000	110,000	Ug/kg	<190	U	<1,100	U	<190	U	26	J	<210	U
Chrysene	1,000	56,000	110,000	Ug/kg	<190	U	<1,100	U	<190	U	<200	U	<210	U
Dibenzo(a,h)Anthracene	330	560	1,100	Ug/kg	<190	U	<1,100	U	<190	U	<200	U	<210	U
Fluoranthene	100,000	500,000	1,000,000	Ug/kg	<190	U	170	J	<190	U	46	J	<210	U
Fluorene	30,000	500,000	1,000,000	Ug/kg	<190	U	<1,100	U	<190	U	<200	U	26	J
Indeno(1,2,3-Cd)Pyrene	500	5,600	11,000	Ug/kg	<190	U	<1,100	U	<190	U	<200	U	<210	U
Naphthalene	12,000	500,000	1,000,000	Ug/kg	<190	U	8,700		600		950		1,000	
Phenanthrene	100,000	500,000	1,000,000	Ug/kg	<190	U	<1,100	U	<190	U	<200	U	<210	U
Pyrene	100,000	500,000	1,000,000	Ug/kg	<190	U	<1,100	U	<190	U	32	J	<210	U
Chromium	30	1,500	6,800	mg/kg	22.8		20.3		22		23.7		28.8	
Cyanide, Total	27	27	10,000	mg/kg	<1.1	U	0.69	J	<0.99	U	<1.1	U	1.2	UJ

Parsons, 2021 Tonawanda Plastics Site NYSDEC ID 915003 Draft Site Investigation Summary Report

Notes:
Tab
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Ug/kg - Micrograms per kilogram
mg/kg - Miligrams per kilogram

Table 1
2020 Soil Data
3821 River Road Tonawnada NY

Analytes		Part 375 SCOs		Units	B-14-11102020-0.3-0.8		B-14-11102020-4.5-5.0		B-15-11102020-1.3-1.8		B-16-11102020-0.9-1.4		B-16-11102020-2.5-3.0	
	Unrestricted Use	Commercial	Industrial											
			Sample Date:		11/11/2020		11/11/2020		11/11/2020		11/11/2020		11/11/2020	
			Sample Interval:		0.3'-0.8'		4.5'-5.0'		1.3'-1.8'		0.9'-1.4'		2.5'-3.0'	
			Matrix		Soil		Soil		Soil		Soil		Soil	
Acetone	50	500,000	1,000,000	Ug/kg	<51,000	U	<250	U	26		<29,000	U	<1,200	U
Benzene	60	44,000	89,000	Ug/kg	8,700	J	<49	U	<4.5	U	17000		<230	U
Ethylbenzene	1,000	390,000	780,000	Ug/kg	7,100	J	<49	U	<4.5	U	15,000		<230	U
Styrene	NS	NS	NS	Ug/kg	<10,000	u	<49	U	<4.5	U	30,000		<230	U
Toulene	700	500,000	1,000,000	Ug/kg	19,000		<49	U	<4.5	U	36,000		<230	U
Total Xylenes	260	500,000	1,000,000	Ug/kg	37,000		<98	U	<9	U	140,000		<460	U
Acenaphthene	20,000	500,000	1,000,000	Ug/kg	790,000		710	J	<200	U	670,000		31	J
Acenaphthylene	100,000	500,000	1,000,000	Ug/kg	820,000		590	J	<200	U	2,100,000		90	J
Anthracene	100,000	500,000	1,000,000	Ug/kg	1,500,000		1,100		<200	U	14,000,000		310	
Benzo(A)Anthracene	1,000	5,600	11,000	Ug/kg	2,000,000		1,600		<200	U	2,100,000		76	J
Benzo(A)Pyrene	1,000	1,000	1,100	Ug/kg	2,000,000		1,700		<200	U	1,800,000		85	J
Benzo(B)Fluoranthene	1,000	5,600	11,000	Ug/kg	1,700,000		1,300		<200	U	1,800,000		110	J
Benzo(G,H,I)perylene	100,000	500,000	1,000,000	Ug/kg	930,000		820	J	<200	U	890,000		47	J
Benzo(K)Fluoranthene	800	56,000	110,000	Ug/kg	780,000		600	J	<200	U	970,000		39	J
Chrysene	1,000	56,000	110,000	Ug/kg	2,100,000		1,800		<200	U	2,000,000		87	J
Dibenzo(a,h)Anthracene	330	560	1,100	Ug/kg	300,000		230	J	<200	U	310,000		<210	U
Fluoranthene	100,000	500,000	1,000,000	Ug/kg	4,300,000		3,400		55	J	6,100,000		200	J
Fluorene	30,000	500,000	1,000,000	Ug/kg	2,700,000		2,300		<200	U	4,400,000		85	J
Indeno(1,2,3-Cd)Pyrene	500	5,600	11,000	Ug/kg	850,000		610	J	<200	U	900,000		46	J
Naphthalene	12,000	500,000	1,000,000	Ug/kg	8,800,000		4,900		60	J	10,000,000		1,900	
Phenanthrene	100,000	500,000	1,000,000	Ug/kg	9,100,000		8,500		35	J	11,000,000		230	
Pyrene	100,000	500,000	1,000,000	Ug/kg	4,200,000		4,200		27	J	4,100,000		150	J
Chromium	30	1,500	6,800	mg/kg	11.4		14.7		21.3		17.7		22.8	
Cyanide, Total	27	27	10,000	mg/kg	<1.2	UJ	<1.1	UJ	<1	UJ	<1	UJ	<1.1	UK

Parsons, 2021 Tonawanda Plastics Site NYSDEC ID 915003 Draft Site Investigation Summary Report

Notes:
Tab
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Table 1
2020 Soil Data
3821 River Road Tonawnada NY

Analytes		Part 375 SCOs		Units	B-17-11102020-0.7-1.2		B-17-11102020-1.5-2.0		B-18-11092020-0.9-1.4		B-18-11092020-4.5-5.0		B-19-11092020-4.5-5.0	
	Unrestricted Use	Commercial	Industrial											
		Sample Date:			11/11/2020		11/10/2020		11/9/2020		11/9/2020		11/9/2020	
		Sample Interval:			0.7'-1.2'		1.5'-2.0'		0.9'-1.4'		4.5'-5.0'		4.5'-5.0'	
		Matrix			Soil		Soil		Soil		Soil		Soil	
Acetone	50	500,000	1,000,000	Ug/kg	21	J	41		<22,000	U	<22	U	<22	U
Benzene	60	44,000	89,000	Ug/kg	<4.6	U	<4.2	U	27,000		<4.4	U	<4.4	U
Ethylbenzene	1,000	390,000	780,000	Ug/kg	<4.6	U	<4.2	U	<4,400	U	<4.4	U	<4.4	U
Styrene	NS	NS	NS	Ug/kg	<4.6	U	<4.2	U	<3,300	J	<4.4	U	<4.4	U
Toulene	700	500,000	1,000,000	Ug/kg	0.62	J	<4.2	U	19,000		<4.4	U	<4.4	U
Total Xylenes	260	500,000	1,000,000	Ug/kg	<9.1	U	<8.4	U	23,000		<8.7	U	<8.7	U
Acenaphthene	20,000	500,000	1,000,000	Ug/kg	<200	U	<200	U	450,000		74	J	<190	U
Acenaphthylene	100,000	500,000	1,000,000	Ug/kg	28	J	<200	U	3,200,000		150	J	<190	U
Anthracene	100,000	500,000	1,000,000	Ug/kg	<200	U	<200	U	3,100,000		380		<190	U
Benzo(A)Anthracene	1,000	5,600	11,000	Ug/kg	44	J	<200	U	3,000,000		380		<190	U
Benzo(A)Pyrene	1,000	1,000	1,100	Ug/kg	62	J	<200	U	2,800,000		340		<190	U
Benzo(B)Fluoranthene	1,000	5,600	11,000	Ug/kg	69	J	<200	U	2,900,000		350		<190	U
Benzo(G,H,I)perylene	100,000	500,000	1,000,000	Ug/kg	38	J	<200	U	1,600,000		180	J	<190	U
Benzo(K)Fluoranthene	800	56,000	110,000	Ug/kg	28	J	<200	U	1,300,000		210		<190	U
Chrysene	1,000	56,000	110,000	Ug/kg	<200	U	<200	U	2,300,000		330		<190	U
Dibenzo(a,h)Anthracene	330	560	1,100	Ug/kg	<200	U	<200	U	380,000		44	J	<190	U
Fluoranthene	100,000	500,000	1,000,000	Ug/kg	80	J	<200	U	8,700,000		1,200		<190	U
Fluorene	30,000	500,000	1,000,000	Ug/kg	<200	U	<200	U	3,900,000		300		<190	U
Indeno(1,2,3-Cd)Pyrene	500	5,600	11,000	Ug/kg	34	J	<200	U	1,500,000		170	J	<190	U
Naphthalene	12,000	500,000	1,000,000	Ug/kg	77	J	38	J	9,100,000		840		<190	U
Phenanthrene	100,000	500,000	1,000,000	Ug/kg	<200	U	<200	U	10,000,000		1,100		<190	U
Pyrene	100,000	500,000	1,000,000	Ug/kg	57	J	<200		5,600,000		760		<190	U
Chromium	30	1,500	6,800	mg/kg	23		21.3		3		26.5		21.5	
Cyanide, Total	27	27	10,000	mg/kg	<1.1	UJ	<1.2	UJ	26.8		<1.1	U	<1.1	U

Parsons, 2021 Tonawanda Plastics Site NYSDEC ID 915003 Draft Site Investigation Summary Report

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Table 1
2020 Soil Data
3821 River Road Tonawnada NY

Analytes		Part 375 SCOs		Units	B-20-11092020-6.1-6.6		B-29-11102020-1.8-2.3		B-30-11102020-0.5-1.0		B-30-11102020-3.5-4.0	
	Unrestricted Use	Commercial	Industrial									
		Sample Date:			11/9/2020		11/10/2020		11/10/2020		11/10/2020	
		Sample Interval:			6.1'-6.6'		1.8'-2.3'		0.5'-1'		3.5'-4.0'	
		Matrix			Soil		Soil		Soil		Soil	
Acetone	50	500,000	1,000,000	Ug/kg	6.1	J	<27	U	<68,000	U	21	J
Benzene	60	44,000	89,000	Ug/kg	<4.7	U	<5.3	U	29,000		<4.8	U
Ethylbenzene	1,000	390,000	780,000	Ug/kg	<4.7	U	<5.3	U	<14,000	U	<4.8	U
Styrene	NS	NS	NS	Ug/kg	<4.7	U	<5.3	U	<15,000	U	<4.8	U
Toulene	700	500,000	1,000,000	Ug/kg	<4.7	U	<5.3	U	19,000		<4.8	U
Total Xylenes	260	500,000	1,000,000	Ug/kg	<9.5	U	<11	U	28,000		<9.7	U
Acenaphthene	20,000	500,000	1,000,000	Ug/kg	<230	U	<220	U	410,000		<190	U
Acenaphthylene	100,000	500,000	1,000,000	Ug/kg	33	J	40	J	3,330,000		120	J
Anthracene	100,000	500,000	1,000,000	Ug/kg	<230	U	<220	U	4,200,000		<190	U
Benzo(A)Anthracene	1,000	5,600	11,000	Ug/kg	180	J	100	J	3,100,000		<190	U
Benzo(A)Pyrene	1,000	1,000	1,100	Ug/kg	200	J	140	J	2,800,000		<190	U
Benzo(B)Fluoranthene	1,000	5,600	11,000	Ug/kg	190	J	180	J	3,200,000		<190	U
Benzo(G,H,I)perylene	100,000	500,000	1,000,000	Ug/kg	130	J	75	J	1,500,000		<190	U
Benzo(K)Fluoranthene	800	56,000	110,000	Ug/kg	120	J	55	J	1,200,000		<190	U
Chrysene	1,000	56,000	110,000	Ug/kg	180	J	96	J	3,000,000		<190	U
Dibenzo(a,h)Anthracene	330	560	1,100	Ug/kg	40	J	<220	U	460,000		<190	U
Fluoranthene	100,000	500,000	1,000,000	Ug/kg	390		230	J	9,400,000		20	J
Fluorene	30,000	500,000	1,000,000	Ug/kg	<230	U	<220	U	3,900,000		83	J
Indeno(1,2,3-Cd)Pyrene	500	5,600	11,000	Ug/kg	120	J	74	J	1,400,000		<190	U
Naphthalene	12,000	500,000	1,000,000	Ug/kg	44	J	440		11,000,000		3,600	
Phenanthrene	100,000	500,000	1,000,000	Ug/kg	200	J	54	J	13,000,000		74	J
Pyrene	100,000	500,000	1,000,000	Ug/kg	290		160	J	5,900,000		<190	U
Chromium	30	1,500	6,800	mg/kg	28.6		37.6		8.4		23.3	
Cyanide, Total	27	27	10,000	mg/kg	<1.1	U	<1.3	UJ	3.7	J	<1.1	UJ

Parsons, 2021 Tonawanda Plastics Site NYSDEC ID 915003 Draft Site Investigation Summary Report

Notes:
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Table 2
2020 Sewer Data
3821 River Road Tonawanda NY

Analytes	Class A Ambient Surface Water Quality Standards and Guidance Values	Units	36 INLET-02162018	36 OUTLET-02162018	36 INLET-04172018	36 OUTLET-04172018	36 INLET_07202018	36 OUTLET_07202018
Sample Date:			2/16/2018	2/16/2018	4/17/2018	4/17/2018	7/20/2018	7/20/2018
Sample Location:			Inlet A - 36" Storm Sewer	Outlet A - 36" Storm Sewer	Inlet A - 36" Storm Sewer	Outlet A - 36" Storm Sewer	Inlet A - 36" Storm Sewer	Outlet A - 36" Storm Sewer
Flow Event:			High Flow - Snow Melt	High Flow - Snow Melt	Storm - Rain Storm	Storm - Rain Storm	Low Flow Event	Low Flow Event
Volitile Organic Compounds								
Benzene	1	ug/L	<1.0 U	0.6 J	<2.0 U	1.4 J	<2.0 U	<2.0 U
Carbon Disulfide	-	ug/L	<1.0 U	0.7 J	<2.0 U	1.7 J	<2.0 U	<2.0 U
Cis-1,2-Dichloroethene	5	ug/L	<1.0 U	1.4	<2.0 U	<2.0 U	<2.0 U	2.6
Methylene Chloride	5	ug/L	<1.0 U	<1 U	1.8 J	1.4 J	1.2 J	<2.0 U
Trichloroethene	5	ug/L	<1.0 U	0.9 J	<2.0 U	<2.0 U	<2.0 U	<2.0 U
Semi-Volitile Organic Compounds								
2-Methylnaphthalene	-	ug/L	<5.0 U	0.7 J	<5.0 U	1.5 J	<5.0 U	<5.0 U
Fluorene	50 (G)*	ug/L	<5.0 U	<5.0	<5.0 U	0.4 J	<5.0 U	<5.0 U
Naphthalene	10	ug/L	<5.0 U	0.9 J	<5.0 U	23.0	<5.0 U	<5.0 U
Inorganics								
Aluminum	0.1	mg/L	0.10 J	0.75	0.28	2.7	0.50	0.17 J
Barium	1	mg/L	0.045	0.044	0.036	0.035	0.086	0.077
Cadmium	0.005	mg/L	<0.0005 U	<0.0005 U	<0.0005 U	0.00063 J	<0.0005 U	0.00056 J
Calcium	-	mg/L	100	106	81	88	147	238
Chromium	0.05	mg/L	<0.001 U	0.0038 J	<0.001 U	0.022	0.003 J	<0.001 U
Cobalt	0.005	mg/L	<0.00063 U	0.00063 J	<0.00063 U	0.0035 J	<0.00063 U	0.0029 J
Copper	0.2	mg/L	0.0025 J	0.0022 J	0.0031 J	0.0062 J	0.0026 J	<0.0016 U
Iron	0.3	mg/L	0.32	3.8	0.31	13.8	1.7	3.3
Lead	0.05	mg/L	<0.003 U	<0.003 U	0.0039 J	0.029	<0.003 U	<0.003 U
Magnesium	35	mg/L	20.7	21.5	16.6	19.4	58.6	45.0
Manganese	0.3	mg/L	0.16	0.22	0.05	0.16	4.3	3.7
Nickel	0.1	mg/L	<0.0013 U	0.0066 J	<0.0013 U	0.032	0.0022 J	0.022
Potassium	-	mg/L	5.5	5.5	5.4	5.4	8.6	6.4
Sodium	20	mg/L	37.8	46.0	23.1	27.8	63.7	83.4
Vanadium	0.015	mg/L	<0.0015 U	0.0084	<0.0015 U	0.056	<0.0015 U	<0.0015 U
Zinc	2 (G)*	mg/L	<0.0064 U	0.025	<0.01 U	0.083	<0.01 U	0.14
Cyanide	0.20	mg/L	<0.005 UJ	0.014	<0.005 U	0.025	0.049	0.24

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Notes;

U - Indicates compound was not detected

J - Indicates an estimated concentration

Ug/kg - Micrograms per kilogram

mg/kg - Miligrams per kilogram

Table 3
Groundwater Data for
3821 River Road Tonawanda, New York

Analytes	Class GA Ambient Water Quality Standards and Guidance Values	Units	MW-1	MW-2	MW-3	MW-4	MW-5	MW-6	MW-7	MW-8	MW-9	MW-10	MW-11R	MW-12R
Sample Date:			10/24/2016	10/25/2016	10/25/2016	10/24/2016	10/25/2016	10/25/2016	10/24/2016	10/24/2016	10/24/2016	10/25/2016	10/26/2016	10/25/2016
Sample Interval:			NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Formation:			GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW
TCL VOCs (SW8260C)														
1,1,1-Trichloroethane (TCA)	5	ug/l	<1 U	<1 U	<1 U	<1 U	<1 U	<10 U	<10 U	<1 U	<1 U	<1 U	<1 U	<1 U
1,1,2,2-Tetrachloroethane	5	ug/l	<1 U	<1 U	<1 U	<1 U	<1 U	<10 U	<10 U	<1 U	<1 U	<1 U	<1 U	<1 U
1,1,2-Trichloroethane	1	ug/l	<1 U	<1 U	<1 U	<1 U	<1 U	<10 U	<10 U	<1 U	<1 U	<1 U	<1 U	<1 U
1,1,2-Trichloro-1,2,2-Trifluoroethane	5	ug/l	<1 U	<1 U	<1 U	<1 U	<1 U	<10 U	<10 U	<1 U	<1 U	<1 U	<1 U	<1 U
1,1-Dichloroethane	5	ug/l	0.47 J	<1 U	<1 U	<1 U	<1 U	<10 U	<10 U	1.6	<1 U	<1 U	<1 U	<1 U
1,1-Dichloroethene	5	ug/l	<1 U	<1 U	<1 U	<1 U	<1 U	<10 U	<10 U	<1 U	<1 U	<1 U	<1 U	<1 U
1,2,3-Trichlorobenzene	5	ug/l	<1 U	<1 U	<1 U	<1 U	<1 U	<10 U	<10 U	<1 U	<1 U	<1 U	<1 U	<1 U
1,2,4-Trichlorobenzene	5	ug/l	<1 U	<1 U	<1 U	<1 U	<1 U	<10 U	<10 U	<1 U	<1 U	<1 U	<1 U	<1 U
1,2-Dibromo-3-Chloropropane	0.04	ug/l	<1 U	<1 U	<1 U	<1 U	<1 U	<10 U	<10 U	<1 U	<1 U	<1 U	<1 U	<1 U
1,2-Dibromoethane (Ethylene Dibromide)	0.0006	ug/l	<1 U	<1 U	<1 U	<1 U	<1 U	<10 U	<10 U	<1 U	<1 U	<1 U	<1 U	<1 U
1,2-Dichlorobenzene	3	ug/l	<1 U	<1 U	<1 U	<1 U	<1 U	<10 U	<10 U	<1 U	<1 U	<1 U	<1 U	<1 U
1,2-Dichloroethane	0.6	ug/l	<1 U	<1 U	<1 U	<1 U	<1 U	<10 U	<10 U	<1 U	<1 U	<1 U	<1 U	<1 U
1,2-Dichloropropane	1	ug/l	<1 U	<1 U	<1 U	<1 U	<1 U	<10 U	<10 U	<1 U	<1 U	<1 U	<1 U	<1 U
1,3-Dichlorobenzene	3	ug/l	<1 U	<1 U	<1 U	<1 U	<1 U	<10 U	<10 U	<1 U	<1 U	<1 U	<1 U	<1 U
1,4-Dichlorobenzene	3	ug/l	<1 U	<1 U	<1 U	<1 U	<1 U	<10 U	<10 U	<1 U	<1 U	<1 U	<1 U	<1 U
1,4-Dioxane (P-Dioxane)		ug/l	<1 U	<1 U	<1 U	<1 U	<1 U	<10 U	<10 U	<1 U	<1 U	<1 U	<1 U	<1 U
Methyl Ethyl Ketone (2-Butanone)	50	ug/l	<10 U	<10 U	<10 U	<10 U	<10 U	<100 U	<100 U	<10 U	<10 U	<10 U	<10 U	4.7 J
2-Hexanone	50	ug/l	<5 U	<5 U	<5 U	<5 U	<5 U	<50 U	<50 U	<5 U	<5 U	<5 U	<5 U	<5 U
Methyl Isobutyl Ketone (4-Methyl-2-Pentanone)		ug/l	<5 U	<5 U	<5 U	<5 U	<5 U	<50 U	<50 U	<5 U	<5 U	<5 U	<5 U	<5 U
Acetone	50	ug/l	18	<10 UJ	4.5 J	<10 UJ	3.9 J	<100 UJ	82 UJ	10 UJ	<10 U	10 UJ	10 UJ	10 UJ
Benzene	1	ug/l	7.8	<1 U	<1 U	<1 U	<1 U	84	36	<1 U	12	4.8	<1 U	<1 U
Bromochloromethane	5	ug/l	<1 U	<1 U	<1 U	<1 U	<1 U	<10 U	<10 U	<1 U	<1 U	<1 U	<1 U	<1 U
Bromodichloromethane	50	ug/l	<1 U	<1 U	<1 U	<1 U	<1 U	<10 U	10UJ	<1 U	<1 UJ	<1 U	<1 U	<1 U
Bromoform	50	ug/l	<1 U	<1 U	<1 U	<1 U	<1 U	<10 U	<10 U	<1 U	<1 U	<1 U	<1 U	<1 U
Bromomethane	5	ug/l	<1 U	<1 U	<1 U	<1 U	<1 U	<10 U	<10 U	1 UJ	<1 U	<1 U	<1 U	<1 U
Carbon Disulfide		ug/l	0.7 J	0.2 J	<1 U	<1 U	0.22 J	28	110	<1 U	<1 U	<1 U	<1 U	<1 U
Carbon Tetrachloride	5	ug/l	<1 U	<1 U	<1 U	<1 U	<1 U	<10 U	<10 U	<1 U	<1 U	<1 U	<1 U	<1 U
Chlorobenzene	5	ug/l	<1 U	<1 U	<1 U	<1 U	<1 U	<10 U	<10 U	<1 U	<1 U	<1 U	<1 U	<1 U
Chloroethane	5	ug/l	<1 U	<1 U	<1 U	<1 U	<1 U	<10 U	<10 U	<1 U	<1 U	<1 U	<1 U	<1 U
Chloroform	7	ug/l	<1 U	<1 U	<1 U	<1 U	<1 U	<10 U	<10 U	<1 U	<1 U	<1 U	<1 U	<1 U
Chloromethane	5	ug/l	<1 U	<1 U	<1 U	<1 U	<1 U	<10 U	<10 U	<1 U	<1 U	<1 U	<1 U	<1 U
Cyclohexane		ug/l	<1 U	<1 U	<1 U	<1 U	<1 U	<10 U	<10 U	<1 U	<1 U	<1 U	<1 U	<1 U
Dibromochloromethane	50	ug/l	<1 U	<1 U	<1 U	<1 U	<1 U	<10 U	<10 U	<1 U	<1 U	<1 U	<1 U	<1 U
Dichlorodifluoromethane	5	ug/l	<1 U	<1 U	<1 U	<1 U	<1 U	<10 U	<10 U	<1 U	<1 U	<1 U	<1 U	<1 U
Methylene Chloride	5	ug/l	<1 U	<1 U	<1 U	<1 U	<1 U	<10 U	<10 U	<1 U	<1 U	<1 U	<1 U	<1 U
Ethylbenzene	5	ug/l	2.8	<1 U	<1 U	<1 U	<1 U	20	<10 U	<1 U	5.3	<1 U	<1 U	<1 U
Isopropylbenzene (Cumene)	5	ug/l	<1 U	<1 U	<1 U	<1 U	<1 U	<10 U	<10 U	<1 U	.84 J	<1 U	<1 U	<1 U
Methyl Acetate		ug/l	<2.5 U	<2.5 U	<2.5 U	<2.5 U	<2.5 U	<25 U	<25 U	<2.5 U	<2.5 U	<2.5 U	<2.5 U	<2.5 U
Tert-Butyl Methyl Ether		ug/l	<1 U	<1 U	<1 U	<1 U	<1 U	<10 U	<10 U	<1 U	<1 U	<1 U	<1 U	<1 U
Methylcyclohexane		ug/l	<1 U	<1 U	<1 U	<1 U	<1 U	<10 U	<10 U	<1 U	.61 J	<1 U	0.22 J	<1 U
Styrene	5	ug/l	<1 U	<1 U	<1 U	<1 U	<1 U	<10 U	<10 U	<1 U	<1 U	<1 U	<1 U	<1 U
Tetrachloroethylene (PCE)	5	ug/l	<1 U	<1 U	<1 U	<1 U	<1 U	<10 U	<10 U	<1 U	<1 U	<1 U	<1 U	<1 U
Toluene	5	ug/l	2.5	<1 U	<1 U	<1 U	<1 U	7.8 J	12	<1 U	0.51 J	<1 U	<1 U	<1 U
Trichloroethylene (TCE)	5	ug/l	<1 U	<1 U	<1 U	5.9	2.6	<10 U	<10 U	<1 U	0.52 J	<1 U	<1 U	<1 U
Trichlorofluoromethane	5	ug/l	<1 U	<1 U	<1 U	<1 U	<1 U	<10 U	<10 U	<1 U	<1 U	<1 U	<1 U	<1 U
Vinyl Chloride	2	ug/l	<1 U	<1 U	<1 U	1.6	4.3	<10 U	<10 U	<1 U	5.4	<1 U	<1 U	<1 U
Cis-1,2-Dichloroethylene	5	ug/l	<1 U	<1 U	<1 U	50	1	<10 U	<10 U	2	8.5	2.5	<1 U	<1 U
Cis-1,3-Dichloropropene	0.4	ug/l	<1 U	<1 U	<1 U	<1 U	<1 U	<10 U	<10 U	<1 U	<1 U	<1 U	<1 U	<1 U
m,p-Xylene	5	ug/l	12	<2 U	<2 U	<2 U	<2 U	24	34	<2 U	2	<2 U	<2 U	<2 U
O-Xylene (1,2-Dimethylbenzene)	5	ug/l	<1 U	<1 U	<1 U	<1 U	<1 U	<10 U	<10 U	<1 U	<1 U	<1 U	<1 U	<1 U
Trans-1,2-Dichloroethene	5	ug/l	<1 U	<1 U	<1 U	1.8	<1 U	<10 U	<10 U	<1 U	1.8	<1 U	<1 U	<1 U
Trans-1,3-Dichloropropene	0.4	ug/l	<1 U	<2 U	<2 U	<1 U	<1 U	<10 U	<10 U	<1 U	<1 U	<1 U	<1 U	<1 U

Table 3
Groundwater Data for
3821 River Road Tonawanda, New York

Analytes	Class GA Ambient Water Quality Standards and Guidance Values		Units	MW-1	MW-2	MW-3	MW-4	MW-5	MW-6	MW-7	MW-8	MW-9	MW-10	MW-11R	MW-12R
	Sample Date:			10/24/2016	10/25/2016	10/25/2016	10/24/2016	10/25/2016	10/25/2016	10/24/2016	10/24/2016	10/24/2016	10/25/2016	10/26/2016	10/25/2016
	Sample Interval:			NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	Formation:			GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW
TCL SVOCs (SW8270D)															
1,2,4,5-Tetrachlorobenzene		5	ug/l	<5.2 U	<6.2 U	<5 U	<4.7 U	<29 U	<4.9 U	<5.3 U	<5.2 U	<50 U	<5.4 U	<4.8 U	<4.7 U
2,3,4,6-Tetrachlorophenol			ug/l	<5.2 U	<6.2 U	<5 U	<4.7 U	<29 U	<4.9 U	<5.3 U	<5.2 U	<50 U	<5.4 U	<4.8 U	<4.7 U
2,4,5-Trichlorophenol			ug/l	<5.2 U	<6.2 U	<5 U	<4.7 U	<29 U	<4.9 U	<5.3 U	<5.2 U	<50 U	<5.4 U	<4.8 U	<4.7 U
2,4,6-Trichlorophenol			ug/l	<5.2 U	<6.2 U	<5 U	<4.7 U	<29 U	<4.9 U	<5.3 U	<5.2 U	<50 U	<5.4 U	<4.8 U	<4.7 U
2,4-Dichlorophenol		5	ug/l	<5.2 U	<6.2 U	<5 U	<4.7 U	<29 U	<4.9 U	<5.3 U	<5.2 U	<50 U	<5.4 U	<4.8 U	<4.7 U
2,4-Dimethylphenol		50	ug/l	1.6 J	<6.2 U	<5 U	<4.7 U	<29 U	0.75 J	4.6 J	<11 U	<50 U	<5.4 U	<4.8 U	<4.7 U
2,4-Dinitrophenol		10	ug/l	<10 U	<12 U	<10 U	<9.5 U	<57 U	<9.7 U	<11 U	<10 U	<100 U	<11 U	<9.7 U	<9.4 U
2,4-Dinitrotoluene		5	ug/l	<5.2 U	<6.2 U	<5 U	<4.7 U	<29 U	<4.9 U	<5.3 U	<5.2 U	<50 U	<5.4 U	<4.8 U	<4.7 U
2,6-Dinitrotoluene		5	ug/l	<5.2 U	<6.2 U	<5 U	<4.7 U	<29 U	<4.9 U	<5.3 U	<5.2 U	<50 U	<5.4 U	<4.8 U	<4.7 U
2-Chloronaphthalene		10	ug/l	<5.2 U	<6.2 U	<5 U	<4.7 U	<29 U	<4.9 U	<5.3 U	<5.2 U	<50 U	<5.4 U	<4.8 U	<4.7 U
2-Chlorophenol			ug/l	<5.2 U	<6.2 U	<5 U	<4.7 U	<29 U	<4.9 U	<5.3 U	<5.2 U	<50 U	<5.4 U	<4.8 U	<4.7 U
2-Methylnaphthalene	NC		ug/l	19	<6.2 U	<5 U	<4.7 U	<29 U	110	90 J	<5.2 U	<50 U	<5.4 U	<4.8 U	<4.7 U
2-Methylphenol (O-Cresol)			ug/l	0.83 J	<6.2 U	<5 U	<4.7 U	<29 U	<4.9 U	4.9 J	<5.2 U	<100 U	<11 U	<4.8 U	<4.7 U
2-Nitroaniline		5	ug/l	<10 U	<12 U	<10 U	<9.5 U	<57 U	<9.7 U	<11 U	<10 U	<50 U	<5.4 U	<9.7 U	<9.4 U
2-Nitrophenol			ug/l	<5.2 U	<6.2 U	<5 U	<4.7 U	<29 U	<4.9 U	<5.3 U	<5.2 U	<50 U	<5.4 U	<4.8 U	<4.7 U
3,3'-Dichlorobenzidine		5	ug/l	<5.2 U	<6.2 U	<5 U	<4.7 U	<29 U	<4.9 U	<11 U	<5.2 U	<50 U	<5.4 U	<4.8 U	<4.7 U
Cresols, M & P			ug/l	<5.2 U	<6.2 U	<10 U	<9.5 U	<29 U	.67 J	<5.3 U	<10 U	<100 U	<11 U	<9.7 U	<9.4 U
3-Nitroaniline		5	ug/l	<10 U	<12 U	<10 U	<9.5 U	<57 U	<9.7 U	<11 U	<10 U	<100 U	<11 U	<9.7 U	<9.4 U
4,6-Dinitro-2-Methylphenol			ug/l	<5.2 U	<6.2 U	<5 U	<4.7 U	<57 U	<9.7 U	<5.3 U	<5.2 U	<100 U	<11 U	<9.7 U	<9.4 U
4-Bromophenyl Phenyl Ether			ug/l	<5.2 U	<6.2 U	<5 U	<4.7 U	<29 U	<4.9 U	<5.3 U	<5.2 U	<50 U	<5.4 U	<4.8 U	<4.7 U
4-Chloro-3-Methylphenol			ug/l	<5.2 U	<6.2 U	<5 U	<4.7 U	<29 U	<4.9 U	<5.3 U	<5.2 U	<50 U	<5.4 U	<4.8 U	<4.7 U
4-Chloroaniline		5	ug/l	<5.2 U	<6.2 U	<5 U	<4.7 U	<29 U	<4.9 U	<5.3 U	<5.2 U	<50 U	<5.4 U	<4.8 U	<4.7 U
4-Chlorophenyl Phenyl Ether			ug/l	<5.2 U	.68 J	<10 U	<9.5 U	<29 U	<4.9 U	9.9 J	<5.2 U	<50 U	<5.4 U	<4.8 U	<4.7 U
4-Nitroaniline		5	ug/l	<10 U	<12 U	<10 U	<9.5 U	<57 U	<9.7 U	<11 U	<10 U	<100 U	<11 U	<9.7 U	<9.4 U
4-Nitrophenol			ug/l	<10 U	<12 U	<10 U	<9.5 U	<57 U	<9.7 U	<11 U	<10 U	<100 U	<11 U	<9.7 U	<9.4 U
Acenaphthene		20	ug/l	5 J	<6.2 U	<5 U	<4.7 U	<29 U	11	6.9	<5.2 U	6.7 J	19	<4.8 U	<4.7 U
Acenaphthylene			ug/l	5.7	<6.2 U	<5 U	<4.7 U	<29 U	<4.9 U	<5.3 U	<5.2 U	<50 U	.46 J	<4.8 U	<4.7 U
Acetophenone			ug/l	4.5 J	<6.2 U	<5 U	<4.7 U	<29 U	<4.9 U	6.1	<5.2 U	<50 U	<5.4 U	<4.8 U	<4.7 U
Anthracene		50	ug/l	<5.2 U	<6.2 U	<5 U	<4.7 U	<29 U	4.8 J	<5.3 U	<5.2 U	<50 U	.79 J	<4.8 U	<4.7 U
Atrazine		7.5	ug/l	<5.2 U	<6.2 U	<5 U	<4.7 U	<29 U	<4.9 U	<5.3 U	<5.2 U	<50 U	<5.4 U	<4.8 U	<4.7 U
Benzo(A)Anthracene		0.002	ug/l	<5.2 U	<6.2 U	<5 U	<4.7 U	<29 U	<4.9 U	.38 J	<5.2 U	<50 U	<5.4 U	<4.8 U	<4.7 U
Benzaldehyde			ug/l	<5.2 U	<6.2 U	<5 U	<4.7 U	<29 U	<4.9 U	<5.3 U	<5.2 U	<50 U	<5.4 U	<4.8 U	<4.7 U
Benzo(A)Pyrene	NC		ug/l	<5.2 U	<6.2 U	<5 U	<4.7 U	<29 U	<4.9 U	<5.3 U	<5.2 U	<50 U	<5.4 U	<4.8 U	<4.7 U
Benzo(B)Fluoranthene		0.002	ug/l	<5.2 U	<6.2 U	<5 U	<4.7 U	<29 U	<4.9 U	<5.3 U	<5.2 U	<50 U	<5.4 U	<4.8 U	<4.7 U
Benzo(G,H,I)Perylene			ug/l	<5.2 U	<6.2 U	<5 U	<4.7 U	<29 U	<4.9 U	<5.3 U	<5.2 U	<50 U	<5.4 U	<4.8 U	<4.7 U
Benzo(K)Fluoranthene		0.002	ug/l	<5.2 U	<6.2 U	<5 U	<4.7 U	<29 U	<4.9 U	<5.3 U	<5.2 U	<50 U	<5.4 U	<4.8 U	<4.7 U
Biphenyl (Diphenyl)		5	ug/l	7.4	<6.2 U	<5 U	<4.7 U	<29 U	31	6	<5.2 U	<50 U	<5.4 U	<4.8 U	<4.7 U
Bis(2-Chloroisopropyl) Ether		5	ug/l	<5.2 U	<6.2 U	<5 U	<4.7 U	<29 U	<4.9 U	<5.3 U	<5.2 U	<50 U	<5.4 U	<4.8 U	<4.7 U
Bis(2-Chloroethoxy) Methane		5	ug/l	<5.2 U	<6.2 U	<5 U	<4.7 U	<29 U	<4.9 U	<5.3 U	<5.2 U	<50 U	<5.4 U	<4.8 U	<4.7 U
Bis(2-Chloroethyl) Ether (2-Chloroethyl Ether)		1	ug/l	<5.2 U	<6.2 U	<5 U	<4.7 U	<29 U	<4.9 U	<5.3 U	<5.2 U	<50 U	<5.4 U	<4.8 U	<4.7 U
Bis(2-Ethylhexyl) Phthalate		5	ug/l	<5.2 U	<6.2 U	<5 U	<4.7 U	<29 U	<4.9 U	<5.3 U	34	<50 U	<5.4 U	<4.8 U	<4.7 U
Benzyl Butyl Phthalate		50	ug/l	<5.2 U	<6.2 U	<5 U	<4.7 U	<29 U	<4.9 U	<5.3 U	<5.2 U	<50 U	<5.4 U	<4.8 U	<4.7 U
Caprolactam			ug/l	<5.2 U	<6.2 U	<5 U	<4.7 U	<29 U	<4.9 U	<5.3 U	6.1	<50 U	<5.4 U	<4.8 U	<4.7 U
Carbazole			ug/l	18	<6.2 U	<5 U	<4.7 U	<29 U	18	25	<5.2 U	5 J	10	<4.8 U	<4.7 U
Chrysene		0.002	ug/l	<5.2 U	<6.2 U	<5 U	<4.7 U	<29 U	<4.9 U	<5.3 U	<5.2 U	<50 U	<5.4 U	<4.8 U	<4.7 U
Di-N-Butyl Phthalate		50	ug/l	<5.2 U	<6.2 U	<5 U	<4.7 U	<29 U	<4.9 U	<5.3 U	<5.2 U	<50 U	<5.4 U	<4.8 U	<4.7 U

