2023 Periodic Review Groundwater Monitoring and Sampling Annual Report

815 River Road Site
Site Number B00178
City of North Tonawanda

Prepared for:
City of North Tonawanda

May 28, 2024

→ The Power of Commitment

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Appendices

1. Site Background

1.1 Site Location and History

This one-acre parcel of land is located directly across from the City of North Tonawanda (City) Wastewater Treatment Plant (WWTP). The City acquired the 815 River Road parcel in 2000 through tax foreclosure. Prior to the City's acquisition of the property, a company that maintained school buses occupied this property. As part of this business, this company maintained fueling systems that included underground storage tanks (USTs) for gasoline and motor oil. City records indicated that the USTs were in place for over 40 years. Presently, the property is owned by Metzger Removal, Inc. as a C&D crushing/recycling operation. A Site location map is presented on Figure 1.

A previous Site investigation completed in January 2001 by Green Environmental Specialists, Inc. (Green) identified seven buried USTs. Analytical testing detected the presence of benzene in two USTs. Site reporting also indicated that the soil and groundwater surrounding the USTs may have been impacted through UST leakage. Shortly after the completion of Green's Site investigation, remedial construction was initiated by a private entity interested in remediating and developing the property for commercial/industrial use. Remedial activities resulted in the removal of four USTs.

In September 2002, an additional Site investigation was completed by Parsons Corporation to delineate the extent of contamination and provide tank closure of the four removed USTs from past remedial activities. The Site investigation identified an additional eight USTs.

1.2 Site Remediation Activities

Under a Site Interim Remedial Measure (IRM), UST removal and closure was provided. Demolition of an on-site building was necessary for proper UST closure and to allow access to impacted soils beneath the building. Impacted soils were excavated and removed from the Site for disposal to Tonawanda Landfill. During the removal of impacted soils and surface water, IRM construction was halted by the City due to a contract dispute. All Site activities were discontinued. Contract disputes could not be settled and construction contracts were terminated. The Site was left with an unfinished open excavation with the potential for additional impacted soils to be excavated. Reporting for the Site investigation and IRM activities was not provided to the City.

Stearns & Wheler, LLC was retained by the City to provide engineering services for an IRM that was conducted in November 2007 that included the excavation and disposal of 1,300 tons of impacted and staged soils. This IRM construction completed the excavation and removal of impacted soils that was halted by the City in 2004. The excavation followed the delineation of impacted soils as defined during the Site investigation. The removal of impacted soils extended to the south to a minor extent onto the adjacent property. IRM excavation limits were brought to within approximately 5-feet of the River Road Right-of-Way (ROW). Depth of excavation limits was to the top of clay. Excavated impacted soils were pre-approved for disposal at Modern Landfill and directly loaded into trucks from the excavation. No soils were staged on site. Confirmatory soil samples were collected from the previously impacted area. After confirmatory soil sampling, analytical test results were reported below the Restricted Commercial Use Soil Cleanup Objectives, and the excavation was backfilled.

1.3 Site Investigation/Remedial Alternatives Report

Stearns & Wheler, LLC was retained by the City to provide engineering services and perform a Site Investigation/Remedial Alternatives Report (SI/RAR). The SI/RAR was completed in January 2008 and selected institutional controls for both impacted soils and groundwater media. The completed 2007 IRM achieved the SI/RAR reported Restricted Commercial Soil Cleanup Objectives.

1.4 Institutional and Engineering Controls

Institutional controls were recommended as the most feasible and selected alternative as reported in the SI/RAR dated January 2008 and included the environmental easement for future redevelopment and ownership of the Site. The Site Management Plan (SMP) addresses the excavation procedures for the remaining soils for future redevelopment, and includes soil management, characterization, and disposal of excavated soils in accordance with the applicable New York State Department of Environmental Conservation (NYSDEC) regulations. The SMP is presented in Section 4.

In addition, the environmental easement imposes a deed restriction that requires compliance with the approved SMP and limits the future use of groundwater from the Site. Installation of potable wells at the Site is prohibited, as is any future use of groundwater at the Site. Annually, future owners are required to certify to the NYSDEC that the implemented remedy has been maintained in accordance with the SMP.

2. Groundwater Monitoring Activities

The Monitoring Plan includes the necessary actions required to maintain the Site. This Monitoring Plan includes a description of a long-term environmental monitoring program, specific information on all of the equipment and materials used in any monitoring systems, contingencies for emergencies, and reporting requirements.

2.1 Site Hydrogeology

The presence of the Niagara River located to the west of the Site suggests that the river will act as the regional discharge zone. Locally, however, groundwater is possibly intercepted by the 36-inch diameter sanitary sewer line located along River Road. The top of the silty clay unit that is consistent throughout the Site has been logged and reported to range in depth between 4 to 5 feet. Standard sewer construction consists of a sewer pipe laid on gravel bedding material with the rest of the sewer trench filled with a gravel backfill. Since the sanitary sewer located along River Road is approximately 15 feet deep, the bottom of the sewer trench is deeper than the top of the silty clay unit. Any groundwater migrating from the Site should follow the top of clay and infiltrate into the gravel backfilled sewer trench. Once in the trench, groundwater can enter the sewer through infiltration and be transmitted to the City's WWTP for treatment.

2.2 Monitoring Requirements

Annual monitoring is performed at the Site. Groundwater monitoring was initially conducted after the remediation was completed and thereafter on an annual basis upon NYSDEC request. Methods used are consistent with NYSDEC requirements.

2.3 Groundwater Monitoring

The 2023 monitoring program at the 815 River Road Site consisted of one annual sampling event. Groundwater was sampled from monitoring wells MW-1 and MW-2 on October 30, 2023. The locations of groundwater monitoring wells MW-1 and MW-2 are approximately 10 feet from the River Road curb line at the 815 River Road property. This sampling event represents the 10th event of the groundwater monitoring program. A Site plan is presented on Figure 2.

Groundwater sampling of monitoring wells MW-1 and MW-2 were collected using low-flow purging and sampling techniques. Prior to sampling, the monitoring well was purged using a disposable bailer. Groundwater parameters of pH, specific conductance, dissolved oxygen (DO), temperature, and oxidation-reduction potential (ORP) were recorded. After the field parameters were recorded, groundwater samples were collected with a disposable bailer and transferred into sample containers provided by the testing laboratory. Groundwater elevation data was recorded.

Purge water generated from monitoring wells MW-1 and MW-2 were discharged to the ground. Groundwater Field Sampling Records are presented in Appendix A.

Several quality control samples, including a trip blank, field duplicate, and MS/MSD were collected during the sampling event. Samples were delivered under chain of custody to Eurofins for analysis of Volatile Organic Compounds (VOCs) by USEPA SW-846 Method 8260. The specific sampling protocol to be used, including sample preservation techniques, Quality Assurance/Quality Control (QA/QC) objectives, a description of chain-of-custody documentation, and analytical parameters are included in the SMP.

3. Groundwater Monitoring Results

3.1 2023 Groundwater Monitoring

This section presents the analytical results of the annual groundwater sampling event performed on October 30, 2023 and represents groundwater monitoring for the 2023 reporting year. Analytical results are presented in Tables 1 and 2 and the laboratory report is presented in Appendix B. Sampling field parameters for the the 2023 groundwater sampling event are presented in Table 3. Included in this section are descriptions of the identification and distribution of constituents present in groundwater, and a comparison of historical data. Constituents are compared to the applicable NYSDEC Division of Water Technical and Operational Guidance Series (TOGS 1.1.1) Groundwater Standards and Guidance Values.

Table 3 2023 Field Groundwater Parameters

Parameter	**Monitoring Well Location**	
	MW-1	**MW-2**
Temperature (°C)	12.8	13.4
pH	7.32	7.16
Conductivity (mS/cm)	2.32	2.38
Dissolved Oxygen (mg/L)	0.58	0.41
Turbidity (NTUs)(1)	2.96	2.57
ORP (mV)	-173	-217

The Data Usability Summary Report is presented in Appendix C. The QA/QC measurements examined for the data were within method-specified or laboratory-derived limits. No data were rejected as a result of the data validation.

Groundwater in the southwest corner of the Site has been impacted with concentrations of VOCs. VOC concentrations were detected in groundwater collected from monitoring wells MW-1 and MW-2 that exceed groundwater standards. VOC concentrations detected in groundwater from the sampling conducted in 2007, 2012, 2015, 2016, 2017, 2019, 2020, 2021, 2022, and the 2023 sampling event completed on October 30, 2023 were compared to determine a trending analysis.

3.2 Monitoring Well MW-1 Test Results

Groundwater analytical results from monitoring well MW-1 detected the following total VOC concentrations from 2007, 2012, 2015, 2016, 2017, 2019, 2020, 2021, 2022, and 2023.

2007	6.0 µg/L
2012	148.0 µg/L
2015	28.0 µg/L
2016	57.3 µg/L
2017	112.8 µg/L
2019	74.3 µg/L
2021	138 µg/L
2022	152 µg/L
2023	76.4 µg/L

Groundwater monitoring for the reporting years of 2012, 2015, 2016, 2017, 2019, 2021, 2022, and 2023 detected VOC concentrations that exceeded the groundwater standard for the following parameter: isopropylbenzene. A trending graph shows fluctuating VOCs concentrations since 2012 is presented on Figure 3.

Concentrations of cyclohexane were detected in 2012, 2016, 2017, and 2019, 2021,2022, and 2023. Concentrations of methylcyclohexane were detected in 2012, 2017, 2021, 2022, and 2023. No groundwater quality standard is established for cyclohexane and methylcyclohexane.

3.3 Monitoring Well MW-2 Test Results

Groundwater test results from monitoring well MW-2 detected the following total VOC concentrations from 2007, 2012, 2015, 2016, 2017, 2018, 2019, 2021, 2022, and 2023.

2007	1,230.0 µg/L
2012	3,345.0 µg/L
2015	1,866.1 µg/L
2016	3,474.3 µg/L
2017	2,771.1 µg/L
2019	3,539.7 µg/L
2020	2,407.3 µg/L
2021	3,536.5 µg/L
2022	2,213.9 µg/L
2023	558.4 µg/L

Groundwater monitoring for the reporting years of 2012, 2015, 2016, 2017, 2019, 2020, 2021, 2022, and 2023 detected VOC concentrations that exceeded the groundwater standard for the following parameters: benzene, ethylbenzene, and isopropylbenzene. A trending graph shows a generally stable/decreasing trend of detected VOCs (with the exception of ethylbenzene, where concentrations have reduced from 2,250 µg/L in 2021 to 270 µg/L in 2023) as presented on Figure 4.

4. Soil Management Plan

The objective of the SMP is to set guidelines for management of soil material during any future activities, which would breach the cover system at the Site. The SMP addresses environmental concerns related to soil management and has been reviewed and approved by the NYSDEC.

4.1 Nature and Extent of Contamination

Based on data obtained from previous investigations and the IRM remediation completed at the Site, a Final Engineering Report for the 815 River Road Site Remediation dated June 2008 was completed by Stearns & Wheler, LLC.

During Site investigation activities, impacted soils were identified. The impacted soil area was excavated, removed, and disposed off-Site during an IRM completed in 2007. Impacted soils were sampled and categorized to preliminarily delineate the extent of the contamination and for waste characterization for off-Site disposal. The impacted soils were excavated to the top of clay which was defined ranging between 9 to 11 feet.

The impacted soil contained concentrations of both volatile and semi-volatile compounds. All concentrations reported during the 2007 IRM were below the Restricted Commercial Use Soil Cleanup Objectives. VOC parameters with the highest concentrations included xylene and ethylbenzene. Semi-volatile compounds were detected to a lesser degree including naphthalene. The potential exposure pathways include inhalation, absorption, ingestion, and contact. Health effects from exposure to these chemical compounds are eye, skin, and respiratory irritants.

The constituents of potential concern for soil consist primarily of residual VOCs and poly aromatic hydrocarbons (PAHs). Results of groundwater sampling indicate that constituents in the soil/fill material have impacted groundwater quality with low concentrations of volatile and semi-volatile compounds. Groundwater in the southwest corner of the Site has been impacted with low concentrations of benzene, 1,2-dichloropropane, toluene, xylene, and ethylbenzene. Analytical test results indicated that groundwater standards have exceeded groundwater standards.

Groundwater in this portion of the Site presumably flows toward the 36-inch diameter sanitary sewer line that runs down the east side of River Road. As stated in Section 2.1 Site Hydrogeology, since the sanitary sewer located along River Road is approximately 15-feet deep, the bottom of the sewer trench is deeper than the top of silty clay unit. Any groundwater migrating from the Site should follow the top of clay and infiltrate into the gravel backfilled sewer trench. Once in the trench, groundwater can enter the sewer through infiltration and could be transmitted to the City's WWTP for treatment.

Deed restrictions enacted by the City, prohibits the installation of potable wells on the property.

4.2 Contemplated Use

As part of the redevelopment project, the property has been identified for industrial/commercial usage. Residential redevelopment will not be permitted. Deed restrictions will require compliance with the SMP. The future use of Site groundwater is prohibited.

4.3 Purpose and Description of Surface Cover System

The purpose of the surface cover system is to eliminate the potential for human contact with fill material and eliminate the potential for contaminated runoff from the property. The cover system consists of existing non-impacted fill soils overlaying the remaining impacted soils located within the River Road ROW. Soil borings completed near the River Road ROW have been logged to report 3 to 6 feet of non-impacted soil overlaying the residually impacted soils. The existing non-impacted soils provide a cover system for any residually impacted materials within the River Road ROW.

4.4 Management of Soil/Fill and Long-Term Maintenance

The purpose of this section is to provide environmental guidelines for management of subsurface soils/fill and the long-term maintenance of the cover system during any future intrusive work which breaches the cover system. The SMP includes the following conditions:

- Any breach of the cover system within the River Road ROW of a width of 33 feet, including for the purposes of construction or utilities work, must be replaced or repaired using an acceptable borrow source free of industrial and/or other potential sources of chemical or petroleum contamination. The repaired area must be covered with clean soil and reseeded or covered with impervious product such as concrete or asphalt to prevent erosion in the future.
- The cover system must be maintained within the River Road ROW since residual impacted soils above NYSDEC Part 375 Unrestricted Use Cleanup Objectives may be present.
- Control surface erosion and run-off from the entire property at all times, including during construction activities. This includes proper maintenance of the fill cover established on the property.
- Site soil that is excavated and is intended to be removed from the property must be managed, characterized, and properly disposed of in accordance with NYSDEC regulations and directives.
- Soil excavated at the Site may be reused as backfill material on-Site provided it contains no visual or olfactory evidence of contamination and is placed beneath a cover system component of 2 to 3 feet of clean fill from an acceptable source area.
- Any off-Site fill material brought to the Site for filling and grading purposes shall be from an acceptable borrow source free of industrial and/or other potential sources of chemical or petroleum contamination.
- Prior to any construction activities, workers shall be notified of the Site conditions with clear instructions regarding how the work is to proceed. Invasive work performed at the property will be performed in accordance with all applicable local, state, and federal regulations to protect worker health and safety.
- An annual report will contain certification that the institutional controls put in place, pursuant to Operation, Monitoring, and Maintenance Plan (OM&M), are still in place, have not been altered and are still effective; that the remedy and protective cover have been maintained; and that the conditions at the Site are fully protective of public health and the environment. The Site designated representative has included the signed IC-EC Certification as presented in Appendix D.

4.5 Excavated and Stockpiled Soil/Fill Disposal

Every effort will be made to keep excavated soils on Site. The proper management of the remaining impacted subsurface soils located within the River Road ROW and other possibly impacted Site soils must be provided. Soil/fill that is excavated as part of redevelopment that cannot be used as fill below the cover system will be characterized prior to transportation off-Site for disposal at a permitted facility. For excavated soil/fill with visual evidence of contamination (i.e., staining or elevated photoionization detector (PID) measurements), one composite sample and a duplicate sample will be collected for each 100 cubic yards of stockpiled soil/fill. For excavated soil/fill that does not exhibit visual evidence of contamination but must be sent for off-Site disposal, one composite sample and a duplicate sample will be collected for each 2,000 cubic yards of stockpiled soil, and a minimum of one sample will be collected for volumes less than 2,000 cubic yards.

The composite sample will be collected from five locations within each stockpile. A duplicate composite sample will also be collected. PID measurements will be recorded for each of the five individual locations. One grab sample will be collected from the individual location with the highest PID measurement. If none of the five individual sample locations exhibit PID readings, one location will be selected at random. The composite sample will be analyzed by a NYSDOH ELAP-certified laboratory for pH (EPA Method 9045C) and Target Compound List (TCL) semi-volatile organic compounds (SVOCs). The grab sample will be analyzed for TCL VOCs.

Additional characterization sampling for off-Site disposal may be required by the disposal facility. To potentially reduce off-Site disposal requirements/costs, the owner or Site developer may also choose to characterize each stockpile individually. If the analytical results indicate that concentrations exceed the standards for Resource Conservation and Recovery Act (RCRA) characteristics, the material will be considered a hazardous waste and must be properly disposed off-Site at a permitted disposal facility within 90 days of excavation. If analytical results indicate that the soil is not a hazardous waste, the material will be properly disposed off-Site at a non-hazardous waste facility. Stockpiled soil cannot be transported on or off-Site until analytical results are received.

4.6 Subgrade Materials

Subgrade material used to backfill excavations or placed to increase Site grades or elevation shall meet the following criteria.

- Subgrade material stockpiled on the surface for re-use must be placed on a liner material or other suitable surface to avoid the commingling of this material with clean topsoil or other surface materials. Stockpiled subgrade material should also be managed to prevent erosion and runoff of precipitation waters which may contact this material.
- Excavated on-Site soil/fill which appears to be visually impacted shall be sampled and analyzed. If backfill materials are suspect, then analytical testing will be required. If soils or soil mixtures are used as backfill materials, they will be sampled for VOCs, SVOCs, pesticides and Polychlorinated Biphenols (PCBs), and metals, and compared to limits listed under Commercial: Allowable Constituent Levels for Imported Fill or Soil (DER-10, Appendix 5).
- Any off-Site fill material brought to the Site for filling and grading purposes shall be from an acceptable borrow source free of industrial and/or other potential sources of chemical or petroleum contamination. A letter will be required from the backfill supplier certifying material is clean from any hazardous and/or solid waste materials.
- Off-Site soils intended for use as Site backfill cannot otherwise be defined as a solid waste in accordance with 6 NYCRR Part 360-2(a).
- If the contractor designates a source as "virgin" soil, it shall be further documented in writing to be native soil material from areas not having supported any known prior industrial or commercial development or agricultural use.
- Virgin soils should be subject to collection of one representative composite sample per source. The sample should be analyzed for TCL VOCs, SVOCs, pesticides, PCBs, and TAL metals. The soil will be acceptable for use as backfill provided that all parameters meet the Imported Backfill Limits.
- Non-virgin soils will be tested via collection of one composite sample per 500 cubic yards of material from each source area. If more than 1,000 cubic yards of soil are borrowed from a given off-Site non-virgin soil source area and both samples of the first 1,000 cubic yards meet Commercial Limits, the sample collection frequency will be reduced to one composite for every 2,500 cubic yards of additional soils from the same source, up to 5,000 cubic yards. For borrow sources greater than 5,000 cubic yards, sampling frequency may be reduced to one sample per 5,000 cubic yards, provided all earlier samples met the imported backfill limits.

4.7 Site Usage

The Site is presently used by Metzger Removal, Inc. as a C&D crushing/recycling operation. Concrete, brick and other materials are hauled to the Site from demolition sites in the surrounding area, and stockpiled for the crushing operation. After crushing, conveyors collect the crushed material and stage in stockpiles. No excavation took place at the Site during the period between 2012 and 2023.

5. Conclusions

Analytical testing from the 2023 groundwater monitoring detected the following VOCs in groundwater sampled from monitoring wells MW-1 and MW-2: benzene (MW-2), ethylbenzene (MW-2), and isopropylbenzene (MW-1 and MW-2) at concentrations that were equal to or exceeded the groundwater quality standard. Cyclohexane (MW-1) and methylcyclohexane (MW-1 and MW-2) were also detected in groundwater sampled from monitoring wells MW-1 and MW-2, however no groundwater quality standard is established for cyclohexane and methylcyclohexane.

5.1 Monitoring Well MW-1 Results

The concentrations of ethylbenzene at monitoring well MW-1 have fluctuated over time. In 2007, the concentration of ethylbenzene was detected at an estimated 2 µg/L concentration, which is below the groundwater standard. Test results from the 2021 groundwater monitoring event detected the concentration of ethylbenzene at 13 µg/L, which represented an increase from the previous sampling event. However, ethylbenzene was not detected in the 2022 or 2023 groundwater monitoring events.

Concentrations of isopropylbenzene at monitoring well MW-1 have similarly fluctuated over time. Isopropylbenzene was not detected at monitoring well MW-1 in 2007. Test results between the 2012 and 2022 sampling events indicated concentrations of isopropylbenzene ranging between 19 and 45 µg/L. Test results from the most recent 2023 groundwater monitoring detected a concentration of isopropylbenzene at 11 µg/L, which is the lowest concentration since 2007 and a decrease from the 2022 isopropylbenzene detection (45 µg/L).

5.2 Monitoring Well MW-2 Results

Concentrations of benzene at monitoring well MW-2 have fluctuated between the reporting periods of 2007, 2012, 2015, 2016, 2017, and 2019, but have decreased since. The following concentrations of benzene and corresponding percent annual increases and decreases were detected in groundwater:

2007	140 µg/L	NA
2012	560 µg/L	300% increase
2015	151 µg/L	73% decrease
2016	280 µg/L	85% increase
2017	207 µg/L	26% decrease
2019	269 µg/L	30% increase
2020	192 µg/L	29% decrease
2021	155 µg/L	19% decrease
2022	130 µg/L	16% decrease
2023	40 µg/L	69% decrease

Concentrations of ethylbenzene at monitoring well MW-2 have fluctuated over the nine reporting periods of 2007, 2012, 2015, 2016, 2017, 2019, 2020, 2021, but have decreased since, including an 83% decrease in ethylbenzene concentration from 2022 to 2023. The following concentrations of ethylbenzene and corresponding annual percent increases and decreases were detected in groundwater:

2007	460 µg/L	NA
2012	1,500 µg/L	226% increase

2015	878 µg/L	41% decrease
2016	2,030 µg/L	131% increase
2017	2,050 µg/L	1% increase
2019	2,000 µg/L	2% decrease
2020	1,410 µg/L	30% decrease
2021	2,250 µg/L	37% increase
2022	1,600 µg/L	29% decrease
2022	270 µg/L	83% decrease

Concentrations of isopropylbenzene at monitoring well MW-2 have fluctuated over the nine reporting periods of 2007, 2012, 2015, 2016, 2017, 2019, 2020, 2021, but have decreased since. The following concentrations of isopropylbenzene and corresponding annual percent increases and decreases were detected in groundwater:

2007	ND	NA
2012	220 µg/L	-
2015	115 µg/L	48% decrease
2016	277 µg/L	141% increase
2017	247 µg/L	11% decrease
2019	237 µg/L	4% decrease
2020	200 µg/L	16% decrease
2021	370 µg/L	85% increase
2022	260 µg/L	30% decrease
2023	240 µg/L	8% decrease

Concentrations of toluene at monitoring well MW-2 have fluctuated between the reporting periods of 2007, 2012, 2015, 2016, 2017, 2019, and 2020 but have decreased since. Toluene was not detected in the 2023 groundwater sample at MW-2. The following concentrations of toluene and corresponding annual percent increases and decreases were detected in groundwater:

2007	70 µg/L	NA
2012	ND	100% decrease
2015	19.1 µg/L	-
2016	39.4 µg/L	106% increase
2017	13.4 µg/L	66% decrease
2019	42.7 µg/L	218% increase
2020	48.3 µg/L	13% increase
2021	31.5 µg/L	35% decrease
2022	6.9J µg/L	78% decrease
2023	ND	100% decrease

Concentrations of total xylenes at monitoring well MW-2 have fluctuated between the reporting periods of 2007, 2012, 2015, 2016, 2017, and 2018, but have decreased since. Total xylenes were not detected in the 2023 groundwater sample at MW-2. The following concentrations of total xylenes and corresponding annual percent increases and decreases were detected in groundwater:

2007	520 µg/L	NA
2012	840 µg/L	62% increase
2015	424 µg/L	50% decrease
2016	620 µg/L	46% increase
2017	99 µg/L	84% decrease
2018	655 µg/L	561% increase
2019	557 µg/L	15% decrease
2021	330 µg/L	41% decrease
2022	15J µg/L	95% decrease
2023	Not detected	100% decrease

In general, detected VOCs concentrations exhibit a stable/decreasing trend of with the exception of total ethylbenzene, which has exhibited a substantial decrease since 2021.

5.3 Future Abatement

An Interim Remedial Measure (IRM) was completed in November 2007 that included the excavation and disposal of 1,300 tons of impacted and staged soils. The excavation followed the delineation of impacted soils as defined in the site investigation report. IRM excavation limits at the southwest corner of the impacted area extended to the approximate bounds of the River Road ROW. The excavation of impacted material near the ROW was limited due to the close proximity of utilities and NYSDOT Route 265 (River Road) pavement. Excavation was not scaled back to a standard angle of repose for the reason of removing as much impacted soil as possible. Depth of excavation limits was to the top of clay ranging in depth from 10.5 to 11.5 feet. Confirmatory soil samples were collected prior to backfill.

During the IRM, it was evident that impacted soils remained at the final location of the southwest excavated wall. Impacted soils were excavated as far as possible to the River Road ROW. No further excavation could be advanced without putting in jeopardy utilities and the River Road pavement. The City remediated the property to the River Road ROW and no further remediation or removal of impacted soils could take place.

Wells were installed knowing that groundwater would be impacted and that groundwater test results could be above groundwater standards as reported in previous Periodic Review Reports. Groundwater Monitoring and Sampling Annual Reporting detected a number of VOCs in groundwater equal to or exceeding the groundwater standard. As reported, local groundwater movement at the Site is toward the Niagara River and the City's combined interceptor River Road sewer. This sewer should act as an interceptor of groundwater ultimately discharging to the City's WWTP and current carbon treatment.

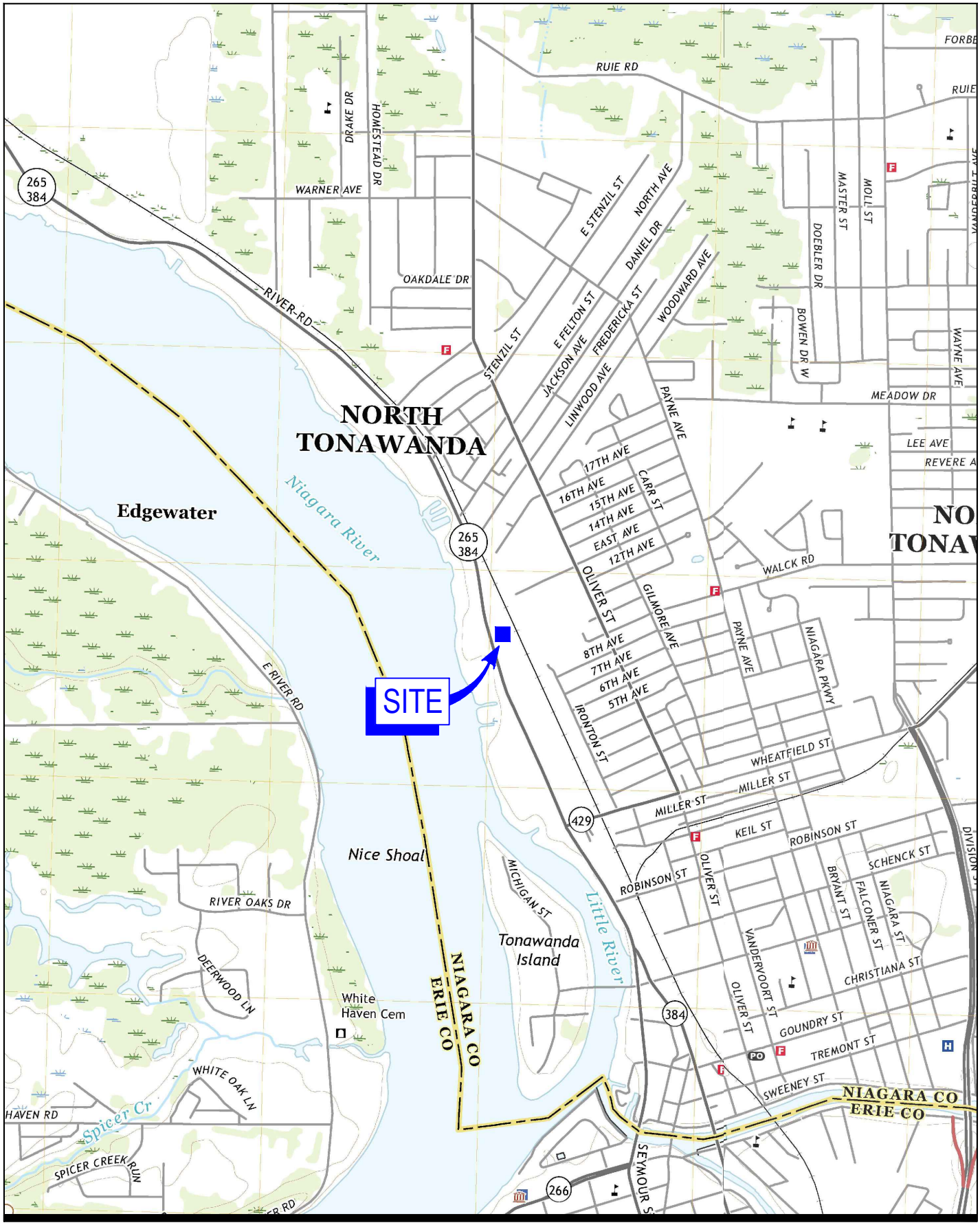
The Site was remediated to the extent practically possible. The remaining impacted soils appear to be located at and under the River Road ROW, which is not City property. The impacted groundwater is the result of the presence of impacted soils located at the River Road ROW.

No future abatement is proposed at this time since impacted soils are not located on formerly City-owned property.

6. Recommendations

Based on the decreasing concentrations in both MW-1 and MW-2. It is recommended that the sampling frequency be revised to biennial (every other year). Therefore, the next sampling event would be conducted in 2025.

Figures



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1" = 2000 ft

Coordinate System: NY83-WF

N

GHD

815 RIVER ROAD SITE
NORTH TONAWANDA, NEW YORK

Project No. **11230275**
Date **March 2024**

SITE LOCATION

FIGURE 1

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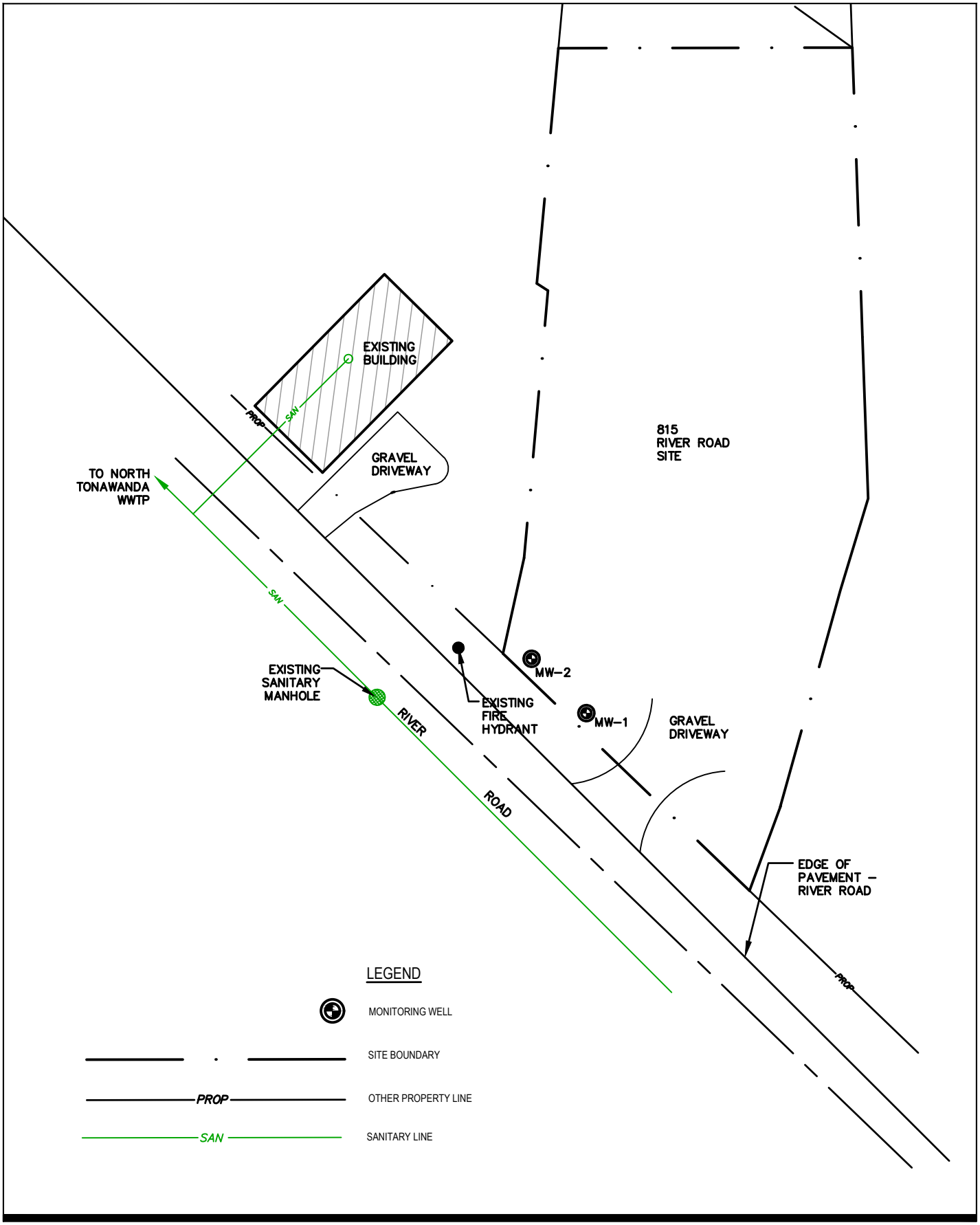