Table 3
Groundwater Data for
3821 River Road Tonawanda, New York

Analytes	Class GA Ambient Water Quality Standards and Guidance Values	Units	MW-1	MW-2	MW-3	MW-4	MW-5	MW-6	MW-7	MW-8	MW-9	MW-10	MW-11R	MW-12R
	Sample Date:		10/24/2016	10/25/2016	10/25/2016	10/24/2016	10/25/2016	10/25/2016	10/24/2016	10/24/2016	10/24/2016	10/25/2016	10/26/2016	10/25/2016
	Sample Interval:		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	Formation:		GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW
Di-N-Octylphthalate	50	ug/l	0.55 J	<6.2 U	<5 U	<4.7 U	<29 U	<4.9 U	<5.3 U	<5.2 U	<50 U	<5.4 U	<4.8 U	<4.7 U
Dibenz(A,H)Anthracene		ug/l	<5.2 U	<6.2 U	<5 U	<4.7 U	<29 U	<4.9 U	<5.3 U	<5.2 U	<50 U	<5.4 U	<4.8 U	<4.7 U
Dibenzofuran		ug/l	5.8 J	<12 U	<10 U	<9.5 U	<57 U	4.3 J	3.4 J	<10 U	<100 U	<5.4 U	<9.7 U	<9.4 U
Diethyl Phthalate	50	ug/l	<5.2 U	<6.2 U	<5 U	<4.7 U	<29 U	<4.9 U	<5.3 U	<5.2 U	<50 U	<5.4 U	<4.8 U	<4.7 U
Dimethyl Phthalate	50	ug/l	<5.2 U	<6.2 U	<5 U	<4.7 U	<29 U	<4.9 U	<5.3 U	<5.2 U	<50 U	<5.4 U	<4.8 U	<4.7 U
Fluoranthene	50	ug/l	1.2 J	<6.2 U	<5 U	<4.7 U	<29 U	2.7 J	.92 J	<5.2 U	<50 U	1.9 J	<4.8 U	<4.7 U
Fluorene	50	ug/l	17	<6.2 U	<5 U	<4.7 U	<29 U	32	9.5	<5.2 U	<50 U	4.8 J	<4.8 U	<4.7 U
Hexachlorobenzene	0.04	ug/l	<5.2 U	<6.2 U	<5 U	<4.7 U	<29 U	<4.9 U	<5.3 U	<5.2 U	<50 U	<5.4 U	<4.8 U	<4.7 U
Hexachlorobutadiene	0.5	ug/l	<5.2 U	<6.2 U	<5 U	<4.7 U	<29 U	<4.9 U	<5.3 U	<5.2 U	<50 U	<5.4 U	<4.8 U	<4.7 U
Hexachlorocyclopentadiene	5	ug/l	<5.2 U	<6.2 U	<5 U	<4.7 U	29 UJ	<4.9 U	5.3 UJ	5.2 UJ	50 UJ	<5.4 U	4.8 UJ	4.7
Hexachloroethane	5	ug/l	<5.2 U	<6.2 U	<5 U	<4.7 U	<29 U	<4.9 U	<5.3 U	<5.2 U	<50 U	<5.4 U	<4.8 U	<4.7 U
Indeno(1,2,3-C,D)Pyrene	0.002	ug/l	<5.2 U	<6.2 U	<5 U	<4.7 U	<29 U	<4.9 U	<5.3 U	<5.2 U	<50 U	<5.4 U	<4.8 U	<4.7 U
Isophorone	50	ug/l	<5.2 U	<6.2 U	<5 U	<4.7 U	<29 U	<4.9 U	<5.3 U	<5.2 U	<50 U	<5.4 U	<4.8 U	<4.7 U
N-Nitrosodi-N-Propylamine		ug/l	<5.2 U	<6.2 U	<5 U	<4.7 U	<29 U	<4.9 U	<5.3 U	<5.2 U	<50 U	<5.4 U	<4.8 U	<4.7 U
N-Nitrosodiphenylamine	50	ug/l	<5.2 U	<6.2 U	<5 U	<4.7 U	<29 U	<4.9 U	<5.3 U	<5.2 U	<50 U	<5.4 U	<4.8 U	<4.7 U
Naphthalene	10	ug/l	250	<6.2 U	<5 U	<4.7 U	<29 U	630	1700	<5.2 U	98	1.1 J	<4.8 U	<4.7 U
Nitrobenzene	0.4	ug/l	<5.2 U	<6.2 U	<5 U	<4.7 U	<29 U	<4.9 U	<5.3 U	<5.2 U	<50 U	<5.4 U	<4.8 U	<4.7 U
Pentachlorophenol	1	ug/l	<10 UJ	<12 UJ	<10 UJ	<9.5 UJ	57 UJ	9.7 UJ	6.9 J	10 UJ	100 UJ	11 UJ	9.7 UJ	9.4 UJ
Phenanthrene	50	ug/l	11	<6.2 U	<5 U	<4.7 U	<29 U	32	4.9 J	<5.2 U	<50 U	.82 J	<4.8 U	<4.7 U
Phenol	1	ug/l	<5.2 U	<6.2 U	<5 U	<4.7 U	<29 U	<'4.9 U	3.5 J	<5.2 U	<50 U	<5.4 U	<4.8 U	<4.7 U
Pyrene	50	ug/l	1.4 J	<6.2 U	<5 U	<4.7 U	<29 U	3.3 J	.82 J	<5.2 U	<50 U	1.2 J	<4.8 U	<4.7 U
TAL Metals (SW6010)														
Aluminum	NC	ug/l	117,000	200	270	<60 U	7000	37500	65600	87 J	193000	43600	10200	190 J
Antimony	3	ug/l	<6.8 U	<6.8 U	<6.8 U	<6.8 U	<6.8 U	<6.8 U	<6.8 U	<6.8 U	<6.8 U	<6.8 U	<6.8 U	<6.8 U
Arsenic	25	ug/l	84	10 J	12 J	<5.6 U	43	<5.6 U	920	<5.6 U	150	31	11 J	6 J
Barium	1,000	ug/l	16	68	78	54	100	22	7.5	40	4900	33	88	18
Beryllium	3	ug/l	11	<0.3 U	<0.3 U	<0.3 U	0.35 J	5.2	5.8	<0.3 U	11	4.7	0.33 J	<0.3 U
Cadmium	5	ug/l	16	0.7 J	<0.5 U	<0.5 U	3.7	0.64 J	20	<0.5 U	15	1.7 J	<0.5 U	<0.5 U
Calcium		ug/l	394,000	453,000	236,000	153,000	124000	278000	275000	118000	272000	271000	594000	424000
Chromium, Total	50	ug/l	580	3.7 J	1.3 J	<1 U	77	160	650	1.2 J	650	200	15	1.1 J
Cobalt	NC	ug/l	180	5.9	<0.63 U	<0.63 U	22	<0.63 U	82	1.3 J	99	12	9.3	8.4
Copper	200	ug/l	250	12	5.7 J	2 J	76	<1.6 U	54	2.2 J	510	69	15	<1.6 U
Iron	300	ug/l	491,000	10000	15,100	960	108000	97000	438000	4800	322000	251000	12900 J	1800 J
Lead	25	ug/l	350	6.1 J	3.1 J	<3 U	180	6.2 J	1200	4 J	890	12	14	3 J
Magnesium	35,000	ug/l	231000	156000	55800	18700	218000	40100	58900	258000	99300	80100	501000	1180000
Manganese	300	ug/l	12300	4700	2300	210	2500	4600	3800	690	6900	7800	660	310
Nickel	100	ug/l	1700	20	<3.4 U	1.7 J	180	27	570	2.9 J	580	140	23	15
Potassium		ug/l	6800	10200	3300	5600	2180	19500	16400	3100	59100	15600	18600	13900
Selenium	10	ug/l	<8.7 U	<8.7 U	<8.7 U	<8.7 U	<8.7 U	<8.7 U	<8.7 U	<8.7 U	13 J	<8.7 U	<8.7 U	<8.7 U
Silver	50	ug/l	<1.7 U	<1.7 U	<1.7 U	<1.7 U	<1.7 U	<1.7 U	<1.7 U	<1.7 U	16	<1.7 U	<1.7 U	<1.7 U
Sodium	20,000	ug/l	75400	125000	108000	10800	80100	17900	25100	154000	90900	127000	491000	465000
Thallium	0.5	ug/l	<10 U	<10 U	<10 U	<10 U	<10 U	<10 U	<10 U	<10 U	<10 U	<10 U	<10 U	<10 U
Vanadium	NC	ug/l	66	<1.5 U	<1.5 U	1.8 J	20	33	56	<1.5 U	330	81	19	<1.5 U
Zinc	2,000	ug/l	4100	15	9.1 J	3.6 J	150	190	2200	11	1800	650	48	5.3 J
Mercury (SW7470)														
Mercury	0.7	ug/l	<0.12 U	<0.12 U	<0.12 U	<0.12 U	0.16 J	<0.12 U	<0.12 U	<0.12 U	1.7	<0.12 U	<0.12 U	<0.12 U
Cyanide (SW9012B/ KELADA-01)														
Cyanide	0.20	mg/l	0.23	2.2	0.38	0.32	.75 J	0.4	0.91	0.7	0.54	1.1	<0.005 U	0.029 J

Source: Tonawanda Plastics Investigation Summary Report, Parsons, 2017

Notes:

U - Indicates compound was not detected

J - Indicates an estimated concentration

Ug/kg - Micrograms per kilogram

mg/kg - Miligrams per kilogram

Table - 4
Monitoring Well Location Summary
3821 River Road, Inc.
Town of Tonawanda, New York

Property Subsection	Plant Subsection AOI	Cell Location	Target Location	Monitoring Well Designation	Type	Depth	Soil Samples	Groundwater Samples	Rationale	Drilling Depth	Sample Depth	Soil Sample Analysis											Groundwater Sample Analysis									
						(Feet)				(Feet)	(Feet unless noted as inch)	VOCs	SVOCs	Cyanide	Metals (See Note 1)	Hexavalent Chromium (See Note 1)	Mercury	Ammonia	PCBs	Pesticide / Herbicides	PFAS & 1,4-Dioxane	Geotechnical (UW, Perm)	VOCs	SVOCs	Cyanide	Metals	Hexavalent Chromium	Mercury	Ammonia	PCBs	Pesticide / Herbicides	PFAS & 1,4-Dioxane
Southwestern Perimeter	AOI 3 - East Area	Z-12	Downgradient of Coal Tar Site	**MW-PBCP-01A**	Shallow Monitoring Well	5	Surface		Downgradient of Former Coal Tar Site	5	0-2 inch		1	1	1	1			1	1	1											
											0-6 inch	1																			
							Top of Clay	1			4-5	1	1	1	1	1	1	1					1	1	1	1	1	1	1	1	1
		Z-12	Downgradient of Coal Tar Site	**MW-PBCP-01B**	Medium Depth Monitoring Well	20	3 feet below Top of Clay	1	Downgradient of Former Coal Tar Site	20	Field Observation	1	1	1	1	1	1	1					1	1	1	1	1	1	1			
							Bottom				18-20	1	1	1	1	1	1															
		Z-12	Downgradient of Coal Tar Site	**MW-PBCP-01C**	Medium Deep Depth Monitoring Well	40	Bottom	1	Downgradient of Former Coal Tar Site	40	38-40	1	1	1	1	1	1						1	1	1	1	1	1				
Eastern Portion of Plant Operations	AOI 2 - Center Plant Area	W-9	Downgradient of Observed Tar and Overhead Piping	**MW-PBCP-02A**	Shallow Monitoring Well	5	Surface		Downgradient of observed tar and near overhead piping that was used to transport materials	5	0-1	1	1	1	1	1	1		1	1	1											
							Top of Clay	1			4-5	1	1	1	1	1	1						1	1	1	1	1	1		1	1	1
		W-9	Downgradient of Observed Tar and Overhead Piping	**MW-PBCP-02B**	Medium Depth Monitoring Well	20	3 feet below Top of Clay	1	Downgradient of observed tar and near overhead piping that was used to transport materials	20	Field Observation	1	1	1	1	1	1						1	1	1	1	1	1				
							Bottom				18-20	1	1	1	1	1	1															
		W-9	Downgradient of Observed Tar and Overhead Piping	**MW-PBCP-02C**	Medium Deep Depth Monitoring Well	40	Bottom	1	Downgradient of observed tar and near overhead piping that was used to transport materials	40	38-40	1	1	1	1	1	1						1	1	1	1	1	1				
North Center of Plant Operations	AOI 2 - Center Plant Area	O-7	Northern Portion of the Plant	**MW-PBCP-03A**	Shallow Monitoring Well	5	Surface		Downgradient of ASTs and Pump House	5	0-1	1	1	1	1	1	1		1	1	1		1	1	1	1	1	1		1	1	1
							Top of Clay	1			4-5	1	1	1	1	1	1															
		O-7	Northern Portion of the Plant	**MW-PBCP-03B**	Medium Depth Monitoring Well	20	3 feet below Top of Clay	1	Downgradient of ASTs and Pump House. Collect thin-walled tube sample at 10 feet for permeability Testing	20	Field Observation	1	1	1	1	1	1					1	1	1	1	1	1	1				
							Bottom				18-20	1	1	1	1	1	1															
		O-7	Northern Portion of the Plant	**MW-PBCP-03C**	Medium Deep Depth Monitoring Well	40	30 Feet	1	Downgradient of ASTs and Pump House	40	Field Observation	1	1	1	1	1	1						1	1	1	1	1	1				
Center of Plant Operations	AOI 2 - Center Plant Area	O-11	Center Portion of the Plant	**MW-PBCP-04A**	Shallow Monitoring Well	5	Surface		Access Groundwater Quality and Flow in the Center Portion of the Plant	5	0-1	1	1	1	1	1	1		1	1	1											
							Top of Clay	1			4-5	1	1	1	1	1	1	1					1	1	1	1	1	1	1	1	1	1
		O-11	Center Portion of the Plant	**MW-PBCP-04B**	Medium Depth Monitoring Well	20	3 feet below Top of Clay	1	Access Groundwater Quality and Flow in the Center Portion of the Plant	20	Field Observation	1	1	1	1	1	1	1					1	1	1	1	1	1	1	1	1	1
							Bottom				18-20	1	1	1	1	1	1															
		O-11	Center Portion of the Plant	**MW-PBCP-04C**	Medium Deep Depth Monitoring Well	40	Bottom	1	Access Groundwater Quality and Flow in the Center Portion of the Plant	40	38-40	1	1	1	1	1	1						1	1	1	1	1	1				
Northwest Corner of the Site	AOI 1 -West Area	E-9	Northwest Corner of the Site	**MW-PBCP-05A**	Shallow Monitoring Well	5	Surface		Access Groundwater Quality and Flow in the Northwest Portion of the Plant at the Property Boundary	5	0-2 inch		1	1	1	1	1		1	1	1											
											0-6 inch	1																			
							Top of Clay	1			4-5	1	1	1	1	1	1	1					1	1	1	1	1	1	1	1	1	1
		E-9	Northwest Corner of the Site	**MW-PBCP-05B**	Medium Depth Monitoring Well	20	3 feet below Top of Clay	1	Access Groundwater Quality and Flow in the Northwest Portion of the Plant at the Property Boundary.	20	Field Observation	1	1	1	1	1	1	1					1	1	1	1	1	1	1			
							Bottom				18-20	1	1	1	1	1	1															
		E-9	Northwest Corner of the Site	**MW-PBCP-05C**	Medium Deep Depth Monitoring Well	40	Bottom	1	Access Groundwater Quality and Flow in the Northwest Portion of the Plant at the Property Boundary	40	38-40	1	1	1	1	1	1						1	1	1	1	1	1				

Table - 4
Monitoring Well Location Summary
3821 River Road, Inc.
Town of Tonawanda, New York

Property Subsection	Plant Subsection AOI	Cell Location	Target Location	Monitoring Well Designation	Type	Depth	Soil Samples	Groundwater Samples	Rationale	Drilling Depth	Sample Depth	Soil Sample Analysis											Groundwater Sample Analysis									
						(Feet)				(Feet)	(Feet unless noted as inch)	VOCs	SVOCs	Cyanide	Metals (See Note 1)	Hexavalent Chromium (See Note 1)	Mercury	Ammonia	PCBs	Pesticide / Herbicides	PFAS & 1,4-Dioxane	Geotechnical (UW, Perm)	VOCs	SVOCs	Cyanide	Metals	Hexavalent Chromium	Mercury	Ammonia	PCBs	Pesticide / Herbicides	PFAS & 1,4-Dioxane
Northwest Corner of the Site	AOI 1 -West Area	I-9		**MW-PBCP-06A**	Shallow Monitoring Well	5	Surface		Access Groundwater Quality and Flow in the Southwest Portion of the Plant at the Property Boundary	5	0-1	1	1	1	1	1	1		1	1	1										
							Top of Clay	1			4-5	1	1	1	1	1	1	1					1	1	1	1	1	1	1	1	1
		I-9		**MW-PBCP-06B**	Medium Deep Depth Monitoring Well	20	3 feet below Top of Clay	1	Access Groundwater Quality and Flow in the Southwest Portion of the Plant at the Property Boundary. Collect a thin-walled tube at 10 feet below top of clay for permeability if no PID reading	20	Field Observation	1	1	1	1	1	1	1				1	1	1	1	1	1	1	1			
							Bottom				18-20	1	1	1	1	1	1														
		I-9		**MW-PBCP-06C**	Medium Deep Depth Monitoring Well	40	Bottom	1	Access Groundwater Quality and Flow in the Southwest Portion of the Plant at the Property Boundary Collect a thin-walled tube between 30 and 38 feet for permeability if no PID reading	40	38-40	1	1	1	1	1	1					1	1	1	1	1	1	1				
		I-9		**MW-PBCP-06D**	Deep Depth Monitoring Well	60	55	1	Confirm thickness of clay and bedrock elevation. Install a double case well	60	Bottom / Top of Rock	1	1	1	1	1	1						1	1	1	1	1	1				
West center area of Site	AOI 2 -Central Area	I-9		**MW-PBCP-07A**	Shallow Monitoring Well	5	Surface		Access Groundwater Quality and Flow in the upgradient of MW-12R and downgradient of process areas.	5	0-1	1	1	1	1	1	1		1	1	1										
							Top of Clay	1			4-5	1	1	1	1	1	1	1					1	1	1	1	1	1	1	1	1
		I-9		**MW-PBCP-07B**	Medium Deep Depth Monitoring Well	20	3 feet below Top of Clay	1	Access Groundwater Quality and Flow in the B-Zone downgradient of process areas.	20	Field Observation	1	1	1	1	1	1	1				1	1	1	1	1	1	1				
							Bottom				18-20	1	1	1	1	1	1														
		I-9		**MW-PBCP-07C**	Medium Deep Depth Monitoring Well	40	Bottom	1	Access Groundwater Quality and Flow in the C-Zone downgradient of process areas.	40	38-40	1	1	1	1	1	1					1	1	1	1	1	1	1				
Southwest Corner	AOI-1 Southwest Corner	G-19 to I-20 (TBD)		**MW-PBCP-08A**	Shallow Monitoring Well	5	Surface		Access Groundwater Quality and Flow in the upgradient of MW-12R and downgradient of process areas.	5	0-2 inch		1	1	1	1	1		1	1	1										
											0-6 inch	1																			
							Top of Clay	1			4-5	1	1	1	1	1	1	1					1	1	1	1	1	1	1	1	1
		I-9		**MW-PBCP-08B**	Medium Deep Depth Monitoring Well	20	3 feet below Top of Clay	1	Access Groundwater Quality and Flow in the B-Zone downgradient of process areas.	20	Field Observation	1	1	1	1	1	1	1				1	1	1	1	1	1	1				
							Bottom				18-20	1	1	1	1	1	1														
		I-9		**MW-PBCP-08C**	Medium Deep Depth Monitoring Well	40	Bottom	1	Access Groundwater Quality and Flow in the C-Zone downgradient of process areas.	40	38-40	1	1	1	1	1	1					1	1	1	1	1	1	1				
									Totals	450		**41**	**41**	**41**	**41**	**41**	**41**	**12**	**8**	**8**	**8**	**7**	**25**	**25**	**25**	**25**	**25**	**25**	**12**	**9**	**9**	**9**
											Duplicates	**2**	**2**	**2**	**2**	**2**	**2**	**1**	**1**	**1**	**1**		**2**	**2**	**2**	**2**	**2**	**2**	**1**	**1**	**1**	**1**
											MS/MSD	**2**	**2**	**2**	**2**	**2**	**2**	**1**	**1**	**1**	**1**		**2**	**2**	**2**	**2**	**2**	**2**	**1**	**1**	**1**	**1**

Notes:
1. All soil samples with a total chromium concentration of 400 mg/Kg or greater shall be analyzed for Hexavalent Chromium.

Table -5
Test Pit Location Summary
3821 River Road, Inc.
Town of Tonawanda, New York

Plant Subsection AOI	Cell Location (Center of Test Pit)	Sample ID	Type	Estimated Depth	Minimum Length	Soil Samples	Rationale	Sample Interval	Soil Sample Analysis								
				(Feet)	(Feet)			(Feet unless Noted as inch)	VOCs	SVOCs	Metals (See Note 1)	Mercury	Cyanide	Ammonia	PCBs	Pesticide / Herbicides	PFAS & 1,4-Dioxane
AOI 3 - East Area	AO-5	TP-PBCP-01	Test Pit	5	60	Surficial	Assess eastern soils adjacent to the property boundary adjacent to the Riverview & Technology Campus BCP Site	0 to 2 inch		1	1	1	1		1	1	1
								0 to 6 inch	1								
						Top of Clay	Confirm depth to clay - observation	Observation Only									
AOI 3 - East Area	AM-7	TP-PBCP-03	Test Pit	5	50	Surficial	Assess chromium detections at B-29 from 1.8 - 2.3-feet below ground surface (bgs)	0 to 1	1	1	1	1	1	1			
						Top of Clay		0.5 below Top of Clay	1	1	1	1	1	1			
AOI 3 - East Area	AK-8	TP-PBCP-04	Test Pit	5	50	Surficial	Assess VOCs and SVOCs detections a B-30 from 0.5 - 1-feet bgs and observed tar at 0.5 - 1.5-feet	0 to 1	1	1	1	1	1				1
						Top of Clay		0.5 below Top of Clay	1	1	1	1	1				
AOI 3 - East Area	AJ-8	TP-PBCP-05	Test Pit	5	50	Surficial	Assess VOCs and SVOCs detections a B-30-2 from 0.5 - 1.0-feet bgs and observed tar at 0.5 - 1.5-feet	0 to 1	1	1	1	1	1				
						Top of Clay		0.5 below Top of Clay	1	1	1	1	1				
AOI 3 - East Area	AF-10	TP-PBCP-06	Test Pit	5	50	Surficial	Assess VOCs and SVOCs detections a B-18 from 0.9 - 1.4-feet bgs and observed tar at 0.9 - 1.8-feet	0 to 2 inch		1	1	1	1				1
								0 to 6 inch	1								
						Top of Clay		0.5 below Top of Clay	1	1	1	1	1				
AOI 3 - East Area	AC-11	TP-PBCP-07	Test Pit	5	100	Surficial	Assess the limits of the previous excavation of "Former Coal Tar Site"	0 to 1	1	1	1	1	1				
						Top of Clay		0.5 below Top of Clay	1	1	1	1	1				
AOI 3 - East Area	AA-9	TP-PBCP-08	Test Pit	5	50	Surficial	Assess VOCs and SVOCs detections at B-14 from 0.3 - 0.8-feet bgs and SVOCs detections from 4.5 - 5.0-feet bgs	0 to 1	1	1	1	1	1				1
						Top of Clay		0.5 below Top of Clay	1	1	1	1	1				

Table -5
Test Pit Location Summary
3821 River Road, Inc.
Town of Tonawanda, New York

Plant Subsection AOI	Cell Location (Center of Test Pit)	Sample ID	Type	Estimated Depth	Minimum Length	Soil Samples	Rationale	Sample Interval	Soil Sample Analysis								
				(Feet)	(Feet)			(Feet unless Noted as inch)	VOCs	SVOCs	Metals (See Note 1)	Mercury	Cyanide	Ammonia	PCBs	Pesticide / Herbicides	PFAS & 1,4-Dioxane
AOI 3 - East Area	AA-9	TP-PBCP-09	Test Pit	5	50	Surficial	Assess VOCs and SVOCs detections at B-14 from 0.3 - 0.8-feet bgs and SVOCs detections from 4.5 - 5.0-feet bgs and within the area of reported blue stained wood chips	0 to 1	1	1	1	1	1				
						Top of Clay	Confirm depth to clay - observation	Observation Only									
AOI 3 - East Area	Y-7	TP-PBCP-10	Test Pit	5	50	Surficial	Assess tar observed at the ground surface	0 to 1	1	1	1	1	1	1			
						Top of Clay	Confirm depth to clay - observation	Observation Only (See Note 2)									
AOI 3 - East Area	Z-8	TP-PBCP-12	Test Pit	5	50	Surficial	Assess tar observed at the ground surface	0 to 1	1	1	1	1	1				
						Top of Clay	Confirm depth to clay - observation	Observation Only (See Note 2)									
AOI 2 - Center Plant Area	V-6	TP-PBCP-13	Test Pit	5 (deeper if possible)	60	Surficial	Assess VOCs detections at B-9 from 0.5 up to 10.0-feet bgs	0 to 1	1	1	1	1	1			1	1
						Top of Clay		0.5 below Top of Clay	1	1	1	1	1				
AOI 2 - Center Plant Area	S-6	TP-PBCP-14	Test Pit	5	50	Surficial	Assess observed tar at 1.0 - 1.3-feet and the area on the south end of the former tank pad	0 to 1	1	1	1	1	1	1		1	
						Top of Clay		0.5 below Top of Clay	1	1	1	1	1	1			
AOI 3 - East Area	X-13	TP-PBCP-16	Test Pit	5	50	Surficial	Assess VOCs and SVOCs detections a B-16 from 0.9 - 1.4-feet bgs and observed tar at 0.4 - 1.7-feet	0 to 1	1	1	1	1	1				
						Top of Clay		0.5 below Top of Clay	1	1	1	1	1				
AOI 2 - Center Plant Area	T-12	TP-PBCP-17	Test Pit	5	50	Surficial	Location is south of the compressor and pump house building. Area has not previously been investigated.	0 to 1	1	1	1	1	1		1	1	
						Top of Clay		0.5 below Top of Clay	1	1	1	1	1		1		

Table -5
Test Pit Location Summary
3821 River Road, Inc.
Town of Tonawanda, New York

Plant Subsection AOI	Cell Location (Center of Test Pit)	Sample ID	Type	Estimated Depth	Minimum Length	Soil Samples	Rationale	Sample Interval	Soil Sample Analysis								
				(Feet)	(Feet)			(Feet unless Noted as inch)	VOCs	SVOCs	Metals (See Note 1)	Mercury	Cyanide	Ammonia	PCBs	Pesticide / Herbicides	PFAS & 1,4-Dioxane
AOI 2 - Center Plant Area	L-13	TP-PBCP-18	Test Pit	5	20	Surficial	Area not previously assessed and with area of former septic tank	0 to 1	1	1	1	1	1	1	1	1	1
						Top of Clay		0.5 below Top of Clay	1	1	1	1	1	1	1		
AOI 2 - Center Plant Area	K-14	TP-PBCP-19	Test Pit	5	50	Surficial	Area not previously assessed and an AST and parts cleaning station inside adjacent building	0 to 1	1	1	1	1	1	1	1	1	1
						Top of Clay		0.5 below Top of Clay	1	1	1	1	1	1			
AOI 1 - West Area	F-14	TP-PBCP-20	Test Pit	14 (deeper if possible)	50	Surficial	Assess bermed soil	0 to 2 inch		1	1	1	1		1	1	1
								0 to 6 inch	1								
						Top of Clay	Confirm depth to clay - observation	Observation Only									
AOI 2 - Center Plant Area	Q-13	TP-PBCP-21	Test Pit	5	30	Surficial	Former Oil House Area	0 to 1	1	1	1	1	1		1		
						Top of Clay		0.5 below Top of Clay	1	1	1	1	1				
AOI 1 - Former Pentane UST	H-14	TP-PBCP-22	Test Pit	5	30	Possible UST Impact	Investigate former UST Location	TDB	1	1	1	1	1	1	1		
						Top of Clay	If Staining observed	TDB	1	1	1	1	1	1	1		
AOI 1 - Former West Tank Farm Location	G-11	TP-PBCP-23	Test Pit	5	75	Surficial	Investigate former Tank Farm Location	0 to 1	1	1	1	1	1	1	1		
						Top of Clay	If Staining observed	TDB	1	1	1	1	1	1	1		

Table -5
Test Pit Location Summary
3821 River Road, Inc.
Town of Tonawanda, New York

Plant Subsection AOI	Cell Location (Center of Test Pit)	Sample ID	Type	Estimated Depth	Minimum Length	Soil Samples	Rationale	Sample Interval	Soil Sample Analysis								
				(Feet)	(Feet)			(Feet unless Noted as inch)	VOCs	SVOCs	Metals (See Note 1)	Mercury	Cyanide	Ammonia	PCBs	Pesticide / Herbicides	PFAS & 1,4-Dioxane
AOI 1 - South Property Line	P-17	TP-PBCP-24	Test Pit	5	30	Possible UST Impact	Property Line Clearance	0-2 inch		1	1	1	1	1	1		
								0-6 inch	1								
						Top of Clay	Depth Only										
AOI 1 - MW-10 Area	J-19	TP-PBCP-25	Test Pit	5	75	Surficial	Investigate for source materials near MW-10	0 to 2 inch		1	1	1	1	1	1		
								0 to 6 inch	1								
						Top of Clay	If Staining observed	TDB	1	1	1	1	1	1	1		
					1025		**Totals**		**38**	**38**	**38**	**38**	**38**	**16**	**15**	**7**	**8**
								Duplicates	**2**	**2**	**2**	**2**	**2**	**1**	**1**	**1**	**1**
								MS/MSD	**2**	**2**	**2**	**2**	**2**	**1**	**1**	**1**	**1**

Notes:
1. All soil samples with a total chromium concentration of 19 mg/Kg or greater shall be analyzed for Hexavalent Chromium.
2. The clay sample should be collected from the clay that has the greatest visual and olfactory evidence of impact in TP-PBCP-10 or TP-PBCP-12.