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1" = 50 ft

Coordinate System: NY83-WF

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GHD

815 RIVER ROAD SITE
NORTH TONAWANDA, NEW YORK

Project No. **11230275**
Date **March 2024**

SITE PLAN

FIGURE 2

Filename: N:\CA\Waterloo\Projects\662\11230275\Digital_Design\ACAD\Figures\RPT003\11230275-GHD-00-00-RPT-EN-D102_WA-003.dwg
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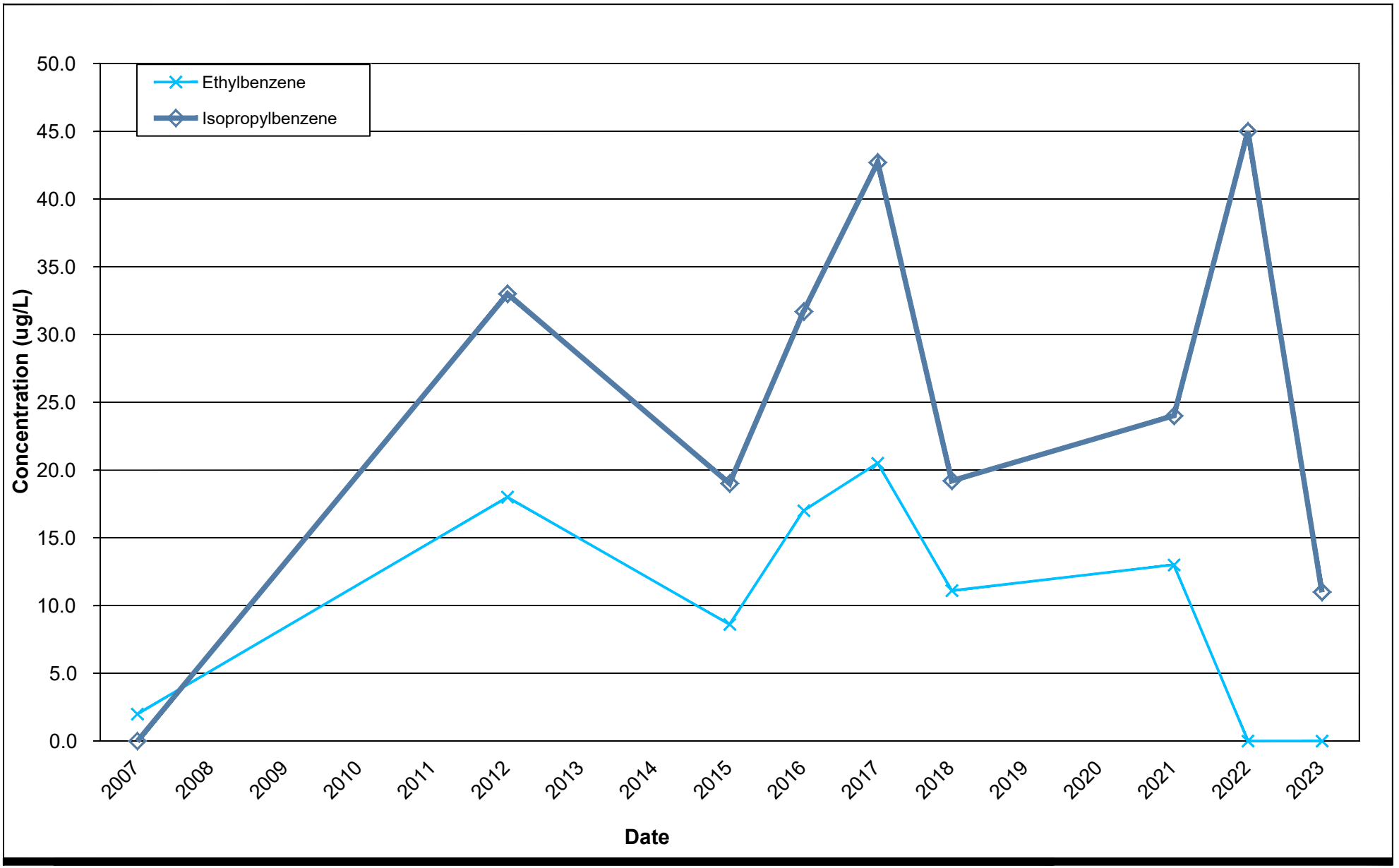

815 RIVER ROAD SITE
NORTH TONAWANDA, NEW YORK

Project No. **11230275**
Date **March 2024**

GROUNDWATER VOC CONCENTRATIONS IN MW-1 vs TIME

FIGURE 3

Filename: N:\CA\Waterloo\Projects\662\11230275\Digital_Design\ACAD\Figures\RPT003\11230275-GHD-00-00-RPT-EN-D103_WA-003.dwg
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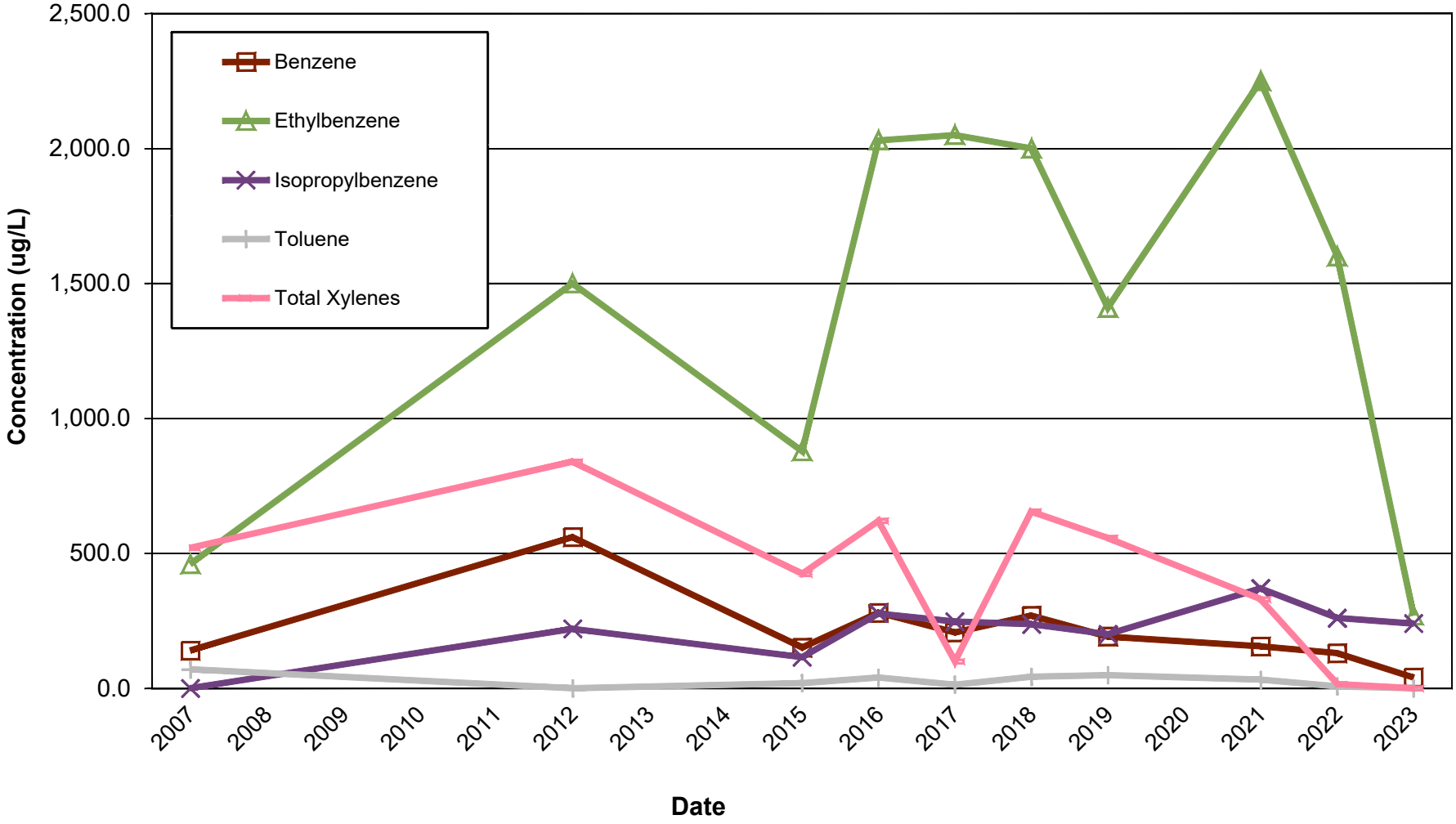


815 RIVER ROAD SITE
NORTH TONAWANDA, NEW YORK

GROUNDWATER VOC CONCENTRATIONS
IN MW-2 vs TIME

Project No. **11230275**
Date **March 2024**

FIGURE 4

Filename: N:\CA\Waterloo\Projects\662\11230275\Digital_Design\ACAD\Figures\RPT003\11230275-GHD-00-00-RPT-EN-D103_WA-003.dwg
Plot Date: 05 March 2024 10:43 AM

Tables

Table 1

Monitoring Well MW-1
Volatile Organic Analytical Test Results
815 River Road Site

le Compounds	NYSDEC TOGS 1.1.1 Water Quality Standards[1]	Units	07/16/07	07/25/12	10/20/15	10/21/16	10/25/17	03/21/19	01/28/20	07/23/21	08/10/22	1030/23
1,1,1-Trichloroethane	5	µg/L	ND	ND	ND	ND	ND	ND	NA	ND	ND	ND
1,1,2,2-Tetrachloroethane	5	µg/L	ND	ND	ND	ND	ND	ND	NA	ND	ND	ND
1,1,2-Trichlo-1,2,2-trifluoroethane	5	µg/L	ND	ND	ND	ND	ND	ND	NA	-	-	-
1,1,2-Trichloroethane	1	µg/L	ND	ND	ND	ND	ND	ND	NA	ND	ND	ND
1,1-Dichloroethane	5	µg/L	ND	ND	ND	ND	ND	ND	NA	ND	ND	ND
1,1-Dichloroethene	5	µg/L	ND	ND	ND	ND	ND	ND	NA	ND	ND	ND
1,2,3-Trichlorobenzene	5	µg/L	-	ND	**0.41J**	ND	ND	ND	NA	ND	ND	ND
1,2,4-Trichlorobenzene	5	µg/L	-	ND	ND	ND	ND	ND	NA	ND	ND	ND
1,2-Dibromo-3-Chloropropane DBCP	0.04	µg/L	-	ND	ND	ND	ND	ND	NA	ND	ND	ND
1,2-Dibromoethane (EDB)	NE	µg/L	-	ND	ND	ND	ND	ND	NA	ND	ND	ND
1,2-Dichlorobenzene	3	µg/L	-	ND	ND	ND	ND	ND	NA	ND	ND	ND
1,2-Dichloroethane	0.6	µg/L	ND	ND	ND	ND	ND	ND	NA	ND	ND	ND
1,2-Dichloropropane	5	µg/L	ND	ND	ND	ND	ND	ND	NA	ND	ND	ND
1,3-Dichlorobenzene	3	µg/L	-	ND	ND	ND	ND	ND	NA	ND	ND	ND
1,4-Dichlorobenzene	3	µg/L	-	ND	ND	ND	ND	ND	NA	ND	ND	ND
2-Hexanone	50	µg/L	ND	ND	ND	ND	ND	ND	NA	ND	ND	ND
Acetone	50	µg/L	ND	ND	**88.8**	ND	ND	ND	NA	ND	ND	ND
Benzene	1	µg/L	ND	ND	ND	ND	ND	ND	NA	ND	ND	ND
Bromoform	50	µg/L	ND	ND	ND	ND	ND	ND	NA	ND	ND	ND
Bromomethane	5	µg/L	ND	ND	ND	ND	ND	ND	NA	ND	ND	ND
Bromodichloromethane	50	µg/L	ND	ND	ND	ND	ND	ND	NA	ND	ND	ND
Bromochloromethane	5	µg/L	-	ND	ND	ND	ND	ND	NA	ND	ND	ND
Carbon disulfide	60	µg/L	ND	ND	ND	ND	ND	ND	NA	ND	ND	ND
Carbon tetrachloride	5	µg/L	ND	ND	ND	ND	ND	ND	NA	ND	ND	ND
Chlorobenzene	5	µg/L	ND	ND	ND	ND	ND	ND	NA	ND	ND	ND
Chloroethane	5	µg/L	ND	ND	ND	ND	ND	ND	NA	ND	ND	ND
Chloroform	7	µg/L	ND	ND	ND	ND	ND	ND	NA	ND	ND	ND
Chloromethane	NE	µg/L	ND	ND	ND	ND	ND	ND	NA	ND	ND	ND
cis-1,2-Dichloroethene	5	µg/L	ND	ND	ND	ND	ND	ND	NA	ND	ND	ND
cis-1,3-Dichloropropene	0.40	µg/L	ND	ND	ND	ND	ND	ND	NA	ND	ND	ND
Cyclohexane	NE	µg/L	ND	**82**	ND	**8.64**	**29.10**	**39.10**	NA	**84.0**	**67.0**	**57.0**
Dibromochloromethane	50	µg/L	ND	ND	-	-	-	-	NA	ND	ND	ND
Chlorodibromomethane	NE	µg/L	-	ND	ND	ND	ND	ND	NA	-	-	-
Dichlorodifluoromethane	5	µg/L	-	ND	ND	ND	ND	ND	NA	ND	ND	ND
Ethylbenzene	5	µg/L	**2J**	**18**	**8.6**	**17.0**	**20.5**	**11.1**	NA	**13.0**	ND	ND
Isopropylbenzene	5	µg/L	ND	**33**	**19.0**	**31.7**	**42.7**	**19.2**	NA	**24.0**	**45.0**	**11.0**
Methyl acetate	NE	µg/L	-	ND	ND	ND	ND	ND	NA	ND	ND	ND
Methyl Ethyl Ketone (MEK)	50	µg/L	-	ND	ND	ND	ND	ND	NA	ND	ND	ND
Methylcyclohexane	NE	µg/L	ND	**15**	ND	ND	**20.5**	ND	NA	**17.0**	**40.0**	**8.4 J**
Methylene chloride	5	µg/L	ND	ND	ND	ND	ND	ND	NA	ND	ND	ND
4-Methyl 2-Pentanone	NE	µg/L	-	-	ND	ND	ND	ND	NA	ND	ND	ND
Methyl-t-Butyl Ether (MTBE)	10	µg/L	-	ND	-	-	-	-	NA	ND	ND	ND
Methyl tert-butyl esther	NE	µg/L	-	ND	ND	ND	ND	ND	NA	-	-	-
m,p-Xylene	5	µg/L	**4J**	-	-	-	-	-	NA	-	-	-
o-Xylene	5	µg/L	ND	-	-	-	-	-	NA	-	-	-
Styrene	5	µg/L	ND	ND	ND	ND	ND	ND	NA	ND	ND	ND
Tetrachloroethene	5	µg/L	ND	ND	ND	ND	ND	ND	NA	ND	ND	ND
Toluene	5	µg/L	ND	ND	ND	ND	ND	ND	NA	ND	ND	ND
Total Xylenes	5	µg/L	**4J**	ND	ND	ND	ND	**4.9**	NA	ND	ND	ND
trans-1, 2-Dichloroethene	5	µg/L	ND	ND	ND	ND	ND	ND	NA	ND	ND	ND
trans-1,3-Dichloropropene	0.4	µg/L	ND	ND	ND	ND	ND	ND	NA	ND	ND	ND
Trichloroethene	5	µg/L	ND	ND	ND	ND	ND	ND	NA	ND	ND	ND
Trichlorofluoromethane	5	µg/L	-	ND	ND	ND	ND	ND	NA	ND	ND	ND
Vinyl Chloride	2	µg/L	ND	ND	ND	ND	ND	ND	NA	ND	ND	ND
Total VOCs		µg/L	6.0	148.0	28.0	57.3	112.8	74.3	NA	138.0	152.0	76.4
Total VOCs		mg/L	0.006	0.148	0.028	0.057	0.113	0.074	NA	0.138	0.152	0.076

Notes:

1 New York State Department of Environmental Conservation (NYSDEC) Technical and Operational Guidance Series (TOGS) 1.1.1: Ambient Water Quality Standards and Guidance Values (µg/L)

6.9 Bolded concentrations indicated the analyte was detected. Bolded and shaded concentrations indicate equal to or exceedance of TOGS 1.1.1 criteria.

NE NYSDEC TOGS 1.1.1 water quality standard not established.

ND The analyte was analyzed for but not detected. The associated value is the analyte quantitation limit.

NA Not sampled due to well in damaged condition.

J The analyte was positively identified; however, the associated numerical value is an estimated concentration only.

\- The analyte was not sampled for.

Synonyms: Chlorodibromomethane = Dichlorobromoethane

Synonyms: 4-Methyl 2-Pentanone = Methyl Isobutyl Ketone

Synonyms: Methyl Ethyl Ketone (MEK) = 2-Butanone

Acetone not included in Total VOCs at direction of DEC.

Table 2

Monitoring Well MW-2
Volatile Organic Analytical Test Results
815 River Road Site

e Compounds	NYSDEC TOGS 1.1.1 Water Quality Standards[1]	Units	07/16/07	07/25/12	10/20/15	10/21/16	10/25/17	03/21/19	01/28/20	07/23/21	8/10/2022[2]	10/30/2023[2]
1,1,1-Trichloroethane	5	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2,2-Tetrachloroethane	5	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2-Trichlo-1,2,2-trifluoroethane	5	µg/L	ND	ND	ND	ND	ND	ND	ND	-	-	-
1,1,2-Trichloroethane	1	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	5	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethene	5	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,3-Trichlorobenzene	5	µg/L	-	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,4-Trichlorobenzene	5	µg/L	-	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dibromo-3-Chloropropane DBCP	0.04	µg/L	-	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dibromoethane (EDB)	NE	µg/L	-	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	3	µg/L	-	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	0.6	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloropropane	5	µg/L	**40J**	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	3	µg/L	-	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	3	µg/L	-	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Hexanone	50	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Acetone	50	µg/L	ND	ND	**188J**	ND	ND	ND	ND	ND	**51J**	ND
Benzene	1	µg/L	**140**	**560**	**151**	**280J6**	**207**	**269**	**192**	**155.0**	**130.0**	**40.0**
Bromoform	50	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromomethane	5	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromodichloromethane	50	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromochloromethane	5	µg/L	-	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon disulfide	60	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon tetrachloride	5	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chlorobenzene	5	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroethane	5	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroform	7	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloromethane	NE	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,2-Dichloroethene	5	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,3-Dichloropropene	0.40	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Cyclohexane	NE	µg/L	ND	**210**	**71.2**	**169**	**111J6**	**336**	**283**	**280.0**	**130.0**	ND
Dibromochloromethane	50	µg/L	ND	ND	-	-	-	-	-	ND	ND	ND
Chlorodibromomethane	NE	µg/L	-	ND	ND	ND	ND	ND	ND	-	-	-
Dichlorodifluoromethane	5	µg/L	-	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	5	µg/L	**460**	**1,500**	**878V**	**2030**	**2050**	**2000**	**1410**	**2250.0**	**1600.0**	**270.0**
Isopropylbenzene	5	µg/L	ND	**220**	**115**	**277J6**	**247**	**237**	**200**	**370.0**	**260.0**	**240.0**
Methyl acetate	NE	µg/L	-	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methyl Ethyl Ketone (MEK)	50	µg/L	-	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methylcyclohexane	NE	µg/L	ND	**15**	**19.8**	**58.9**	**43.3J6**	ND	**103.0**	**120.0**	**21.0**	**8.4 J**
Methylene chloride	5	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-Methyl 2-Pentanone	NE	µg/L	-	-	ND	ND	ND	ND	ND	ND	ND	ND
Methyl-t-Butyl Ether (MTBE)	10	µg/L	-	ND	-	-	-	-	ND	ND	ND	ND
Methyl tert-butyl esther	NE	µg/L	-	ND	ND	ND	ND	ND	ND	-	-	-
m,p-Xylene	5	µg/L	**480**	-	-	-	-	-	-	-	-	-
o-Xylene	5	µg/L	**40J**	-	-	-	-	-	-	-	-	-
Styrene	5	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethene	5	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Toluene	5	µg/L	**70J**	ND	**19.1J**	**39.4**	**13.4**	**42.7**	**48.3**	**31.5**	**6.9J**	ND
Total Xylenes	5	µg/L	-	**840**	**424**	**620**	**99**	**655**	**557**	**330.0**	**15J**	ND
trans-1, 2-Dichloroethene	5	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,3-Dichloropropene	0.4	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethene	5	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichlorofluoromethane	5	µg/L	-	ND	ND	ND	ND	ND	ND	ND	ND	ND
Vinyl Chloride	2	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total VOCs		µg/L	1,230.0	3,345.0	1,866.1	3,474.3	2,771.1	3,539.7	2,793.3	3,536.5	2,213.9	558.4
Total VOCs		mg/L	1.230	3.345	1.866	3.474	2.771	3.540	2.793	3.537	2.214	0.558

Notes

1 New York State Department of Environmental Conservation (NYSDEC) Technical and Operational Guidance Series (TOGS) 1.1.1: Ambient Water Quality Standards and Guidance Values (µg/L)
2 Duplicate sample collected, Highest concentration shown
6.9 Bolded concentrations indicated the analyte was detected. Bolded and shaded concentrations indicate equal to or exceedance of TOGS 1.1.1 criteria.
NE NYSDEC TOGS 1.1.1 water quality standard not established.
ND The analyte was analyzed for but not detected. The associated value is the analyte quantitation limit.
J The analyte was positively identified; however, the associated numerical value is an estimated concentration only.
J6 The sample matrix interfered with the ability to make any accurate determination; spike value is low.
V The sample concentration is too high to evaluate accurate spike recoveries.
- The analyte was not sampled for.
Synonyms: Chlorodibromomethane = Dichlorobromoethane
Synonyms: 4-Methyl 2-Pentanone = Methyl Isobutyl Ketone
Synonyms: Methyl Ethyl Ketone (MEK) = 2-Butanone

Appendices

Appendix A

Groundwater Sampling Field Logs

MS/MSD

Monitoring Well Record for Low-Flow Purging
(Form SP-09)

Project Data:

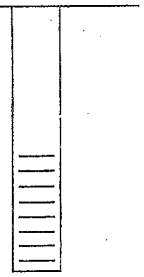
Project Name: 815 River Rd Annual
Ref. No.: 11230275-04

Date: 10/30/2023
Personnel: K. Miller

Monitoring Well Data:

Well No.: MW-1
Vapour PID (ppm):
Measurement Point:
Constructed Well Depth (m/ft):
Measured Well Depth (m/ft):
Depth of Sediment (m/ft):

Saturated Screen Length (m/ft):
Depth to Pump Intake (m/ft)[1]:
Well Diameter, D (cm/in):
Well Screen Volume, V_s (L)[2]:
Initial Depth to Water (m/ft): 6.45



Time	Pumping Rate (mL/min)	Depth to Water (m/ft)	Drawdown from Initial Water Level[3] (m/ft)	Temperature °C	Conductivity (mS/cm)	Turbidity NTU	DO (mg/L)	pH	ORP (mV)	Volume Purged, Vp (L)	No. of Well Screen Volumes Purged[4]
Precision Required[5]:				±3 %	±0.005 or 0.01[6]	±10 %	±10 %	±0.1 Units	±10 mV		
1005	88	6.82	.37	13.3	2.54	5.10	1.06	7.26	-61.5		
1010	88	7.12	.67	13.3	2.51	3.91	0.88	7.35	-93.8		
1015	112	7.33	.88	13.4	2.48	3.77	0.78	7.39	-112.2		
1020	112	7.62	1.17	13.8	2.48	3.52	0.72	7.40	-126.8		
1025	112	7.86	1.41	13.9	2.44	2.74	0.67	7.48	-177.4		
1030	120	8.03	1.58	14.0	2.34	1.88	0.62	7.31	-177.2		
1035	88	8.07	1.62	13.5	2.32	1.61	0.60	7.29	-171.7		
1040	88	7.78	1.33	12.8	2.32	2.96	0.58	7.32	-173		

Sample ID: WG-11230275-103023-KM-001

Sample Time: 1045

Notes:

(1) The pump intake will be placed at the well screen mid-point or at a minimum of 0.6 m (2 ft) above any sediment accumulated at the well bottom.

(2) The well screen volume will be based on a 1.52 metres (5-foot) screen length (L). For metric units, $V_s=\pi*(r^2)*L$ in mL, where r (r=D/2) and L are in cm.
For Imperial units, $V_s=\pi*(r^2)*L*(2.54)^3$, where r and L are in inches

(3) The drawdown from the initial water level should not exceed 0.1 m (0.3 ft). The pumping rate should not exceed 500 mL/min.

(4) Purging will continue until stabilization is achieved or until 20 well screen volumes have been purged (unless purge water remains visually turbid and appears to be clearing, or unless stabilization parameters are varying slightly outside of the stabilization criteria and appear to be stabilizing), No. of Well Screen Volumes Purged= Vp/Vs.

(5) For conductivity, the average value of three readings <1 mS/cm ±0.005 mS/cm or where conductivity >1 mS/cm ±0.01 mS/cm.

Start Purge at 10:03

Clear and colorless Sample

Monitoring Well Record for Low-Flow Purging
(Form SP-09)

Project Data:

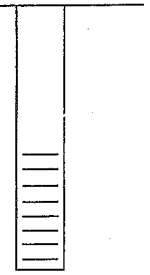
Project Name: 815 River Rd Annual
Ref. No.: 1123027S - 04

Date: 10/30/2023
Personnel: K. Miller

Monitoring Well Data:

Well No.: MW-2
Vapour PID (ppm):
Measurement Point:
Constructed Well Depth (m/ft):
Measured Well Depth (m/ft):
Depth of Sediment (m/ft):

Saturated Screen Length (m/ft):
Depth to Pump Intake (m/ft)[1]:
Well Diameter, D (cm/in):
Well Screen Volume, V_s (L)[2]:
Initial Depth to Water (m/ft): 6.23



Time	Pumping Rate (mL/min)	Depth to Water (m/ft)	Drawdown from Initial Water Level[3] (m/ft)	Temperature °C	Conductivity (mS/cm)	Turbidity NTU	DO (mg/L)	pH	ORP (mV)	Volume Purged, Vp (L)	No. of Well Screen Volumes Purged[4]
Precision Required[5]:				±3 %	±0.005 or 0.01[6]	±10 %	±10 %	±0.1 Units	±10 mV		
1110	128	6.41	0.18	12.6	2.43	4.00	1.81	7.18	-94.9		
1115	112	7.07	0.84	13.3	2.42	2.86	0.52	7.16	-153.6		
1120	104	7.56	1.33	13.4	2.41	3.23	0.43	7.16	-181		
1125	112	7.98		13.4	2.40	2.44	1.12	7.16	-197.4		
1130	112	8.36		13.3	2.39	2.68	0.83	7.16	-207.1		
1135	112	8.57		13.5	2.39	2.77	0.55	7.16	-212.5		
1140	112	8.81		13.4	2.38	2.57	0.41	7.16	-217		

Sample ID: WG-1123027S-103023-KM-002 Sample Time: 1145

Notes: Blind Dup: WG-1123027S-103023-KM-003

(1) The pump intake will be placed at the well screen mid-point or at a minimum of 0.6 m (2 ft) above any sediment accumulated at the well bottom.

(2) The well screen volume will be based on a 1.52 metres (5-foot) screen length (L). For metric units, $V_s=\pi*(r^2)*L$ in mL, where r (r=D/2) and L are in cm.
For Imperial units, $V_s=\pi*(r^2)*L*(2.54)^3$, where r and L are in inches

(3) The drawdown from the initial water level should not exceed 0.1 m (0.3 ft). The pumping rate should not exceed 500 mL/min.

(4) Purging will continue until stabilization is achieved or until 20 well screen volumes have been purged (unless purge water remains visually turbid and appears to be clearing, or unless stabilization parameters are varying slightly outside of the stabilization criteria and appear to be stabilizing), No. of Well Screen Volumes Purged= Vp/Vs.

(5) For conductivity, the average value of three readings <1 mS/cm ±0.005 mS/cm or where conductivity >1 mS/cm ±0.01 mS/cm.

Start Purge at 11:08

Clear and colorless sample

Appendix B

Analytical Test Results

eurofins | Environment Testing

ANALYTICAL REPORT

PREPARED FOR

Attn: Linda Waters
GHD Services Inc.
2055 Niagara Falls Blvd., Suite 3
Niagara Falls, New York 14304

Generated 11/6/2023 11:46:14 AM

JOB DESCRIPTION

11230275, River Road

JOB NUMBER

480-214257-1

Eurofins Buffalo
10 Hazelwood Drive
Amherst NY 14228-2298

See page two for job notes and contact information.

Job Notes

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing Northeast, LLC Project Manager.

Authorization

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Authorized for release by
Denise Heckler, Project Manager II
Denise.Heckler@et.eurofinsus.com
(330)966-9477

Table of Contents

Definitions/Glossary

Client: GHD Services Inc.
Job ID: 480-214257-1
Project/Site: 11230275, River Road

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
*+	LCS and/or LCSD is outside acceptance limits, high biased.
F1	MS and/or MSD recovery exceeds control limits.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: GHD Services Inc.
Project/Site: 11230275, River Road

Job ID: 480-214257-1

Job ID: 480-214257-1

Laboratory: Eurofins Buffalo

Narrative

Job Narrative
480-214257-1

Receipt
The samples were received on 10/30/2023 12:30 PM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 4.0º C.

GC/MS VOA
Method 8260C: The continuing calibration verification (CCV) associated with batch 480-689958 recovered above the upper control limit for Carbon tetrachloride. The samples associated with this CCV were non-detects for the affected analytes; therefore, the data have been reported. The associated sample is impacted: TB-11230275-103023-KM (480-214257-4).

Method 8260C: The continuing calibration verification (CCV) associated with batch 480-690125 recovered above the upper control limit for Dibromochloromethane, Carbon tetrachloride and Tetrachloroethene. The samples associated with this CCV were non-detects for the affected analytes; therefore, the data have been reported. The associated samples are impacted: WG-11230275-103023-KM-001 (480-214257-1), WG-11230275-103023-KM-002 (480-214257-2) and WG-11230275-103023-KM-003 (480-214257-3).

Method 8260C: The laboratory control sample (LCS) and / or laboratory control sample duplicate (LCSD) for analytical batch 480-690125 recovered outside control limits for the following analytes: 1,1,1-Trichloroethane and Carbon tetrachloride. These analytes were biased high in the LCS and were not detected in the associated samples; therefore, the data have been reported. The associated samples are impacted: WG-11230275-103023-KM-001 (480-214257-1), WG-11230275-103023-KM-002 (480-214257-2) and WG-11230275-103023-KM-003 (480-214257-3).

Method 8260C: The following volatiles samples were diluted due to foaming at the time of purging during the original sample analysis: WG-11230275-103023-KM-001 (480-214257-1), WG-11230275-103023-KM-001 (480-214257-1[MS]) and WG-11230275-103023-KM-001 (480-214257-1[MSD]). Elevated reporting limits (RLs) are provided.

Method 8260C: The following samples were diluted to bring the concentration of target analytes within the calibration range: WG-11230275-103023-KM-002 (480-214257-2) and WG-11230275-103023-KM-003 (480-214257-3). Elevated reporting limits (RLs) are provided.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Detection Summary

Client: GHD Services Inc.
Project/Site: 11230275, River Road

Job ID: 480-214257-1

Client Sample ID: WG-11230275-103023-KM-001 — Lab Sample ID: 480-214257-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Cyclohexane	57		10	1.8	ug/L	10		8260C	Total/NA
Isopropylbenzene	11		10	7.9	ug/L	10		8260C	Total/NA
Methylcyclohexane	8.4	J	10	1.6	ug/L	10		8260C	Total/NA

Client Sample ID: WG-11230275-103023-KM-002 — Lab Sample ID: 480-214257-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Benzene	40		10	4.1	ug/L	10		8260C	Total/NA
Ethylbenzene	250		10	7.4	ug/L	10		8260C	Total/NA
Isopropylbenzene	240		10	7.9	ug/L	10		8260C	Total/NA
Methylcyclohexane	8.4	J	10	1.6	ug/L	10		8260C	Total/NA

Client Sample ID: WG-11230275-103023-KM-003 — Lab Sample ID: 480-214257-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Benzene	40		10	4.1	ug/L	10		8260C	Total/NA
Ethylbenzene	270		10	7.4	ug/L	10		8260C	Total/NA
Isopropylbenzene	240		10	7.9	ug/L	10		8260C	Total/NA

Client Sample ID: TB-11230275-103023-KM — Lab Sample ID: 480-214257-4

No Detections.