Table - 6
Media Samples (Grab)
3821 River Road, Inc.
Town of Tonawanda, New York

Plant Subsection AOI	Cell Location	Sample ID	Type	Depth	Rationale	Sample Depth	Soil Sample Analysis						Water Sample Analysis					
				(Feet)		(Feet unless Noted as inch)	VOCs	SVOCs	Cyanide	Metals	Mercury		VOCs	SVOCs	Cyanide	Metals	Mercury	Ammonia
AOI 1 - West Area	D-9	SS-PBCP-01	Surface Soil	0-2	Soil samples to assess area of observed tar	1 - 2	1	1	1	1	1							
					If no tar observed	0 - 2 inch		1	1	1	1							
						0 - 6 inch	1											
AOI 1 - West Area	AK-2	SS-PBCP-02	Surface Soil	0-2	Soil samples to assess area of observed tar	1 - 2	1	1	1	1	1							
AOI 2 - Center Plant Area	T-7	SW-PBCP-01	Surface Water	NA	Assess surface water quality	TBD							1	1	1	1	1	1
AOI 2 - Center Plant Area	J-8	SW-PBCP-02	Surface Water	NA	Assess surface water quality	TBD							1	1	1	1	1	1
AOI 2 - Center Plant Area	R-16	SW-PBCP-03	Surface Water	NA	Assess surface water influent quality at 48-inch storm sewer site influent	TBD							1	1	1	1	1	1
AOI 1 - West Area	E-9	SW-PBCP-04	Surface Water	NA	Assess surface water quality effluent quality of 48-inch storm sewer	TBD							1	1	1	1	1	1
AOI 1 - West Area	K-19	SW-PBCP-05	Surface Water	NA	Assess surface water influent quality at 36-inch storm sewer site influent	TBD							1	1	1	1	1	
AOI 1 - West Area	D-9	SW-PBCP-06	Surface Water	NA	Assess surface water quality effluent quality of 36-inch storm sewer	TBD							1	1	1	1	1	
AOI 2 - Center Plant Area	P-5	SW-PBCP-07	Pit Water	NA	Valve Pit Northwest of North Tank Farm	NA							1	1	1	1	1	
AOI 2 - Center Plant Area	R-5	SW-PBCP-08	Pit Water	NA	Valve Pit North of North Tank Farm	NA							1	1	1	1	1	
AOI 2 - Center Plant Area	P-5	SD-PBCP-09	Pit Sediment	NA	Valve Pit Northwest of North Tank Farm	NA	1	1	1	1	1							

Plant Subsection AOI	Cell Location	Sample ID	Type	Depth	Rationale	Sample Depth	Soil Sample Analysis						Water Sample Analysis					
				(Feet)		(Feet unless Noted as inch)	VOCs	SVOCs	Cyanide	Metals	Mercury		VOCs	SVOCs	Cyanide	Metals	Mercury	Ammonia
AOI 2 - Center Plant Area	R-5	SD-PBCP-10	Pit Sediment	NA	Valve Pit North of North Tank Farm	NA	1	1	1	1	1							
AOI 2 - Compressor Building Sump	Q-9	SW-PBCP-11	Sump Water	NA	Former Sump Location West of Compressor Building. Sample water if sump exists.	NA							1	1	1	1	1	
AOI 2 - Compressor Building OWS	Q-10	SW-PBCP-12	OWS Liquids	NA	Former OWS Location West of Compressor Building. Check for multiple phases, sample all liquid phases.	NA							1	1	1	1	1	
AOI 2 - Compressor Building Sump	Q-9	SD-PBCP-13	Sump Sediment	NA	Former Sump Location West of Compressor Building. Sample sediment if sump exists.	NA	1	1	1	1	1							
AOI 2 - Compressor Building OWS	Q-10	SD-PBCP-14	OWS Sludge	NA	Former OWS Location West of Compressor Building. Sample sludge if present	NA	1	1	1	1	1							
					Totals		**7**	**7**	**7**	**7**	**7**		**10**	**10**	**10**	**10**	**10**	**4**
					Duplicates		1	1	1	1	1		1	1	1	1	1	1
					MS/MSD		1	1	1	1	1		1	1	1	1	1	1

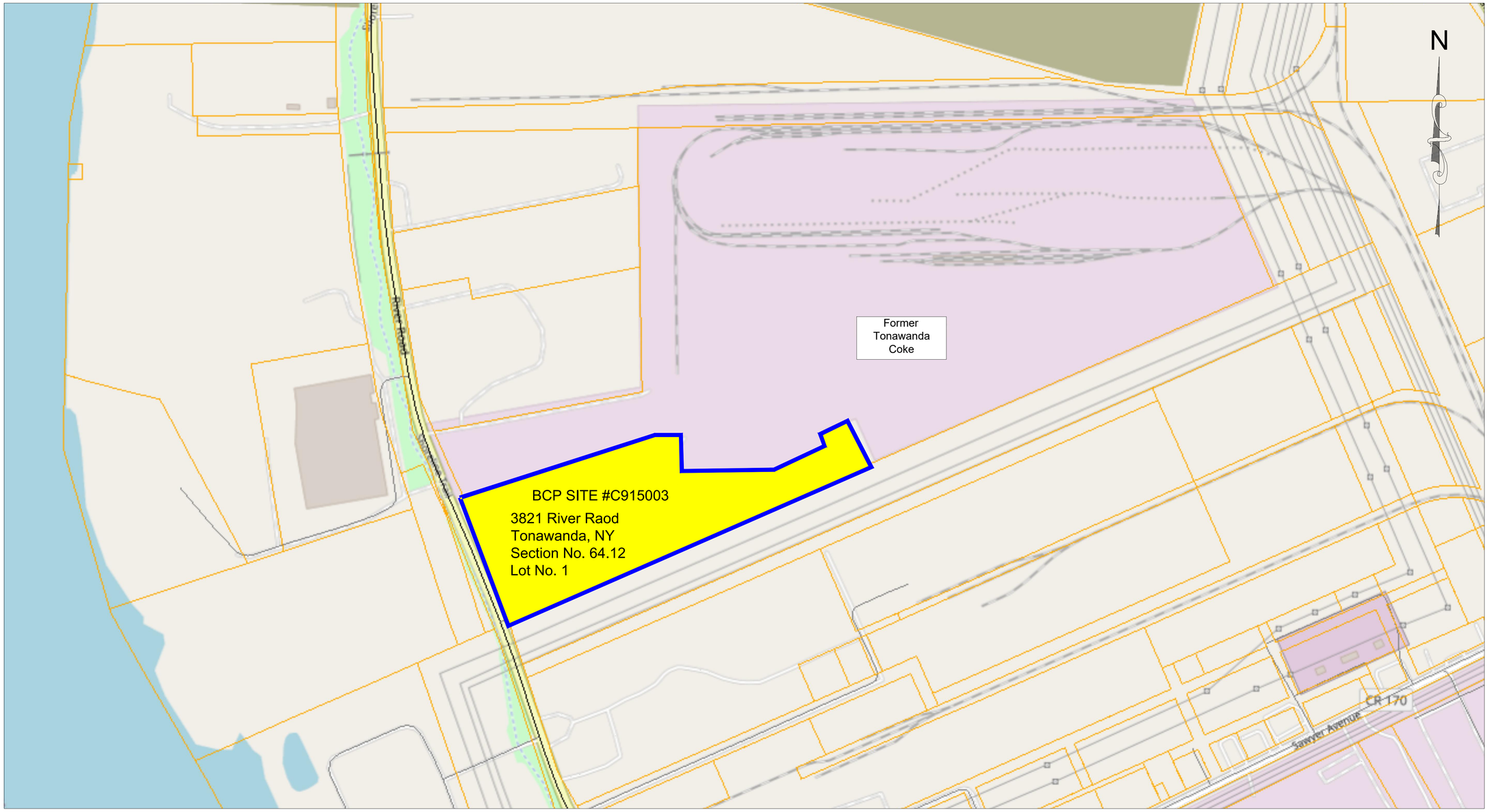
N.A. = Not Applicable
TBD = To be determined based on field observations.
Notes:
1. All soil samples with a total chromium concentration of 19 mg/Kg or greater shall be analyzed for Hexavalent Chromium.

Table - 7
Existing Monitoring Wells
3821 River Road, Inc.
Town of Tonawanda, New York

Plant Subsection AOI	Cell Location	Top of Riser Elevation (Feet AMSL)	Ground Surface Elevation (Feet AMSL)	Well Depth (Feet BTOC)	Monitoring I.D.	Type	Rationale	Groundwater Sample Analysis							
								VOCs	SVOCs	Cyanide	Metals	Hexavalent Chromium	Mercury	Ammonia	PFAS
AOI 1 - West Area	J-16	585.60	583.00	11.58	MW-1	Shallow Monitoring Well	Existing Monitoring Well	1	1	1	1	1	1		
AOI 1 - West Area	H-15	583.76	581.80	11.76	MW-2	Shallow Monitoring Well	Existing Monitoring Well	1	1	1	1	1	1		
AOI 1 - West Area	G-14	582.65	581.30	11.40	MW-3	Shallow Monitoring Well	Existing Monitoring Well	1	1	1	1	1	1		
AOI 1 - West Area	H-14	584.04	581.40	11.75	MW-4	Shallow Monitoring Well	Existing Monitoring Well	1	1	1	1	1	1		
AOI 1 - West Area	L-17	587.00	584.60	10.90	MW-5	Shallow Monitoring Well	Existing Monitoring Well	1	1	1	1	1	1		
AOI 1 - West Area	I-16	584.87	582.40	11.25	MW-6	Shallow Monitoring Well	Existing Monitoring Well	1	1	1	1	1	1		
AOI 1 - West Area	I-16	586.21	582.10	11.60	MW-7	Shallow Monitoring Well	Existing Monitoring Well	1	1	1	1	1	1		
AOI 1 - West Area	K-16	585.85	583.90	15.20	MW-8	Medium Depth Monitoring Well	Existing Monitoring Well	1	1	1	1	1	1		
AOI 1 - West Area	I-17	585.30	582.30	12.65	MW-9	Shallow Monitoring Well	Existing Monitoring Well	1	1	1	1	1	1		
AOI 1 - West Area	I-18	586.67	584.00	12.35	MW-10	Shallow Monitoring Well	Existing Monitoring Well	1	1	1	1	1	1		
AOI 1 - West Area	H-17	596.89	594.00	42.80	MW-11R	Medium Deep Depth Monitoring Well	Existing Monitoring Well	1	1	1	1	1	1		
AOI 1 - West Area	F-13	591.33	588.80	37.82	MW-12R	Medium Deep Depth Monitoring Well	Existing Monitoring Well	1	1	1	1	1	1	1	
AOI 2 - Center Plant Area	W-7	598.73	595.40	13.33	MW-13	Shallow Monitoring Well	Existing Monitoring Well	1	1	1	1	1	1	1	
AOI 3 -West Area	AG-7	603.99	600.20	15.41	MW-14	Medium Depth Monitoring Well	Existing Monitoring Well	1	1	1	1	1	1		
							Totals	**14**	**14**	**14**	**14**	**14**	**14**	**2**	**0**
							Duplicates	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**
							MS/MSD	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**

References: Parsons, 2021, Tonawanda Plastics Site NYSDEC ID 915003 Draft Site Investigation Summary Report

Figures



Erie County, New York, Interactive Mapping Viewer, www2.erie.gov/gis

D

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APPROVED	

SITE LOCATION MAP

3821 RIVER ROAD
TONAWANDA NEW YORK, 14150
NYSDEC BCP SITE #C915003

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441 CARLISLE DRIVE
SUITE C
HERNDON, VIRGINIA 20170
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FIGURE 1

DRAWING NUMBER
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BUILDING NUMBERS

1. Admin - Locked
2. Storage 1
3. Possible Septic Tank - 3 Openings
4. Electrical Utility Building
5. West Warehouse 2 & Investigation Derived Waste (IDW) Storage Area
6. West Warehouse 1
7. West Storage 3
8. Debris Piles
9. Office Trailer
10. Ausmus Garage
11. Brick Shop
12. A - North Garage A (East)
    B - North Garage B (West)
13. A - Open Lean To (Under Larger Lean To C)
    B - Open Lean To (Under Larger Lean To C)
    C - Larger Lean To
14. Discharge Meter House with Manhole
15. Allied Pump House - Product Pumping
16. Electric Equipment Mobile Building
17. Lean-To 2
18. Northwest Storage
19. Small Pump House
20. Coke Building
21. Northeast Storage
22. Laboratory
23. Two-story Administration Building
24. Pump House

Legend

- Existing Monitoring Well
- Property Line
- Building

D

1" = 80'
80' 40' 0' 80'

References:

1. Parsons, 2021, Tonawanda Plastics Site NYSDEC ID 915003 Draft Site Investigation Summary Report
2. Niagara Boundary and Mapping Services, 2022, Site Aerial of 3821 River Road Tonawanda
3. Building names provided by previous seller, not documented.

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SITE AERIAL MAP
AERIAL IMAGE - APRIL 2022
3821 RIVER ROAD
TONAWANDA NEW YORK, 14150
NYSDEC BCP SITE #C915003

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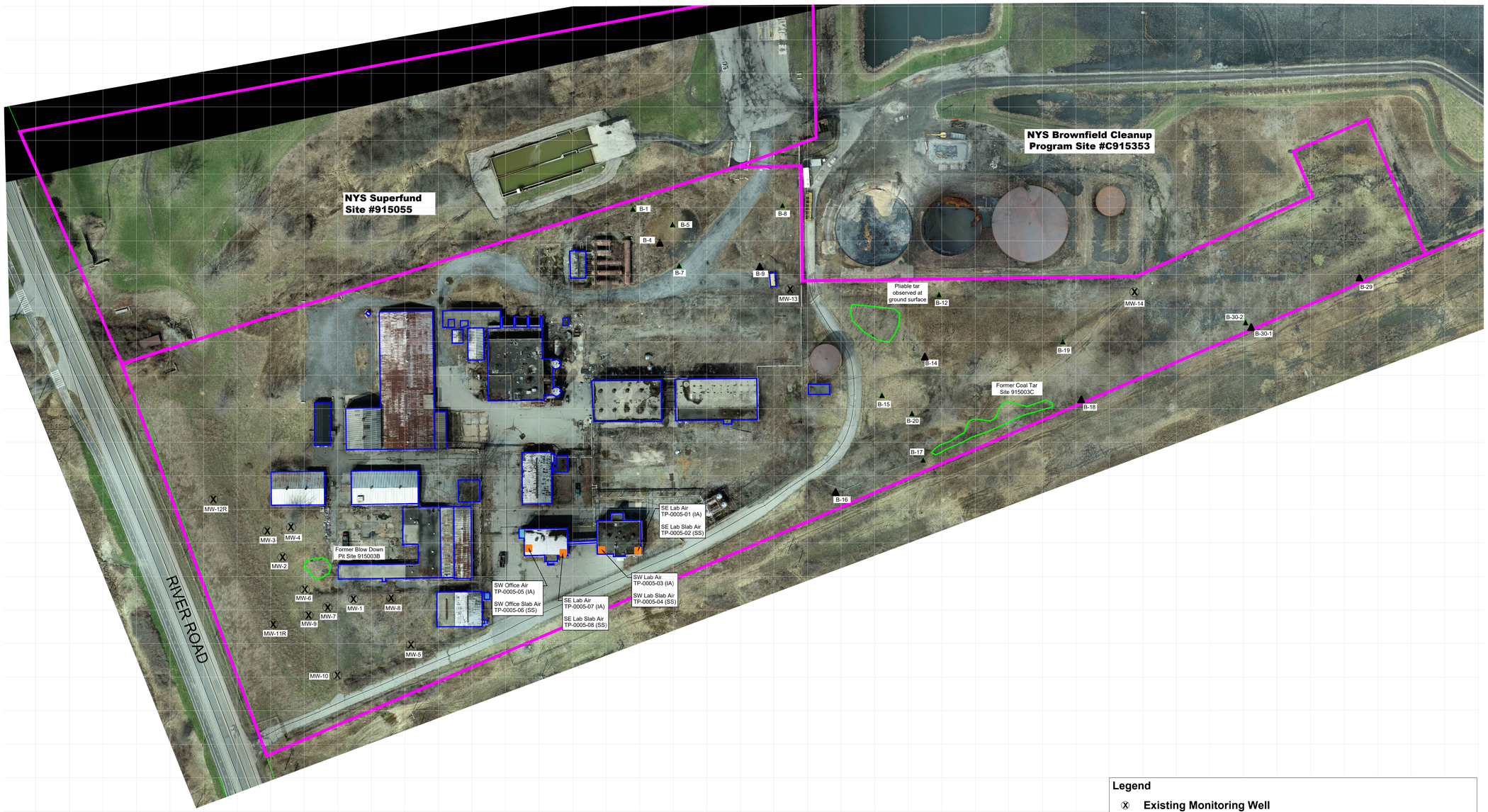
FIGURE 2

DRAWING NUMBER
RI WORKPLAN



References:

1. Parsons, 2021, Tonawanda Plastics Site NYSDEC ID 915003 Draft Site Investigation Summary Report
2. Parsons, 2017, Tonawanda Plastics Investigation Summary Report
3. Niagara Boundary and Mapping Services, 2022, Site Aerial of 3821 River Road Tonawanda

1" = 80'
80' 40' 0' 80'

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HISTORICAL SAMPLE LOCATIONS

3821 RIVER ROAD
TONAWANDA NEW YORK, 14150
NYSDEC BCP SITE #C915003

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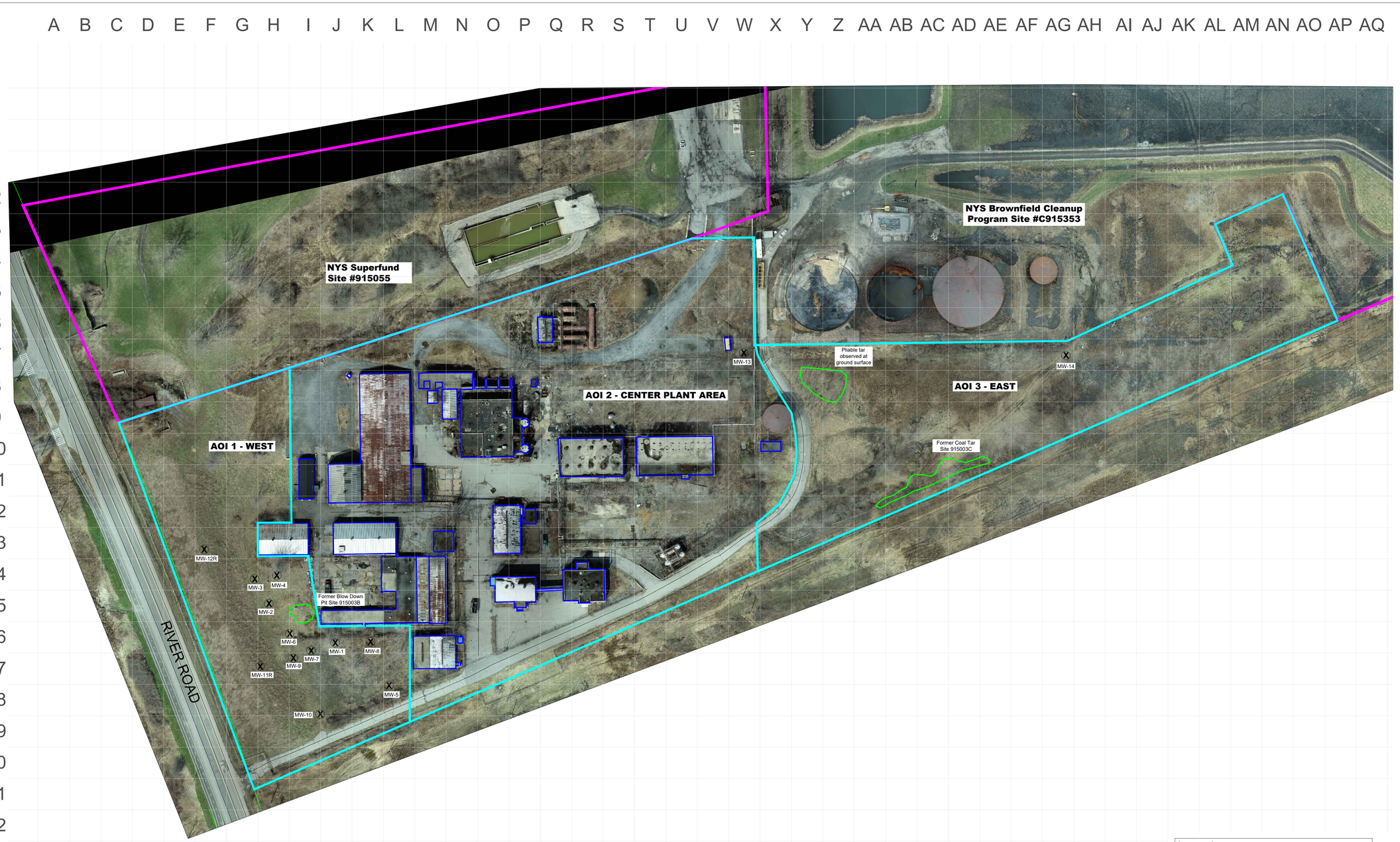
FIGURE 3

DRAWING NUMBER
RI WORKPLAN



D

1" = 80'
80' 40' 0' 80'

References:

1. Parsons, 2021, Tonawanda Plastics Site NYSDEC ID 915003 Draft Site Investigation Summary Report
2. Parsons, 2017, Tonawanda Plastics Investigation Summary Report
3. Niagara Boundary and Mapping Services, 2022, Site Aerial of 3821 River Road Tonawanda

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AREAS OF INVESTIGATION (AOIs) BOUNDARIES

3821 RIVER ROAD
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FIGURE 4

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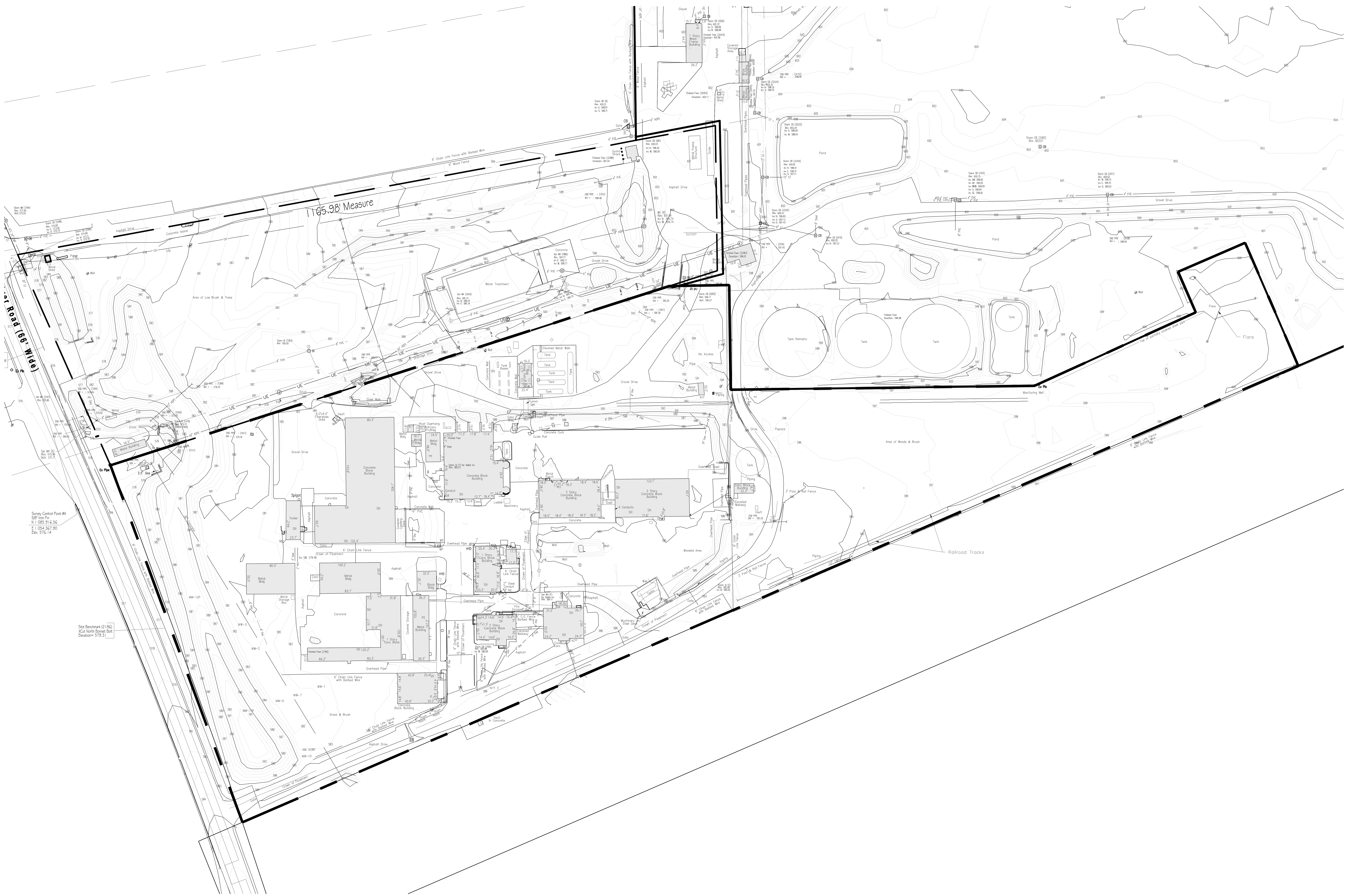

D

1" = 80'

80' 40' 0' 80'

Reference:

1. Niagara Boundary and Mapping Services, 2022, Site Aerial of 3821 River Road Tonawanda

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SITE TOPOGRAPHIC MAP, APRIL 2022

3821 RIVER ROAD

TONAWANDA, NY 14150

NYSDEC BCP SITE #C915003

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FIGURE 5

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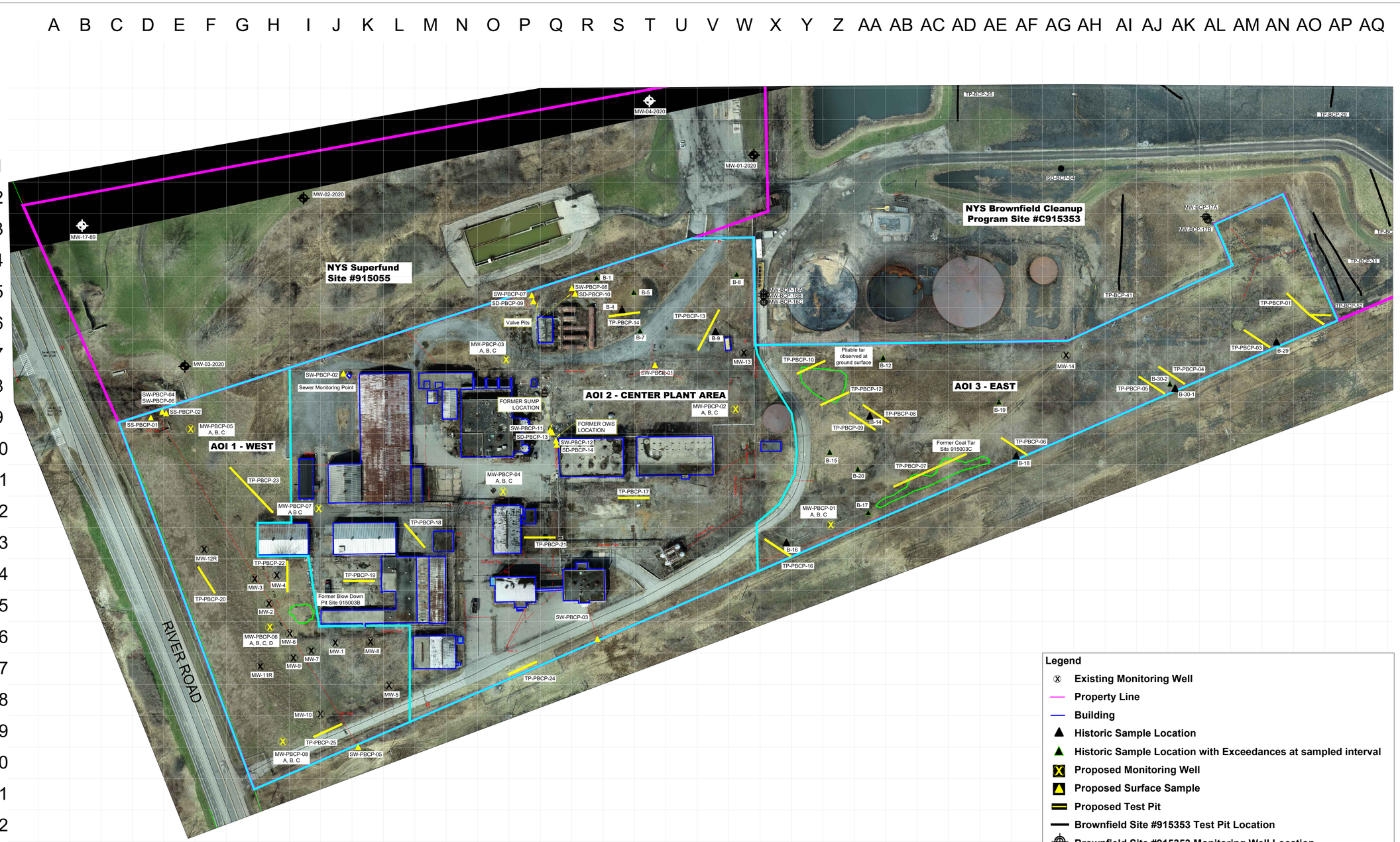

Legend

- Existing Monitoring Well
- Property Line
- Building
- Historic Sample Location
- Historic Sample Location with Exceedances at sampled interval
- Proposed Monitoring Well
- Proposed Surface Sample
- Proposed Test Pit
- Brownfield Site #915353 Test Pit Location
- Brownfield Site #915353 Monitoring Well Location
- Brownfield Site #915353 Solid Sample Location
- Superfund Site #915055 Monitoring Well Location
- Site Features (Utilities)
- Areas of Investigation (AOIs)

1" = 80'

80' 40' 0' 80'

References:

1. Parsons, 2021, Tonawanda Plastics Site NYSDEC ID 915003 Draft Site Investigation Summary Report
2. Parsons, 2017, Tonawanda Plastics Investigation Summary Report
3. Niagara Boundary and Mapping Services, 2022, Site Aerial of 3821 River Road Tonawanda

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PROPOSED SAMPLE LOCATIONS

3821 RIVER ROAD
TONAWANDA NEW YORK, 14150
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FIGURE 6

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RI WORKPLAN

Analytes	Unrestricted Use	Part 375 SCOs: Commercial	Part 375 SCOs: Industrial	Units	B-9-11112020-0.5-1.0	B-9-11112020-2.0-2.5	B-9-11112020-9.5-10.0
Sample Date:					11/11/2020	11/11/2020	11/11/2020
Sample Interval (ft):					0.5-1	2.0-2.5	9.5-10
Matrix:					Soil	Soil	Soil
Benzene	60	44,000	89,000	Ug/kg	17,000	66,000	86,000
Ethylbenzene	1,000	390,000	780,000	Ug/kg	17,000	1,500 J	1,300 J
Toulene	700	500,000	1,000,000	Ug/kg	14,000	83,000	54,000
Total Xylenes	260	500,000	1,000,000	Ug/kg	120,000	9,200	8,100

Analytes	Unrestricted Use	Part 375 SCOs: Commercial	Part 375 SCOs: Industrial	Units	B-14-11102020-0.3-0.8		B-14-11102020-4.5-5.0	
Sample Date:					11/11/2020		11/11/2020	
Sample Interval (ft):					0.3-0.8		4.5-5.0	
Matrix:					Soil		Soil	
Benzene	60	44,000	89,000	Ug/kg	8,700	J	<49	U
Ethylbenzene	1,000	390,000	780,000	Ug/kg	7,100	J	<49	U
Toulene	700	500,000	1,000,000	Ug/kg	19,000		<49	U
Total Xylenes	260	500,000	1,000,000	Ug/kg	37,000		<98	U
Acenaphthene	20,000	500,000	1,000,000	Ug/kg	780,000		710	J
Acenaphthylene	100,000	500,000	1,000,000	Ug/kg	820,000		590	J
Anthracene	100,000	500,000	1,000,000	Ug/kg	1,500,000		1,100	
Benzo(A)Anthracene	1,000	5,600	11,000	Ug/kg	2,000,000		1,600	
Benzo(A)Pyrene	1,000	1,000	1,100	Ug/kg	2,000,000		1,700	
Benzo(B)Fluoranthene	1,000	5,600	11,000	Ug/kg	1,700,000		1,300	
Benzo(G,H,I)perylene	100,000	500,000	1,000,000	Ug/kg	930,000		820	J
Benzo(K)Fluoranthene	800	56,000	110,000	Ug/kg	780,000		600	J
Chrysene	1,000	56,000	110,000	Ug/kg	2,100,000		1,800	
Dibenzo(a,h)Anthracene	330	560	1,100	Ug/kg	300,000		230	J
Fluoranthene	100,000	500,000	1,000,000	Ug/kg	4,300,000		3,400	
Fluorene	30,000	500,000	1,000,000	Ug/kg	2,700,000		2,300	
Indeno(1,2,3-Cd)Pyrene	500	5,600	11,000	Ug/kg	850,000		610	J
Naphthalene	12,000	500,000	1,000,000	Ug/kg	6,800,000		4,900	
Phenanthrene	100,000	500,000	1,000,000	Ug/kg	9,100,000		8,500	
Pyrene	100,000	500,000	1,000,000	Ug/kg	4,200,000		4,200	

Analytes	Unrestricted Use	Part 375 SCOs: Commercial	Part 375 SCOs: Industrial	Units	B-29-11102020-1.8-2.3
Sample Date:					11/10/2020
Sample Interval (ft):					1.8-2.3
Matrix:					Soil
Chromium	30	1,500	6,800	mg/kg	37.6

Analytes	Unrestricted Use	Part 375 SCOs: Commercial	Part 375 SCOs: Industrial	Units	B-16-11102020-0.9-1.4
Sample Date:					11/11/2020
Sample Interval (ft):					0.9-1.4
Matrix:					Soil
Benzene	60	44,000	89,000	Ug/kg	17000
Ethylbenzene	1,000	390,000	780,000	Ug/kg	15,000
Toulene	700	500,000	1,000,000	Ug/kg	36,000
Total Xylenes	260	500,000	1,000,000	Ug/kg	140,000
Acenaphthene	20,000	500,000	1,000,000	Ug/kg	670,000
Acenaphthylene	100,000	500,000	1,000,000	Ug/kg	2,100,000
Anthracene	100,000	500,000	1,000,000	Ug/kg	14,000,000
Benzo(A)Anthracene	1,000	5,600	11,000	Ug/kg	2,100,000
Benzo(A)Pyrene	1,000	1,000	1,100	Ug/kg	1,800,000
Benzo(B)Fluoranthene	1,000	5,600	11,000	Ug/kg	1,800,000
Benzo(G,H,I)perylene	100,000	500,000	1,000,000	Ug/kg	890,000
Benzo(K)Fluoranthene	800	56,000	110,000	Ug/kg	970,000
Chrysene	1,000	56,000	110,000	Ug/kg	2,000,000
Dibenzo(a,h)Anthracene	330	560	1,100	Ug/kg	310,000
Fluoranthene	100,000	500,000	1,000,000	Ug/kg	6,100,000
Fluorene	30,000	500,000	1,000,000	Ug/kg	4,400,000
Indeno(1,2,3-Cd)Pyrene	500	5,600	11,000	Ug/kg	900,000
Naphthalene	12,000	500,000	1,000,000	Ug/kg	10,000,000
Phenanthrene	100,000	500,000	1,000,000	Ug/kg	11,000,000
Pyrene	100,000	500,000	1,000,000	Ug/kg	4,100,000