This Detection Summary does not include radiochemical test results.

Eurofins Buffalo

Client: GHD Services Inc.
Project/Site: 11230275, River Road

Job ID: 480-214257-1

Client Sample ID: WG-11230275-103023-KM-001
Date Collected: 10/30/23 10:45
Date Received: 10/30/23 12:30

Lab Sample ID: 480-214257-1
Matrix: Water

Method: SW846 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	8.2	U *+	10	8.2	ug/L			11/03/23 11:40	10
1,1,2,2-Tetrachloroethane	2.1	U	10	2.1	ug/L			11/03/23 11:40	10
1,1,2-Trichloroethane	2.3	U	10	2.3	ug/L			11/03/23 11:40	10
1,1,2-Trichloro-1,2,2-trifluoroethane	3.1	U	10	3.1	ug/L			11/03/23 11:40	10
1,1-Dichloroethane	3.8	U	10	3.8	ug/L			11/03/23 11:40	10
1,1-Dichloroethene	2.9	U	10	2.9	ug/L			11/03/23 11:40	10
1,2,4-Trichlorobenzene	4.1	U	10	4.1	ug/L			11/03/23 11:40	10
1,2-Dibromo-3-Chloropropane	3.9	U	10	3.9	ug/L			11/03/23 11:40	10
1,2-Dichlorobenzene	7.9	U	10	7.9	ug/L			11/03/23 11:40	10
1,2,3-Trichlorobenzene	4.1	U	10	4.1	ug/L			11/03/23 11:40	10
1,2-Dichloroethane	2.1	U	10	2.1	ug/L			11/03/23 11:40	10
1,2-Dichloropropane	7.2	U	10	7.2	ug/L			11/03/23 11:40	10
1,3-Dichlorobenzene	7.8	U	10	7.8	ug/L			11/03/23 11:40	10
1,4-Dichlorobenzene	8.4	U	10	8.4	ug/L			11/03/23 11:40	10
2-Butanone (MEK)	13	U	100	13	ug/L			11/03/23 11:40	10
2-Hexanone	12	U	50	12	ug/L			11/03/23 11:40	10
4-Methyl-2-pentanone (MIBK)	21	U	50	21	ug/L			11/03/23 11:40	10
Acetone	30	U	100	30	ug/L			11/03/23 11:40	10
Benzene	4.1	U	10	4.1	ug/L			11/03/23 11:40	10
Bromodichloromethane	3.9	U	10	3.9	ug/L			11/03/23 11:40	10
Bromoform	2.6	U	10	2.6	ug/L			11/03/23 11:40	10
Bromomethane	6.9	U	10	6.9	ug/L			11/03/23 11:40	10
Carbon disulfide	1.9	U	10	1.9	ug/L			11/03/23 11:40	10
Carbon tetrachloride	2.7	U *+	10	2.7	ug/L			11/03/23 11:40	10
Chlorobenzene	7.5	U	10	7.5	ug/L			11/03/23 11:40	10
Dibromochloromethane	3.2	U	10	3.2	ug/L			11/03/23 11:40	10
Chloroethane	3.2	U	10	3.2	ug/L			11/03/23 11:40	10
Chloroform	3.4	U	10	3.4	ug/L			11/03/23 11:40	10
Chloromethane	3.5	U	10	3.5	ug/L			11/03/23 11:40	10
cis-1,2-Dichloroethene	8.1	U	10	8.1	ug/L			11/03/23 11:40	10
cis-1,3-Dichloropropene	3.6	U	10	3.6	ug/L			11/03/23 11:40	10
Cyclohexane	**57**		10	1.8	ug/L			11/03/23 11:40	10
Dichlorodifluoromethane	6.8	U	10	6.8	ug/L			11/03/23 11:40	10
Ethylbenzene	7.4	U	10	7.4	ug/L			11/03/23 11:40	10
1,2-Dibromoethane	7.3	U	10	7.3	ug/L			11/03/23 11:40	10
Isopropylbenzene	**11**		10	7.9	ug/L			11/03/23 11:40	10
Methyl acetate	13	U F1	25	13	ug/L			11/03/23 11:40	10
Methyl tert-butyl ether	1.6	U	10	1.6	ug/L			11/03/23 11:40	10
Methylcyclohexane	**8.4**	**J**	10	1.6	ug/L			11/03/23 11:40	10
Methylene Chloride	4.4	U	10	4.4	ug/L			11/03/23 11:40	10
Styrene	7.3	U	10	7.3	ug/L			11/03/23 11:40	10
Tetrachloroethene	3.6	U	10	3.6	ug/L			11/03/23 11:40	10
Toluene	5.1	U	10	5.1	ug/L			11/03/23 11:40	10
trans-1,2-Dichloroethene	9.0	U	10	9.0	ug/L			11/03/23 11:40	10
trans-1,3-Dichloropropene	3.7	U	10	3.7	ug/L			11/03/23 11:40	10
Trichloroethene	4.6	U	10	4.6	ug/L			11/03/23 11:40	10
Trichlorofluoromethane	8.8	U	10	8.8	ug/L			11/03/23 11:40	10
Vinyl chloride	9.0	U	10	9.0	ug/L			11/03/23 11:40	10
Xylenes, Total	6.6	U	20	6.6	ug/L			11/03/23 11:40	10

Client: GHD Services Inc.
Project/Site: 11230275, River Road

Job ID: 480-214257-1

Client Sample ID: WG-11230275-103023-KM-001

Lab Sample ID: 480-214257-1
Date Collected: 10/30/23 10:45
Matrix: Water
Date Received: 10/30/23 12:30

Method: SW846 8260C - Volatile Organic Compounds by GC/MS (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chlorobromomethane	8.7	U	10	8.7	ug/L			11/03/23 11:40	10

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*98*		*80 - 120*		*11/03/23 11:40*	*10*
1,2-Dichloroethane-d4 (Surr)	*102*		*77 - 120*		*11/03/23 11:40*	*10*
4-Bromofluorobenzene (Surr)	*96*		*73 - 120*		*11/03/23 11:40*	*10*
Dibromofluoromethane (Surr)	*103*		*75 - 123*		*11/03/23 11:40*	*10*

Client Sample ID: WG-11230275-103023-KM-002

Lab Sample ID: 480-214257-2
Date Collected: 10/30/23 11:45
Matrix: Water
Date Received: 10/30/23 12:30

Method: SW846 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	8.2	U *+	10	8.2	ug/L			11/03/23 12:02	10
1,1,2,2-Tetrachloroethane	2.1	U	10	2.1	ug/L			11/03/23 12:02	10
1,1,2-Trichloroethane	2.3	U	10	2.3	ug/L			11/03/23 12:02	10
1,1,2-Trichloro-1,2,2-trifluoroethane	3.1	U	10	3.1	ug/L			11/03/23 12:02	10
1,1-Dichloroethane	3.8	U	10	3.8	ug/L			11/03/23 12:02	10
1,1-Dichloroethene	2.9	U	10	2.9	ug/L			11/03/23 12:02	10
1,2,4-Trichlorobenzene	4.1	U	10	4.1	ug/L			11/03/23 12:02	10
1,2-Dibromo-3-Chloropropane	3.9	U	10	3.9	ug/L			11/03/23 12:02	10
1,2-Dichlorobenzene	7.9	U	10	7.9	ug/L			11/03/23 12:02	10
1,2,3-Trichlorobenzene	4.1	U	10	4.1	ug/L			11/03/23 12:02	10
1,2-Dichloroethane	2.1	U	10	2.1	ug/L			11/03/23 12:02	10
1,2-Dichloropropane	7.2	U	10	7.2	ug/L			11/03/23 12:02	10
1,3-Dichlorobenzene	7.8	U	10	7.8	ug/L			11/03/23 12:02	10
1,4-Dichlorobenzene	8.4	U	10	8.4	ug/L			11/03/23 12:02	10
2-Butanone (MEK)	13	U	100	13	ug/L			11/03/23 12:02	10
2-Hexanone	12	U	50	12	ug/L			11/03/23 12:02	10
4-Methyl-2-pentanone (MIBK)	21	U	50	21	ug/L			11/03/23 12:02	10
Acetone	30	U	100	30	ug/L			11/03/23 12:02	10
Benzene	**40**		10	4.1	ug/L			11/03/23 12:02	10
Bromodichloromethane	3.9	U	10	3.9	ug/L			11/03/23 12:02	10
Bromoform	2.6	U	10	2.6	ug/L			11/03/23 12:02	10
Bromomethane	6.9	U	10	6.9	ug/L			11/03/23 12:02	10
Carbon disulfide	1.9	U	10	1.9	ug/L			11/03/23 12:02	10
Carbon tetrachloride	2.7	U *+	10	2.7	ug/L			11/03/23 12:02	10
Chlorobenzene	7.5	U	10	7.5	ug/L			11/03/23 12:02	10
Dibromochloromethane	3.2	U	10	3.2	ug/L			11/03/23 12:02	10
Chloroethane	3.2	U	10	3.2	ug/L			11/03/23 12:02	10
Chloroform	3.4	U	10	3.4	ug/L			11/03/23 12:02	10
Chloromethane	3.5	U	10	3.5	ug/L			11/03/23 12:02	10
cis-1,2-Dichloroethene	8.1	U	10	8.1	ug/L			11/03/23 12:02	10
cis-1,3-Dichloropropene	3.6	U	10	3.6	ug/L			11/03/23 12:02	10
Cyclohexane	1.8	U	10	1.8	ug/L			11/03/23 12:02	10
Dichlorodifluoromethane	6.8	U	10	6.8	ug/L			11/03/23 12:02	10
Ethylbenzene	**250**		10	7.4	ug/L			11/03/23 12:02	10
1,2-Dibromoethane	7.3	U	10	7.3	ug/L			11/03/23 12:02	10
Isopropylbenzene	**240**		10	7.9	ug/L			11/03/23 12:02	10

Client Sample ID: WG-11230275-103023-KM-002

Lab Sample ID: 480-214257-2

Date Collected: 10/30/23 11:45

Matrix: Water

Date Received: 10/30/23 12:30

Method: SW846 8260C - Volatile Organic Compounds by GC/MS (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Methyl acetate	13	U	25	13	ug/L			11/03/23 12:02	10
Methyl tert-butyl ether	1.6	U	10	1.6	ug/L			11/03/23 12:02	10
Methylcyclohexane	**8.4**	**J**	10	1.6	ug/L			11/03/23 12:02	10
Methylene Chloride	4.4	U	10	4.4	ug/L			11/03/23 12:02	10
Styrene	7.3	U	10	7.3	ug/L			11/03/23 12:02	10
Tetrachloroethene	3.6	U	10	3.6	ug/L			11/03/23 12:02	10
Toluene	5.1	U	10	5.1	ug/L			11/03/23 12:02	10
trans-1,2-Dichloroethene	9.0	U	10	9.0	ug/L			11/03/23 12:02	10
trans-1,3-Dichloropropene	3.7	U	10	3.7	ug/L			11/03/23 12:02	10
Trichloroethene	4.6	U	10	4.6	ug/L			11/03/23 12:02	10
Trichlorofluoromethane	8.8	U	10	8.8	ug/L			11/03/23 12:02	10
Vinyl chloride	9.0	U	10	9.0	ug/L			11/03/23 12:02	10
Xylenes, Total	6.6	U	20	6.6	ug/L			11/03/23 12:02	10
Chlorobromomethane	8.7	U	10	8.7	ug/L			11/03/23 12:02	10

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*99*		*80 - 120*		*11/03/23 12:02*	*10*
1,2-Dichloroethane-d4 (Surr)	*101*		*77 - 120*		*11/03/23 12:02*	*10*
4-Bromofluorobenzene (Surr)	*95*		*73 - 120*		*11/03/23 12:02*	*10*
Dibromofluoromethane (Surr)	*101*		*75 - 123*		*11/03/23 12:02*	*10*

Client Sample ID: WG-11230275-103023-KM-003

Lab Sample ID: 480-214257-3

Date Collected: 10/30/23 11:45

Matrix: Water

Date Received: 10/30/23 12:30

Method: SW846 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	8.2	U *+	10	8.2	ug/L			11/03/23 12:25	10
1,1,2,2-Tetrachloroethane	2.1	U	10	2.1	ug/L			11/03/23 12:25	10
1,1,2-Trichloroethane	2.3	U	10	2.3	ug/L			11/03/23 12:25	10
1,1,2-Trichloro-1,2,2-trifluoroethane	3.1	U	10	3.1	ug/L			11/03/23 12:25	10
1,1-Dichloroethane	3.8	U	10	3.8	ug/L			11/03/23 12:25	10
1,1-Dichloroethene	2.9	U	10	2.9	ug/L			11/03/23 12:25	10
1,2,4-Trichlorobenzene	4.1	U	10	4.1	ug/L			11/03/23 12:25	10
1,2-Dibromo-3-Chloropropane	3.9	U	10	3.9	ug/L			11/03/23 12:25	10
1,2-Dichlorobenzene	7.9	U	10	7.9	ug/L			11/03/23 12:25	10
1,2,3-Trichlorobenzene	4.1	U	10	4.1	ug/L			11/03/23 12:25	10
1,2-Dichloroethane	2.1	U	10	2.1	ug/L			11/03/23 12:25	10
1,2-Dichloropropane	7.2	U	10	7.2	ug/L			11/03/23 12:25	10
1,3-Dichlorobenzene	7.8	U	10	7.8	ug/L			11/03/23 12:25	10
1,4-Dichlorobenzene	8.4	U	10	8.4	ug/L			11/03/23 12:25	10
2-Butanone (MEK)	13	U	100	13	ug/L			11/03/23 12:25	10
2-Hexanone	12	U	50	12	ug/L			11/03/23 12:25	10
4-Methyl-2-pentanone (MIBK)	21	U	50	21	ug/L			11/03/23 12:25	10
Acetone	30	U	100	30	ug/L			11/03/23 12:25	10
Benzene	**40**		10	4.1	ug/L			11/03/23 12:25	10
Bromodichloromethane	3.9	U	10	3.9	ug/L			11/03/23 12:25	10
Bromoform	2.6	U	10	2.6	ug/L			11/03/23 12:25	10
Bromomethane	6.9	U	10	6.9	ug/L			11/03/23 12:25	10
Carbon disulfide	1.9	U	10	1.9	ug/L			11/03/23 12:25	10

Client Sample ID: WG-11230275-103023-KM-003

Lab Sample ID: 480-214257-3

Date Collected: 10/30/23 11:45
Date Received: 10/30/23 12:30

Matrix: Water

Method: SW846 8260C - Volatile Organic Compounds by GC/MS (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbon tetrachloride	2.7	U *+	10	2.7	ug/L			11/03/23 12:25	10
Chlorobenzene	7.5	U	10	7.5	ug/L			11/03/23 12:25	10
Dibromochloromethane	3.2	U	10	3.2	ug/L			11/03/23 12:25	10
Chloroethane	3.2	U	10	3.2	ug/L			11/03/23 12:25	10
Chloroform	3.4	U	10	3.4	ug/L			11/03/23 12:25	10
Chloromethane	3.5	U	10	3.5	ug/L			11/03/23 12:25	10
cis-1,2-Dichloroethene	8.1	U	10	8.1	ug/L			11/03/23 12:25	10
cis-1,3-Dichloropropene	3.6	U	10	3.6	ug/L			11/03/23 12:25	10
Cyclohexane	1.8	U	10	1.8	ug/L			11/03/23 12:25	10
Dichlorodifluoromethane	6.8	U	10	6.8	ug/L			11/03/23 12:25	10
Ethylbenzene	**270**		10	7.4	ug/L			11/03/23 12:25	10
1,2-Dibromoethane	7.3	U	10	7.3	ug/L			11/03/23 12:25	10
Isopropylbenzene	**240**		10	7.9	ug/L			11/03/23 12:25	10
Methyl acetate	13	U	25	13	ug/L			11/03/23 12:25	10
Methyl tert-butyl ether	1.6	U	10	1.6	ug/L			11/03/23 12:25	10
Methylcyclohexane	1.6	U	10	1.6	ug/L			11/03/23 12:25	10
Methylene Chloride	4.4	U	10	4.4	ug/L			11/03/23 12:25	10
Styrene	7.3	U	10	7.3	ug/L			11/03/23 12:25	10
Tetrachloroethene	3.6	U	10	3.6	ug/L			11/03/23 12:25	10
Toluene	5.1	U	10	5.1	ug/L			11/03/23 12:25	10
trans-1,2-Dichloroethene	9.0	U	10	9.0	ug/L			11/03/23 12:25	10
trans-1,3-Dichloropropene	3.7	U	10	3.7	ug/L			11/03/23 12:25	10
Trichloroethene	4.6	U	10	4.6	ug/L			11/03/23 12:25	10
Trichlorofluoromethane	8.8	U	10	8.8	ug/L			11/03/23 12:25	10
Vinyl chloride	9.0	U	10	9.0	ug/L			11/03/23 12:25	10
Xylenes, Total	6.6	U	20	6.6	ug/L			11/03/23 12:25	10
Chlorobromomethane	8.7	U	10	8.7	ug/L			11/03/23 12:25	10

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*100*		*80 - 120*		*11/03/23 12:25*	*10*
1,2-Dichloroethane-d4 (Surr)	*100*		*77 - 120*		*11/03/23 12:25*	*10*
4-Bromofluorobenzene (Surr)	*97*		*73 - 120*		*11/03/23 12:25*	*10*
Dibromofluoromethane (Surr)	*101*		*75 - 123*		*11/03/23 12:25*	*10*

Client Sample ID: TB-11230275-103023-KM

Lab Sample ID: 480-214257-4

Date Collected: 10/30/23 10:00
Date Received: 10/30/23 12:30

Matrix: Water

Method: SW846 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	0.82	U	1.0	0.82	ug/L			11/02/23 13:17	1
1,1,2,2-Tetrachloroethane	0.21	U	1.0	0.21	ug/L			11/02/23 13:17	1
1,1,2-Trichloroethane	0.23	U	1.0	0.23	ug/L			11/02/23 13:17	1
1,1,2-Trichloro-1,2,2-trifluoroethane	0.31	U	1.0	0.31	ug/L			11/02/23 13:17	1
1,1-Dichloroethane	0.38	U	1.0	0.38	ug/L			11/02/23 13:17	1
1,1-Dichloroethene	0.29	U	1.0	0.29	ug/L			11/02/23 13:17	1
1,2,4-Trichlorobenzene	0.41	U	1.0	0.41	ug/L			11/02/23 13:17	1
1,2-Dibromo-3-Chloropropane	0.39	U	1.0	0.39	ug/L			11/02/23 13:17	1
1,2-Dichlorobenzene	0.79	U	1.0	0.79	ug/L			11/02/23 13:17	1
1,2,3-Trichlorobenzene	0.41	U	1.0	0.41	ug/L			11/02/23 13:17	1

Client: GHD Services Inc.
Project/Site: 11230275, River Road

Job ID: 480-214257-1

Client Sample ID: TB-11230275-103023-KM
Date Collected: 10/30/23 10:00
Date Received: 10/30/23 12:30

Lab Sample ID: 480-214257-4
Matrix: Water

Method: SW846 8260C - Volatile Organic Compounds by GC/MS (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane	0.21	U	1.0	0.21	ug/L			11/02/23 13:17	1
1,2-Dichloropropane	0.72	U	1.0	0.72	ug/L			11/02/23 13:17	1
1,3-Dichlorobenzene	0.78	U	1.0	0.78	ug/L			11/02/23 13:17	1
1,4-Dichlorobenzene	0.84	U	1.0	0.84	ug/L			11/02/23 13:17	1
2-Butanone (MEK)	1.3	U	10	1.3	ug/L			11/02/23 13:17	1
2-Hexanone	1.2	U	5.0	1.2	ug/L			11/02/23 13:17	1
4-Methyl-2-pentanone (MIBK)	2.1	U	5.0	2.1	ug/L			11/02/23 13:17	1
Acetone	3.0	U	10	3.0	ug/L			11/02/23 13:17	1
Benzene	0.41	U	1.0	0.41	ug/L			11/02/23 13:17	1
Bromodichloromethane	0.39	U	1.0	0.39	ug/L			11/02/23 13:17	1
Bromoform	0.26	U	1.0	0.26	ug/L			11/02/23 13:17	1
Bromomethane	0.69	U	1.0	0.69	ug/L			11/02/23 13:17	1
Carbon disulfide	0.19	U	1.0	0.19	ug/L			11/02/23 13:17	1
Carbon tetrachloride	0.27	U	1.0	0.27	ug/L			11/02/23 13:17	1
Chlorobenzene	0.75	U	1.0	0.75	ug/L			11/02/23 13:17	1
Dibromochloromethane	0.32	U	1.0	0.32	ug/L			11/02/23 13:17	1
Chloroethane	0.32	U	1.0	0.32	ug/L			11/02/23 13:17	1
Chloroform	0.34	U	1.0	0.34	ug/L			11/02/23 13:17	1
Chloromethane	0.35	U	1.0	0.35	ug/L			11/02/23 13:17	1
cis-1,2-Dichloroethene	0.81	U	1.0	0.81	ug/L			11/02/23 13:17	1
cis-1,3-Dichloropropene	0.36	U	1.0	0.36	ug/L			11/02/23 13:17	1
Cyclohexane	0.18	U	1.0	0.18	ug/L			11/02/23 13:17	1
Dichlorodifluoromethane	0.68	U	1.0	0.68	ug/L			11/02/23 13:17	1
Ethylbenzene	0.74	U	1.0	0.74	ug/L			11/02/23 13:17	1
1,2-Dibromoethane	0.73	U	1.0	0.73	ug/L			11/02/23 13:17	1
Isopropylbenzene	0.79	U	1.0	0.79	ug/L			11/02/23 13:17	1
Methyl acetate	1.3	U	2.5	1.3	ug/L			11/02/23 13:17	1
Methyl tert-butyl ether	0.16	U	1.0	0.16	ug/L			11/02/23 13:17	1
Methylcyclohexane	0.16	U	1.0	0.16	ug/L			11/02/23 13:17	1
Methylene Chloride	0.44	U	1.0	0.44	ug/L			11/02/23 13:17	1
Styrene	0.73	U	1.0	0.73	ug/L			11/02/23 13:17	1
Tetrachloroethene	0.36	U	1.0	0.36	ug/L			11/02/23 13:17	1
Toluene	0.51	U	1.0	0.51	ug/L			11/02/23 13:17	1
trans-1,2-Dichloroethene	0.90	U	1.0	0.90	ug/L			11/02/23 13:17	1
trans-1,3-Dichloropropene	0.37	U	1.0	0.37	ug/L			11/02/23 13:17	1
Trichloroethene	0.46	U	1.0	0.46	ug/L			11/02/23 13:17	1
Trichlorofluoromethane	0.88	U	1.0	0.88	ug/L			11/02/23 13:17	1
Vinyl chloride	0.90	U	1.0	0.90	ug/L			11/02/23 13:17	1
Xylenes, Total	0.66	U	2.0	0.66	ug/L			11/02/23 13:17	1
Chlorobromomethane	0.87	U	1.0	0.87	ug/L			11/02/23 13:17	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*95*		*80 - 120*		*11/02/23 13:17*	*1*
1,2-Dichloroethane-d4 (Surr)	*93*		*77 - 120*		*11/02/23 13:17*	*1*
4-Bromofluorobenzene (Surr)	*99*		*73 - 120*		*11/02/23 13:17*	*1*
Dibromofluoromethane (Surr)	*98*		*75 - 123*		*11/02/23 13:17*	*1*

Surrogate Summary

Client: GHD Services Inc.
Project/Site: 11230275, River Road

Job ID: 480-214257-1

Method: 8260C - Volatile Organic Compounds by GC/MS

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
		TOL	DCA	BFB	DBFM
Lab Sample ID	Client Sample ID	(80-120)	(77-120)	(73-120)	(75-123)
480-214257-1	WG-11230275-103023-KM-001	98	102	96	103
480-214257-1 MS	WG-11230275-103023-KM-001	100	100	98	102
480-214257-1 MSD	WG-11230275-103023-KM-001	100	99	96	99
480-214257-2	WG-11230275-103023-KM-002	99	101	95	101
480-214257-3	WG-11230275-103023-KM-003	100	100	97	101
480-214257-4	TB-11230275-103023-KM	95	93	99	98
LCS 480-689958/6	Lab Control Sample	97	91	100	92
LCS 480-690125/6	Lab Control Sample	102	102	100	105
MB 480-689958/8	Method Blank	101	101	106	102
MB 480-690125/8	Method Blank	99	101	99	102

Surrogate Legend

TOL = Toluene-d8 (Surr)
DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260C - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 480-689958/8
Matrix: Water
Analysis Batch: 689958

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	0.82	U	1.0	0.82	ug/L			11/02/23 11:13	1
1,1,2,2-Tetrachloroethane	0.21	U	1.0	0.21	ug/L			11/02/23 11:13	1
1,1,2-Trichloroethane	0.23	U	1.0	0.23	ug/L			11/02/23 11:13	1
1,1,2-Trichloro-1,2,2-trifluoroethane	0.31	U	1.0	0.31	ug/L			11/02/23 11:13	1
1,1-Dichloroethane	0.38	U	1.0	0.38	ug/L			11/02/23 11:13	1
1,1-Dichloroethene	0.29	U	1.0	0.29	ug/L			11/02/23 11:13	1
1,2,4-Trichlorobenzene	0.41	U	1.0	0.41	ug/L			11/02/23 11:13	1
1,2-Dibromo-3-Chloropropane	0.39	U	1.0	0.39	ug/L			11/02/23 11:13	1
1,2-Dichlorobenzene	0.79	U	1.0	0.79	ug/L			11/02/23 11:13	1
1,2,3-Trichlorobenzene	0.41	U	1.0	0.41	ug/L			11/02/23 11:13	1
1,2-Dichloroethane	0.21	U	1.0	0.21	ug/L			11/02/23 11:13	1
1,2-Dichloropropane	0.72	U	1.0	0.72	ug/L			11/02/23 11:13	1
1,3-Dichlorobenzene	0.78	U	1.0	0.78	ug/L			11/02/23 11:13	1
1,4-Dichlorobenzene	0.84	U	1.0	0.84	ug/L			11/02/23 11:13	1
2-Butanone (MEK)	1.3	U	10	1.3	ug/L			11/02/23 11:13	1
2-Hexanone	1.2	U	5.0	1.2	ug/L			11/02/23 11:13	1
4-Methyl-2-pentanone (MIBK)	2.1	U	5.0	2.1	ug/L			11/02/23 11:13	1
Acetone	3.0	U	10	3.0	ug/L			11/02/23 11:13	1
Benzene	0.41	U	1.0	0.41	ug/L			11/02/23 11:13	1
Bromodichloromethane	0.39	U	1.0	0.39	ug/L			11/02/23 11:13	1
Bromoform	0.26	U	1.0	0.26	ug/L			11/02/23 11:13	1
Bromomethane	0.69	U	1.0	0.69	ug/L			11/02/23 11:13	1
Carbon disulfide	0.19	U	1.0	0.19	ug/L			11/02/23 11:13	1
Carbon tetrachloride	0.27	U	1.0	0.27	ug/L			11/02/23 11:13	1
Chlorobenzene	0.75	U	1.0	0.75	ug/L			11/02/23 11:13	1
Dibromochloromethane	0.32	U	1.0	0.32	ug/L			11/02/23 11:13	1
Chloroethane	0.32	U	1.0	0.32	ug/L			11/02/23 11:13	1
Chloroform	0.34	U	1.0	0.34	ug/L			11/02/23 11:13	1
Chloromethane	0.35	U	1.0	0.35	ug/L			11/02/23 11:13	1
cis-1,2-Dichloroethene	0.81	U	1.0	0.81	ug/L			11/02/23 11:13	1
cis-1,3-Dichloropropene	0.36	U	1.0	0.36	ug/L			11/02/23 11:13	1
Cyclohexane	0.18	U	1.0	0.18	ug/L			11/02/23 11:13	1
Dichlorodifluoromethane	0.68	U	1.0	0.68	ug/L			11/02/23 11:13	1
Ethylbenzene	0.74	U	1.0	0.74	ug/L			11/02/23 11:13	1
1,2-Dibromoethane	0.73	U	1.0	0.73	ug/L			11/02/23 11:13	1
Isopropylbenzene	0.79	U	1.0	0.79	ug/L			11/02/23 11:13	1
Methyl acetate	1.3	U	2.5	1.3	ug/L			11/02/23 11:13	1
Methyl tert-butyl ether	0.16	U	1.0	0.16	ug/L			11/02/23 11:13	1
Methylcyclohexane	0.16	U	1.0	0.16	ug/L			11/02/23 11:13	1
Methylene Chloride	0.44	U	1.0	0.44	ug/L			11/02/23 11:13	1
Styrene	0.73	U	1.0	0.73	ug/L			11/02/23 11:13	1
Tetrachloroethene	0.36	U	1.0	0.36	ug/L			11/02/23 11:13	1
Toluene	0.51	U	1.0	0.51	ug/L			11/02/23 11:13	1
trans-1,2-Dichloroethene	0.90	U	1.0	0.90	ug/L			11/02/23 11:13	1
trans-1,3-Dichloropropene	0.37	U	1.0	0.37	ug/L			11/02/23 11:13	1
Trichloroethene	0.46	U	1.0	0.46	ug/L			11/02/23 11:13	1
Trichlorofluoromethane	0.88	U	1.0	0.88	ug/L			11/02/23 11:13	1
Vinyl chloride	0.90	U	1.0	0.90	ug/L			11/02/23 11:13	1

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: MB 480-689958/8
Matrix: Water
Analysis Batch: 689958

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Xylenes, Total	0.66	U	2.0	0.66	ug/L			11/02/23 11:13	1
Chlorobromomethane	0.87	U	1.0	0.87	ug/L			11/02/23 11:13	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*101*		*80 - 120*		*11/02/23 11:13*	*1*
1,2-Dichloroethane-d4 (Surr)	*101*		*77 - 120*		*11/02/23 11:13*	*1*
4-Bromofluorobenzene (Surr)	*106*		*73 - 120*		*11/02/23 11:13*	*1*
Dibromofluoromethane (Surr)	*102*		*75 - 123*		*11/02/23 11:13*	*1*

Lab Sample ID: LCS 480-689958/6
Matrix: Water
Analysis Batch: 689958

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1,1-Trichloroethane	25.0	29.3		ug/L		117	73 - 126
1,1,2,2-Tetrachloroethane	25.0	25.7		ug/L		103	76 - 120
1,1,2-Trichloroethane	25.0	28.3		ug/L		113	76 - 122
1,1,2-Trichloro-1,2,2-trifluoroethane	25.0	27.8		ug/L		111	61 - 148
1,1-Dichloroethane	25.0	27.9		ug/L		112	77 - 120
1,1-Dichloroethene	25.0	27.0		ug/L		108	66 - 127
1,2,4-Trichlorobenzene	25.0	28.2		ug/L		113	79 - 122
1,2-Dibromo-3-Chloropropane	25.0	28.9		ug/L		116	56 - 134
1,2-Dichlorobenzene	25.0	26.2		ug/L		105	80 - 124
1,2,3-Trichlorobenzene	25.0	27.7		ug/L		111	75 - 123
1,2-Dichloroethane	25.0	25.3		ug/L		101	75 - 120
1,2-Dichloropropane	25.0	27.6		ug/L		110	76 - 120
1,3-Dichlorobenzene	25.0	28.1		ug/L		112	77 - 120
1,4-Dichlorobenzene	25.0	26.6		ug/L		107	80 - 120
2-Butanone (MEK)	125	113		ug/L		90	57 - 140
2-Hexanone	125	129		ug/L		103	65 - 127
4-Methyl-2-pentanone (MIBK)	125	128		ug/L		103	71 - 125
Acetone	125	121		ug/L		97	56 - 142
Benzene	25.0	28.4		ug/L		113	71 - 124
Bromodichloromethane	25.0	27.6		ug/L		110	80 - 122
Bromoform	25.0	27.5		ug/L		110	61 - 132
Bromomethane	25.0	24.9		ug/L		100	55 - 144
Carbon disulfide	25.0	26.8		ug/L		107	59 - 134
Carbon tetrachloride	25.0	31.4		ug/L		126	72 - 134
Chlorobenzene	25.0	27.4		ug/L		110	80 - 120
Dibromochloromethane	25.0	28.8		ug/L		115	75 - 125
Chloroethane	25.0	25.3		ug/L		101	69 - 136
Chloroform	25.0	26.4		ug/L		106	73 - 127
Chloromethane	25.0	26.7		ug/L		107	68 - 124
cis-1,2-Dichloroethene	25.0	27.1		ug/L		109	74 - 124
cis-1,3-Dichloropropene	25.0	27.0		ug/L		108	74 - 124
Cyclohexane	25.0	29.6		ug/L		118	59 - 135
Dichlorodifluoromethane	25.0	25.9		ug/L		104	59 - 135
Ethylbenzene	25.0	29.1		ug/L		116	77 - 123