Analytes	Unrestricted Use	Part 375 SCOs: Commercial	Part 375 SCOs: Industrial	Units	B-30-11102020-0.5-1.0
Sample Date:					11/10/2020
Sample Interval (ft):					0.5-1
Matrix:					Soil
Benzene	60	44,000	89,000	Ug/kg	29,000
Toulene	700	500,000	1,000,000	Ug/kg	19,000
Total Xylenes	260	500,000	1,000,000	Ug/kg	28,000
Acenaphthene	20,000	500,000	1,000,000	Ug/kg	410,000
Acenaphthylene	100,000	500,000	1,000,000	Ug/kg	3,330,000
Anthracene	100,000	500,000	1,000,000	Ug/kg	4,200,000
Benzo(A)Anthracene	1,000	5,600	11,000	Ug/kg	3,100,000
Benzo(A)Pyrene	1,000	1,000	1,100	Ug/kg	2,800,000
Benzo(B)Fluoranthene	1,000	5,600	11,000	Ug/kg	3,200,000
Benzo(G,H,I)perylene	100,000	500,000	1,000,000	Ug/kg	1,500,000
Benzo(K)Fluoranthene	800	56,000	110,000	Ug/kg	1,200,000
Chrysene	1,000	56,000	110,000	Ug/kg	3,000,000
Dibenzo(a,h)Anthracene	330	560	1,100	Ug/kg	460,000
Fluoranthene	100,000	500,000	1,000,000	Ug/kg	9,400,000
Fluorene	30,000	500,000	1,000,000	Ug/kg	3,900,000
Indeno(1,2,3-Cd)Pyrene	500	5,600	11,000	Ug/kg	1,400,000
Naphthalene	12,000	500,000	1,000,000	Ug/kg	11,000,000
Phenanthrene	100,000	500,000	1,000,000	Ug/kg	13,000,000
Pyrene	100,000	500,000	1,000,000	Ug/kg	5,900,000

Analytes	Unrestricted Use	Part 375 SCOs: Commercial	Part 375 SCOs: Industrial	Units	B-18-11092020-0.9-1.4
Sample Date:					11/9/2020
Sample Interval (ft):					0.9-1.4
Matrix:					Soil
Benzene	60	44,000	89,000	Ug/kg	27,000
Toulene	700	500,000	1,000,000	Ug/kg	19,000
Total Xylenes	260	500,000	1,000,000	Ug/kg	23,000
Acenaphthene	20,000	500,000	1,000,000	Ug/kg	450,000
Acenaphthylene	100,000	500,000	1,000,000	Ug/kg	3,200,000
Anthracene	100,000	500,000	1,000,000	Ug/kg	3,100,000
Benzo(A)Anthracene	1,000	5,600	11,000	Ug/kg	3,000,000
Benzo(A)Pyrene	1,000	1,000	1,100	Ug/kg	2,800,000
Benzo(B)Fluoranthene	1,000	5,600	11,000	Ug/kg	2,500,000
Benzo(G,H,I)perylene	100,000	500,000	1,000,000	Ug/kg	1,600,000
Benzo(K)Fluoranthene	800	56,000	110,000	Ug/kg	1,300,000
Chrysene	1,000	56,000	110,000	Ug/kg	2,300,000
Dibenzo(a,h)Anthracene	330	560	1,100	Ug/kg	380,000
Fluoranthene	100,000	500,000	1,000,000	Ug/kg	8,700,000
Fluorene	30,000	500,000	1,000,000	Ug/kg	3,900,000
Indeno(1,2,3-Cd)Pyrene	500	5,600	11,000	Ug/kg	1,500,000
Naphthalene	12,000	500,000	1,000,000	Ug/kg	9,100,000
Phenanthrene	100,000	500,000	1,000,000	Ug/kg	10,000,000
Pyrene	100,000	500,000	1,000,000	Ug/kg	5,600,000

D

1" = 50'
50' 25' 0' 50'

References:
1. Parsons, 2021, Tonawanda Plastics Site NYSDEC ID 915003 Draft Site Investigation Summary Report
2. Niagara Boundary and Mapping Services, 2022, Site Aerial of 3821 River Road Tonawanda

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2020 SOIL DATA
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NYSDEC BCP SITE #C915003

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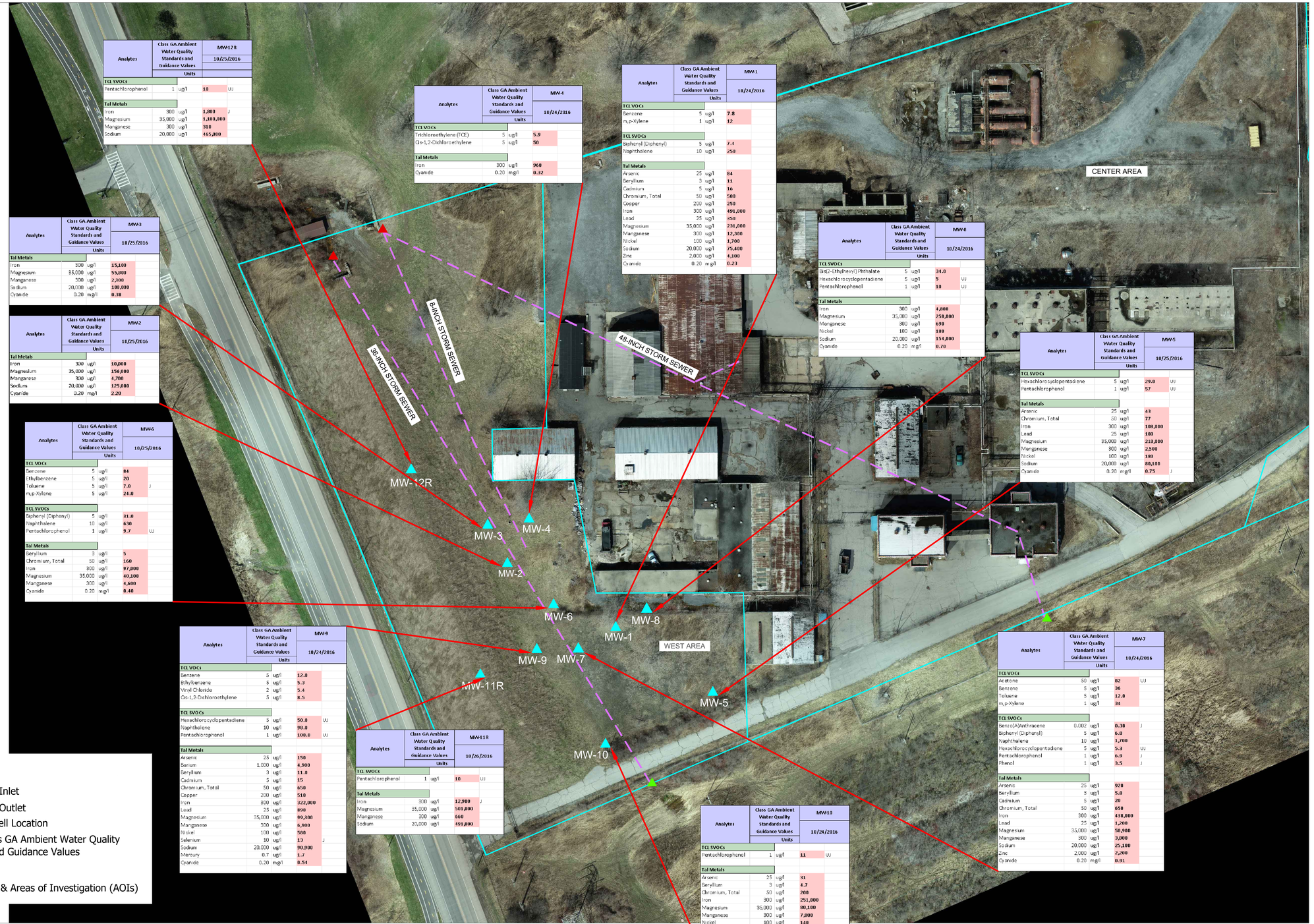
FIGURE 7

DRAWING NUMBER
RI WORKPLAN



Analytes	Class GA Ambient Water Quality Standards and Guidance Values	Units	MW-12R 10/25/2016	
TCL SVOCs				
Pentachlorophenol	1	ug/l	**10**	UJ
Tal Metals				
Iron	300	ug/l	**1,000**	J
Magnesium	35,000	ug/l	**1,180,000**	
Manganese	300	ug/l	**310**	
Sodium	20,000	ug/l	**165,000**	

Analytes	Class GA Ambient Water Quality Standards and Guidance Values	Units	MW-4 10/24/2016	
TCL VOCs				
Trichloroethylene (TCE)	5	ug/l	**5.9**	
Cis-1,2-Dichloroethylene	5	ug/l	**50**	
Tal Metals				
Iron	300	ug/l	**960**	
Cyanide	0.20	mg/l	**0.32**	

Analytes	Class GA Ambient Water Quality Standards and Guidance Values	Units	MW-1 10/24/2016	
TCL VOCs				
Benzene	5	ug/l	**7.8**	
m,p-Xylene	1	ug/l	**12**	
TCL SVOCs				
Biphenyl (Diphenyl)	5	ug/l	**7.4**	
Naphthalene	10	ug/l	**258**	
Tal Metals				
Arsenic	25	ug/l	**84**	
Beryllium	3	ug/l	**11**	
Cadmium	5	ug/l	**16**	
Chromium, Total	50	ug/l	**588**	
Copper	200	ug/l	**258**	
Iron	300	ug/l	**491,000**	
Lead	25	ug/l	**358**	
Magnesium	35,000	ug/l	**231,000**	
Manganese	300	ug/l	**12,300**	
Nickel	100	ug/l	**1,700**	
Sodium	20,000	ug/l	**75,400**	
Zinc	2,000	ug/l	**4,100**	
Cyanide	0.20	mg/l	**0.23**	

Analytes	Class GA Ambient Water Quality Standards and Guidance Values	Units	MW-3 10/25/2016	
Tal Metals				
Iron	300	ug/l	**15,100**	
Magnesium	35,000	ug/l	**55,800**	
Manganese	300	ug/l	**2,300**	
Sodium	20,000	ug/l	**180,000**	
Cyanide	0.20	mg/l	**0.38**	

Analytes	Class GA Ambient Water Quality Standards and Guidance Values	Units	MW-2 10/25/2016	
Tal Metals				
Iron	300	ug/l	**10,000**	
Magnesium	35,000	ug/l	**156,000**	
Manganese	300	ug/l	**4,700**	
Sodium	20,000	ug/l	**125,000**	
Cyanide	0.20	mg/l	**2.20**	

Analytes	Class GA Ambient Water Quality Standards and Guidance Values	Units	MW-6 10/25/2016	
TCL VOCs				
Benzene	5	ug/l	**84**	
Ethylbenzene	5	ug/l	**20**	
Toluene	5	ug/l	**7.8**	J
m,p-Xylene	5	ug/l	**24.0**	
TCL SVOCs				
Biphenyl (Diphenyl)	5	ug/l	**31.0**	
Naphthalene	10	ug/l	**630**	
Pentachlorophenol	1	ug/l	**9.7**	UJ
Tal Metals				
Beryllium	3	ug/l	**5**	
Chromium, Total	50	ug/l	**160**	
Iron	300	ug/l	**97,000**	
Magnesium	35,000	ug/l	**40,100**	
Manganese	300	ug/l	**4,600**	
Cyanide	0.20	mg/l	**0.40**	

Analytes	Class GA Ambient Water Quality Standards and Guidance Values	Units	MW-6 10/24/2016	
TCL SVOCs				
Bis(2-Ethylhexyl) Phthalate	5	ug/l	**34.0**	
Hexachlorocyclopentadiene	5	ug/l	**5**	UJ
Pentachlorophenol	1	ug/l	**10**	UJ
Tal Metals				
Iron	300	ug/l	**4,800**	
Magnesium	35,000	ug/l	**258,000**	
Manganese	300	ug/l	**690**	
Nickel	100	ug/l	**180**	
Sodium	20,000	ug/l	**154,000**	
Cyanide	0.20	mg/l	**0.70**	

Analytes	Class GA Ambient Water Quality Standards and Guidance Values	Units	MW-5 10/25/2016	
TCL SVOCs				
Hexachlorocyclopentadiene	5	ug/l	**29.0**	UJ
Pentachlorophenol	1	ug/l	**57**	UJ
Tal Metals				
Arsenic	25	ug/l	**43**	
Chromium, Total	50	ug/l	**77**	
Iron	300	ug/l	**188,000**	
Lead	25	ug/l	**180**	
Magnesium	35,000	ug/l	**210,000**	
Manganese	300	ug/l	**2,500**	
Nickel	100	ug/l	**180**	
Sodium	20,000	ug/l	**88,100**	
Cyanide	0.20	mg/l	**0.75**	J

Analytes	Class GA Ambient Water Quality Standards and Guidance Values	Units	MW-9 10/24/2016	
TCL VOCs				
Benzene	5	ug/l	**12.0**	
Ethylbenzene	5	ug/l	**5.3**	
Vinyl Chloride	2	ug/l	**5.4**	
Cis-1,2-Dichloroethylene	5	ug/l	**8.5**	
TCL SVOCs				
Hexachlorocyclopentadiene	5	ug/l	**50.0**	UJ
Naphthalene	10	ug/l	**88.0**	
Pentachlorophenol	1	ug/l	**100.0**	UJ
Tal Metals				
Arsenic	25	ug/l	**153**	
Barium	1,000	ug/l	**4,900**	
Beryllium	3	ug/l	**11.0**	
Cadmium	5	ug/l	**15**	
Chromium, Total	50	ug/l	**650**	
Copper	200	ug/l	**510**	
Iron	300	ug/l	**322,000**	
Lead	25	ug/l	**890**	
Magnesium	35,000	ug/l	**99,300**	
Manganese	300	ug/l	**6,900**	
Nickel	100	ug/l	**500**	
Selenium	10	ug/l	**13**	J
Sodium	20,000	ug/l	**90,900**	
Mercury	0.7	ug/l	**1.7**	
Cyanide	0.20	mg/l	**0.54**	

Analytes	Class GA Ambient Water Quality Standards and Guidance Values	Units	MW-11R 10/26/2016	
TCL SVOCs				
Pentachlorophenol	1	ug/l	**10**	UJ
Tal Metals				
Iron	300	ug/l	**12,900**	J
Magnesium	35,000	ug/l	**501,000**	
Manganese	300	ug/l	**660**	
Sodium	20,000	ug/l	**491,000**	

Analytes	Class GA Ambient Water Quality Standards and Guidance Values	Units	MW-10 10/24/2016	
TCL SVOCs				
Pentachlorophenol	1	ug/l	**11**	UJ
Tal Metals				
Arsenic	25	ug/l	**31**	
Beryllium	3	ug/l	**4.7**	
Chromium, Total	50	ug/l	**208**	
Iron	300	ug/l	**251,000**	
Magnesium	35,000	ug/l	**80,100**	
Manganese	300	ug/l	**7,900**	
Nickel	100	ug/l	**148**	
Sodium	20,000	ug/l	**127,000**	
Cyanide	0.20	mg/l	**1.10**	

Analytes	Class GA Ambient Water Quality Standards and Guidance Values	Units	MW-7 10/24/2016	
TCL VOCs				
Acetone	50	ug/l	**82**	UJ
Benzene	5	ug/l	**36**	
Toluene	5	ug/l	**12.0**	
m,p-Xylene	1	ug/l	**34**	
TCL SVOCs				
Benzo(A)Anthracene	0.002	ug/l	**0.38**	J
Biphenyl (Diphenyl)	5	ug/l	**6.0**	
Naphthalene	10	ug/l	**1,700**	
Hexachlorocyclopentadiene	5	ug/l	**5.3**	UJ
Pentachlorophenol	1	ug/l	**6.9**	J
Phenol	1	ug/l	**3.5**	J
Tal Metals				
Arsenic	25	ug/l	**928**	
Beryllium	3	ug/l	**5.8**	
Cadmium	5	ug/l	**20**	
Chromium, Total	50	ug/l	**650**	
Iron	300	ug/l	**438,000**	
Lead	25	ug/l	**1,200**	
Magnesium	35,000	ug/l	**58,900**	
Manganese	300	ug/l	**3,800**	
Sodium	20,000	ug/l	**25,100**	
Zinc	2,000	ug/l	**2,200**	
Cyanide	0.20	mg/l	**0.91**	

D

References:
1. Parsons, 2017, Tonawanda Plastics Investigation Summary Report
2. Niagara Boundary and Mapping Services, 2022, Site Aerial of 3821 River Road Tonawanda

Note: The trajectories of the 8-inch diameter and 48-inch diameter storm sewers are approximate.

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2016 MONITORING WELL DATA
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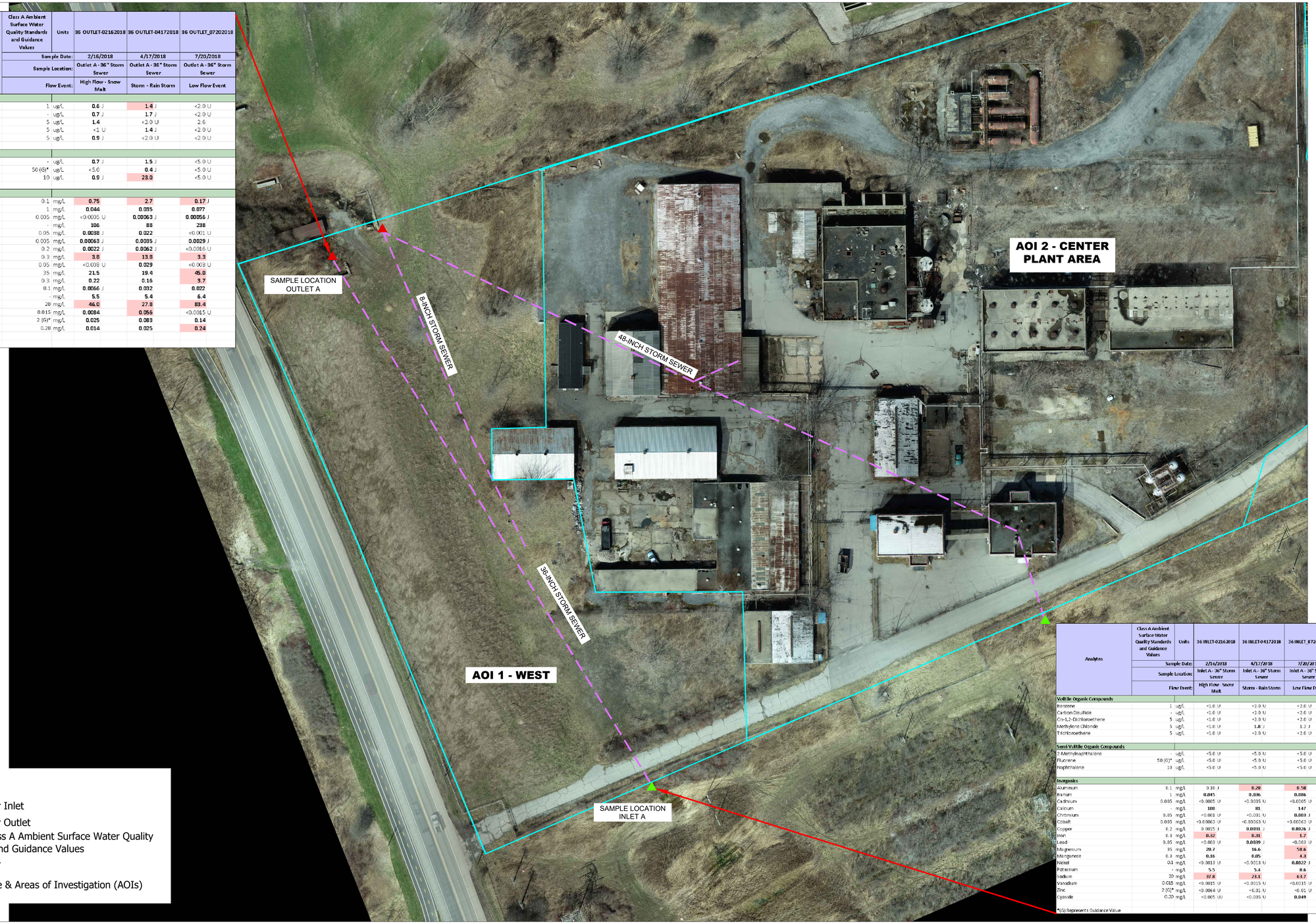
FIGURE 8

DRAWING NUMBER
RI WORKPLAN

Analytes	Class A Ambient Surface Water Quality Standards and Guidance Values	Units	36 OUTLET-02162018	36 OUTLET-04172018	36 OUTLET_07202018
Sample Date:			2/16/2018	4/17/2018	7/20/2018
Sample Location:			Outlet A - 36" Storm Sewer	Outlet A - 36" Storm Sewer	Outlet A - 36" Storm Sewer
Flow Event:			High Flow - Snow Melt	Storm - Rain Storm	Low Flow Event
Volitile Organic Compounds					
Benzene	1	ug/L	0.6 J	1.4 J	<2.0 U
Carbon Disulfide	-	ug/L	0.7 J	1.7 J	<2.0 U
Cis-1,2-Dichloroethene	5	ug/L	1.4	<2.0 U	2.6
Methylene Chloride	5	ug/L	<1 U	1.4 J	<2.0 U
Trichloroethene	5	ug/L	0.9 J	<2.0 U	<2.0 U
Semi-Volitile Organic Compounds					
2-Methylnaphthalene	-	ug/L	0.7 J	1.5 J	<5.0 U
Fluorene	50 (G)*	ug/L	<5.0	0.4 J	<5.0 U
Naphthalene	10	ug/L	0.9 J	23.0	<5.0 U
Inorganics					
Aluminum	0.1	mg/L	0.75	2.7	0.17 J
Barium	1	mg/L	0.044	0.035	0.077
Cadmium	0.005	mg/L	<0.0005 U	0.00063 J	0.00056 J
Calcium	-	mg/L	106	88	238
Chromium	0.05	mg/L	0.0038 J	0.022	<0.001 U
Cobalt	0.005	mg/L	0.00063 J	0.0035 J	0.0029 J
Copper	0.2	mg/L	0.0022 J	0.0062 J	<0.0016 U
Iron	0.3	mg/L	3.6	13.8	3.3
Lead	0.05	mg/L	<0.003 U	0.029	<0.003 U
Magnesium	35	mg/L	21.5	19.4	45.0
Manganese	0.3	mg/L	0.22	0.16	3.7
Nickel	0.1	mg/L	0.0066 J	0.032	0.022
Potassium	-	mg/L	5.5	5.4	6.4
Sodium	20	mg/L	46.0	27.8	83.4
Vanadium	0.015	mg/L	0.0084	0.056	<0.0015 U
Zinc	2 (G)*	mg/L	0.025	0.083	0.14
Cyanide	0.20	mg/L	0.014	0.025	0.24

*(G) Represents Guidance Value



Analytes	Class A Ambient Surface Water Quality Standards and Guidance Values	Units	36 INLET-02162018	36 INLET-04172018	36 INLET_07202018
Sample Date:			2/16/2018	4/17/2018	7/20/2018
Sample Location:			Inlet A - 36" Storm Sewer	Inlet A - 36" Storm Sewer	Inlet A - 36" Storm Sewer
Flow Event:			High Flow - Snow Melt	Storm - Rain Storm	Low Flow Event
Volitile Organic Compounds					
Benzene	1	ug/L	<1.0 U	<2.0 U	<2.0 U
Carbon Disulfide	-	ug/L	<1.0 U	<2.0 U	<2.0 U
Cis-1,2-Dichloroethene	5	ug/L	<1.0 U	<2.0 U	<2.0 U
Methylene Chloride	5	ug/L	<1.0 U	1.8 J	1.2 J
Trichloroethene	5	ug/L	<1.0 U	<2.0 U	<2.0 U
Semi-Volitile Organic Compounds					
2-Methylnaphthalene	-	ug/L	<5.0 U	<5.0 U	<5.0 U
Fluorene	50 (G)*	ug/L	<5.0 U	<5.0 U	<5.0 U
Naphthalene	10	ug/L	<5.0 U	<5.0 U	<5.0 U
Inorganics					
Aluminum	0.1	mg/L	0.10 J	0.28	0.58
Barium	1	mg/L	0.045	0.036	0.086
Cadmium	0.005	mg/L	<0.0005 U	<0.0005 U	<0.0005 U
Calcium	-	mg/L	100	81	147
Chromium	0.05	mg/L	<0.001 U	<0.001 U	0.003 J
Cobalt	0.005	mg/L	<0.00063 U	<0.00063 U	<0.00063 U
Copper	0.2	mg/L	0.0025 J	0.0031 J	0.0026 J
Iron	0.3	mg/L	0.32	0.31	1.7
Lead	0.05	mg/L	<0.003 U	0.0039 J	<0.003 U
Magnesium	35	mg/L	20.7	16.6	58.6
Manganese	0.3	mg/L	0.16	0.05	4.3
Nickel	0.1	mg/L	<0.0018 U	<0.0018 U	0.0022 J
Potassium	-	mg/L	5.5	5.4	8.6
Sodium	20	mg/L	37.8	24.1	63.7
Vanadium	0.015	mg/L	<0.0015 U	<0.0015 U	<0.0015 U
Zinc	2 (G)*	mg/L	<0.004 U	<0.01 U	<0.01 U
Cyanide	0.20	mg/L	<0.005 UJ	<0.005 U	0.049

*(G) Represents Guidance Value

LEGEND

- Storm Water Inlet
- Storm Water Outlet
- Exceeds Class A Ambient Surface Water Quality Standards and Guidance Values
- Storm Sewer
- Property Line & Areas of Investigation (AOIs)

D

1" = 50'
50' 25' 0' 50'

References:
1. Parsons, 2021, Tonawanda Plastics Site NYSDEC ID 915003 Draft Site Investigation Summary Report
2. Niagara Boundary and Mapping Services, 2022, Site Aerial of 3821 River Road Tonawanda

Note:
1. Storm sewer data is compare to the Class A ambient surface water quality standard because the SPDES discharge criteria for Energy Transfer at Inlet A is not available.
2. The trajectories of the 8-inch diameter and 48-inch diameter storm sewers are approximate.

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2018 STORM SEWER DATA
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FIGURE 9

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RI WORKPLAN

Appendix A - Quality Assurance Project Plan

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Quality Assurance Project Plan

3821 River Road, Inc.

Brownfield Cleanup Program Site

NYSDEC Site #C915003

3821 River Road

Tonawanda, NY 14150

July 14, 2023

441 CARLISLE DRIVE
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Table of Contents

1 Introduction

The purpose of this Quality Assurance Project Plan (QAPP) is to serve as a guidance document during implementation of the Remedial Investigation (RI) for 3821 River Road, Inc., Brownfield Cleanup Program Site (BCP Site) #C915003 located at 3821 River Road in Tonawanda, Erie County, New York. The RI will be conducted in accordance with the executed BCP Agreement between the New York Statement Department of Environmental Conservation (NYSDEC) and 3821 River Road, Inc.
This QAPP is designed to provide an overview of Quality Assurance/Quality Control (QA/QC) procedures. Specific methods and QA/QC procedure for chemical testing of environmental samples obtained from the site as part of the RI Work Plan (RIWP) are defined.

An Inventum Engineering, P.C. (Inventum) Project Manager will be responsible for verifying that QA procedures are followed during the investigation and analysis. This will provide for the valid collection of representative samples. The Project Manager will be in direct contact with the analytical laboratory to ensure that holding times and other QA/QC requirements are met. The selected laboratory will be responsible for overseeing analytical QA/QC activities.

The estimated number of environmental samples and corresponding analytical parameters/methods are provided in Table 1 below. These sample quantities may vary depending on media availability and routine adjustments made during the field work.

Table 1 – Analytical Parameters and Methods

Parameter	EPA Method Reference	Groundwater	Soils	Surface Water
Metals	6010C	39	79	
Metals	200.7			10
Mercury	7470A	39	79	
Mercury	1631E			10
Cyanide	SM 4500 CN E - 2011	39	79	10
Volatile Organic Compounds	8260C	39	79	
Volatile Organic Compounds	624.1			10

Semi-Volatile Organic Compounds	8270D	39	79	
Semi-Volatile Organic Compounds	625.1			10
Polychlorinated Biphenyls	8082A	9	23	
Pesticides	8081B	9	15	
Herbicides	8151A	9	15	
1,4 Dioxane	8270SIM	9	16	
Per- and Polyfluoroalkyl Substances	1633	9	46	
Ammonia	350.1	14	28	4
Hexavalent Chromium	7196A	39	79	
Toxicity Characteristic Leaching Procedure	1311	As Required	As Required	As Required
Field Duplicates		1 per 20 Samples Collected	1 per 20 Samples Collected	1 per 20 Samples Collected
Matrix Spike (MS)/Matrix Spike Duplicate (MSD)		1 per 20 Samples Collected	1 per 20 Samples Collected	1 per 20 Samples Collected

Trip Blanks	8260	One per Volatile Shipment	N/A	
Rinsate (Equipment) Blanks		N/A	10% of Total Sampling Program for Non-Disposable Equipment	

Note: Soil samples with a total chromium concentration of 400 mg/Kg or greater shall then be analyzed for Hexavalent Chromium.

The analytical laboratory utilized will be a certified NYSDOH ELAP laboratory for the appropriates categories. The laboratory QA Manager will be responsible for performing project-specific audits and overseeing the quality control data generated.

2 Data Quality Objectives

Data Quality Objectives (DQOs) are qualitative and quantitative statements which specify the quality of data required to support the investigation of the Site. DQOs focus on the identification of the end use of the data to be collected. The project DQOs will be achieved utilizing the definitive data category, as outlined in Guidance for the Data Quality Objectives Process, EPA QA/G-4 (September 1994). All samples will provide definitive data, which are generated using rigorous analytical methods, such as the reference methods approved by the United States Environmental Protection Agency (USEPA). The purpose of this investigation is to establish a baseline of current conditions in order to aid in the development of an Alternatives Analysis (AA) for the BCP Site.

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

- To assess the current nature and extent of contamination in groundwater.
- To assess the current nature and extent of contamination in surficial soils.
- To assess the current nature and extent of contamination in subsurface soils.
- To assess the current nature and extent of contamination surface water within the storm sewers.

2.1 QA Objectives for Chemical Data Management

Sample analytical methodology for the media sampled and data deliverables will meet the requirements in the most recent NYSDEC Analytical Services Protocol (ASP). Laboratories will be instructed that completed Sample Preparation and Analysis Summary forms are to be submitted with the analytical data packages. The laboratory will also be instructed that matrix interferences must be cleaned up, to the extent practicable. Data Usability Summary Reports (DUSRs) will be generated. In order to achieve the definitive data category described above, the data quality indicators of precision, accuracy, representativeness, comparability, and completeness will be measured during offsite chemical analysis.

2.1.1 Precision

Precision examines the distribution of the reported values about their mean. The distribution of reported values refers to how different the individual reported values are from the average reported value. Precision may be affected by the natural variation of the matrix or contamination within that matrix, as well as by errors made in field and/or laboratory handling procedures. Precision is evaluated using analyses of a laboratory matrix spike/matrix spike duplicate (for organics) and matrix duplicates (for inorganics), which not only exhibit sampling and analytical precision, but indicate analytical precision through the reproducibility of the analytical results. Relative Percent Difference (RPD) is used to evaluate precision. RPD criteria must meet the method requirements identified in QAPP Section 6.1.

2.1.2 Accuracy

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

2.1.3 Representativeness

Representativeness expresses the degree to which the sample data accurately and precisely represents the characteristics of a population of samples, parameter variations at a sampling point, or environmental conditions. Representativeness is a qualitative parameter, which is most concerned with the proper design of the sampling program or sub-sampling of a given sample. Objectives for representativeness are defined for sampling and analysis tasks and are a function of the investigative objectives. The sampling procedures have been selected with the goal of obtaining representative samples for the media of concern.

2.1.4 Comparability

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

2.1.5 Completeness

Completeness is defined as a measure of the amount of valid data obtainable from a measurement system compared to the amount that was expected to be obtained under normal conditions. It is important that appropriate QA procedures be maintained to verify that valid data are obtained in order to meet project needs. For the data generated, a goal of 90% is required for completeness (or usability) of the analytical data. If this goal is not met, then NYSDEC, Inventum, and the 3821 River Road project personnel will determine whether the deviations might cause the data to be rejected.

3 Sampling Locations, Custody, Holding Times, and Analysis

Sample locations and procedures are discussed in the RI Scope of Work and the accompanying Tables and Figures of the Site's RIWP. Procedures for chain of custody, holding times and laboratory analyses shall be followed as per SW-846 and as per the laboratory's Quality Assurance Plan. All holding times begin with validated time of sample receipt (VTSR) at the laboratory. The laboratory must meet the method required detection limits which are referenced within the EPA Methods (QAPP Table 1).

In addition, for the emerging contaminants, the laboratory must meet the detection limits for PFAS specified in the NYSDEC's November 2022 *Guidelines for Sampling and Analysis of PFAS Under NYSDEC's Part 375 Remedial Programs* and 0.28 micrograms per liter (µg/L) for 1,4-Dioxane.

4 Calibration Procedures and Frequency

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

4.1 Analytical Support Areas

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

- Standard/Reagent Preparation - Primary reference standards and secondary standard solutions shall be obtained from National Institute of Standards and Technology (NIST), or other reliable commercial sources to verify the highest purity possible. The preparation and maintenance of standards and reagents will be accomplished according to the methods referenced. All standards and standard solutions are to be formally documented (i.e., in a logbook) and should identify the supplier, lot number, purity/concentration, receipt/preparation date, preparers name, method of preparation, expiration date, and any other pertinent information. All standard solutions shall be validated prior to use. Care shall be exercised in the proper storage and handling of standard solutions (e.g., separating volatile standards from nonvolatile standards). The laboratory shall continually monitor the quality of the standards and reagents through well documented procedures.

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

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

- Water Supply System - The laboratory must maintain a sufficient water supply for all project needs. The grade of the water must be of the highest quality (analyte-free) in order to eliminate false-positives from the analytical results. Ultraviolet cartridges or carbon absorption treatments

are recommended for organic analyses and ion-exchange treatment is recommended for inorganic tests. Appropriate documentation of the quality of the water supply system(s) will be performed on a regular basis.

4.2 Laboratory Instruments

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

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

Calibration of an instrument must be performed prior to the analysis of any samples and then at periodic intervals (continuing calibration) during the sample analysis to verify that the instrument is still calibrated. If the contract laboratory cannot meet the method required calibration requirements, corrective action shall be taken as discussed in QAPP Section 7. All corrective action procedures taken by the contract laboratory are to be documented, summarized within the case narrative, and submitted with the analytical results.

5 Internal Quality Control Checks

Internal QC checks are used to determine if analytical operations at the laboratory are in control, as well as determining the effect sample matrix may have on data being generated. Two types of internal checks are performed and are described as batch QC and matrix-specific QC procedures. The type and frequency of specific QC samples performed by the contract laboratory will be according to the specified analytical method and project specific requirements. Acceptable criteria and/or target ranges for these QC samples are presented within the referenced analytical methods.

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

5.1 Batch QC

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

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

5.2 Matrix-Specific QC

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

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

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

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

6 Calculation of Data Quality Indicators

6.1 Precision

Precision is evaluated using analyses of a field duplicate and/or a laboratory MS/MSD which not only exhibit sampling and analytical precision but indicate analytical precision through the reproducibility of the analytical results. RPD is used to evaluate precision by the following formula:

$$RPD = \frac{(X1 - X2) \times 100\%}{[(X1 + X2)/2]}$$

Where:

X1= Measured value of sample or matrix spike

X2= Measured value of duplicate or matrix spike duplicate

Precision will be determined through the use of MS/MSD (for organics) and matrix duplicates (for inorganics) analyses.

6.2 Accuracy

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

$$\text{Accuracy (\%R)} = \frac{(Xs - Xu) \times 100\%}{K}$$

Where:

Xs- Measured value of the spike sample

Xu- Measured value of the unspiked sample

K - Known amount of spike in the sample

6.3 Completeness

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

$$\text{Completeness (\%C)} = \frac{(Xv - Xn) \times 100\%}{N}$$

Where:

Xv- Number of valid measurements

Xn- Number of invalid measurements

N - Number of valid measurements expected to be obtained

7 Corrective Actions

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

7.1 Incoming Samples

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

7.2 Sample Holding Times

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

7.3 Instrument Calibration

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

7.4 Reporting Limits

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

7.5 Method QC

All QC method-specified QC samples shall meet the method requirements referenced in the analytical methods. Failure of method-required QC will result in the review and possible qualification of all affected data. If the laboratory cannot find any errors, the affected sample(s) shall be reanalyzed and/or re-extracted/redigested, then reanalyzed within method-required holding times to verify the presence or absence of matrix effects. If matrix effect is confirmed, the corresponding data shall be flagged accordingly using the flagging symbols and criteria. If matrix effect is not confirmed, then the entire batch of samples may have to be reanalyzed and/or re-extracted/redigested, then reanalyzed. Inventum shall be notified as soon as possible to discuss possible corrective actions should unusually difficult sample matrices be encountered.

7.6 Calculation Errors

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

8 Data Reduction, Validation, and usability

8.1 Data Reduction

Laboratory analytical data are first generated in raw form at the instrument. These data may be either in a graphic or printed tabular format. Specific data generation procedures and calculations are found in each

of the referenced. Analytical results must be reported consistently. Identification of all analytes must be accomplished with an authentic standard of the analyte traceable to NIST or USEPA sources. Individuals experienced with a method's particular analysis and knowledgeable of requirements will perform data reduction.

8.2 Data Validation

Data validation is a systematic procedure of reviewing a body of data against a set of established criteria to provide a specified level of assurance of validity prior to its intended use. All analytical samples collected will receive a limited data review. The data validation will be limited to a review of holding times, completeness of all required deliverables, review of QC results (surrogates, spikes, duplicates) and a 10% check of all samples analyzed to ensure they were analyzed properly. The methods as well as the general guidelines presented in the following documents will be used during the data review USEPA Contract Laboratory Program (CLP) Organic Data Review, SOP Nos. HW-6, Revision #11 and USEPA Evaluation of Metals Data for the Contract Laboratory Program based on 3/90, SOW, Revision XI. These documents will be used with the following exceptions:

- Technical holding times will be in accordance with NYSDEC ASP, 10/95 edition.
- Organic calibration and QC criteria will be in accordance with NYSDEC ASP, 10/95 edition. Data will be qualified if it does not meet NYSDEC ASP, 10/95 criteria.

Where possible, discrepancies will be resolved by the project manager (i.e., no letters will be written to laboratories). A complete analytical data validation is not anticipated. However, if the initial limited data audit reveals significant deviations and problems with the analytical data, project personnel may recommend a complete variation of the data.

Category B deliverables will be provided for all samples collected to delineate the nature and extent of contamination. Inventum will submit all analytical data packages for third-party data validation review. A third-party Data Usability Summary Report (DUSR) will be prepared for each laboratory data package.

9 References

- Comprehensive Environmental Response Compensation and Liability Act (CERCLA) Quality Assurance Manual, Final Copy, Revision I, October 1989.
- National Enforcement Investigations Center of USEPA Office of Enforcement. NEIC Policies and Procedures. Washington: USEPA.
- New York State Department of Environmental Conservation (NYSDEC). 1995. Analytical Services Protocol, (ASP) 10/95 Edition. Albany: NYSDEC.

Appendix B – Health and Safety Plan

Inventum Engineering, PC
Site-Specific Health and Safety Plan (HASP)

(Required for all Type 2 and 3 projects.)

1. General Information

Client Name: 3821 River Road, Inc.	Project #: 3821 River Road
Project Name: Brownfield Program Management	Project Manager: John Black, PE

Street Address:
3821 River Road
Tonawanda, New York 14150

Prepared By: Peter Zaffram **Date: September 22, 2022**

Approved By: John Black, P.E. **Date: November 10, 2022**

Proposed Date(s) of Work: TBD

Proposed Scope of Work:

Inventum Engineering, PC (Inventum) will be the owner's representative, investigation team and engineer supporting the site management, site investigation(s), and remedial investigation(s) through the New York State Brownfield Cleanup Program (BCP) for 3821 River Road, Inc located on the former Allied Chemical – Special Chemical Division (Site). The general scope of work is provided below, and tasks will be updated with additional details/specifications as the project progresses through the BCP.

Task 1 - Site Management and Oversight

Inventum will conduct site visits, general management support, and general contractor and subcontractor oversight related to the remedial investigation for the Site. This task includes site visits related to oversight of the RI, but specifically excludes Inventum personnel directly performing any intrusive site work or oversight of contractors/subcontractors performing intrusive site work. Direct intrusive site work and/or intrusive site work oversight is covered under Tasks 2 through 7 below.

Task 2 – Surficial Soil Sampling

Surficial (approximately 0 to 1 foot below ground surface [bgs]) soil samples will be collected from various locations of the Site to establish current conditions. Shallow samples will be collected using a hand-auger, shovel, or trowel and the material will be recovered for lithological characterization and field screening with a PID equipped with a 10.6 eV lamp. All observations and measurements will be logged in the field notebook. Samples may be collected for various constituents including Metals, Semi-Volatile Organic

Compounds (SVOCs), Volatile Organic Compounds (VOCs), Polychlorinated Biphenyls (PCBs), 1,4-Dioxane, and Per- and Polyfluoroalkyl Substances (PFAS).

Task 3 – Subsurface Soil Sampling

Subsurface (> 1 feet bgs) soils samples will be collected from various locations of the Site to establish current conditions. Depending on the depth of sample, subsurface samples may be collected using a hand-auger, shovel, trowel, light or heavy excavating equipment, direct-push equipment, or rotary drilling equipment. Material will be recovered for lithological characterization and field screening with a PID equipped with a 10.6 eV lamp. All observations and measurements will be logged in the field notebook. Samples may be collected for various constituents including Metals, SVOCs, VOCs, PCBs, 1,4-Dioxane, and PFAS.

Task 4 – Storm Sewer Water Sampling

Water samples will be collected periodically from the inlet and outlet of the storm sewers that cross beneath the site. Additional water samples may be collected at the site to characterize accumulated liquids in pits, containments, or depressions. Storm Sewer samples will be analyzed for VOCs, SVOCs, and Metals.

Additional samples shall be collected as needed to characterize liquids accumulating in sumps, pits, tunnels and depressions at the site. These samples shall be collected in accordance with approved work plans.

Task 5 – Monitoring Well Abandonment

Existing monitoring wells at the Site may be abandoned depending on an assessment of their condition over the course of the Site investigation(s) and remedial activities. The existing wells that are identified for abandonment will be abandoned in accordance with the requirements and guidance in NYSDEC Policy CP-43 "*Groundwater Monitoring Well Decommissioning Policy*". No monitoring wells are currently scheduled to be abandoned.

Task 6 – Monitoring Well Installation

New monitoring wells may be installed as part of the BCP investigation(s) and remedial activities. The borings for the wells will be advanced to depth using hollow-stem augers and include the collection of soil samples for lithological characterization and for samples for analytical testing. Unconsolidated material samples will be collected for observation and screening with a photo-ionization detector (PID) equipped with a 10.6 eV lamp in a continuous interval over the total depth of the boring with a split barrel sampler driven through the augers. All lithological observations, field measurements, and well construction details

will be logged in the field notebook. Surface and subsurface soil samples may be collected in accordance with Tasks 2 and 3.

The new wells will be completed with a 2-inch diameter Schedule 40 polyvinyl chloride (PVC) well casing and 5-feet of 0.010-inch slotted screen. A sand filter pack will be placed from the bottom of the screened interval to a minimum of 1 foot above the top of the screen. A 2-foot bentonite seal will be placed on top the filter pack and the remaining annular space will be completed with a cement grout (Portland Type I cement with 3 – 5% bentonite). The wells may either be completed flush-to-grade within a traffic rated box or within a steel bollard enclosure that protrudes a minimum of 2-feet above ground surface.

All newly installed wells will be developed prior to sampling and any existing monitoring wells may be redeveloped prior to sampling. The water levels in the monitoring wells will be manually measured using an oil/water interface probe prior to redevelopment and the depth to water, depth and thickness of any Light Non-Aqueous Phase Liquid (LNAPL), and the total depth of the well will be measured and logged in the field notebook. The wells will be redeveloped by removing three well volumes, purging the wells until dry, or purging and surging the wells using a submersible pump.

Field parameters (temperature, pH, conductivity, ORP, turbidity) will be measured and logged in the field notebook at least three (3) times during the development process (beginning, middle, and end) using a hand-held water quality monitor. All development water will be containerized and stored in appropriately labeled drums or totes and disposed offsite or treated and discharged in accordance with site permits and applicable local, state, and federal regulations.

Task 7 – Groundwater Monitoring and Sampling

Inspections will be conducted prior to sampling and will include visual observations of the well head, seal, and cover. Measurements of the depth to liquid (if LNAPL is present), depth to water, and the overall total depth of the well will be collected using an oil/water interface probe and recorded in the field notebook for comparison to construction dimensions and previous records.

Monitoring wells will be sampled using a bailer by standard purge methods or peristaltic pump or QED bladder pump following low-flow sampling procedures. Field parameters (temperature, pH, dissolved oxygen, conductivity, ORP, turbidity) will be measured and logged in the field notebook at periodic intervals using a hand-held water quality monitor. All purge water will be containerized and stored in appropriately labeled drums or totes and disposed offsite or treated and discharged in accordance with applicable local, state, and federal regulations.

Samples may be collected for various constituents including Metals, SVOCs, VOCs, PCBs, 1,4-Dioxane, and PFAS.

Inventum Engineering, PC
Site-Specific Health and Safety Plan (HASP)

(Required for all Type 2 and 3 projects.)

Task 8 – Sampling of Residuals

Samples will be collected from various sumps, pits, tanks and containers at the proposed BCP Site to characterize contents and prepare profiles for sale, recycling and disposal. To the extent practicable, all samples will be collected from the surface or from equipment outside the accumulation point to avoid the need for confined space entry. Samples may be collected installed using a bailer, hand-auger, shovel, trowel, sludge sampler or other long reach equipment. Material will be recovered, and field screened with a PID equipped with a 10.6 eV lamp. All observations and measurements will be logged in the field notebook. Samples may be collected for various constituents including Metals, SVOCs, VOCs, PCBs, hazardous characteristics, pH and water content.

Inventum Role(s) On Site:

- ☐ Inventum Staff Will Not Be On Site (HASP and Risk Analysis is for subcontractor information only)
- ☒ Resident Project Representative (*e.g.*, "Observe and Document")
- ☐ Construction Manager (*e.g.*, CM, Managing/General Contractor)
- ☒ Representative for Client (*e.g.*, "Agent for Owner")
- ☒ General On-site Consulting/Engineering Services
- ☒ Other

☒ Soil Sampling	☒ Solid Waste Sampling	☒ Liquid Waste Sampling
☒ Groundwater Sampling	☒ Surface Water Sampling	☒ Wastewater Sampling
☐ Sediment Sampling	☐ Surveying	☐ Confined Space Entry

Risk Analysis (RA)

(Required for all Inventum Type 2 or Type 3 field projects.)

Major Project Tasks	Inventum Task	Subcontractor Task	Minimum PPE Level Required see HASP for details (suggested levels for Subcontractor work)
1. Site Management and Oversight	☒	☐	☐ N/A ☒ D ☐ C ☐ B ☐ A
2. Surficial Soil Sampling	☒	☒	☐ N/A ☒ D ☐ C ☐ B ☐ A
3. Subsurface Soil Sampling	☒	☒	☐ N/A ☒ D ☐ C ☐ B ☐ A
4. Permit Compliance Water and Wastewater Sampling	☒	☒	☐ N/A ☒ D ☐ C ☐ B ☐ A
5. Monitoring Well Abandonment	☒	☒	☐ N/A ☒ D ☐ C ☐ B ☐ A
6. Monitoring Well Installation	☒	☒	☐ N/A ☒ D ☐ C ☐ B ☐ A
7. Groundwater Monitoring and Sampling	☒	☒	☐ N/A ☒ D ☐ C ☐ B ☐ A
8. Sampling of Residuals	☒	☒	☐ N/A ☒ D ☐ C ☐ B ☐ A

2. Contingency Planning

LOCAL EMERGENCY RESOURCES:	
Ambulance: 911	Emergency Room: 716.447.6100
Police: 911	Fire Department: 911
NYSDEC Contact: Ben McPherson, Project Manager, 716.851.7220	Poison Control Center: 1-800-222-1222 ☐ Specify:
Other (client services offered, etc.):	

SITE RESOURCES:			
Drinking Water Supply	☐ Inventum	☐ Subcontractor	☒ Client
Wash Water Supply	☐ Inventum	☐ Subcontractor	☒ Client
Telephone – Land Line		☐ Subcontractor	☒ Client
Telephone - Cellular	☒ Inventum	☐ Subcontractor	
First Aid Kit	☒ Inventum	☒ Subcontractor	
Fire Extinguisher	☐ Inventum	☒ Subcontractor	☒ Client
Emergency Shower **N/A**	☐ Inventum	☐ Subcontractor	☐ Client
Eye Wash **N/A**	☐ Inventum	☐ Subcontractor	☐ Client
Other: Confined space retrieval device **N/A**	☐ Inventum	☐ Subcontractor	☐ Client

Risk Analysis (RA)

(Required for all Inventum Type 2 or Type 3 field projects.)

EMERGENCY/SAFETY CONTACTS:	
Inventum Technical Contacts	John Black (571.217.6761); Todd Waldrop (571.217.3627); James Edwards (571.232.5048)
Inventum Project Manager (PM): John Black	571.217.6761
Inventum Office Safety Coordinator (OSC)	John Black (571.217.6761); Todd Waldrop (571.217.3627); James Edwards (571.232.5048)
Inventum Field Contact:	John Black (571.217.6761); Todd Waldrop (571.217.3627); James Edwards (571.232.5048); Roxanne Birx (585.734.5255); Peter Zaffram (716.553.5129);
Contractor Contact (To Vary – Main Remedial Contractor provided):	Ontario Specialty Contracting; 716.856.3333
Client Contact:	John Yensan (716.856.3333)
Front Gate Guard Shack	716.783.5744

Emergency Route:

Hospitals or clinics identified for emergency medical care should be contacted, to verify that emergency care is provided at that location. Verify the exact location of the medical facility during this call. See directions and map of route to Kenmore Mercy Hospital on the following page:

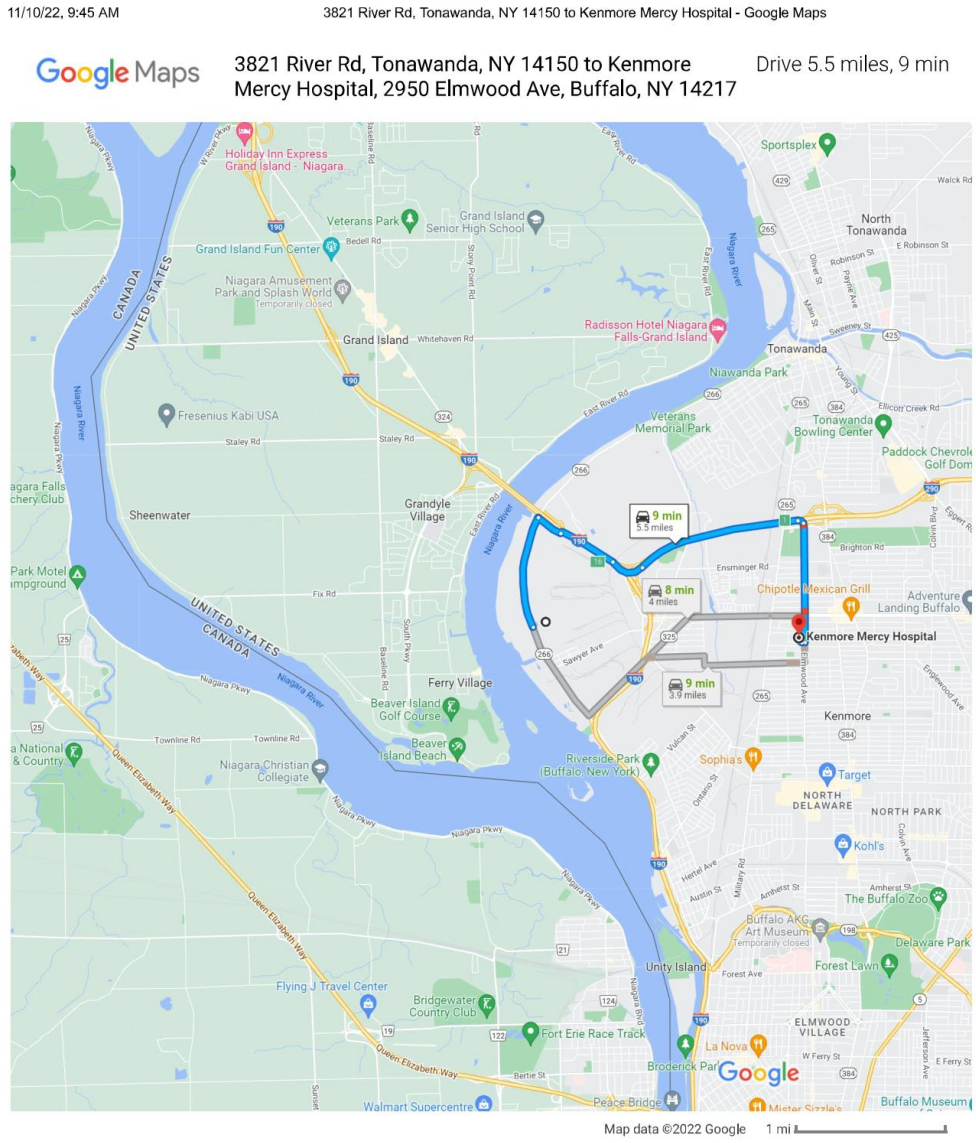
Hospital: **Kenmore Mercy Hospital**
2950 Elmwood Ave
Buffalo, NY 14127
716.447.6100

Other: NA

Risk Analysis (RA)

(Required for all Inventum Type 2 or Type 3 field projects.)

Map to Hospital



Directions to Hospital:

- **Turn right onto River Road**
- **Turn right onto Grand Island Blvd (about 1.2 miles)**
- **Turn left to merge onto I-190 S toward I-290.**
- **Use the right 2 lanes to take exit 16 for I-290 East toward I-90 / Tonawanda / Rochester**
- **Continue onto I-290 East**
- **Take Exit 1 for Elmwood Avenue**
- **Keep left at the fork to continue on Elmwood Avenue, follow signs for I-290 East/Elwood Avenue/Knoche Road/Delaware Avenue**
- **At about 1.5 miles and turn right onto Elmwood Avenue**
- **Make a sharp right and hospital is on left**

Emergency Procedures:

If an emergency develops at the site, the first responder should take the following course of action:

- Notify the proper emergency services for assistance.
- Notify other personnel at the site.
- As soon as possible, contact the Inventum Project Manager to inform them of the incident.
- Complete the Inventum Incident Report Form (see Appendices) within 24 hours of the incident and client notifications, as required.

Risk Analysis (RA)

(Required for all Inventum Type 2 or Type 3 field projects.)

Investigation of Near Miss Incident and Initial Report of Incident/Exposure:

Inventum employees are required to report any incident, near miss, or injury, as soon as possible, by contacting the following:

☒ Inventum Managing Partner ☒ Notify supervisor ☒ Notify project manager

☐ Notify Site Manager () ☐ Complete client report: as required

(name):
(phone number):

Emergency Equipment Required On Site:

☒ First Aid Kit

☐ Emergency Eye Wash

☐ Emergency Shower

☐ Fire Extinguisher

☐ Spill Control Media

☐ Tripod/Hoist/Harness for non-entry confined space rescue

Risk Analysis (RA)

(Required for all Inventum Type 2 or Type 3 field projects.)

3. Site Classification

	Identification of Potential Hazards	YES	NO	SITE TYPE[1]
1.	Is the work a Phase I ESA (i.e., supervised plant walk-through, etc.)?	☒	☐	1
2.	Is the work being performed solely by a subcontractor (i.e., INVENTUM not on site)?	☐	☒	1
3.	Is the work just a supervised inspection for process evaluation, other inspections, meetings, records review, or a tour?	☒	☐	1
4.[1]	Is the work completely absent of any chemical, physical, biological, or radiological hazards which would require a site-specific health and safety plan?	☐	☒	1
5.	Does the work include any mandatory client H&S requirements?	☒	☐	1, 2, or 3
6.	Does the project include on-site work other than office type areas?	☒	☐	2 or 3
7.	Does the proposed work scope involve any of the following:			
	Known and controlled chemical or biological hazards	☒	☐	2
	Unprotected work at elevation (fall protection required)	☐	☒	2
	Invasive activities (*i.e.,* Phase II ESA, UST Removal, sampling, etc.)	☒	☐	2 or 3
	Exposure to ionizing radiation (i.e., using nuclear gauges, etc.)	☐	☒	2 or 3
	Open excavations/trenches (Competent Person may be required on site)	☒	☐	2 or 3
	Confined space entry (permit may be required)	☐	☒	2 or 3
	The use of scaffolding (qualified inspections are required)	☐	☒	2 or 3
	Heavy equipment	☒	☐	2 or 3
	Facility maintenance (O&M, piping, electrical, lockout/tagout, etc.)	☐	☒	2 or 3
	Underground utilities may be encountered	☒	☐	2 or 3
	Overhead utilities may be encountered	☒	☐	2 or 3
	Stack testing	☐	☒	2 or 3
	Geotechnical drilling	☒	☐	2 or 3
	Demolition Activities with known or suspected contamination	☒	☐	2 or 3
	Unknown or uncontrolled chemical or biological hazards	☐	☒	3
	Known and uncontrolled chemical or biological hazards	☒	☐	3
	Waste sampling	☒	☐	3
	Construction activities with known or suspected contamination	☒	☐	3
	Remedial activities (RCRA, CERCLA, EnviroBlend®, Oxigent, etc.)	☒	☐	3
8.	Is the work regulated by 29 CFR 1910.120 (OSHA) or 30 CFR (MSHA)?	☒	☐	3
9.	Is the work regulated by NPL, CERCLA, RCRA, TSD, or SARA?	☒	☐	3

[1] Denotes typical site level (based on activities).

Risk Analysis (RA)

(Required for all Inventum Type 2 or Type 3 field projects.)

Site Type Designation:

☐ **Type 1** Known and controlled hazards associated with consulting/engineering services.

☐ **Type 2** Known and controlled hazards, but with invasive, hazardous activities and/or civil/mechanical construction related services, or sampling.

☒ **Type 3** Unknown and/or uncontrolled hazards associated with corrective action clean-up, and/or remediation of hazardous substances.

4. Site Characterization

Client Requirement(s)[1]:	☒ None	☐ Site Orientation	☐ H&S Orientation
	☐ Permits or Other Requirements (specify and attach, if available):		
Site Information:	☒ Map/Diagram (attach)	☐ Map/Diagram Unavailable	
	☐ Inactive Site	☒ Active Site (specify below)	
General Environmental Concerns:	☒ Contaminated Water	☒ Wastewater	☒ Dust
	☒ Contaminated Soil	☒ Solid Waste	☒ Noise
	☒ Contaminated Air	☒ Waterways	☐ Other:
Site Security/Access Control:	☐ None	☒ On Site	
	☐ Other (explain):		
Amenities Available for Work:	☐ None	☒ Waste Storage	☒ Restrooms
	☒ Tools/Equipment Storage	☒ Office/Trailer Space	☒ Supplies Storage
Utilities Available for Work:	☐ None	☒ As Listed: Water, electric	
Medical Services Available:	☐ None On Site	☒ As Listed: First aid	
Facility Alarms/Signals:	☒ None	☐ As Listed:	
Traffic/Parking/Railway Issues:	☐ None	☒ As Listed (On-Site/Off-Site): On-site parking	
☐ Permits Required (specify)[2]:	☐ Confined Space Entry	☐ Local:	☐ State:
	☐ Federal:	☐ Other:	☒ N/A
☒ Utility Locate Service(s):	☒ On Site	☐ Client	☒ Other: Former Site employees contracted to client for daily site management
	☐ Off Site	☐	☒ One Call
		☐	☐ N/A

[1] If relying on the client for any specific hazard identification and control, implemented control and effectiveness should be documented prior to beginning any work activities. This is recommended for all field projects.

[2] Permit examples: Utilities (electrical, water, gas, etc.); Excavations; Explosives; Cranes; Burning; Fuel storage; Traffic control; Hoists; Cutting; Welding; Demolition; Confined space; Restricted access areas; etc.

Risk Analysis (RA)

(Required for all Inventum Type 2 or Type 3 field projects.)

Detailed Physical Description of Site/Facility: ☒ **Map/Diagram Attached**

The 17.446-acre Site is located at 3821 River Road, Town of Tonawanda, Erie County, New York. The Site is located approximately 0.25 miles west of I-90 on the east side of River Road. The surrounding properties are primarily industrial or vacant.

The Site was originally developed by Allied Fibers and Plastics Company (Allied), which is now Honeywell International, in the early 1950s, and was operated as a manufacturing facility through 1982. Site operations by Allied included the polymerization of ethylene into low molecular weight polyethylene (trademark: A-C Polyethylene and Co-polymers), which was finished into powder, pelleted and solid forms. Allied sold the property to Rouse Breihan, Inc. in 1985. Rouse Breihan conducted some management and laboratory testing for the Tonawanda Coke Corporation (TCC) on the proposed BCP Site. A trucking firm also used the site for vehicle maintenance and parking. The Site has been vacant since 2019. 3821 River Road, Inc. purchased the Site from Rouse Breihan Inc. on August 2, 2022.

Approximately 23 buildings are present on the Site and 12 aboveground storage tanks (AST) with aboveground and below grade piping are located in the center portion of the Site. The remaining buildings are unoccupied and unmaintained.

Previous Site Remediation

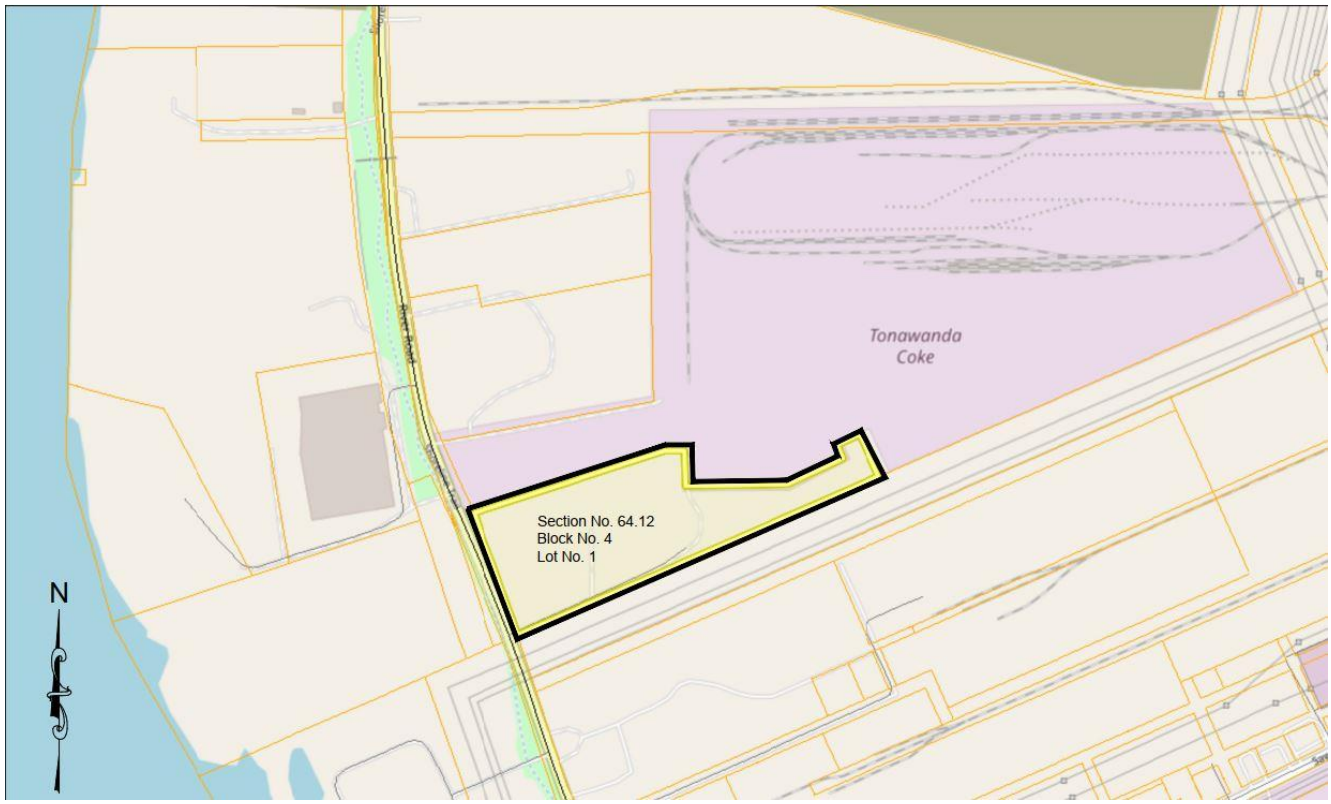
During the summer of 1981, approximately 500 cubic yards (CY) of "tar" and soils were excavated and removed from an area approximately 100-feet by 10 to 20-feet wide located in the eastern portion of the Site along the southern property boundary. The Coal Tar Site (NYSDEC Inactive Hazardous Waste Site 915003C) consisted of an area of the plant property where pools of what was described as "coal tar", from spillage and leakage during product-transfer operations, were located. The tar removal was completed by the TCC, under agreement with Allied, as part of the demolition of the idle facility termed the "tar storage" terminal. Tar removal was completed to the underlying clay layer. Analytical results of confirmatory soil samples collected following the excavation showed that residual chemicals of concern (COCs) were not detected or were in low parts per million (ppm) concentrations. Three test holes adjacent to the excavation were completed to a depth of approximately three feet to determine if any further migration of coal tar had taken place and no contamination was observed in the test holes. In addition to the "tar" and soil removal, a buried coal tar pipeline was also removed to the property limits. As part of the pipeline removal, an underground tank which was used as a "blow-down" tank for the transfer line, was removed. NYSDEC informed Allied in October 1981 that no further remediation was necessary in the Coal Tar Site and blow down tank area.

The site was sampled by the United States Geological Survey (U.S.G.S.) in July of 1982 and in May of 1983 under the Niagara River Toxics Investigation. Chromium and lead exceeded concentrations in samples taken from undisturbed soils in the Tonawanda area. Twenty-one organic priority pollutants were detected in the soil samples and all concentrations were below 10 parts per billion (ppb). A Phase I Investigation was completed in 1983 and an investigation was carried out at the end of 1988. Soil samples collected inside the pit showed high levels of chromium and elevated levels of lead. Sediment from an onsite catch basin showed elevated metals concentrations. Sampling and analysis of five off-site sewer samples showed no migration from this source. To further the investigation, up-gradient monitoring wells and four additional wells were installed. Sampling of the monitoring wells over one year showed groundwater exceedances for cyanide, benzene, ethylbenzene, toluene, xylene, and numerous poly aromatic hydrocarbons (PAH) compounds.

Risk Analysis (RA)

(Required for all Inventum Type 2 or Type 3 field projects.)

Figure 1; Site Location



Site Activities/Current Operations: ☒ None ☐ As Specified

Other Concurrent Site Activities, Work, and/or Other Adjacent Hazards or Concerns:

☒ None

As Specified:

☐ Schools	☐ Daycare	☐ Hospital	☐ Airport
☐ Residential	☐ Offices	☐ Shopping	☐ Active parking lot in work space

5. Hazard Evaluation

Risk Analysis (RA)

(Required for all Inventum Type 2 or Type 3 field projects.)

Complete [1] Substance Name (be specific)	Specific Applicable OSHA Standard (if any)	Physical State [2] (S, L, G, Aq, Vap, F, P)	Max. [3] Conc. Level Per Physical State	General [4] Control Measures (Eng., Admin., PPE)
Acetone	2400 mg/m3	L	82 ug/L	Eng., PPE
Acenaphthene	NA	S	790 ug/kg	Eng., PPE
Acenaphthylene	NA	S	3,200 ug/kg	Eng., PPE
Anthracene	0.2 mg/m3	S	14,000,000 ug/kg	Eng., PPE
Benzo(a)anthracene	0.2 mg/m3	S, L	3,100,000 ug/kg, 0.4 ug/L	Eng., PPE
Benzo(a)pyrene	0.2 mg/m3	S	2,800,000 ug/kg	Eng., PPE
Benzo(b)fluoranthene	0.2 mg/m3	S	3,200,000 ug/kg	Eng., PPE
Benzene	N/A	S, L	86,000 ug/kg, 84 ug/L	Eng., PPE
Benzo(G,H,I) perylene	1 ppm	S	1600,000 ug/kg	Eng., PPE
Benzo(k)Fluoranthene	NA	S	1,300,000 ug/kg	Eng., PPE
Biphenyl (Diphenyl)		L	31 ug/L	Eng., PPE
Bis(2-Ethylhexyl) Phthalate	NA	L	34 ug/L	Eng., PPE
Chrysene	0.2 mg/m3	S	3,000,000 ug/kg	Eng., PPE
cis-1,2-Dichloroethene	0.2 mg/m3	L	50 ug/L	Eng., PPE
Dibenz(a,h)anthracene	NA	S	460,000 ug/kg	Eng., PPE
Ethylbenzene	545 mg/m3	S, L	1,700 ug/kg, 20.0 ug/L	Eng., PPE
Fluoranthene	NA	S	9,400,000 ug/kg	Eng., PPE
Fluorene	NA	S	4,400,000 ug/kg	Eng., PPE
Hexachlorocyclopentadiene	NA	L	50 ug/L	Eng., PPE
Indeno(1,2,3-Cd) Pyrene	NA	S	15,000,000 ug/kg	Eng., PPE
Naphthalene	50 mg/m3	S, L	11,000,000 ug/kg, 1700 ug/L	Eng., PPE
Pentachlorophenol	0.5 mg/m3	L	100 ug/L	Eng., PPE
Phenanthrene	0.2 mg/m3	S	13,000,000 ug/kg	Eng., PPE
Phenol	19 mg/m3	L	3.5 ug/L	Eng., PPE
Pyrene	NA	S	5,900,000 ug/kg	Eng., PPE
Toluene	200 ppm	S, L	83,000 ug/kg, 12 ug/L	Eng., PPE
Trichloroethene	100 ppm	L	5.9 ug/L	Eng., PPE
Total Xylenes	435 mg/m3	S, L	120,000 ug/kg, 34 ug/L	Eng., PPE
Vinyl Chloride	1 ppm	L	5.4 ug/L	Eng., PPE
Arsenic	10 µg/m³	L	920.0 ug/L	Eng., PPE
Barium	0.5 mg/m3	L	4,900.0 ug/L	Eng., PPE
Beryllium	0.2 µg/m³	L	11.0 ug/L	Eng., PPE
Cadmium	5 µg/m³	L	16.0 ug/L	Eng., PPE
Chromium, Total	1 mg/m3	S, L	37,600 ug/kg, 5,800 ug/L	Eng., PPE
Copper	0.1 mg/m3	L	510.0 ug/L	Eng., PPE

Iron	10 mg/m3	L	491,000.0 ug/L	Eng., PPE
Lead	0.05 mg/m3	L	1,200.0 ug/L	Eng., PPE
Magnesium	NA	L	1,180,000 ug/L	Eng., PPE
Manganese	NA	L	12,300 ug/L	Eng., PPE
Nickel	1 mg/m3	L	1,700 ug/L	Eng., PPE
Selenium	0.2 mg/m3	L	13 ug/L	Eng., PPE
Sodium	NA	L	491,000 ug/L	Eng., PPE
Zinc	5 mg/m3	L	4,100 ug/L	Eng., PPE
Mercury	NA	L	1.7 ug/L	Eng., PPE
Cyanide	5 mg/m3	L	2.2 ug/L	Eng., PPE

(1) Use OSHA regulated name, not elemental forms. If available, attach SDS. Identify any sample preservative or O&M chemicals or subcontractor chemicals in this table also.
(2) S = Solids, L = Liquid, G = Gas, Aq = Aqueous, Vap = Vapor, F = Fume, P = Airborne Particulate.
(3) Site Maps with Soil and Groundwater exceedances are included in Attachment A.
(4) See the following sections for detailed control measures: personal protection equipment (PPE), Air Monitoring (Admin), or Site Control (Admin and Eng.).
(6) IP = Ionization Potential, VP = Vapor Pressure, LEL = Lower Explosive Limit, UEL = Upper Explosive Limit, N/A = Not Applicable, N.D. = Not Determined
(7) IDLH = Immediately Dangerous to Life and Health. NEVER enter IDLH conditions on site without proper respiratory protection.
(8) C = Ceiling Value, ST = Short-Term Exposure Limit, TWA = Time-Weighted Average, None Est. = None Established
(9) R = Respirable Limit, T = Total Limit
(10) Warning Properties: Good (G), Poor (P), None (N)

Risk Analysis (RA)

(Required for all Inventum Type 2 or Type 3 field projects.)