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 480-689958/6
Matrix: Water
Analysis Batch: 689958

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,2-Dibromoethane	25.0	27.5		ug/L		110	77 - 120
Isopropylbenzene	25.0	29.0		ug/L		116	77 - 122
Methyl acetate	50.0	47.0		ug/L		94	74 - 133
Methyl tert-butyl ether	25.0	24.8		ug/L		99	77 - 120
Methylcyclohexane	25.0	28.3		ug/L		113	68 - 134
Methylene Chloride	25.0	26.2		ug/L		105	75 - 124
Styrene	25.0	28.7		ug/L		115	80 - 120
Tetrachloroethene	25.0	30.1		ug/L		120	74 - 122
Toluene	25.0	28.5		ug/L		114	80 - 122
trans-1,2-Dichloroethene	25.0	27.7		ug/L		111	73 - 127
trans-1,3-Dichloropropene	25.0	28.8		ug/L		115	80 - 120
Trichloroethene	25.0	28.1		ug/L		112	74 - 123
Trichlorofluoromethane	25.0	27.1		ug/L		108	62 - 150
Vinyl chloride	25.0	27.6		ug/L		110	65 - 133
Chlorobromomethane	25.0	26.1		ug/L		105	72 - 130

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Toluene-d8 (Surr)	*97*		*80 - 120*
1,2-Dichloroethane-d4 (Surr)	*91*		*77 - 120*
4-Bromofluorobenzene (Surr)	*100*		*73 - 120*
Dibromofluoromethane (Surr)	*92*		*75 - 123*

Lab Sample ID: MB 480-690125/8
Matrix: Water
Analysis Batch: 690125

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	0.82	U	1.0	0.82	ug/L			11/03/23 11:06	1
1,1,2,2-Tetrachloroethane	0.21	U	1.0	0.21	ug/L			11/03/23 11:06	1
1,1,2-Trichloroethane	0.23	U	1.0	0.23	ug/L			11/03/23 11:06	1
1,1,2-Trichloro-1,2,2-trifluoroethane	0.31	U	1.0	0.31	ug/L			11/03/23 11:06	1
1,1-Dichloroethane	0.38	U	1.0	0.38	ug/L			11/03/23 11:06	1
1,1-Dichloroethene	0.29	U	1.0	0.29	ug/L			11/03/23 11:06	1
1,2,4-Trichlorobenzene	0.41	U	1.0	0.41	ug/L			11/03/23 11:06	1
1,2-Dibromo-3-Chloropropane	0.39	U	1.0	0.39	ug/L			11/03/23 11:06	1
1,2-Dichlorobenzene	0.79	U	1.0	0.79	ug/L			11/03/23 11:06	1
1,2,3-Trichlorobenzene	0.41	U	1.0	0.41	ug/L			11/03/23 11:06	1
1,2-Dichloroethane	0.21	U	1.0	0.21	ug/L			11/03/23 11:06	1
1,2-Dichloropropane	0.72	U	1.0	0.72	ug/L			11/03/23 11:06	1
1,3-Dichlorobenzene	0.78	U	1.0	0.78	ug/L			11/03/23 11:06	1
1,4-Dichlorobenzene	0.84	U	1.0	0.84	ug/L			11/03/23 11:06	1
2-Butanone (MEK)	1.3	U	10	1.3	ug/L			11/03/23 11:06	1
2-Hexanone	1.2	U	5.0	1.2	ug/L			11/03/23 11:06	1
4-Methyl-2-pentanone (MIBK)	2.1	U	5.0	2.1	ug/L			11/03/23 11:06	1
Acetone	3.0	U	10	3.0	ug/L			11/03/23 11:06	1
Benzene	0.41	U	1.0	0.41	ug/L			11/03/23 11:06	1
Bromodichloromethane	0.39	U	1.0	0.39	ug/L			11/03/23 11:06	1
Bromoform	0.26	U	1.0	0.26	ug/L			11/03/23 11:06	1

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: MB 480-690125/8
Matrix: Water
Analysis Batch: 690125

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bromomethane	0.69	U	1.0	0.69	ug/L			11/03/23 11:06	1
Carbon disulfide	0.19	U	1.0	0.19	ug/L			11/03/23 11:06	1
Carbon tetrachloride	0.27	U	1.0	0.27	ug/L			11/03/23 11:06	1
Chlorobenzene	0.75	U	1.0	0.75	ug/L			11/03/23 11:06	1
Dibromochloromethane	0.32	U	1.0	0.32	ug/L			11/03/23 11:06	1
Chloroethane	0.32	U	1.0	0.32	ug/L			11/03/23 11:06	1
Chloroform	0.34	U	1.0	0.34	ug/L			11/03/23 11:06	1
Chloromethane	0.35	U	1.0	0.35	ug/L			11/03/23 11:06	1
cis-1,2-Dichloroethene	0.81	U	1.0	0.81	ug/L			11/03/23 11:06	1
cis-1,3-Dichloropropene	0.36	U	1.0	0.36	ug/L			11/03/23 11:06	1
Cyclohexane	0.18	U	1.0	0.18	ug/L			11/03/23 11:06	1
Dichlorodifluoromethane	0.68	U	1.0	0.68	ug/L			11/03/23 11:06	1
Ethylbenzene	0.74	U	1.0	0.74	ug/L			11/03/23 11:06	1
1,2-Dibromoethane	0.73	U	1.0	0.73	ug/L			11/03/23 11:06	1
Isopropylbenzene	0.79	U	1.0	0.79	ug/L			11/03/23 11:06	1
Methyl acetate	1.3	U	2.5	1.3	ug/L			11/03/23 11:06	1
Methyl tert-butyl ether	0.16	U	1.0	0.16	ug/L			11/03/23 11:06	1
Methylcyclohexane	0.16	U	1.0	0.16	ug/L			11/03/23 11:06	1
Methylene Chloride	0.44	U	1.0	0.44	ug/L			11/03/23 11:06	1
Styrene	0.73	U	1.0	0.73	ug/L			11/03/23 11:06	1
Tetrachloroethene	0.36	U	1.0	0.36	ug/L			11/03/23 11:06	1
Toluene	0.51	U	1.0	0.51	ug/L			11/03/23 11:06	1
trans-1,2-Dichloroethene	0.90	U	1.0	0.90	ug/L			11/03/23 11:06	1
trans-1,3-Dichloropropene	0.37	U	1.0	0.37	ug/L			11/03/23 11:06	1
Trichloroethene	0.46	U	1.0	0.46	ug/L			11/03/23 11:06	1
Trichlorofluoromethane	0.88	U	1.0	0.88	ug/L			11/03/23 11:06	1
Vinyl chloride	0.90	U	1.0	0.90	ug/L			11/03/23 11:06	1
Xylenes, Total	0.66	U	2.0	0.66	ug/L			11/03/23 11:06	1
Chlorobromomethane	0.87	U	1.0	0.87	ug/L			11/03/23 11:06	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*99*		*80 - 120*		*11/03/23 11:06*	*1*
1,2-Dichloroethane-d4 (Surr)	*101*		*77 - 120*		*11/03/23 11:06*	*1*
4-Bromofluorobenzene (Surr)	*99*		*73 - 120*		*11/03/23 11:06*	*1*
Dibromofluoromethane (Surr)	*102*		*75 - 123*		*11/03/23 11:06*	*1*

Lab Sample ID: LCS 480-690125/6
Matrix: Water
Analysis Batch: 690125

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1,1-Trichloroethane	25.0	31.9	*+	ug/L		128	73 - 126
1,1,2,2-Tetrachloroethane	25.0	26.0		ug/L		104	76 - 120
1,1,2-Trichloroethane	25.0	27.7		ug/L		111	76 - 122
1,1,2-Trichloro-1,2,2-trifluoroethane	25.0	29.7		ug/L		119	61 - 148
1,1-Dichloroethane	25.0	29.4		ug/L		118	77 - 120
1,1-Dichloroethene	25.0	30.3		ug/L		121	66 - 127
1,2,4-Trichlorobenzene	25.0	30.2		ug/L		121	79 - 122

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 480-690125/6
Matrix: Water
Analysis Batch: 690125

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,2-Dibromo-3-Chloropropane	25.0	30.6		ug/L		122	56 - 134
1,2-Dichlorobenzene	25.0	27.4		ug/L		110	80 - 124
1,2,3-Trichlorobenzene	25.0	30.0		ug/L		120	75 - 123
1,2-Dichloroethane	25.0	26.5		ug/L		106	75 - 120
1,2-Dichloropropane	25.0	29.2		ug/L		117	76 - 120
1,3-Dichlorobenzene	25.0	27.8		ug/L		111	77 - 120
1,4-Dichlorobenzene	25.0	27.0		ug/L		108	80 - 120
2-Butanone (MEK)	125	122		ug/L		98	57 - 140
2-Hexanone	125	121		ug/L		97	65 - 127
4-Methyl-2-pentanone (MIBK)	125	128		ug/L		103	71 - 125
Acetone	125	174		ug/L		139	56 - 142
Benzene	25.0	29.8		ug/L		119	71 - 124
Bromodichloromethane	25.0	29.5		ug/L		118	80 - 122
Bromoform	25.0	30.4		ug/L		122	61 - 132
Bromomethane	25.0	26.3		ug/L		105	55 - 144
Carbon disulfide	25.0	29.6		ug/L		119	59 - 134
Carbon tetrachloride	25.0	34.7	*+	ug/L		139	72 - 134
Chlorobenzene	25.0	27.3		ug/L		109	80 - 120
Dibromochloromethane	25.0	30.2		ug/L		121	75 - 125
Chloroethane	25.0	27.2		ug/L		109	69 - 136
Chloroform	25.0	27.3		ug/L		109	73 - 127
Chloromethane	25.0	29.3		ug/L		117	68 - 124
cis-1,2-Dichloroethene	25.0	29.0		ug/L		116	74 - 124
cis-1,3-Dichloropropene	25.0	28.5		ug/L		114	74 - 124
Cyclohexane	25.0	31.3		ug/L		125	59 - 135
Dichlorodifluoromethane	25.0	26.8		ug/L		107	59 - 135
Ethylbenzene	25.0	29.1		ug/L		116	77 - 123
1,2-Dibromoethane	25.0	27.2		ug/L		109	77 - 120
Isopropylbenzene	25.0	29.0		ug/L		116	77 - 122
Methyl acetate	50.0	52.4		ug/L		105	74 - 133
Methyl tert-butyl ether	25.0	27.3		ug/L		109	77 - 120
Methylcyclohexane	25.0	30.3		ug/L		121	68 - 134
Methylene Chloride	25.0	28.2		ug/L		113	75 - 124
Styrene	25.0	28.6		ug/L		114	80 - 120
Tetrachloroethene	25.0	30.3		ug/L		121	74 - 122
Toluene	25.0	29.2		ug/L		117	80 - 122
trans-1,2-Dichloroethene	25.0	29.6		ug/L		118	73 - 127
trans-1,3-Dichloropropene	25.0	28.7		ug/L		115	80 - 120
Trichloroethene	25.0	29.7		ug/L		119	74 - 123
Trichlorofluoromethane	25.0	29.9		ug/L		119	62 - 150
Vinyl chloride	25.0	30.3		ug/L		121	65 - 133
Chlorobromomethane	25.0	27.0		ug/L		108	72 - 130

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Toluene-d8 (Surr)	*102*		*80 - 120*
1,2-Dichloroethane-d4 (Surr)	*102*		*77 - 120*
4-Bromofluorobenzene (Surr)	*100*		*73 - 120*
Dibromofluoromethane (Surr)	*105*		*75 - 123*

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 480-214257-1 MS
Matrix: Water
Analysis Batch: 690125

Client Sample ID: WG-11230275-103023-KM-001
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1,1-Trichloroethane	8.2	U *+	250	300		ug/L		120	73 - 126
1,1,2,2-Tetrachloroethane	2.1	U	250	263		ug/L		105	76 - 120
1,1,2-Trichloroethane	2.3	U	250	274		ug/L		110	76 - 122
1,1,2-Trichloro-1,2,2-trifluoroethane	3.1	U	250	286		ug/L		114	61 - 148
1,1-Dichloroethane	3.8	U	250	293		ug/L		117	77 - 120
1,1-Dichloroethene	2.9	U	250	289		ug/L		116	66 - 127
1,2,4-Trichlorobenzene	4.1	U	250	303		ug/L		121	79 - 122
1,2-Dibromo-3-Chloropropane	3.9	U	250	309		ug/L		123	56 - 134
1,2-Dichlorobenzene	7.9	U	250	279		ug/L		111	80 - 124
1,2,3-Trichlorobenzene	4.1	U	250	307		ug/L		123	75 - 123
1,2-Dichloroethane	2.1	U	250	260		ug/L		104	75 - 120
1,2-Dichloropropane	7.2	U	250	281		ug/L		112	76 - 120
1,3-Dichlorobenzene	7.8	U	250	281		ug/L		112	77 - 120
1,4-Dichlorobenzene	8.4	U	250	272		ug/L		109	78 - 124
2-Butanone (MEK)	13	U	1250	1160		ug/L		93	57 - 140
2-Hexanone	12	U	1250	1210		ug/L		97	65 - 127
4-Methyl-2-pentanone (MIBK)	21	U	1250	1310		ug/L		105	71 - 125
Acetone	30	U	1250	1420		ug/L		113	56 - 142
Benzene	4.1	U	250	286		ug/L		114	71 - 124
Bromodichloromethane	3.9	U	250	279		ug/L		112	80 - 122
Bromoform	2.6	U	250	262		ug/L		105	61 - 132
Bromomethane	6.9	U	250	243		ug/L		97	55 - 144
Carbon disulfide	1.9	U	250	276		ug/L		110	59 - 134
Carbon tetrachloride	2.7	U *+	250	306		ug/L		122	72 - 134
Chlorobenzene	7.5	U	250	272		ug/L		109	80 - 120
Dibromochloromethane	3.2	U	250	276		ug/L		111	75 - 125
Chloroethane	3.2	U	250	260		ug/L		104	69 - 136
Chloroform	3.4	U	250	271		ug/L		108	73 - 127
Chloromethane	3.5	U	250	222		ug/L		89	68 - 124
cis-1,2-Dichloroethene	8.1	U	250	286		ug/L		114	74 - 124
cis-1,3-Dichloropropene	3.6	U	250	242		ug/L		97	74 - 124
Cyclohexane	57		250	351		ug/L		118	59 - 135
Dichlorodifluoromethane	6.8	U	250	248		ug/L		99	59 - 135
Ethylbenzene	7.4	U	250	290		ug/L		116	77 - 123
1,2-Dibromoethane	7.3	U	250	267		ug/L		107	77 - 120
Isopropylbenzene	11		250	306		ug/L		118	77 - 122
Methyl acetate	13	U F1	500	679	F1	ug/L		136	74 - 133
Methyl tert-butyl ether	1.6	U	250	259		ug/L		104	77 - 120
Methylcyclohexane	8.4	J	250	291		ug/L		113	68 - 134
Methylene Chloride	4.4	U	250	275		ug/L		110	75 - 124
Styrene	7.3	U	250	286		ug/L		114	80 - 120
Tetrachloroethene	3.6	U	250	294		ug/L		117	74 - 122
Toluene	5.1	U	250	283		ug/L		113	80 - 122
trans-1,2-Dichloroethene	9.0	U	250	293		ug/L		117	73 - 127
trans-1,3-Dichloropropene	3.7	U	250	247		ug/L		99	80 - 120
Trichloroethene	4.6	U	250	277		ug/L		111	74 - 123
Trichlorofluoromethane	8.8	U	250	255		ug/L		102	62 - 150
Vinyl chloride	9.0	U	250	275		ug/L		110	65 - 133

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 480-214257-1 MS
Matrix: Water
Analysis Batch: 690125

Client Sample ID: WG-11230275-103023-KM-001
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Chlorobromomethane	8.7	U	250	268		ug/L		107	72 - 130

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
Toluene-d8 (Surr)	*100*		*80 - 120*
1,2-Dichloroethane-d4 (Surr)	*100*		*77 - 120*
4-Bromofluorobenzene (Surr)	*98*		*73 - 120*
Dibromofluoromethane (Surr)	*102*		*75 - 123*