5. Hazard Evaluation (continued)

Site-Specific Physical Hazards

HAZARD	SPECIFIC CONTROL MEASURE
Slip/Trip/Fall Injury	– Use roads or trails whenever possible. – Occasionally reassess route to avoid dangerous terrain. – Maintain good housekeeping and keep work area clear of loose materials and equipment. – Use portable steps to mount and dismount sampling vehicle.
Ingestion of or contact with impacted soil	– Wear safety glasses. – Wear nitrile and appropriate cut-/puncture-resistant gloves (see Glove Selection Guideline) when performing tasks. – Wash hands and arms thoroughly when daily work is completed. – No eating, drinking, or smoking while conducting monitoring or sampling activities.
Pinched fingers or toes	– Wear appropriate cut-/puncture-resistant gloves (see Glove Selection Guideline) when the potential for hand injury exists. – Wear steel-toed safety shoes with steel shanks while on site.
Strained muscles	– Use proper lifting posture, techniques, and equipment when handling heavy objects. – Use two people for loads >40 lbs. or awkward items. – Take rests as needed during and between carries.
Cutting activities	
Flying debris/eye injuries	– Wear ANSI-approved safety glasses when the potential for flying debris and eye injuries exists.

Risk Analysis (RA)

(Required for all Inventum Type 2 or Type 3 field projects.)

Other Common Physical Hazards

(modify as needed, but include with all project hazard assessments)

☒	PHYSICAL HAZARD	GENERAL CONTROL MEASURE
☒	Aboveground Storage Tanks (AST)	Be aware of any aboveground storage tanks and the type of material being stored in them. Be aware of the potential of spills, fires, explosions, etc., while working near the tanks. Stay clear of tanks whenever possible and be aware of any equipment operators near the tank(s).
☒	Animals (dogs, etc.)	Be aware of any animals on site or adjacent to the site. Appropriate care should be taken if any feral (wild) animals are encountered.
☐	Blasting/Explosives	INVENTUM personnel shall not handle any explosive devices or materials. INVENTUM personnel should understand the blasting procedures being used by the subcontractor, and all of the associated health & safety precautions. The subcontractor shall handle, store, and use the explosives in accordance with 29 CFR 1926.900, Subpart H and U.
☐	Boat or Barge	A boat or barge should be used that is adequately stable for the type of activity conducted. The boat or barge should have all of the appropriate and current licensing and registrations required by the applicable regulatory agencies. All applicable laws and regulations will be followed when launching the boat or barge, and when navigating to and from the work site. Personal floatation devices should always be worn while navigating the boat or barge. The boat must be equipped with the following approved United States Coast Guard (USCG) safety equipment: – A Type 1, 2, or 3 personal flotation device (PFD) for every person aboard (should be worn while navigating) The following equipment is recommended: – A Type 4 throwable PFD – Audible distress signal device (air horn, whistle) – Fire extinguisher (if engine-propelled) – Auxiliary propulsion (spare paddles, trolling motor) – Bow and stern lines – Anchor and anchor line – First aid kit – Visual distress signal device(s) (flares, dyes) – Additional PFDs Be familiar with local weather and tidal characteristics. Do not conduct sampling from a boat/barge when threatening weather is imminent, or poor visibility exists. Sampling from a boat is prohibited in water containing substances likely to cause injury upon short-term or prolonged contact. Sampling from a boat is prohibited when the temperature of the water is high or low enough to cause injury upon short-term or prolonged exposure. Avoid sampling from a boat when unsafe water turbulence (waves) exists. Avoid standing in a boat. Always use the buddy system when sampling from a boat or barge; one person should be on shore with visual contact of the barge and should be able to summon emergency assistance if needed. Be familiar with local weather and tidal characteristics. Work on a boat or barge will not be performed when threatening or severe weather is impending or present.

Risk Analysis (RA)

(Required for all Inventum Type 2 or Type 3 field projects.)

Other Common Physical Hazards

(modify as needed, but include with all project hazard assessments)

☒	PHYSICAL HAZARD	GENERAL CONTROL MEASURE
☒	Briars or Thistles	Be aware of any briars or thistles on site. Wear appropriate clothing and gloves. Avoid contact with briars or thistles whenever possible.
☒	Business Traffic	Be aware of traffic patterns associated with local businesses near the work site. Allow traffic to enter and exit the businesses in such a manner to avoid creating traffic hazards, back-ups, delays, or potential accident situations.
☐	Cement Dust	Stay clear of mixing operations and avoid contact with or breathing of the dust.
☐	Chain Saws	Stay clear of any chain saw operations. Subcontractor is responsible for the safe use of chain saws on site.
☐	Cleaning Agents	Use caution when applying cleaning agent to equipment. Use gloves, safety glasses, splash shields, and protective clothing as needed.
☒	Client Activities	Be aware of client activities at or adjacent to the site. Work activities should be coordinated with other site activities to avoid conflicts. Contact EDP offices prior to starting work.
☒	Cold Stress	Work schedules may be modified when temperatures are below 20° F as measured by the wind chill factor. Take frequent breaks to warm up. Drink plenty of fluids. Wear appropriate clothing, and monitor for cold stress symptoms (frostbite, hypothermia, etc.).
☒	Compressed Air or Gas Cylinders	Compressed air or gas cylinders should be clearly marked, and they should be stored, transported, and secured in an approved manner.
☒	Compressed Air/Gas or Pressurized Liquids Hoses, Lines & Fittings	Compressed air or gas, or pressurized liquid lines or hoses should be inspected at least daily, or in the event a leak develops, or if a line or hose is run over or crimped.
☐	Concrete/Masonry/ Foundations	No construction loads shall be placed on a concrete structure or portion of a concrete structure unless a person who is qualified in structural design has determined that the structure or portion of the structure is capable of supporting the loads. All protruding reinforcing steel, onto and into which employees could fall, shall be guarded to eliminate the hazard of impalement. No employee shall be permitted to work under concrete buckets while buckets are being elevated or lowered into position. To the extent practical, elevated concrete buckets shall be routed so that no employee, or the fewest number of employees, are exposed to the hazards associated with falling concrete buckets. A limited access zone shall be established whenever a masonry wall is being constructed. All masonry walls over eight feet in height shall be adequately braced to prevent overturning and to prevent collapse unless the wall is adequately supported so that it will not overturn or collapse. The bracing shall remain in place until permanent supporting elements of the structure are in place.
☐	Confined Spaces (tanks, vaults, vessels, trenches, manholes, some excavations, etc.)	The scope of this project does entail entry into confined spaces. Confined spaces will not be entered unless a confined space entry permit has been completed, signed, and approved, and all participating personnel are trained in confined space entry procedures, including safety, and rescue procedures. All potential hazards of confined space may not be addressed by this hazard assessment, and health and safety plan.
☒	Cutting Tools	Stay clear of contractors' cutting tools, especially saws and torches. Be aware that cutting operations could create other hazards, such as falling objects, or shifting materials, etc. Safety glasses should be worn while using cutting tools. Spark-proof tools should be used when working in areas of potential explosive or flammable conditions. Fixed-open blade knives are prohibited.

Risk Analysis (RA)

(Required for all Inventum Type 2 or Type 3 field projects.)

Other Common Physical Hazards

(modify as needed, but include with all project hazard assessments)

☒	PHYSICAL HAZARD	GENERAL CONTROL MEASURE
☒	Demolition Activities	Stay clear of walls, ceilings, roofs, etc., as they are being demolished.
☒	Demolition Debris	Demolition material should only be handled by appropriate equipment because of sharp points, edges, etc. Demolition material may also pose a trip hazard, fall, or puncture hazard, so avoid walking or climbing on debris piles, etc.
☒	Drums	If drums are used on-site, they should be clearly labeled with the name of the contents and the appropriate label. Drums should only be handled with the appropriate equipment. Drums discovered during excavations, etc., shall not be opened or moved until appropriate identification can be performed. At a minimum, Level B protection is required for sampling any unlabeled drums discovered during remediation procedures.
☒	Dust/Particulates (Particulates Not Otherwise Regulated) (PNOR) (OSHA PEL = 15 mg./m^3, total) (OSHA PEL = 5 mg./m^3, respirable)	For general dust, work should be performed up-wind if possible. If conditions warrant it, monitoring should be done with a PM-10. Monitoring should occur at least 3 times per day, and every time re-entering the site. Readings should be taken downwind from the work area or inside the equipment as indicated by the conditions on site. If the OSHA PEL is exceeded, or is likely to be exceeded, engineering or administrative controls should be used, or a dust respirator must be worn. For hazardous dusts, a detailed air monitoring plan and a respiratory protection plan should be developed for the site activities.
☐	Elevated Work	For any construction work activities elevated 6 feet or more, or other non-construction activities elevated 4 feet or more, fall protection must be provided. Caution should be taken on catwalks and ladders because of potential slippery conditions, or the potential for footwear to catch on the surfaces.
☐	Energized Sources (electrical equipment or hookups, lines, etc.,) (Lockout/Tagout)	Contractors for all electrical activities, and any facility equipment with moving parts should follow proper lock-out/tag-out procedures, and only properly trained employees will perform the work. Employees will not perform any lock-out/tag-out activities unless personnel are properly trained in lockout/tagout procedures. Heed any caution signs or labels.
☒	Equipment Exhaust	Equipment exhaust should be ventilated away from the work area while drilling inside structures. Industrial fans can be used to move exhaust out of the area.
☒	Ergonomic Issues (job hazard analysis)	Ergonomic hazards will be addressed on a site-specific basis once mobilization to the field has occurred. Workstations will be evaluated on an individual basis.
☒	Evening Work	If work is performed during the evening hours, work shall be limited by the availability and the quality of artificial lighting. Care should also be taken to avoid slip, trip, and fall hazards that are not as easy to identify during low light conditions.
☒	Excavations	Stay clear of excavation walls. INVENTUM personnel will not enter an excavation, in accordance with 1926 Sub Part P. Subcontractor must provide a Competent Person on site if one is required by the planned activities. Side cuts should conform to 1926 Subpart P requirements, or shoring should be used. All open excavations should be secured using traffic cones, barrier tape, or barricade signs stating, "Do Not Enter Excavations", especially if left open overnight.
☐	Explosives	Be aware of potential explosive materials and how to identify them. No smoking is allowed on-site or near where potential explosive materials may be present.
☒	Facility Conveyors (product or waste lines)	Stay clear of facility conveyors, product process lines, and waste disposal lines. Be aware of any client-specific health and safety requirements to work in these areas.

Risk Analysis (RA)

(Required for all Inventum Type 2 or Type 3 field projects.)

Other Common Physical Hazards

(modify as needed, but include with all project hazard assessments)

☒	PHYSICAL HAZARD	GENERAL CONTROL MEASURE
☒	Facility Equipment/Machinery	Be aware of active and moving client equipment on site.
☒	Facility Piping - aboveground	Stay clear of aboveground pipes. Client is responsible to identify all applicable aboveground facility pipes prior to any work activities in the area. Pipes can be overhead hazards, or trip hazards. Pipes can be hazardous because of the material flowing through them, such as steam, natural gas, toxic chemicals, etc. Some pipes are also coated with hazardous material such as asbestos.
☒	Facility Piping - belowground	Client is responsible to identify all applicable underground facility pipe locations prior to any subsurface activities.
☐	Fall Hazard	Proper tie-off, harnesses, railings, etc. should be used when performing work on ladders, scaffolding, man-lifts, or on the roof of buildings, etc. Stay clear of the edges of pits, trenches, quarries, etc.
☒	Falling Objects	Be aware of any potential falling objects or materials on site. Stay clear of any areas identified as potential falling object areas.
☒	Fences	Be aware of fences in disrepair that may be trip hazards or may have materials that could cause punctures or cuts. Use caution when crossing over or under fences.
☒	Field Equipment	If field equipment is heavy or awkward to carry, get assistance or use carts to help move around the site.
☒	Field Vehicle	Inventum personnel shall follow all applicable state and federal traffic laws while traveling to and from the site, and while working on the site. In particular, the following laws should be followed: speed limits, parking restrictions, use of wipers and lights during precipitation events, limiting cell phone use, etc. It is the responsibility of the driver to verify that all safety equipment on the vehicle is working properly before driving the vehicle. In particular, the following items should be checked: tire pressure, tire tread, windshield wipers, windshield washer, headlights, tail lights, brake lights, spare tire, fire extinguisher, first aid kit, etc.
☒	Fire Hazards	Eliminate sources of ignition in work areas that have ignitable materials. Provide an ABC fire extinguisher in close proximity to the support zone.
☒	Flooded Areas	Do not drive through flooded areas or standing water. Do not wade into moving water, or water deeper than 2 feet without adequate assistance.
☒	Flying Debris/ Eye Injuries	Be aware of any flying debris on site and wear protective eyewear when necessary.
☒	Fork Lifts	Be aware of forklift patterns and stay clear of those routes.
☒	Hand Tools	Use only the appropriate tool for the task at hand. Use the tool(s) as designed, described, and intended by the manufacturer.
☒	Heat Stress	The work schedule may be modified if the ambient temperature is more than 80° F. Take breaks as necessary, and drink plenty of fluids. If necessary, wear sunscreen and sunglasses on bright days. Monitor site personnel for signs of heat stress symptoms (heat rash, heat cramps, heat exhaustion, or heat stroke).

Risk Analysis (RA)

(Required for all Inventum Type 2 or Type 3 field projects.)

Other Common Physical Hazards

(modify as needed, but include with all project hazard assessments)

☒	PHYSICAL HAZARD	GENERAL CONTROL MEASURE
☒	Heavy Equipment	Contractor is responsible for safe operation of equipment. All mobile heavy equipment must have a functioning backup alarm, and operators must comply with manufacturer's equipment instructions. Maintain proper distance and remain in line of sight of operator and out of reach of equipment. Isolate equipment swings, if possible. Make eye contact with the equipment operator before approaching the equipment. Understand and review hand signals, and wear orange safety vest, if necessary.
☒	Heavy Lifting	Use proper lifting procedures and equipment when handling heavy objects such as drums, manhole covers, tank covers, etc.
☒	High Pressure Gas Lines, etc.	Be aware of high-pressure gas lines and follow approved safety precautions when working with or around the lines.
☐	Highway Traffic	Traffic control within the right-of-way will be in accordance with the WDOT "Work Zone Safety – Guidelines for Construction, Maintenance, and Utility Operations" procedures. Work may be restricted within specific lanes during peak traffic times. Verify peak traffic times, and review planned activities with the WDOT, so that appropriate lane closures can be coordinated.
☒	Housekeeping	All field vehicles, job trailers, and field offices will be properly cleaned and organized to prevent cluttered work and storage areas.
☐	Hunters/Firing Range, etc.	Be aware of surrounding activities that may involve hunting, firearms, etc. that may not be in your immediate area, but could create an unsafe work environment.
☒	Ice (thin)	When project activities include either crossing ice or working directly on the ice, a detailed plan should be developed that will be used to continually evaluate the ice conditions, and to determine when work should be terminated due to unsafe conditions. All staff working on the ice will wear an appropriate and approved personal flotation device. Other emergency equipment such as ropes, a throwable flotation device, a means to warm a wet and cold worker, etc. must be available. A buddy system should also be used for this type of work, such that one person is always on shore or at least on previously determined safe ice.
☒	Insects (ticks, bees, spiders, etc.)	Site workers with known allergies to insect bites should carry their own medication. In case of emergencies, inform fellow workers of any severe allergies. Use insect repellant as necessary, and as specifically allowed on site. If possible, wear long-sleeved shirts and pants. If appropriate, check for ticks at the end of each day. Have other appropriate first aid supplies handy for bites.
☒	Stakeholders	Be aware of the potential for irate neighbors or outsiders that may interfere with work activities, or that may potentially damage equipment or on-site materials, etc.
☐	Ladders	Ladders should only be used if they are in good condition, conform to OSHA requirements, and if they will be used in an appropriate manner. Be especially cautious of slipping on ladders when the ladder or footwear is wet or dirty.
☐	Landfill Gas (Methane, CO2, Hydrogen Sulfide)	Avoid breathing gas, especially in low oxygen areas (simple asphyxiant). Potentially flammable and explosive, so keep ignition sources away from gas. Explosive conditions of LEL >5% in a work area should be ventilated as soon as possible, or the area should be evacuated.
☐	Leachate (Municipal Solid Waste (MSW))	MSW leachate may contain hazardous biological substances, so avoid physical contact with leachate and, if possible, stay up-wind. If contact is made with leachate, wash affected areas thoroughly with soap and water. If boots contact leachate, they should be thoroughly washed with soap and water also.

Risk Analysis (RA)

(Required for all Inventum Type 2 or Type 3 field projects.)

Other Common Physical Hazards

(modify as needed, but include with all project hazard assessments)

☒	PHYSICAL HAZARD	GENERAL CONTROL MEASURE
☒	Lead	Wear gloves when in contact with lead contaminated soil, etc. Thoroughly wash hands and arms when daily work is completed.
☒	Long Hours/Fatigue	Long work hours can lead to fatigue, and fatigue can lead to the physical inability to perform the work in a safe manner, or travel to or from a work site in a safe manner. If long work hours are scheduled, or if the scheduled work takes longer than planned, field staff should determine if fatigue is, or will be, an issue. Field staff should evaluate whether they are able to complete the work in a safe manner, or whether they are able to travel in a safe manner. If fatigue is an issue, appropriate breaks should be planned or taken, including overnight stays when necessary.
☒	Material Handling	Move containers and heavy material only with the proper equipment, and secure them to prevent dropping, falling, or loss of control during transport. Stay clear of material handling operations, especially near slopes. Do not stand down the slope from equipment, supplies or materials being moved above on the slope, or being deployed onto the slope.
☒	Material Storage	Stored material may be a falling hazard, or a crush hazard. Do not stand adjacent to materials stacked up, such as pipes, geosynthetic rolls, etc., or in the area of deployment.
☐	Methane Gas (Landfill Gas)	Explosive conditions (5% LEL) will be ventilated, if encountered, prior to working in an area. Methane is a simple asphyxiant.
☐	Mine or Quarry	No work shall be performed within 15 feet (or other designated client setback, whichever is greatest) of the mine or quarry walls. Be aware of the potential for falling rocks or slope failures.
☐	Municipal Solid Waste (MSW)	MSW may contain hazardous biological substances, so avoid physical contact, and if possible, stay up-wind. Wear appropriate PPE, such as gloves, safety shoes, and safety glasses. Wash hands, arms, and face after working near MSW. Reusable PPE and equipment should be thoroughly decontaminated after exposure to MSW. MSW may also contain sharp objects with the potential to puncture PPE.
☒	Natural Gas	Natural gas is flammable and explosive. Keep ignition sources away from gas sources. Use spark-proof tools when working with gas lines, etc.
☒	Noise	Hearing protection must be worn when noise levels exceed 85 dBA in the work area. If you need to raise your voice to be heard at the work site, then hearing protection should be worn. Hearing protection will be worn near drill rigs.
☒	Overhead Hazards	Pay attention to overhead equipment, piping, and structures. A hard hat must be worn at all times when overhead hazards are present on site including the operation of a drill rig.
☒	Pedestrian Traffic (public, client, workers)	Be aware of pedestrian traffic patterns and route traffic around the exclusion zone(s), as necessary, to avoid distractions and the potential for exposures or accidents. Use appropriate barricades and caution tape to mark work areas.
☒	Poisonous Plants	Be able to identify any local poisonous plants and avoid them if possible or wear protective clothing as necessary. When removing potentially exposed clothing or PPE, the clothing or PPE should be carefully and thoroughly washed or decontaminated.
☒	Portable Heaters	Be aware of portable heater locations and stay a safe distance from them.
☒	Power Washing Equipment	Stay clear of the power washing nozzles and equipment.
☒	Propane Tanks	Be aware of propane tank locations, and any gas lines leading to or from the tanks.

Risk Analysis (RA)

(Required for all Inventum Type 2 or Type 3 field projects.)

Other Common Physical Hazards

(modify as needed, but include with all project hazard assessments)

☒	PHYSICAL HAZARD	GENERAL CONTROL MEASURE
☐	Radiation (ionizing)	Exposure to ionizing radiation can be controlled by one of three methods: time, distance, or shielding. Limit your time near the radioactive source. Keep your distance from the radioactive source. Shield yourself from the radioactive source with appropriate shielding material. If the radioactive source(s) are from INVENTUM equipment, the INVENTUM employee using the equipment needs required training to use the equipment and must be monitored using a dosimeter badge.
☐	Rock Blasting	Contractor is responsible for following safe blasting protocol. Heed all contractor warnings at time of blasting and stay well clear until safe to return to area, as indicated by the contractor.
☒	Sample Preservative Chemicals:	Wear safety glasses and nitrile gloves when adding preservative chemicals to sample bottles or vials. Have clean wash water nearby.
☐	Scaffolding	Stay clear of scaffolding. Be aware of the OSHA safety requirements for using constructing and scaffolding.
☒	Severe Weather	Work may be suspended if dangerous weather conditions (lightning, tornadoes, high winds, heavy rain, freezing rain, etc.) occur. Be aware of changing weather conditions and be prepared to take shelter as necessary. Potential shelters should be identified prior to beginning work.
☒	Sharp Objects	Wear appropriate gloves when handling sharp objects or use appropriate equipment to move objects.
☒	Slippery Ground/Surfaces	Exercise caution, especially on slopes, field trailer floors and stairs, after a precipitation event. Use slip resistant boots or implement surface preparations to eliminate the slippery nature of the surface prior to accessing the area. Spill control measures and general housekeeping should be utilized to help prevent slipping on wet floors, wet pavement, and general work areas.
☒	Slips, Trips, and Falls:	Maintain clear walkways for work areas.
☒	Snakes	Be aware of the potential for snakes in the area and wear snake boots, snake chaps, gaiters, or leggings as needed.
☒	Steam Cleaning Equipment	Stay clear of the steam cleaning nozzles and equipment.
☐	Steel Erection	All materials, equipment, and tools, which are not in use while aloft, shall be secured against accidental displacement. The controlling contractor shall bar other construction processes below steel erection unless overhead protection for the employees below is provided. Employees engaged in steel erection activities on a walking/working surface with an unprotected side or edge more than 15 feet above a lower level shall be protected from fall hazards by guardrail systems, safety net systems, personal fall arrest systems, positioning device systems or fall restraint systems.
☐	Steep Slopes or Banks	Pay attention to footing and walking. Stay a safe distance from unstable or extremely steep slopes. Wear appropriate footwear. Be aware of potential slope or bank failures. Heavy equipment should not be operated on or near unstable slopes or banks.
☒	Strong Nuisance Odors	Strong odors should be ventilated before entering a work area, or a respirator shall be worn as needed.
☒	Sunburn	For extended periods of time outdoors on sunny days, sunglasses, long-sleeved shirts and long pants should be worn to help prevent sunburn and eye problems. Wear sunscreen as appropriate for the project.
☒	Surface Water	Working next to or on, bodies of water shall be done using the buddy system. Staff shall wear USCG-approved personal floatation devices when on or adjacent to bodies of water.

Risk Analysis (RA)

(Required for all Inventum Type 2 or Type 3 field projects.)

Other Common Physical Hazards

(modify as needed, but include with all project hazard assessments)

☒	PHYSICAL HAZARD	GENERAL CONTROL MEASURE
☒	Terrain	Uneven or steep terrain can cause hazardous conditions for walking and transporting equipment around the site. Site personnel should use caution when working on uneven surfaces, and they should avoid working down-slope from heavy equipment, or materials being moved or stored.
☒	Traffic (client, contractors, public, semi-trucks, forklifts, etc.)	Obey all posted speed limits. Park in designated areas only. Be aware of traffic patterns on site, and during access to the site. Use orange traffic cones and barrier warning tape, as needed, or if within 25 feet of the right-of-way. INVENTUM personnel must wear orange safety vests when working in or near traffic areas. Class 2 traffic vests are required with traffic speeds 25 mph or higher. Class 3 traffic vests are required with traffic speeds 50 mph or higher.
☐	Trains/Railroad Tracks	Be aware of any train activities on the site, entering or leaving the site, or immediately adjacent to the site. Do not walk between the rails or on the railroad ties. When driving, stop at all railroad crossings, even if they are unmarked, and look in both directions before proceeding across the tracks.
☒	Transporting Hazardous Materials	INVENTUM personnel who transport hazardous materials shall have the required DOT training prior to transporting materials, and will comply with all applicable DOT regulations and requirements for labeling, packaging, etc.
☐	Tree Cutting	Stay clear of tree cutting activities.
☒	Trenching	INVENTUM personnel will enter trenches in accordance with 1926 Sub Part P. Be aware that some trenching conditions may result in a confined space condition.
☒	Trip Hazards (wires, cords, hoses, debris, corn stubble, uneven surfaces, etc.)	Temporary wires, cords, hoses, etc., should be properly located, marked, and protected to help prevent tripping and disruption to work activities. Trip hazards are particularly a problem early in the morning, late in the day, or under other poor lighting conditions.
☒	Underground Storage Tanks (USTs) (Septic Tanks)	If any unknown USTs are encountered, drilling or excavations will be terminated in that location until a new scope of work, Risk Assessment and Health & Safety Plan can be developed.
☒	Uneven Surfaces	Be aware of uneven walking or driving surfaces and exercise caution when moving around the site.
☒	Utilities – Overhead (electrical, telephone, cable TV, etc.)	A subcontractor, the client, or INVENTUM will locate and identify all overhead utilities. The owner or client will be responsible for identifying all applicable overhead utilities, product lines, pipes, and aboveground tanks. A minimum clearance of 20 feet must be maintained between equipment and overhead utility lines.
☒	Utilities – Underground (electric, gas, telephone, water, storm sewer, sanitary sewer, cable TV, etc.)	A subcontractor, the client, or INVENTUM will call Digger's Hotline to locate all underground utilities. The owner or client will be responsible for marking all applicable on-site underground utilities, product lines, pipes, and tanks.
☒	Waterways	Exercise caution near, around, or in waterways. Harnesses should be worn when working in, or within 4 feet of, the waterway, especially when attempting to sample from shore or a boat or barge. All applicable laws and regulations will be followed when navigating a boat or barge to and from a work site.

Risk Analysis (RA)

(Required for all Inventum Type 2 or Type 3 field projects.)

Other Common Physical Hazards

(modify as needed, but include with all project hazard assessments)

☒	PHYSICAL HAZARD	GENERAL CONTROL MEASURE
☒	Welding Tools	Stay clear of welding operations, and do not look directly at the welding process without appropriate eyewear and shield.
☐	Traffic Control	**Traffic Control**: Traffic control within the right-of-way will be in accordance with the local Public Right-of-Way Agency. Work may be restricted within specific lanes during peak traffic times. Verify peak traffic times and review planned activities with the local Public Right-of-Way Agency, so that appropriate lane closures can be coordinated.

Proposed Date(s) of Inventum Work: TBD

ON-SITE PROJECT TEAM MEMBER	ON-SITE PROJECT RESPONSIBILITIES
John Black	Inventum Site Health and Safety Representative (Supervisor); Remedial Contractor Oversight
Todd Waldrop	Inventum Site Health and Safety Representative (Supervisor); Remedial Contractor Oversight
James Edwards	Inventum Site Health and Safety Representative (Supervisor); Remedial Contractor Oversight

Any required construction/demolition activities: ☒ No ☐ Yes If Yes, complete Section 1

Site-Specific Health and Safety Plan

(Required for all Inventum Type 2 or Type 3 field projects.)

1. Construction Tasks: work tasks to be performed by Inventum staff or Inventum subcontractors

Civil

- ☐ Sewer (utility)
- ☐ Water (utility)
- ☐ Electric (utility)
- ☐ Communications (utility)
- ☐ Siding
- ☐ Roofing
- ☐ Drywall
- ☐ Flooring
- ☐ Ceilings
- ☐ Casework
- ☐ Masonry
- ☐ Escalator
- ☐ Steel (erection)
- ☐ Pre-cast (erection)
- ☐ Concrete (erection)
- ☐ Re-bar
- ☐ Elevator
- ☐ Fireproofing
- ☐ Windows
- ☐ Landscaping
- ☐ Painting
- ☐ Insulation
- ☐ Doors
- ☐ Finish Concrete

Mechanical

- ☐ Insulation
- ☐ Millwright
- ☐ Fire Protection
- ☐ Boiler
- ☐ Industrial Ventilation
- ☐ Steel Fabrication/Erection

Other

- ☐ Electrical
- ☐ Demolition (attach a detailed "**Demolition Plan**")

- ☐ Others
- ☐ Others
- ☐ Others

Estimated Direct-Hire Inventum Employees:

Home Office: ☐ Not Applicable ☐ Specify:

Craft Labor: ☐ Not Applicable ☐ Specify:

Craft	Quantity
Craft	Quantity

Site-Specific Health and Safety Plan

(Required for all Inventum Type 2 or Type 3 field projects.)

2. Applicable Safety Standards or Regulations:

☒ Federal OSHA ☐ State OSHA ☐ Owner/Client

Specific Standards:	29 CFR 1910 (OSHA)	29 CFR 1926 (Other Regulations)
☒ Medical Services and First Aid	1910.151	1926.50
☒ Hazard Communication (HAZCOM)	1910.1200	1926.59
☐ Lead Exposure	1910.1025	1926.62
☒ HAZWOPER	1910.120	1926.65
☒ Personal Protective Equipment (PPE)	1910.132-138	1926.95-107
☒ Respiratory Protection	1910.134	1926.103
☒ Ventilation	1910.94	1926.57
☒ Noise Exposure	1910.95	1926.52
☐ Illumination	N/A	1926.56
☐ Fire Protection	1910.157	1926.24 and 150-155
☐ Sanitation	1910.141	1926.51
☐ Materials Handling (rigging, etc.)	1910.176	1926.250-251
☐ Welding/Cutting	1910.251-255	1926.350-354
☐ Lockout/Tagout	1910.147	1926.417
☐ Electrical (flexible cords, etc.)	1910.305	1926.400-449
☐ Scaffolding	1910.28-29	1926.450-454
☐ Fall Protection (elevated work)	1910.23-29, 1910.66-68	1926.104-107; 500-503
☐ Ladders/Stairways	1910.25-27	1926.1050 and 1060
☐ Cranes, Derricks, Hoists, Elevators, etc.	1910.179-181	1926.550-555
☐ Aerial Lifts	1910.66-68	1926.556
☐ Earthmoving Equipment	N/A	1926.602
☐ Powered Industrial Trucks (forklifts)	1910.178	1926.602
☒ Excavations and Trenching	N/A	1926.650-652
☐ Concrete and Masonry	N/A	1926.700-706
☐ Steel Erection	N/A	1926.750-761
☐ Demolition	N/A	1926.850-860
☒ Asbestos	1910.1001	1926.1101
☐ Confined Space Entry	1910.146	1926.21

Site-Specific Health and Safety Plan

(Required for all Inventum Type 2 or Type 3 field projects.)

☐ Commercial Diving	1910.401-441	1926.1071-1092
☒ Compressed Gases	1910.101-105	N/A
☐ Ionizing Radiation	1910.1096	1926.53
☒ Benzene	1910.1028	1926.1128
☒ Cadmium	1910.1027	1926.1127
☒ Tools - Hand and Power	N/A	1926.300-307
☐ Blasting and Using Explosives	N/A	1926.900-914

Site-Specific Health and Safety Plan

(Required for all Inventum Type 2 or Type 3 field projects.)

3. Training Required

(* required for all "Type 3" sites; but minimum recommended)

Check "A" if training required for everyone, and check "T" if training required for specific task.

A	T	SUBJECT	REFERENCE	
			29 CFR 1910	**29 CFR 1926 or Other**
☐	☒	HAZWOPER 40 hour*	1910.120	1926.65
☐	☐	3-Day HAZWOPER Supervised On-Site*	1910.120	1926.65
☐	☒	8-Hour HAZWOPER Refresher*	1910.120	1926.65
☐	☐	8-Hour Supervisor HAZWOPER*	1910.120	1926.65
☐	☒	First Aid, CPR*	1910.151	1926.23,.50
☐	☒	Respiratory Protection	1910.134	1926.103
☐	☐	Confined Space ☐ Permit attached	1910.146	1926.21
☐	☐	Mine Safety (MSHA)	N/A	30 CFR 48.8
☐	☐	Lockout/Tagout ☐ Permit attached	1910.147	1926.417
☒	☐	Bloodborne Pathogens	1910.1030	N/A
☒	☐	Noise Exposure	1910.95	1926.52
☐	☒	Competent Person	N/A	1926.32,.450,.650
☐	☐	Construction Health and Safety OSHA 10-Hour	N/A	1926.21
☐	☐	Demolition	N/A	1926.850
☐	☐	Excavations ☐ Permit attached	N/A	1926.650-652
☐	☐	Electrical Work	1910.332	1926.400-.449
☐	☐	Ladders/Stairways	N/A	1926.1050-1060
☐	☐	Scaffolding	1910.28	1926.450-454
☐	☐	Fall Protection	1910.23-29; 1910.66-68	1926.104,.501
☐	☐	Commercial Diving	1910.410	1926.1071-1092
☐	☐	Hot Work ☐ Permit attached	1910.251-255	1926.350
☐	☐	Lead Awareness	1910.1025	1926.62
☐	☐	Asbestos Awareness	1910.1001	1926.1101
☐	☐	Cadmium	1910.1027	1926.1127
☐	☐	Benzene	1910.1028	1926.1128
☐	☐	Ionizing Radiation	1910.1096	1926.53; 10 CFR 19.12
☐	☐	Troxler or NITON Gauge User	1910.1096	10 CFR 19.12
☐	☐	Radiation Safety Program	1910.1096	10 CFR 20.1101
☐	☐	Hazard Communication (HAZCOM)	1910.1200	1926.59
☐	☒	DOT Hazardous Materials Shipping	1910.1201	49 CFR 172.704

Client-specific training: ☒ Not Applicable ☐ Specify

Site-specific orientation: ☒ Not Applicable ☐ Specify

Competent person: ☒ Not Applicable ☐ Specify

Direct-hire employee training/certification: ☒ Not Applicable ☐ Specify

Site-Specific Health and Safety Plan

(Required for all Inventum Type 2 or Type 3 field projects.)

4. Medical Surveillance

Surveillance Required: * required for all "Type 3" sites; baseline is minimum recommended
** Specify frequency below

	29 CFR 1910	29 CFR 1926 or Other
☐ HAZWOPER Physical - Baseline*	1910.120	1926.65
☐ HAZWOPER Physical – Annual	1910.120	1926.65
☐ HAZWOPER Physical - Biennial*	1910.120	1926.65
☐ OSHA Respiratory Protection Questionnaire	1910.134	1926.103
☐ Respiratory Certification Exam	1910.134	1926.103
☐ Arsenic (urine) **	1910.1018	N/A
☐ Asbestos **	1910.1001	1926.1101
☐ Cadmium (blood) **	1910.1027	1926.1127
☐ Lead/ZPP (blood) **	1910.1025	1926.62
☐ Mercury (blood) **	N/A	N/A
☐ PCB **	N/A	N/A
☐ Vinyl Chloride **	1910.1017	1926.117
☐ Hepatitis B Vaccine (series) **	1910.1030	N/A
☐ Tetanus/Diphtheria	N/A	Stay Current
☐ Stress Test	N/A	Only as requested
☐ Visual Acuity Test	N/A	Only as requested
☐ Hearing Test (Audiometry)	N/A	Only as requested
☐ Pulmonary Function	N/A	Only as requested

Client-specific drug testing: ☒ Not Applicable ☐ Specify

Client-specific medical monitoring[1]: ☒ Not Applicable ☐ Specify

Site-specific medical monitoring: ☒ Not Applicable ☐ Specify

**Frequency of medical monitoring: ☒ Not Applicable ☐ Specify

Site-Specific Health and Safety Plan

(Required for all Inventum Type 2 or Type 3 field projects.)

5. Personal Protective Equipment (PPE)

Based on evaluation of potential hazards, the following levels of personal protection have been designated for the applicable work tasks:

Specific Inventum Job Task or Function	Minimum Level of Protection
Task 1 – Site management and Oversight	☒ D ☐ C ☐ B ☐ A
Level D: safety glasses (ANSI), safety shoes (ANSI), ear plugs (ANSI); safety vest (ANSI)	
Task 2 – Surficial Soil Sampling	☒ D ☐ C ☐ B ☐ A
Level D: safety glasses (ANSI), safety shoes (ANSI), ear plugs (ANSI); safety vest (ANSI), nitrile gloves,	
Task 3 – Subsurface Soil Sampling	☒ D ☐ C ☐ B ☐ A
Level D: Hard hat, safety glasses (ANSI), safety shoes (ANSI), nitrile gloves	
Task 4 – Permit Compliance Water and Wastewater Sampling	☒ D ☐ C ☐ B ☐ A
Level D: Hard hat, safety glasses (ANSI), safety shoes (ANSI), nitrile gloves	
Task 5 – Monitoring Well Abandonment	☒ D ☐ C ☐ B ☐ A
Level D: safety glasses (ANSI), safety shoes (ANSI), ear plugs (ANSI); safety vest (ANSI)	
Task 6 – Monitoring Well Installation	☒ D ☐ C ☐ B ☐ A
Level D: safety glasses (ANSI), safety shoes (ANSI), ear plugs (ANSI); safety vest (ANSI)	
Task 7 – Groundwater Monitoring and Sampling	☒ D ☐ C ☐ B ☐ A
Level D: Hard hat, safety glasses (ANSI), safety shoes (ANSI), nitrile gloves	
Task 8 – Sampling of Residuals	☒ D ☐ C ☐ B ☐ A
Level D: Hard hat, safety glasses (ANSI), safety shoes (ANSI), nitrile gloves	

Site-Specific Health and Safety Plan

(Required for all Inventum Type 2 or Type 3 field projects.)

Criteria for changing protection levels are as follows:

EVACUATION[2] or PROTECTION LEVEL CHANGE[3] CRITERIA	APPROVALS REQUIRED [1] OSC
Site Evacuation Plan: ☒ Not Applicable ☐ Specify or Attach Plan:	
Change to Level D when: ☐ Not Applicable ☒	☒N/A All site work in Level D
Change to Level C when: ☒ Not Applicable ☐ dust levels exceed 2.5 mg/m^3 in the breathing zone continuously for 5 minutes.	☒ No work will be conducted in Level C. Site work will stop, controls reevaluated, and HASP updated as necessary
Change to Level B when: ☒ Not Applicable ☐ Specify	☒ Inventum will not conduct any work in Level B.
Change to Level A when: ☒ Not Applicable ☐ Specify	☒ Inventum will not conduct any work in Level A. ☒

[1] OSC: Office Safety Coordinator

[2] General Recommendations: Evacuate the area when LEL readings are >10% LEL in the atmosphere, or when PID readings are greater than the PEL in the breathing zone.

[3] General Recommendation: To Level C when PID readings are greater than the PEL in the breathing zone. To Level B or A only after detailed evaluation and planning.

Note: Changes to the level of protection shall be made only after the required approvals are obtained. All changes shall be recorded in the field log and reported to the Project Manager as soon as possible. Inventum's goal is to avoid using respiratory protection unless it is absolutely necessary or required. Administrative controls or engineering controls should always be considered as a means to reduce potential exposures before PPE is required or considered.

Site-Specific Health and Safety Plan

(Required for all Inventum Type 2 or Type 3 field projects.)

6. Air Monitoring [(1)]

The following monitoring instruments shall be used on site to measure airborne contaminant concentrations in either the breathing zone, or as part of the overall site **Air Monitoring Plan** (attach detailed plan):

MONITORING EQUIPMENT	LOCATION OF MONITORING	FREQUENCY OF MONITORING	ACTION LEVELS
☐ Combustible Gas Indicator	☐ N/A ☐ Monitoring Plan Attached ☐ Confined Space ☐ Manhole	☐ Continuously when potential combustible gases or lack of oxygen are suspected. ☐ Specify	5-10% LEL: continue with caution > 10 % LEL: evacuate the area ☐ Specify
☐ O2 Monitor ☐ CO Monitor ☐ H_2S Monitor	☐ N/A ☐ Confined Space ☐ Manhole – monitor oxygen, carbon monoxide, hydrogen sulfide , and lower explosive limit	☐ Continuously when excess oxygen (>22.5%) or lack of oxygen (<19.5%) are suspected. ☐ Test atmosphere prior to entry and continuous during confined space entry.	< 19.5% Oxygen: evacuate the area; supplied air may be needed. > 22.5% Oxygen: evacuate the area; potential fire hazard. ☐ Specify
☐ Colorimetric Tubes Type: Type: Type:	☐ N/A ☐ Specify ☐ Sample Container ☐ Confined Space ☐ Specify	☐ Periodically during sampling for analytical purposes only. ☐ Whenever noticeable odor is present. ☐ Specify	☐ Specify
☒ PID Lamp Needed: ☐ 9.8 eV ☒ 10.6 eV ☐ 11.7 eV Calibration Gas: Isobutylene Correction Factor:	☒ Personal Monitoring ☒ Sample Container ☐ Confined Space ☐ Specify	☒ Periodically during sampling for analytical purposes only. ☒ Continuously within the employee breathing zone. ☐ Specify ☐ Specify	☒ None. ☒ >5 ppm above background in breathing zone for 5+ min. Stop work and reevaluate potential sources and controls.
☐ FID	☐ N/A ☐ Specify	☐ Specify	☐ Specify
☒ Personal Dust Monitor	☐ N/A ☒ Personal Monitoring in Breathing Zone (Task 2 - 6 only)	☒ Continuously within the employee breathing zone	☒ >2.5 mg/m3 at work perimeter for 15 min sustained. Stop work and apply dust controls

Site-Specific Health and Safety Plan

(Required for all Inventum Type 2 or Type 3 field projects.)

☒Other: Perimeter Monitoring	☒ Perimeter Air Monitoring in accordance with the CAMP	☐ Specify	☐ Specify
☐Laboratory Supported ☐Personal ☐Area ☒Perimeter	☐ N/A ☐ Specify Employee breathing zone	☐ Specify continuous	☒ When visible dust is present apply dust control measures (water spray) until abated.

(1) Whenever air monitoring is required to be performed, a detailed **Air-Monitoring Plan** should be developed and attached to the HASP. The plan should include **Monitoring Locations, Frequency of Readings**, and any **Action Levels** being used to control the work site.

Air Monitoring Plan

Field monitoring of dust production is anticipated only during subsurface soil sampling (Task 2) and installation of monitoring wells (Task 7). A visual assessment of dust levels will be used continuously during the work along with personal employee monitoring and perimeter air monitoring in accordance with an approved CAMP.

Dust production during monitoring well abandoned, monitoring well installation, and surficial soil sampling is not anticipated due to the typical moisture content of the soil.

This level of nuisance dust is visually observable. If dust is observable continuously in the breathing zone for 5 minutes, dust control methods will be used (*e.g.*, water spray will be applied) until dust is abated. Work will be temporarily discontinued until dust is reduced to acceptable levels within the breathing zone. Should particulate levels above the action level be a continual problem, relevant field personnel will reassess the situation with the project manager.

Site-Specific Health and Safety Plan

(Required for all Inventum Type 2 or Type 3 field projects.)

7. Site Controls and Work Zones (describe in detail)

Facility Alarms or Signals: ☒ Not Applicable ☐ Specify

Work Permits Required: ☒ Not Applicable ☐ Specify

Work Traffic Issues: ☒ Not Applicable ☐ Specify

Parking Issues: ☒ Not Applicable ☐ Specify

Railway Traffic Issues: ☒ Not Applicable ☐

Support Zone(s):

☒ Field vehicle ☒ Job Trailer On Site ☐ Other:

Contamination Reduction Zone(s):

☒ Field vehicle ☐ Facility restroom/utility room ☐ Other:

Exclusion Zone(s):

☒ Area immediately surrounding work area ☐ Other:

Site Entry Procedures:

☒ **Notify Site Safety Contact Representative.**

☒ **Read HASP Plan and sign Acknowledgment Statement.**

☒ **Check in with the facility contact person.** ☒ **Check in with owners full time site representatives.**

☒ **Check in with facility security guard.** ☒ **All visitors must check in and sign visitor logbook in guard house.**

☒ **Wear proper personal protective equipment.**

☐ Attend facility orientation. ☐

☒ **Conduct daily safety meeting (document).**

☐ Other: Confined space – do not enter the confined space if LEL >10%, oxygen <21% or >23.5%, carbon monoxide >35 ppm, or hydrogen sulfide >7 ppm. Exit the confined space if the atmospheric conditions become hazards as noted.

Site-Specific Health and Safety Plan

(Required for all Inventum Type 2 or Type 3 field projects.)

Decontamination Procedures:

Personnel: (specify)	Work will be performed in Level D or Modified Level D, and minimal contamination is expected. Follow standard decontamination procedures, and good personal hygiene. Disposable PPE should be removed, contained, and disposed of in an appropriate manner. Prior arrangements should be made if disposal is planned for at the project site. Site workers should plan and stage for wash water and soap at the site, prior to beginning the work. Site workers should wash hands and any exposed skin extremely well with soap and water, prior to leaving the contamination reduction zone, eating, drinking, driving, or leaving the site. Any soiled or contaminated clothing should be removed and handled appropriately, by either washing as soon as possible, or if necessary, disposing. Soiled or contaminated clothing should be carefully bagged prior to disposal or washing, to reduce potential exposure.
Equipment: (specify)	Site workers should plan and stage for the appropriate decontamination method at the site prior to beginning the work. Any contaminated single-use disposable equipment or PPE should be appropriately containerized and disposed of as soon as possible in an appropriate manner. Prior arrangements should be made if disposal is planned for at the project site. Contaminated equipment or PPE that will be re-used should be handled and cleaned while wearing the appropriate PPE. Typically, equipment is decontaminated using Alconox soap and deionized water.

Disposal of Investigation-derived Material:

☒ Leave on site for disposal. Location TBD ☐ Other:

Work Limitations (time of day, buddy system, etc.):

☐ Buddy system required for some tasks.

☒ Work will be performed during daylight hours only.

☐ Work will be performed using artificial light.

Describe or attach a lighting plan: A lighting plan is attached.

☒ No eating, drinking, or smoking in contamination reduction zone(s) or exclusion zone(s).

☒ When temperatures are either above 80°F or below 20°F, work schedules may be modified.

☒ Other site-specific limitations: Do not enter battery building

Site-Specific Health and Safety Plan

(Required for all Inventum Type 2 or Type 3 field projects.)

Radiation Safety:

- ☒ Radiation information is not applicable to this project.
- ☐ Notify RSO.
- ☐ Wear dosimeter badge when handling gauge.
- ☐ Post applicable radiation signs and documents.
- ☐ Post emergency numbers.
- ☐ Provide at least two lock systems for overnight storage.
- ☐ Maintain storage at least 15 feet from full-time workstations.
- ☐ Block, brace, and securely lock the gauge during "all" transportation.
- ☐ Limit "public" exposure to gauge while in use.
- ☐ Provide sketch of gauge storage to RSO.

Site-Specific Health and Safety Plan

(Required for all Inventum Type 2 or Type 3 field projects.)

Acknowledgment Statement:

As an employee of Inventum, I have reviewed the Hazard Assessment (HA)/Health & Safety Plan (HASP). I hereby acknowledge that I have received the **required level of training and medical surveillance as necessary**, that I am knowledgeable about the contents of this site-specific RA/HSP, and that I will use personal protective equipment (PPE) and follow procedures specified in the HASP.

Signatures of Inventum Site Personnel:

	Date:	
	Date:	
	Date:	
	Date:	
	Date:	
	Date:	
	Date:	
	Date:	
	Date:	
	Date:	
	Date:	
	Date:	

INVENTUM SAFETY OBSERVATION FORM
November 2022

Location/Project Name: _____	**Date:** _____
Observer Name: _____	
Observee Name: _____	**Time:** _____
Task Observed	
Description of Task Observed and Background Information	
Positive Comments	

INVENTUM SAFETY OBSERVATION FORM
November 2022

Conclusions / Why the Questionable Items Occurred?

Feedback Session Conducted By: _____ **Date:** _____

Name of Observee's Supervisor: _____ **Time:** _____

At-Risk Observations/Root Cause Analysis

Personal Factor:
(1) Lack of skill or knowledge
(2) Correct way takes more time/requires more effort
(3) Shortcutting standard procedures is rewarded or appreciated
(4) In past, did not follow procedures or acceptable practices and no incident occurred

Job Factor:
(5) Lack of or inadequate operational procedures or work standards
(6) Inadequate communication of expectations or work standards
(7) Inadequate tools or equipment

At-Risk Observation #	Root Cause Analysis #	Solution(s) To Prevent Potential Incident from Occurring	Person Responsible	Agreed Due Date	Date Completed

Results of Verification (were solutions done?) and Validation (were solutions effective?)

Reviewed by (PM/Supervisor): _____ **Date:** _____

Approved by (Practice Safety Leader): _____ **Date:** _____

INVENTUM SAFETY OBSERVATION FORM
November 2022

PERSONAL PROTECTIVE EQUIPMENT	Safe	At-Risk	Comments
1. Hearing Protection (e.g., Ear Plugs)			
2. Head Protection (e.g., Hard Hat)			
3. ANSI Rated Eye Protection (e.g., Safety Glasses)			
4. Hand Protection (e.g., Kevlar Gloves)			
5. Foot Protection (e.g., Safety Shoes)			
6. Respiratory Protection			
7. Fall Protection Inspected (e.g., Harness)			
8. ANSI Rated Reflective Vest/High Visibility Clothing			
9. Other (Specify)			
BODY USE AND POSITIONING	**Safe**	**At-Risk**	**Comments**
10. Correct Body Use and Positioning When Lifting/Pushing/Pulling			
11. Pinch Points/Moving Equipment - Hands/Body Clear			
12. Mounts/Dismounts Using 3-Points of Contact			
13. Other (Specify)			

INVENTUM SAFETY OBSERVATION FORM
November 2022

WORK ENVIRONMENT	Safe	At-Risk	Comments
14. Work/Walk Surface Free of Obstructions (e.g., Tripping Hazards)			
15. Housekeeping/Storage			
16. Defined and Secured (e.g., warning devices, barricades, cones, flags)			
17. Suspended Load, Swing Radius & Lift Area is Barricaded			
18. Safety Shutdown Devices			
19. Proper Storage & Labeling /Disposal of Sample & Waste Materials			
20. Cylinders Stored Upright, Secured, & Caps in Place			
21. Manhole/vault Inspected for Hazards			
22. Other (Specify)			

INVENTUM SAFETY OBSERVATION FORM
November 2022

OPERATING PROCEDURES	Safe	At-Risk	Comments
23. Job Planning (HASP reviewed, JSAs, etc.)			
24. Fire Extinguishers Accessible and Inspections Current			
25. Work Permit/Authorization to Work (Hot, Cold, LOTO, Confined Space)			
26. JSA Reviewed & Followed			
27. Hazard Assessment - Hazard Hunt			
28. Interfaces with Other Functions (awareness with other personnel on site)			
29. Operators Looking Behind Prior to Backing Up			
30. Operators Wearing Seat Belts While Operating Equipment			
31. Subsurface Structures Identified			
32. Proper Trench Protective Equipment in Place			
33. Adequate Egress Is Available for Excavation & Trench (within 25 ft. if depth is <4 ft.)			
34. All Materials Set Back at Least 2 Feet From Edge of Trench/Excavation			
35. Other (Specify)			

INVENTUM SAFETY OBSERVATION FORM
November 2022

TOOLS/EQUIPMENT	Safe	At-Risk	Comments
36. Hand Tools (Proper Equipment Selection, Condition, and Use)			
37. Power Tools (Proper Equipment Selection, Condition, and Use)			
38. Equipment, Including Heavy (Proper Equipment Selection, Condition, and Use)			
39. Hoses Inspected			
40. Required Monitoring Equipment Calibrated & Used			
41. Ladders Set up Correctly & Inspected			
42. Right Tools for the Job are Available and in Good Condition - No Fixed Open Blade Knives (FOBKs)			
43. Other (Specify)			
Total #	0	0	

Daily Hazard Review Topic and Sign-In:

Daily Review Topic	Date

Acknowledgment Statement:

As an affected employee of Inventum Engineering, I hereby acknowledge that I have reviewed the contents of this site-specific HSP and the **daily safety meeting topic**, and that I will use the applicable personal protective equipment (PPE) and follow the procedures specified in the HASP.

Signatures of all onsite Inventum Personnel, including Direct-Hires (Required):

_____ Date: _____

_____ Date: _____

_____ Date: _____

_____ Date: _____

_____ Date: _____

_____ Date: _____

_____ Date: _____

_____ Date: _____

_____ Date: _____

_____ Date: _____

Attachment A – Site Maps with Soil, Storm Sewer, and Groundwater Exceedances

Analytes	Part 375 SCOs: Unrestricted Use	Part 375 SCOs: Commercial	Part 375 SCOs: Industrial	Units	B-9-11112020-0.5-1.0		B-9-11112020-2.0-2.5		B-9-11112020-9.5-10.0	
Sample Date:					11/11/2020		11/11/2020		11/11/2020	
Sample Interval (ft):					0.5-1		2.0-2.5		9.5-10	
Matrix					Soil		Soil		Soil	
Benzene	60	44,000	89,000	Ug/kg	17,000		66,000		86,000	
Ethylbenzene	1,000	390,000	780,000	Ug/kg	17,000		1,500	J	1,300	J
Toulene	700	500,000	1,000,000	Ug/kg	14,000		83,000		54,000	
Total Xylenes	260	500,000	1,000,000	Ug/kg	120,000		9,200		8,100	

Analytes	Part 375 SCOs: Unrestricted Use	Part 375 SCOs: Commercial	Part 375 SCOs: Industrial	Units	B-14-11102020-0.3-0.8		B-14-11102020-4.5-5.0	
Sample Date:					11/11/2020		11/11/2020	
Sample Interval (ft):					0.3-0.8		4.5-5.0	
Matrix					Soil		Soil	
Benzene	60	44,000	89,000	Ug/kg	8,700	J	<49	U
Ethylbenzene	1,000	390,000	780,000	Ug/kg	7,100	J	<49	U
Toulene	700	500,000	1,000,000	Ug/kg	19,000		<49	U
Total Xylenes	260	500,000	1,000,000	Ug/kg	37,000		<98	U
Acenaphthene	20,000	500,000	1,000,000	Ug/kg	790,000		710	J
Acenaphthylene	100,000	500,000	1,000,000	Ug/kg	820,000		590	J
Anthracene	100,000	500,000	1,000,000	Ug/kg	1,500,000		1,100	
Benzo(A)Anthracene	1,000	5,600	11,000	Ug/kg	2,000,000		1,600	
Benzo(A)Pyrene	1,000	1,000	1,100	Ug/kg	2,000,000		1,700	
Benzo(B)Fluoranthene	1,000	5,600	11,000	Ug/kg	1,700,000		1,300	
Benzo(G,H,I)perylene	100,000	500,000	1,000,000	Ug/kg	930,000		820	J
Benzo(K)Fluoranthene	800	56,000	110,000	Ug/kg	780,000		600	J
Chrysene	1,000	56,000	110,000	Ug/kg	2,100,000		1,800	
Dibenzo(a,h)Anthracene	330	560	1,100	Ug/kg	300,000		230	J
Fluoranthene	100,000	500,000	1,000,000	Ug/kg	4,300,000		3,400	
Fluorene	30,000	500,000	1,000,000	Ug/kg	2,700,000		2,300	
Indeno(1,2,3-Cd)Pyrene	500	5,600	11,000	Ug/kg	850,000		610	J
Naphthalene	12,000	500,000	1,000,000	Ug/kg	8,800,000		4,900	
Phenanthrene	100,000	500,000	1,000,000	Ug/kg	9,100,000		8,500	
Pyrene	100,000	500,000	1,000,000	Ug/kg	4,200,000		4,200	

Analytes	Part 375 SCOs: Unrestricted Use	Part 375 SCOs: Commercial	Part 375 SCOs: Industrial	Units	B-29-11102020-1.8-2.3
Sample Date:					11/10/2020
Sample Interval (ft):					1.8-2.3
Matrix					Soil
Chromium	30	1,500	6,800	mg/kg	37.6

Analytes	Part 375 SCOs: Unrestricted Use	Part 375 SCOs: Commercial	Part 375 SCOs: Industrial	Units	B-16-11102020-0.9-1.4
Sample Date:					11/11/2020
Sample Interval (ft):					0.9-1.4
Matrix					Soil
Benzene	60	44,000	89,000	Ug/kg	17000
Ethylbenzene	1,000	390,000	780,000	Ug/kg	15,000
Toulene	700	500,000	1,000,000	Ug/kg	36,000
Total Xylenes	260	500,000	1,000,000	Ug/kg	140,000
Acenaphthene	20,000	500,000	1,000,000	Ug/kg	670,000
Acenaphthylene	100,000	500,000	1,000,000	Ug/kg	2,100,000
Anthracene	100,000	500,000	1,000,000	Ug/kg	14,000,000
Benzo(A)Anthracene	1,000	5,600	11,000	Ug/kg	2,100,000
Benzo(A)Pyrene	1,000	1,000	1,100	Ug/kg	1,800,000
Benzo(B)Fluoranthene	1,000	5,600	11,000	Ug/kg	1,800,000
Benzo(G,H,I)perylene	100,000	500,000	1,000,000	Ug/kg	890,000
Benzo(K)Fluoranthene	800	56,000	110,000	Ug/kg	970,000
Chrysene	1,000	56,000	110,000	Ug/kg	2,000,000
Dibenzo(a,h)Anthracene	330	560	1,100	Ug/kg	310,000
Fluoranthene	100,000	500,000	1,000,000	Ug/kg	6,100,000
Fluorene	30,000	500,000	1,000,000	Ug/kg	4,400,000
Indeno(1,2,3-Cd)Pyrene	500	5,600	11,000	Ug/kg	900,000
Naphthalene	12,000	500,000	1,000,000	Ug/kg	10,000,000
Phenanthrene	100,000	500,000	1,000,000	Ug/kg	11,000,000
Pyrene	100,000	500,000	1,000,000	Ug/kg	4,100,000

Analytes	Part 375 SCOs: Unrestricted Use	Part 375 SCOs: Commercial	Part 375 SCOs: Industrial	Units	B-30-11102020-0.5-1.0
Sample Date:					11/10/2020
Sample Interval (Ft):					0.5-1
Matrix					Soil
Benzene	60	44,000	89,000	Ug/kg	29,000
Toulene	700	500,000	1,000,000	Ug/kg	19,000
Total Xylenes	260	500,000	1,000,000	Ug/kg	28,000
Acenaphthene	20,000	500,000	1,000,000	Ug/kg	410,000
Acenaphthylene	100,000	500,000	1,000,000	Ug/kg	3,330,000
Anthracene	100,000	500,000	1,000,000	Ug/kg	4,200,000
Benzo(A)Anthracene	1,000	5,600	11,000	Ug/kg	3,100,000
Benzo(A)Pyrene	1,000	1,000	1,100	Ug/kg	2,800,000
Benzo(B)Fluoranthene	1,000	5,600	11,000	Ug/kg	3,200,000
Benzo(G,H,I)perylene	100,000	500,000	1,000,000	Ug/kg	1,500,000
Benzo(K)Fluoranthene	800	56,000	110,000	Ug/kg	1,200,000
Chrysene	1,000	56,000	110,000	Ug/kg	3,000,000
Dibenzo(a,h)Anthracene	330	560	1,100	Ug/kg	460,000
Fluoranthene	100,000	500,000	1,000,000	Ug/kg	9,400,000
Fluorene	30,000	500,000	1,000,000	Ug/kg	3,900,000
Indeno(1,2,3-Cd)Pyrene	500	5,600	11,000	Ug/kg	1,400,000
Naphthalene	12,000	500,000	1,000,000	Ug/kg	11,000,000
Phenanthrene	100,000	500,000	1,000,000	Ug/kg	13,000,000
Pyrene	100,000	500,000	1,000,000	Ug/kg	5,900,000

Analytes	Part 375 SCOs: Unrestricted Use	Part 375 SCOs: Commercial	Part 375 SCOs: Industrial	Units	B-18-11092020-0.9-1.4
Sample Date:					11/9/2020
Sample Interval (ft):					0.9-1.4
Matrix					Soil
Benzene	60	44,000	89,000	Ug/kg	27,000
Toulene	700	500,000	1,000,000	Ug/kg	19,000
Total Xylenes	260	500,000	1,000,000	Ug/kg	23,000
Acenaphthene	20,000	500,000	1,000,000	Ug/kg	450,000
Acenaphthylene	100,000	500,000	1,000,000	Ug/kg	3,200,000
Anthracene	100,000	500,000	1,000,000	Ug/kg	3,100,000
Benzo(A)Anthracene	1,000	5,600	11,000	Ug/kg	3,000,000
Benzo(A)Pyrene	1,000	1,000	1,100	Ug/kg	2,800,000
Benzo(B)Fluoranthene	1,000	5,600	11,000	Ug/kg	2,900,000
Benzo(G,H,I)perylene	100,000	500,000	1,000,000	Ug/kg	1,600,000
Benzo(K)Fluoranthene	800	56,000	110,000	Ug/kg	1,300,000
Chrysene	1,000	56,000	110,000	Ug/kg	2,300,000
Dibenzo(a,h)Anthracene	330	560	1,100	Ug/kg	380,000
Fluoranthene	100,000	500,000	1,000,000	Ug/kg	8,700,000
Fluorene	30,000	500,000	1,000,000	Ug/kg	3,900,000
Indeno(1,2,3-Cd)Pyrene	500	5,600	11,000	Ug/kg	1,500,000
Naphthalene	12,000	500,000	1,000,000	Ug/kg	9,100,000
Phenanthrene	100,000	500,000	1,000,000	Ug/kg	10,000,000
Pyrene	100,000	500,000	1,000,000	Ug/kg	5,600,000

LEGEND

9.5-10 Deepest Exceedance (feet below ground surface)

Soil Borings

- No Exceedance of Industrial Part 375 SCOs at Sampled Interval
- Exceeds Unrestricted Use Part 375 Soil Cleanup Objectives (SCOs)
- Exceeds Commercial Part 375 SCOs
- Exceeds Industrial Part 375 SCOs
- Property Line & Sub-Area Boundaries

D

1" = 50'

50' 25' 0' 50'

References:

1. Parsons, 2021, Tonawanda Plastics Site NYSDEC ID 915003 Draft Site Investigation Summary Report
2. Niagara Boundary and Mapping Services, 2022, Site Aerial of 3821 River Road Tonawanda

RB

DRAWING BY

CHECKED

APPROVED

2020 SOIL DATA

3821 RIVER ROAD

TONAWANDA NEW YORK, 14150

INVENTUM ENGINEERING

441 CARLISLE DRIVE

SUITE C

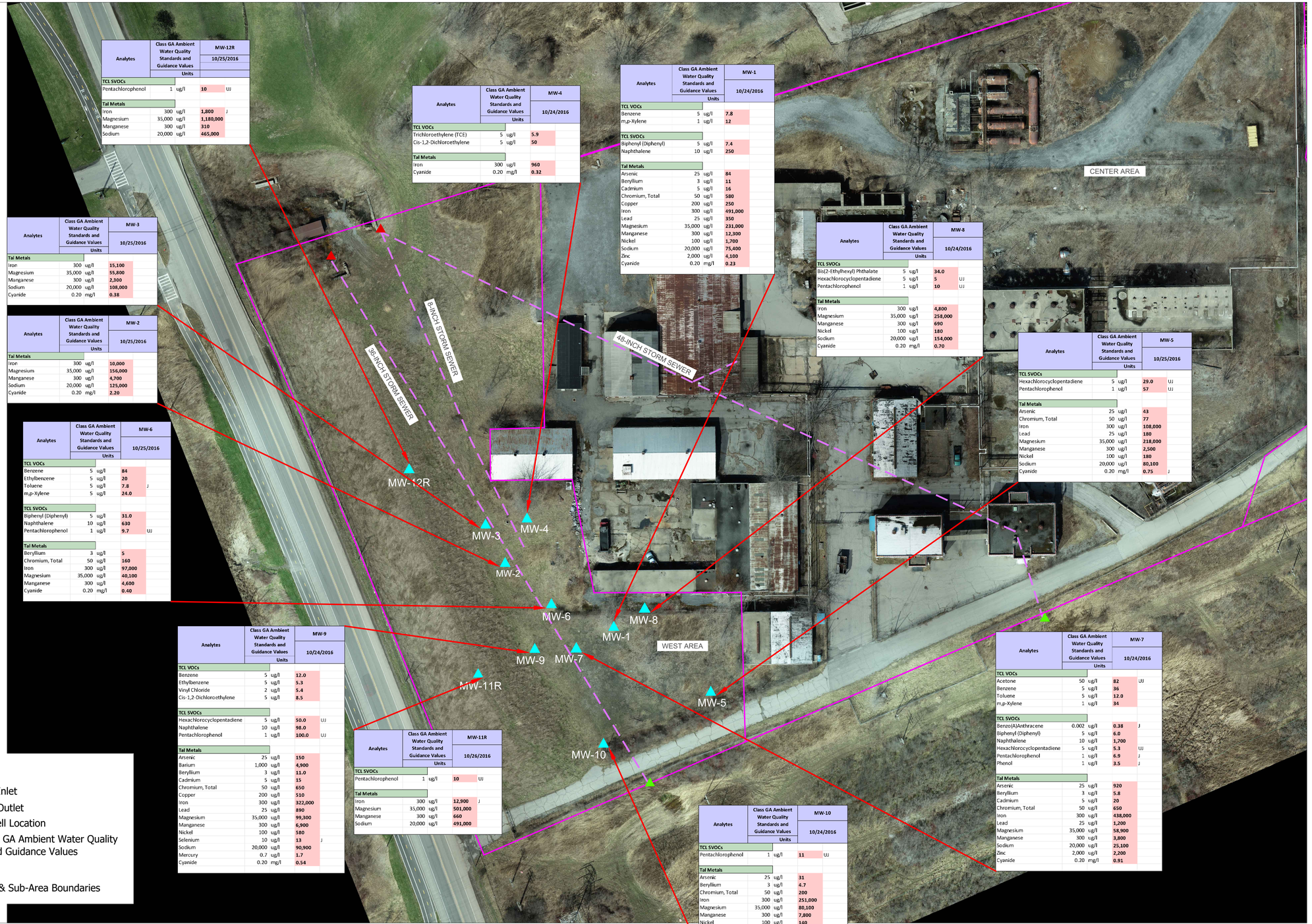
HERNDON, VIRGINIA 20170

(703) 722-6049

www.InventumEng.com

FIGURE 7

DRAWING NUMBER



Analytes	Class GA Ambient Water Quality Standards and Guidance Values	Units	MW-12R 10/25/2016	
TCL SVOCs				
Pentachlorophenol	1	ug/l	**10**	UJ
Tal Metals				
Iron	300	ug/l	**1,800**	J
Magnesium	35,000	ug/l	**1,180,000**	
Manganese	300	ug/l	**310**	
Sodium	20,000	ug/l	**465,000**	

Analytes	Class GA Ambient Water Quality Standards and Guidance Values	Units	MW-4 10/24/2016	
TCL VOCs				
Trichloroethylene (TCE)	5	ug/l	**5.9**	
Cis-1,2-Dichloroethylene	5	ug/l	**50**	
Tal Metals				
Iron	300	ug/l	**960**	
Cyanide	0.20	mg/l	**0.32**	

Analytes	Class GA Ambient Water Quality Standards and Guidance Values	Units	MW-1 10/24/2016	
TCL VOCs				
Benzene	5	ug/l	**7.8**	
m,p-Xylene	1	ug/l	**12**	
TCL SVOCs				
Biphenyl (Diphenyl)	5	ug/l	**7.4**	
Naphthalene	10	ug/l	**250**	
Tal Metals				
Arsenic	25	ug/l	**84**	
Beryllium	3	ug/l	**11**	
Cadmium	5	ug/l	**16**	
Chromium, Total	50	ug/l	**580**	
Copper	200	ug/l	**250**	
Iron	300	ug/l	**491,000**	
Lead	25	ug/l	**350**	
Magnesium	35,000	ug/l	**231,000**	
Manganese	300	ug/l	**12,300**	
Nickel	100	ug/l	**1,700**	
Sodium	20,000	ug/l	**75,400**	
Zinc	2,000	ug/l	**4,100**	
Cyanide	0.20	mg/l	**0.23**	

Analytes	Class GA Ambient Water Quality Standards and Guidance Values	Units	MW-3 10/25/2016	
Tal Metals				
Iron	300	ug/l	**15,100**	
Magnesium	35,000	ug/l	**55,800**	
Manganese	300	ug/l	**2,300**	
Sodium	20,000	ug/l	**108,000**	
Cyanide	0.20	mg/l	**0.38**	

Analytes	Class GA Ambient Water Quality Standards and Guidance Values	Units	MW-2 10/25/2016	
Tal Metals				
Iron	300	ug/l	**10,000**	
Magnesium	35,000	ug/l	**156,000**	
Manganese	300	ug/l	**4,700**	
Sodium	20,000	ug/l	**125,000**	
Cyanide	0.20	mg/l	**2.20**	

Analytes	Class GA Ambient Water Quality Standards and Guidance Values	Units	MW-6 10/25/2016	
TCL VOCs				
Benzene	5	ug/l	**84**	
Ethylbenzene	5	ug/l	**20**	
Toluene	5	ug/l	**7.8**	J
m,p-Xylene	5	ug/l	**24.0**	
TCL SVOCs				
Biphenyl (Diphenyl)	5	ug/l	**31.0**	
Naphthalene	10	ug/l	**630**	
Pentachlorophenol	1	ug/l	**9.7**	UJ
Tal Metals				
Beryllium	3	ug/l	**5**	
Chromium, Total	50	ug/l	**160**	
Iron	300	ug/l	**97,000**	
Magnesium	35,000	ug/l	**40,100**	
Manganese	300	ug/l	**4,600**	
Cyanide	0.20	mg/l	**0.40**	

Analytes	Class GA Ambient Water Quality Standards and Guidance Values	Units	MW-8 10/24/2016	
TCL SVOCs				
Bis(2-Ethylhexyl) Phthalate	5	ug/l	**34.0**	
Hexachlorocyclopentadiene	5	ug/l	**5**	UJ
Pentachlorophenol	1	ug/l	**10**	UJ
Tal Metals				
Iron	300	ug/l	**4,800**	
Magnesium	35,000	ug/l	**258,000**	
Manganese	300	ug/l	**690**	
Nickel	100	ug/l	**180**	
Sodium	20,000	ug/l	**154,000**	
Cyanide	0.20	mg/l	**0.70**	

Analytes	Class GA Ambient Water Quality Standards and Guidance Values	Units	MW-5 10/25/2016	
TCL SVOCs				
Hexachlorocyclopentadiene	5	ug/l	**29.0**	UJ
Pentachlorophenol	1	ug/l	**57**	UJ
Tal Metals				
Arsenic	25	ug/l	**43**	
Chromium, Total	50	ug/l	**77**	
Iron	300	ug/l	**108,000**	
Lead	25	ug/l	**180**	
Magnesium	35,000	ug/l	**218,000**	
Manganese	300	ug/l	**2,500**	
Nickel	100	ug/l	**180**	
Sodium	20,000	ug/l	**80,100**	
Cyanide	0.20	mg/l	**0.75**	J

Analytes	Class GA Ambient Water Quality Standards and Guidance Values	Units	MW-9 10/24/2016	
TCL VOCs				
Benzene	5	ug/l	**12.0**	
Ethylbenzene	5	ug/l	**5.3**	
Vinyl Chloride	2	ug/l	**5.4**	
Cis-1,2-Dichloroethylene	5	ug/l	**8.5**	
TCL SVOCs				
Hexachlorocyclopentadiene	5	ug/l	**50.0**	UJ
Naphthalene	10	ug/l	**98.0**	
Pentachlorophenol	1	ug/l	**100.0**	UJ
Tal Metals				
Arsenic	25	ug/l	**150**	
Barium	1,000	ug/l	**4,900**	
Beryllium	3	ug/l	**11.0**	
Cadmium	5	ug/l	**15**	
Chromium, Total	50	ug/l	**650**	
Copper	200	ug/l	**510**	
Iron	300	ug/l	**322,000**	
Lead	25	ug/l	**890**	
Magnesium	35,000	ug/l	**99,300**	
Manganese	300	ug/l	**6,900**	
Nickel	100	ug/l	**580**	
Selenium	10	ug/l	**13**	J
Sodium	20,000	ug/l	**90,900**	
Mercury	0.7	ug/l	**1.7**	
Cyanide	0.20	mg/l	**0.54**	

Analytes	Class GA Ambient Water Quality Standards and Guidance Values	Units	MW-11R 10/26/2016	
TCL SVOCs				
Pentachlorophenol	1	ug/l	**10**	UJ
Tal Metals				
Iron	300	ug/l	**12,900**	J
Magnesium	35,000	ug/l	**501,000**	
Manganese	300	ug/l	**660**	
Sodium	20,000	ug/l	**491,000**	

Analytes	Class GA Ambient Water Quality Standards and Guidance Values	Units	MW-10 10/24/2016	
TCL SVOCs				
Pentachlorophenol	1	ug/l	**11**	UJ
Tal Metals				
Arsenic	25	ug/l	**31**	
Beryllium	3	ug/l	**4.7**	
Chromium, Total	50	ug/l	**200**	
Iron	300	ug/l	**251,000**	
Magnesium	35,000	ug/l	**80,100**	
Manganese	300	ug/l	**7,800**	
Nickel	100	ug/l	**140**	
Sodium	20,000	ug/l	**127,000**	
Cyanide	0.20	mg/l	**1.10**	

Analytes	Class GA Ambient Water Quality Standards and Guidance Values	Units	MW-7 10/24/2016	
TCL VOCs				
Acetone	50	ug/l	**82**	UJ
Benzene	5	ug/l	**36**	
Toluene	5	ug/l	**12.0**	
m,p-Xylene	1	ug/l	**34**	
TCL SVOCs				
Benzo(A)Anthracene	0.002	ug/l	**0.38**	J
Biphenyl (Diphenyl)	5	ug/l	**6.0**	
Naphthalene	10	ug/l	**1,700**	
Hexachlorocyclopentadiene	5	ug/l	**5.3**	UJ
Pentachlorophenol	1	ug/l	**6.9**	J
Phenol	1	ug/l	**3.5**	J
Tal Metals				
Arsenic	25	ug/l	**920**	
Beryllium	3	ug/l	**5.8**	
Cadmium	5	ug/l	**20**	
Chromium, Total	50	ug/l	**650**	
Iron	300	ug/l	**438,000**	
Lead	25	ug/l	**1,200**	
Magnesium	35,000	ug/l	**58,900**	
Manganese	300	ug/l	**3,800**	
Sodium	20,000	ug/l	**25,100**	
Zinc	2,000	ug/l	**2,200**	
Cyanide	0.20	mg/l	**0.91**	

LEGEND

- Storm Water Inlet
- Storm Water Outlet
- Monitoring Well Location
- Exceeds Class GA Ambient Water Quality Standards and Guidance Values
- Storm Sewer
- Property Line & Sub-Area Boundaries

D

1" = 50'
50' 25' 0' 50'

References:
1. Parsons, 2017, Tonawanda Plastics Investigation Summary Report
2. Niagara Boundary and Mapping Services, 2022, Site Aerial of 3821 River Road Tonawanda

Note: The trajectories of the 8-inch diameter and 48-inch diameter storm sewers are approximate.

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2016 MONITORING WELL DATA
3821 RIVER ROAD
TONAWANDA NEW YORK, 14150

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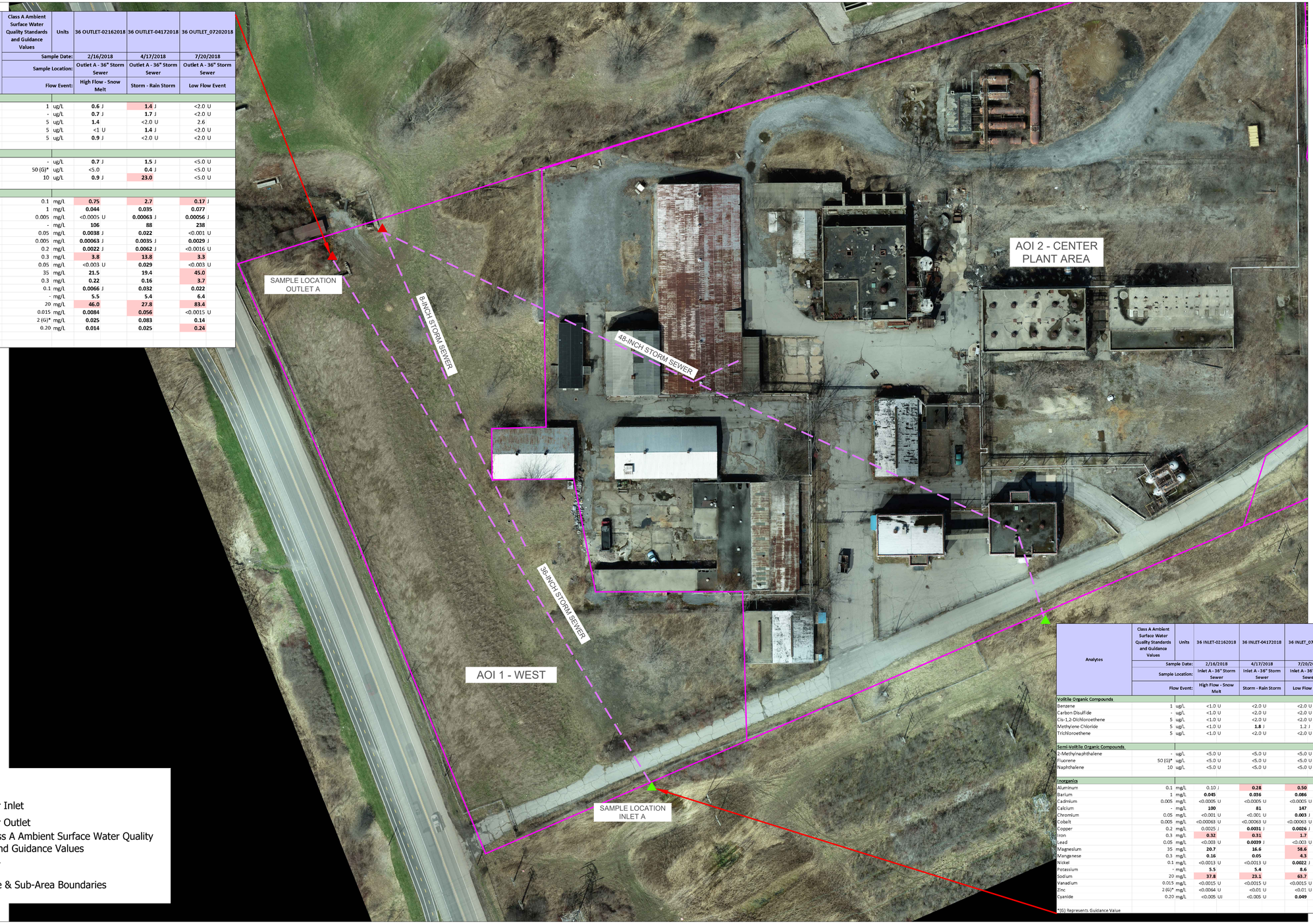
FIGURE 8
DRAWING NUMBER

Analytes	Class A Ambient Surface Water Quality Standards and Guidance Values	Units	36 OUTLET-02162018	36 OUTLET-04172018	36 OUTLET_07202018
Sample Date:			2/16/2018	4/17/2018	7/20/2018
Sample Location:			Outlet A - 36" Storm Sewer	Outlet A - 36" Storm Sewer	Outlet A - 36" Storm Sewer
Flow Event:			High Flow - Snow Melt	Storm - Rain Storm	Low Flow Event
Volitile Organic Compounds					
Benzene	1	ug/L	**0.6** J	**1.4** J	<2.0 U
Carbon Disulfide	-	ug/L	**0.7** J	**1.7** J	<2.0 U
Cis-1,2-Dichloroethene	5	ug/L	**1.4**	<2.0 U	2.6
Methylene Chloride	5	ug/L	<1 U	**1.4** J	<2.0 U
Trichloroethene	5	ug/L	**0.9** J	<2.0 U	<2.0 U
Semi-Volitile Organic Compounds					
2-Methylnaphthalene	-	ug/L	**0.7** J	**1.5** J	<5.0 U
Fluorene	50 (G)*	ug/L	<5.0	**0.4** J	<5.0 U
Naphthalene	10	ug/L	**0.9** J	**23.0**	<5.0 U
Inorganics					
Aluminum	0.1	mg/L	**0.75**	**2.7**	**0.17** J
Barium	1	mg/L	**0.044**	**0.035**	**0.077**
Cadmium	0.005	mg/L	<0.0005 U	**0.00063** J	**0.00056** J
Calcium	-	mg/L	**106**	**88**	**238**
Chromium	0.05	mg/L	**0.0038** J	**0.022**	<0.001 U
Cobalt	0.005	mg/L	**0.00063** J	**0.0035** J	**0.0029** J
Copper	0.2	mg/L	**0.0022** J	**0.0062** J	<0.0016 U
Iron	0.3	mg/L	**3.8**	**13.8**	**3.3**
Lead	0.05	mg/L	<0.003 U	**0.029**	<0.003 U
Magnesium	35	mg/L	**21.5**	**19.4**	**45.0**
Manganese	0.3	mg/L	**0.22**	**0.16**	**3.7**
Nickel	0.1	mg/L	**0.0066** J	**0.032**	**0.022**
Potassium	-	mg/L	**5.5**	**5.4**	**6.4**
Sodium	20	mg/L	**46.0**	**27.8**	**83.4**
Vanadium	0.015	mg/L	**0.0084**	**0.056**	<0.0015 U
Zinc	2 (G)*	mg/L	**0.025**	**0.083**	**0.14**
Cyanide	0.20	mg/L	**0.014**	**0.025**	**0.24**

*(G) Represents Guidance Value



Analytes	Class A Ambient Surface Water Quality Standards and Guidance Values	Units	36 INLET-02162018	36 INLET-04172018	36 INLET_07202018
Sample Date:			2/16/2018	4/17/2018	7/20/2018
Sample Location:			Inlet A - 36" Storm Sewer	Inlet A - 36" Storm Sewer	Inlet A - 36" Storm Sewer
Flow Event:			High Flow - Snow Melt	Storm - Rain Storm	Low Flow Event
Volitile Organic Compounds					
Benzene	1	ug/L	<1.0 U	<2.0 U	<2.0 U
Carbon Disulfide	-	ug/L	<1.0 U	<2.0 U	<2.0 U
Cis-1,2-Dichloroethene	5	ug/L	<1.0 U	<2.0 U	<2.0 U
Methylene Chloride	5	ug/L	<1.0 U	**1.8** J	1.2 J
Trichloroethene	5	ug/L	<1.0 U	<2.0 U	<2.0 U
Semi-Volitile Organic Compounds					
2-Methylnaphthalene	-	ug/L	<5.0 U	<5.0 U	<5.0 U
Fluorene	50 (G)*	ug/L	<5.0 U	<5.0 U	<5.0 U
Naphthalene	10	ug/L	<5.0 U	<5.0 U	<5.0 U
Inorganics					
Aluminum	0.1	mg/L	0.10 J	**0.28**	**0.50**
Barium	1	mg/L	**0.045**	**0.036**	**0.086**
Cadmium	0.005	mg/L	<0.0005 U	<0.0005 U	<0.0005 U
Calcium	-	mg/L	**100**	**81**	**147**
Chromium	0.05	mg/L	<0.001 U	<0.001 U	**0.003** J
Cobalt	0.005	mg/L	<0.00063 U	<0.00063 U	<0.00063 U
Copper	0.2	mg/L	0.0025 J	**0.0031** J	**0.0026** J
Iron	0.3	mg/L	**0.32**	**0.31**	**1.7**
Lead	0.05	mg/L	<0.003 U	**0.0039** J	<0.003 U
Magnesium	35	mg/L	**20.7**	**16.6**	**58.6**
Manganese	0.3	mg/L	**0.16**	**0.05**	**4.3**
Nickel	0.1	mg/L	<0.0013 U	<0.0013 U	**0.0022** J
Potassium	-	mg/L	**5.5**	**5.4**	**8.6**
Sodium	20	mg/L	**37.8**	**23.1**	**63.7**
Vanadium	0.015	mg/L	<0.0015 U	<0.0015 U	<0.0015 U
Zinc	2 (G)*	mg/L	<0.0094 U	<0.01 U	<0.01 U
Cyanide	0.20	mg/L	<0.005 UJ	<0.005 U	**0.049**

*(G) Represents Guidance Value

LEGEND

- Storm Water Inlet
- Storm Water Outlet
- Exceeds Class A Ambient Surface Water Quality Standards and Guidance Values
- Storm Sewer
- Property Line & Sub-Area Boundaries

D

1" = 50'

50' 25' 0' 50'

References:

1. Parsons, 2021, Tonawanda Plastics Site NYSDEC ID 915003 Draft Site Investigation Summary Report
2. Niagara Boundary and Mapping Services, 2022, Site Aerial of 3821 River Road Tonawanda

Note:

1. Storm sewer data is compare to the Class A ambient surface water quality standard because the SPDES discharge criteria for Energy Transfer at Inlet A is not available.
2. The trajectories of the 8-inch diameter and 48-inch diameter storm sewers are approximate.

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2018 STORM SEWER DATA
3821 RIVER ROAD
TONAWANDA NEW YORK, 14150

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FIGURE 9

DRAWING NUMBER

Appendix C – Community Air Monitoring Plan

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Community Air Monitoring Plan

3821 River Road, Inc.

Brownfield Cleanup Program (BCP) Site

NYSDEC Site #C915003

3821 River Road

Tonawanda, NY 14150

July 14, 2023

441 CARLISLE DRIVE
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Table of Contents

1 Overview

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

The generic CAMP presented below will be sufficient to cover many, if not most, sites. Specific requirements should be reviewed for each situation in consultation with NYSDOH to ensure proper applicability. In some cases, a separate site-specific CAMP or supplement may be required. Depending upon the nature of contamination, chemical- specific monitoring with appropriately-sensitive methods may be required.

- *The 3821 River Road, Inc. (3821 River Road) Site will have a perimeter air monitoring program before and during the Remedial Investigation (RI). If there are detections at the property line, additional monitoring requirements will be considered*[1].
- *Three (3) perimeter air monitoring station units (1 Upwind and 2 Downwind) will be mobile and moved as the work area(s) change at the 3821 River Road BCP Site. Example monitoring locations are shown on Figure 10 provided in Appendix A-2.*

Depending upon the proximity of potentially exposed individuals, more stringent monitoring or response levels than those presented below may be required. Special requirements will be necessary for work within 20 feet of potentially exposed individuals or structures and for indoor work with co-located residences or facilities. These requirements should be determined in consultation with NYSDOH.

- *There are no sensitive receptors on the property. The closest residence is more than 0.25 miles away from the property boundary.*

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

2 Community Air Monitoring Plan

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

[1] The text in *italic font* are comments inserted by 3821 River Road, Inc. in addition to the standard CAMP Template.

- *VOC and particulate monitoring will be incorporated into the RI and Interim Remedial Measure (IRM) activities.*

Continuous monitoring will be required for all ground intrusive activities during the demolition of contaminated or potentially contaminated structures, installing groundwater conveyance trenches, operation of a groundwater treatment system when housed indoors, and during the decontamination and deconstruction of Above Ground Storage Tanks (ASTs). Ground intrusive activities include, but are not limited to, soil/waste excavation and handling, test pitting or trenching, and the installation of soil borings or monitoring wells. Decontamination and deconstruction of ASTs include, but are not limited to, removal of residual products, decontamination of ASTs and ancillary piping and equipment, and emptying and decontamination of secondary containment structures.

Periodic monitoring for VOCs will be required during non-intrusive activities such as the collection of soil and sediment samples or the collection of groundwater samples from existing monitoring wells. "Periodic" monitoring during sample collection might reasonably consist of taking a reading upon arrival at a sample location, monitoring while opening a well cap or overturning soil, monitoring during well baling/purging, and taking a reading prior to leaving a sample location. In some instances, depending upon the proximity of potentially exposed individuals, continuous monitoring may be required during sampling activities. Examples of such situations include groundwater sampling at wells on the curb of a busy urban street, in the midst of a public park, or adjacent to a school or residence.

- *During sampling periodic monitoring will be implemented with hand-held instruments.*

3 VOC Monitoring, Response Levels, and Actions

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

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

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

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

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

5. The NYSDEC and NYSDOH project managers for the Site will be notified within 24-hours by phone or email if there is an exceedance of the VOC action level of 25 ppm at the perimeter of the work area as described within Section 3. The notification shall include a description of the control measures implemented to prevent further exceedances.

4 Particulate Monitoring, Response Levels, and Actions

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

1. If the downwind PM-10 particulate level is 100 micrograms per cubic meter (mcg/m^3) greater than background (upwind perimeter) for the 15-minute period or if airborne dust is observed leaving the work area, then dust suppression techniques must be employed. Work may continue with dust suppression techniques provided that downwind PM-10 particulate levels do not exceed 150 mcg/m3 above the upwind level and provided that no visible dust is migrating from the work area.

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

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

4. Should the action level of 150 mcg/m3 above the upwind monitoring concentration be exceeded after corrective actions are taken, work must stop and NYDEC and NYSDOH project managers for the Site must be notified within 24-hours by phone or email. The notification shall include a description of the control measures implemented to prevent further exceedances.

Appendix A-1
Fugitive Dust and Particulate Monitoring

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

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

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

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

(a) Objects to be measured: Dust, mists or aerosols;

(b) Measurement Ranges: 0.001 to 400 mg/m^3 (1 to 400,000 :ug/m^3);

(c) Precision (2-sigma) at constant temperature: +/- 10 :g/m^3 for one second averaging; and +/- 1.5 g/m^3 for sixty second averaging;

(d) Accuracy: +/- 5% of reading +/- precision (Referred to gravimetric calibration with SAE fine test dust (mmd= 2 to 3 :m, g= 2.5, as aerosolized);

(e) Resolution: 0.1% of reading or $1g/m^3$, whichever is larger;

(f) Particle Size Range of Maximum Response: 0.1-10;

(g) Total Number of Data Points in Memory: 10,000;

(h) Logged Data: Each data point with average concentration, time/date and data point number

(i) Run Summary: overall average, maximum concentrations, time/date of maximum, total number of logged points, start time/date, total elapsed time (run duration), STEL concentration and time/date occurrence, averaging (logging) period, calibration factor, and tag number;

(j) Alarm Averaging Time (user selectable): real-time (1-60 seconds) or STEL (15 minutes), alarms required;

(k) Operating Time: 48 hours (fully charged NiCd battery); continuously with charger;

(l) Operating Temperature: -10 to 50^o C (14 to 122^o F);

(m) Particulate levels will be monitored upwind and immediately downwind at the working site and integrated over a period not to exceed 15 minutes.

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

5. The action level will be established at 150 ug/m^3 (15 minutes average). While conservative, this short-term interval will provide a real-time assessment of on-site air quality to assure both health and safety. If particulate levels are detected in excess of 150 ug/m^3, the upwind background level must be confirmed immediately. If the working site particulate measurement is greater than 100 ug/m^3 above the background level, additional dust suppression techniques must be implemented to reduce the generation of fugitive dust and corrective action taken to protect site personnel and reduce the potential for contaminant migration. Corrective measures may include increasing the level of personal protection for on-site personnel and implementing additional dust suppression techniques (see paragraph 7). Should the action level of 150 ug/m^3 above the upwind monitoring concentration be exceeded after corrective actions are taken, work must stop and DER and DOH must be notified within one hour. The notification shall include a description of the control measures implemented to prevent further exceedances..

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

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

(a) Applying water on haul roads and demolitions;

(b) Wetting equipment and excavation faces;

(c) Spraying water on buckets during excavation and dumping;

(d) Hauling materials in properly tarped or watertight containers;

(e) Restricting vehicle speeds to 10 mph;

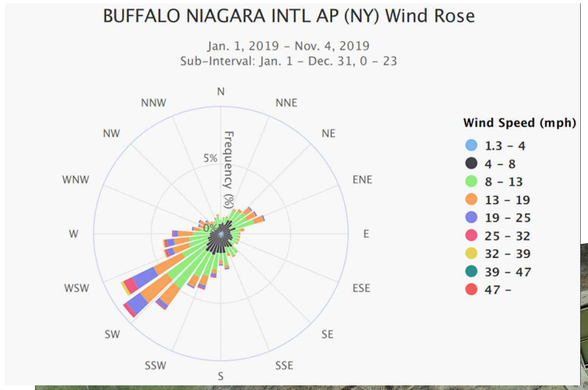
(f) Covering excavated areas and material after excavation activity ceases; and

(g) Reducing the excavation size and/or number of excavations.

Experience has shown that the chance of exceeding the 150ug/m^3 action level is remote when the above-mentioned techniques are used. When techniques involving water application are used, care must be taken not to use excess water, which can result in unacceptably wet conditions. Using atomizing sprays will prevent overly wet conditions, conserve water, and provide an effective means of suppressing the fugitive dust.

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

Appendix A-2
Perimeter Air Monitoring Locations



N

BUILDING NUMBERS

1. Admin - Locked
2. Storage 1
3. Possible Septic Tank - 3 Openings
4. Electrical Utility Building
5. West Warehouse 2
6. West Warehouse 1
7. West Storage 3
8. Debris Piles
9. Office Trailer
10. Ausmus Garage
11. Brick Shop
12. A - North Garage A (East)
    B - North Garage B (West)
13. A - Open Lean To (Under Larger Lean To C)
    B - Open Lean To (Under Larger Lean To C)
    C - Larger Lean To
14. Discharge Meter House with Manhole
15. Allied Pump House - Product Pumping
16. Electric Equipment Mobile Building
17. Lean-To 2
18. Northwest Storage
19. Small Pump House
20. Coke Building
21. Northeast Storage
22. Laboratory
23. Two-story Administration Building
24. Pump House

Legend

- Existing Monitoring Well
- Property Line
- Building
- Site Features (Utilities & Structures

Note:
1. Downwind and upwind monitoring locations will be moved and relocated as necessary to account for active work areas.

References:
1. Parsons, 2021, Tonawanda Plastics Site NYSDEC ID 915003 Draft Site Investigation Summary Report
2. Niagara Boundary and Mapping Services, 2022, Site Aerial of 3821 River Road Tonawanda

1" = 80'
80' 40' 0' 80'

D

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COMMUNITY AIR MONITORING PLAN (CAMP)

3821 RIVER ROAD
TONAWANDA NEW YORK, 14150
NYSDEC BCP SITE #C915003

INVENTUM ENGINEERING
441 CARLISLE DRIVE
SUITE C
HERNDON, VIRGINIA 20170
(703) 722-6049
www.InventumEng.com

FIGURE 10

DRAWING NUMBER
RI WORKPLAN

Appendix D – Wetlands Databases

Environmental Resource Mapper

The coordinates of the point you clicked on are:

UTM 18	**Easting:**	179472.35559568758	**Northing:**	4766087.261542752
Longitude/Latitude	**Longitude:**	-78.93095380684204	**Latitude:**	42.979929948948104

The approximate address of the point you clicked on is:
14150, Tonawanda, New York

County: Erie
Town: Tonawanda
USGS Quad: BUFFALO NW, NY-ONT

If your project or action is within or near an area with a rare animal, a permit may be required if the species is listed as endangered or threatened and the department determines the action may be harmful to the species or its habitat.

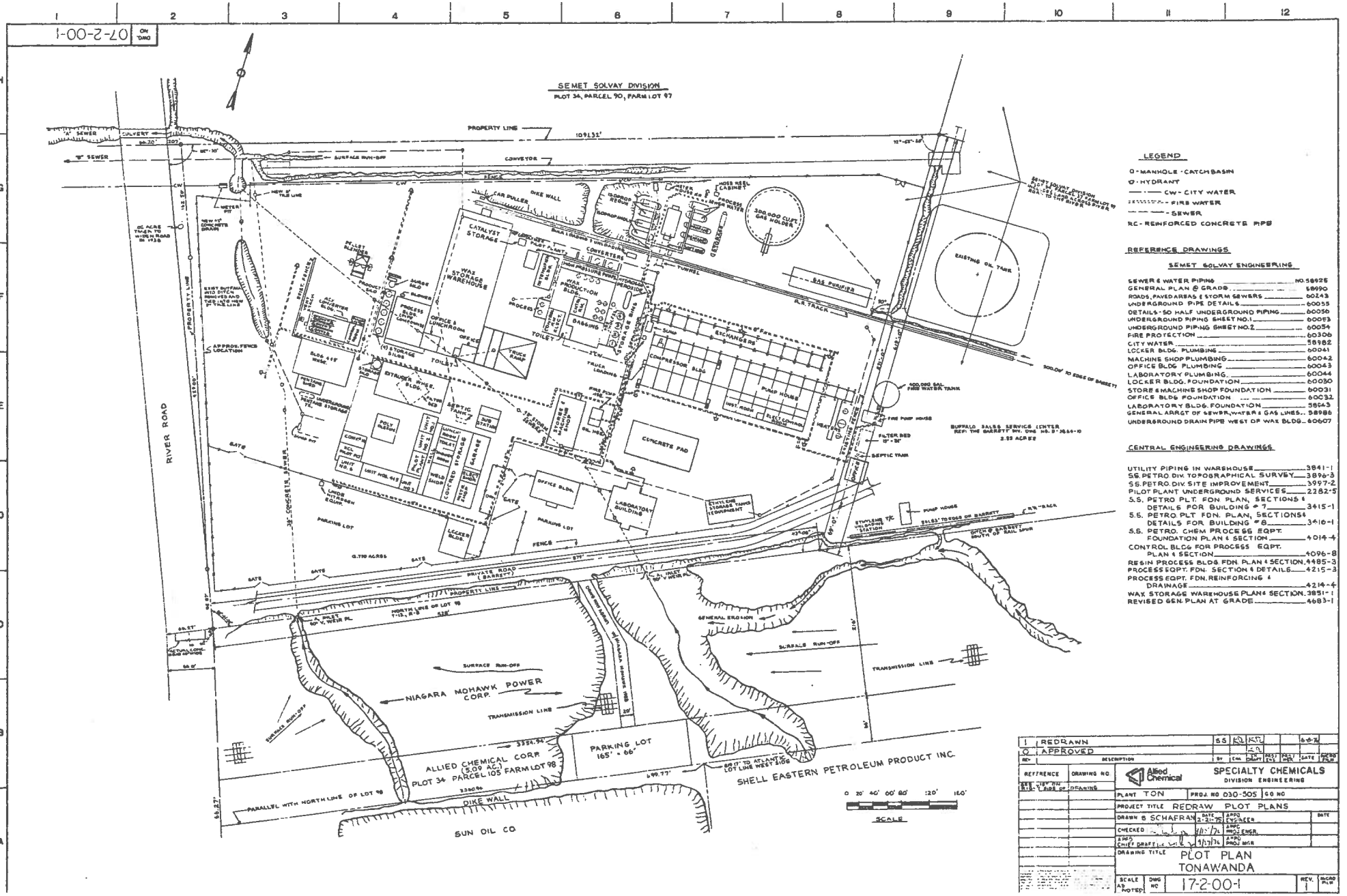
If your project or action is within or near an area with rare plants and/or significant natural communities, the environmental impacts may need to be addressed.

The presence of a unique geological feature or landform near a project, unto itself, does not trigger a requirement for a NYS DEC permit. Readers are advised, however, that there is the chance that a unique feature may also show in another data layer (ie. a wetland) and thus be subject to permit jurisdiction.

Please refer to the "Need a Permit?" tab for permit information or other authorizations regarding these natural resources.

Disclaimer: If you are considering a project or action in, or near, a wetland or a stream, a NYS DEC permit may be required. The Environmental Resources Mapper does not show all natural resources which are regulated by NYS DEC, and for which permits from NYS DEC are required. For example, Regulated Tidal Wetlands, and Wild, Scenic, and Recreational Rivers, are currently not included on the maps.

Appendix E - Historical Plant Layout Figures



LEGEND

- O - MANHOLE - CATCH BASIN
- O - HYDRANT
- —·—·— CW - CITY WATER
- ——— FIRE WATER
- — — — SEWER
- RC - REINFORCED CONCRETE PIPE

REFERENCE DRAWINGS

SEMET SOLVAY ENGINEERING

SEWER & WATER PIPING	NO. 58925
GENERAL PLAN & GRADE	58990
ROADS, PAVED AREAS & STORM SEWERS	60243
UNDERGROUND PIPE DETAILS	60055
DETAILS - SO HALF UNDERGROUND PIPING	60056
UNDERGROUND PIPING SHEET NO. 1	60053
UNDERGROUND PIPING SHEET NO. 2	60054
FIRE PROTECTION	60306
CITY WATER	58982
LOCKER BLDG. PLUMBING	60041
MACHINE SHOP PLUMBING	60042
OFFICE BLDG PLUMBING	60043
LABORATORY PLUMBING	60044
LOCKER BLDG. FOUNDATION	60030
STORE & MACHINE SHOP FOUNDATION	60031
OFFICE BLDG FOUNDATION	60032
LABORATORY BLDG. FOUNDATION	58643
GENERAL ARRGT OF SEWER, WATER & GAS LINES	58986
UNDERGROUND DRAIN PIPE WEST OF WAX BLDG	60607

CENTRAL ENGINEERING DRAWINGS

UTILITY PIPING IN WAREHOUSE	3841-1
S.S. PETRO DIV. TOPOGRAPHICAL SURVEY	3896-3
S.S. PETRO. DIV. SITE IMPROVEMENT	3997-2
PILOT PLANT UNDERGROUND SERVICES	2282-5
S.S. PETRO PLT. FDN. PLAN, SECTIONS & DETAILS FOR BUILDING # 7	3415-1
S.S. PETRO. PLT. FDN. PLAN, SECTIONS & DETAILS FOR BUILDING # 8	3416-1
S.S. PETRO. CHEM PROCESS EQPT. FOUNDATION PLAN & SECTION	4014-4
CONTROL BLDG. FOR PROCESS EQPT. PLAN & SECTION	4096-8
RESIN PROCESS BLDG. FDN. PLAN & SECTION	4485-3
PROCESS EQPT. FDN. SECTION & DETAILS	4215-3
PROCESS EQPT. FDN. REINFORCING & DRAINAGE	4214-4
WAX STORAGE WAREHOUSE PLAN & SECTION	3851-1
REVISED GEN. PLAN AT GRADE	4683-1

NO.	DESCRIPTION	BY	CHK.	DRAFT	PROJ ENG	PROJ MGR	DATE	ACCEPTED
1	REDRAWN	SS	RJ	KT			6-6-74	
0	APPROVED			JH				

REFFRENCE	DRAWING NO
SEE "TIP ON" RIBBON SIDE OF DRAWING	

Allied Chemical — SPECIALTY CHEMICALS, DIVISION ENGINEERING

PLANT TON | PROJ NO 030-505 | GO NO

PROJECT TITLE REDRAW PLOT PLANS

			DATE
DRAWN S SCHAFRAN	2-21-75	AMPC ENGINEER	
CHECKED	9/17/74	AMPC MGR ENGR.	
ASSO. CHIEF DRAFTSMAN	9/17/74	AMPC PROJ MGR	

DRAWING TITLE PLOT PLAN TONAWANDA

SCALE AS NOTED | DWG NO 17-2-00-1 | REV. 1 | ACCEPTED

07-2-00-1