Lab Sample ID: 480-214257-1 MSD
Matrix: Water
Analysis Batch: 690125

Client Sample ID: WG-11230275-103023-KM-001
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1,1-Trichloroethane	8.2	U *+	250	287		ug/L		115	73 - 126	5	15
1,1,2,2-Tetrachloroethane	2.1	U	250	271		ug/L		108	76 - 120	3	15
1,1,2-Trichloroethane	2.3	U	250	268		ug/L		107	76 - 122	2	15
1,1,2-Trichloro-1,2,2-trifluoroethane	3.1	U	250	266		ug/L		106	61 - 148	7	20
1,1-Dichloroethane	3.8	U	250	279		ug/L		112	77 - 120	5	20
1,1-Dichloroethene	2.9	U	250	272		ug/L		109	66 - 127	6	16
1,2,4-Trichlorobenzene	4.1	U	250	286		ug/L		115	79 - 122	6	20
1,2-Dibromo-3-Chloropropane	3.9	U	250	306		ug/L		122	56 - 134	1	15
1,2-Dichlorobenzene	7.9	U	250	272		ug/L		109	80 - 124	3	20
1,2,3-Trichlorobenzene	4.1	U	250	285		ug/L		114	75 - 123	7	20
1,2-Dichloroethane	2.1	U	250	258		ug/L		103	75 - 120	1	20
1,2-Dichloropropane	7.2	U	250	276		ug/L		110	76 - 120	2	20
1,3-Dichlorobenzene	7.8	U	250	274		ug/L		110	77 - 120	2	20
1,4-Dichlorobenzene	8.4	U	250	266		ug/L		106	78 - 124	2	20
2-Butanone (MEK)	13	U	1250	1170		ug/L		93	57 - 140	1	20
2-Hexanone	12	U	1250	1230		ug/L		98	65 - 127	2	15
4-Methyl-2-pentanone (MIBK)	21	U	1250	1300		ug/L		104	71 - 125	0	35
Acetone	30	U	1250	1420		ug/L		113	56 - 142	0	15
Benzene	4.1	U	250	283		ug/L		113	71 - 124	1	13
Bromodichloromethane	3.9	U	250	275		ug/L		110	80 - 122	1	15
Bromoform	2.6	U	250	264		ug/L		106	61 - 132	1	15
Bromomethane	6.9	U	250	225		ug/L		90	55 - 144	7	15
Carbon disulfide	1.9	U	250	263		ug/L		105	59 - 134	5	15
Carbon tetrachloride	2.7	U *+	250	299		ug/L		120	72 - 134	2	15
Chlorobenzene	7.5	U	250	263		ug/L		105	80 - 120	3	25
Dibromochloromethane	3.2	U	250	281		ug/L		112	75 - 125	2	15
Chloroethane	3.2	U	250	245		ug/L		98	69 - 136	6	15
Chloroform	3.4	U	250	261		ug/L		104	73 - 127	4	20
Chloromethane	3.5	U	250	216		ug/L		86	68 - 124	3	15
cis-1,2-Dichloroethene	8.1	U	250	274		ug/L		109	74 - 124	4	15
cis-1,3-Dichloropropene	3.6	U	250	256		ug/L		102	74 - 124	6	15
Cyclohexane	57		250	334		ug/L		111	59 - 135	5	20
Dichlorodifluoromethane	6.8	U	250	233		ug/L		93	59 - 135	6	20
Ethylbenzene	7.4	U	250	283		ug/L		113	77 - 123	2	15
1,2-Dibromoethane	7.3	U	250	269		ug/L		107	77 - 120	0	15

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 480-214257-1 MSD
Matrix: Water
Analysis Batch: 690125

Client Sample ID: WG-11230275-103023-KM-001
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Isopropylbenzene	11		250	301		ug/L		116	77 - 122	2	20
Methyl acetate	13	U F1	500	684	F1	ug/L		137	74 - 133	1	20
Methyl tert-butyl ether	1.6	U	250	256		ug/L		102	77 - 120	1	37
Methylcyclohexane	8.4	J	250	288		ug/L		112	68 - 134	1	20
Methylene Chloride	4.4	U	250	269		ug/L		108	75 - 124	2	15
Styrene	7.3	U	250	275		ug/L		110	80 - 120	4	20
Tetrachloroethene	3.6	U	250	281		ug/L		112	74 - 122	4	20
Toluene	5.1	U	250	276		ug/L		110	80 - 122	2	15
trans-1,2-Dichloroethene	9.0	U	250	281		ug/L		113	73 - 127	4	20
trans-1,3-Dichloropropene	3.7	U	250	251		ug/L		101	80 - 120	2	15
Trichloroethene	4.6	U	250	273		ug/L		109	74 - 123	2	16
Trichlorofluoromethane	8.8	U	250	237		ug/L		95	62 - 150	7	20
Vinyl chloride	9.0	U	250	259		ug/L		104	65 - 133	6	15
Chlorobromomethane	8.7	U	250	267		ug/L		107	72 - 130	1	15

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
Toluene-d8 (Surr)	*100*		*80 - 120*
1,2-Dichloroethane-d4 (Surr)	*99*		*77 - 120*
4-Bromofluorobenzene (Surr)	*96*		*73 - 120*
Dibromofluoromethane (Surr)	*99*		*75 - 123*

QC Association Summary

Client: GHD Services Inc.
Project/Site: 11230275, River Road

Job ID: 480-214257-1

GC/MS VOA

Analysis Batch: 689958

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-214257-4	TB-11230275-103023-KM	Total/NA	Water	8260C	
MB 480-689958/8	Method Blank	Total/NA	Water	8260C	
LCS 480-689958/6	Lab Control Sample	Total/NA	Water	8260C	

Analysis Batch: 690125

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-214257-1	WG-11230275-103023-KM-001	Total/NA	Water	8260C	
480-214257-2	WG-11230275-103023-KM-002	Total/NA	Water	8260C	
480-214257-3	WG-11230275-103023-KM-003	Total/NA	Water	8260C	
MB 480-690125/8	Method Blank	Total/NA	Water	8260C	
LCS 480-690125/6	Lab Control Sample	Total/NA	Water	8260C	
480-214257-1 MS	WG-11230275-103023-KM-001	Total/NA	Water	8260C	
480-214257-1 MSD	WG-11230275-103023-KM-001	Total/NA	Water	8260C	

Lab Chronicle

Client: GHD Services Inc.
Project/Site: 11230275, River Road

Job ID: 480-214257-1

Client Sample ID: WG-11230275-103023-KM-001
Lab Sample ID: 480-214257-1
Date Collected: 10/30/23 10:45
Matrix: Water
Date Received: 10/30/23 12:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260C		10	690125	AXK	EET BUF	11/03/23 11:40

Client Sample ID: WG-11230275-103023-KM-002
Lab Sample ID: 480-214257-2
Date Collected: 10/30/23 11:45
Matrix: Water
Date Received: 10/30/23 12:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260C		10	690125	AXK	EET BUF	11/03/23 12:02

Client Sample ID: WG-11230275-103023-KM-003
Lab Sample ID: 480-214257-3
Date Collected: 10/30/23 11:45
Matrix: Water
Date Received: 10/30/23 12:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260C		10	690125	AXK	EET BUF	11/03/23 12:25

Client Sample ID: TB-11230275-103023-KM
Lab Sample ID: 480-214257-4
Date Collected: 10/30/23 10:00
Matrix: Water
Date Received: 10/30/23 12:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260C		1	689958	CR	EET BUF	11/02/23 13:17

Laboratory References:

EET BUF = Eurofins Buffalo, 10 Hazelwood Drive, Amherst, NY 14228-2298, TEL (716)691-2600

Accreditation/Certification Summary

Client: GHD Services Inc.
Job ID: 480-214257-1
Project/Site: 11230275, River Road

Laboratory: Eurofins Buffalo

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
New York	NELAP	10026	03-31-24

Method Summary

Client: GHD Services Inc.
Project/Site: 11230275, River Road

Job ID: 480-214257-1

Method	Method Description	Protocol	Laboratory
8260C	Volatile Organic Compounds by GC/MS	SW846	EET BUF
5030C	Purge and Trap	SW846	EET BUF

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET BUF = Eurofins Buffalo, 10 Hazelwood Drive, Amherst, NY 14228-2298, TEL (716)691-2600

Sample Summary

Client: GHD Services Inc.
Project/Site: 11230275, River Road

Job ID: 480-214257-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
480-214257-1	WG-11230275-103023-KM-001	Water	10/30/23 10:45	10/30/23 12:30
480-214257-2	WG-11230275-103023-KM-002	Water	10/30/23 11:45	10/30/23 12:30
480-214257-3	WG-11230275-103023-KM-003	Water	10/30/23 11:45	10/30/23 12:30
480-214257-4	TB-11230275-103023-KM	Water	10/30/23 10:00	10/30/23 12:30

CHAIN OF CUSTODY RECORD

COC NO.: 61108

PAGE 1 OF 1

Address: 2055 Niagara Falls Blvd

Phone: 716-297-6150 **Fax:**

Project No/ Phase/Task Code: 11230275-04	**Laboratory Name:** Eurofins TestAmerica	**Lab Location:** Amherst NY	**SSOW ID:**
Project Name: 815 River Rd Annual	**Lab Contact:** Denise Heckler		**Cooler No:**
Project Location: 815 River Rd N. Tonawanda			**Carrier:** Hand Delivered
GHD Chemistry Contact: Linda Waters			**Airbill No:**
Sampler(s): K. Miller			**Total # of Containers:** 17

Item	Sample Identification (Containers for each sample may be combined on one line)	Date (mm/dd/yy)	Time (hh:mm)	Matrix Code (see back of COC)	Grab (G) or Comp (C)	Filtered (Y/N)	VOCs	Total Containers/sample	MS/MSD Request	Comments/ Special Instructions:
	PRESERVATION - (SEE BACK OF COC FOR ABBREVIATIONS)						HC			
1	WG-11230275-103023-KM-001	10/30/23	1045	WG	G	N	X	9	X	
2	WG-11230275-103023-KM-002	10/30/23	1145	WG	G	N	X	3		
3	WG-11230275-103023-KM-003	10/30/23	1145	WG	G	N	X	3		
4	TB-11230275-103023-KM	10/30/23	1000	TB	G	N	X	2		
5										
6										
7										
8										
9										
10										
11										
12										

480-214257 Chain of Custody

TAT Required in business days (use separate COCs for different TATs):

☐ 1 Day ☐ 2 Days ☐ 3 Days ☐ 1 Week ☐ 2 Week ☐ Other:

Notes/ Special Requirements: Temp 4.0 # ICE

	Relinquished By	Company	Date	Time		Received By	Company	Date	Time
1.	[signature]	GHD	10/30/23	1230	1.	[signature]	TA	10/30/23	1230
2.					2.				
3.					3.				

THE CHAIN OF CUSTODY IS A LEGAL DOCUMENT – ALL FIELDS MUST BE COMPLETED ACCURATELY

Distribution: WHITE – Fully Executed Copy (CRA) YELLOW – Receiving Laboratory Copy PINK – Shipper GOLDENROD – Sampling Crew

CRA Form: COC-10B (20110804)

Login Sample Receipt Checklist

Client: GHD Services Inc.

Job Number: 480-214257-1

Login Number: 214257
List Number: 1
Creator: Stopa, Erik S

List Source: Eurofins Buffalo

Question	Answer	Comment
Radioactivity either was not measured or, if measured, is at or below background	True	
The cooler's custody seal, if present, is intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the sample IDs on the containers and the COC.	True	
Samples are received within Holding Time (Excluding tests with immediate HTs)..	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
VOA sample vials do not have headspace or bubble is <6mm (1/4") in diameter.	True	
If necessary, staff have been informed of any short hold time or quick TAT needs	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Sampling Company provided.	True	GHD
Samples received within 48 hours of sampling.	True	
Samples requiring field filtration have been filtered in the field.	N/A	
Chlorine Residual checked.	N/A	

Appendix C

Data Usability Report

Data Usability Summary Report

January 22, 2024

To	John Pentilchuk	**Project No.**	11230275
Copy to	John Sweeney	**DVR No.**	3
From	Linda Waters/cs/3-NF	**Contact No.**	315-802-0343
Project Name	815 River Road	**Email**	Linda.Waters@ghd.com
Subject	Data Usability Summary Report North Tonawanda 815 River Road Groundwater Sampling City of North Tonawanda North Tonawanda, New York October 2023		

The services undertaken by GHD in connection with preparing this report were limited to those specifically detailed in the report and are subject to the scope limitations set out in the report.

1. Introduction

This document details the data usability and quality assessment of the analytical data resulting from the collection of groundwater samples from 815 River Road located in North Tonawanda, New York. Samples were submitted to Eurofins Buffalo, located in Amherst, New York The sample summary detailing sample identification and analytical parameters is presented in Table 1. The validated analytical results are summarized in Table 2. Samples were analyzed in accordance with the methodology presented in Table 3.

This Data Usability Summary Report (DUSR) has been prepared following the guidelines provided in New York State Department of Environmental Conservation (NYSDEC) Division of Environmental Remediation "DER 10, Technical Guidance for Site Investigation and Remediation, Appendix 2B Guidance for Data Deliverables and the Development of Data Usability Summary Reports," (DER 10) May 2010.

2. Analytical Methodology and Data Validation

Evaluation of the data was based on information obtained from the finished data sheets, raw data, the chain of custody form, calibration data, blank data, recovery data from surrogate spikes/laboratory control samples (LCS)/matrix spike (MS) samples and field QC samples. The assessment of analytical and in house data included checks for adherence to accuracy and precision criteria, and transmittal errors.

The QA/QC criteria by which these data have been assessed are outlined in the analytical method referenced in Table 3 and applicable guidance from the document entitled: "National Functional Guidelines for Organic Superfund Methods Data Review", USEPA 540R20005, November 2020. This document will subsequently be referred to as the "Guidelines" in this Memorandum.

Full Contract Laboratory Program (CLP) equivalent raw data deliverables were provided by the laboratory. The data quality assessment and validation presented in the following subsections were performed based on the sample results, supporting QA/QC and all raw data provided.

3. QA/QC Review

3.1 Deliverables

The data package was complete as defined under the requirements for Analytical Service Protocol (ASP).

4. Sample Holding Time and Preservation

The sample holding time criterion for the analysis is summarized in Table 3. The sample chain of custody document and analytical report was used to determine sample holding times. All samples were analyzed within the required holding times.

All samples were properly preserved, delivered on ice, and stored by the laboratory at the required temperature (0 6°C).

5. Gas Chromatography/Mass Spectrometer (GC/MS)

Prior to volatile organic compound (VOC) analysis, GC/MS instrumentation is tuned to ensure optimization over the mass range of interest. To evaluate instrument tuning, the method requires the analysis of the specific tuning compound bromofluorobenzene (BFB). The resulting spectra must meet the criteria cited in the method before analysis is initiated. Analysis of the tuning compound must then be repeated every 12 hours throughout sample analysis to ensure the continued optimization of the instrument.

Tuning compounds were analyzed at the required frequency throughout VOC analysis periods. All tuning criteria were met indicating that proper optimization of the instrumentation was achieved.

6. Initial Calibration

To quantify VOCs of interest in samples, calibration of the GC/MS over a specific concentration range must be performed. Initially, a five-point calibration curve containing all compounds of interest is analyzed to characterize instrument response for each analyte over a specific concentration range. Linearity of the calibration curve and instrument sensitivity are evaluated against the following criteria:

All relative response factors (RRFs) must be greater than or equal to the values listed in the Guidelines.

The percent relative standard deviation (%RSD) values must not exceed 20.0 percent or a minimum correlation coefficient (R) and minimum coefficient of determination (R2) of 0.99 if linear and quadratic equation calibration curves are used.

The initial calibration data for VOCs were reviewed. All compounds met the above criteria for sensitivity and linearity.

7. Continuing Calibration

To ensure that instrument calibration for VOC analyses is acceptable throughout the sample analysis period, continuing calibration standards must be analyzed and compared to the initial calibration curve every 12 hours.

The following criteria were employed to evaluate continuing calibration data:

1. All RRF values must be greater than or equal to the values listed in the Guidelines.
2. Percent difference (%D) values must not exceed 20.0 percent.

Calibration standards were analyzed at the required frequency, and most results met the above criteria for instrument sensitivity and stability. Associated sample results for analytes that did not meet the above criteria were qualified as estimated to reflect the indicated variability in instrument response (see Table 4).

8. Laboratory Blank Analyses

Method blanks are prepared from a purified matrix and analyzed with investigative samples to determine the existence and magnitude of sample contamination introduced during the analytical procedures.

For this study, laboratory method blanks were analyzed at a minimum frequency of 1 per analytical batch.

All method blank results were non-detect, indicating that laboratory contamination was not a factor for this investigation.

9. Surrogate Spike Recoveries

In accordance with the method employed, all samples, blanks, and QC samples analyzed for volatile organics are spiked with surrogate compounds prior to sample analysis. Surrogate recoveries provide a means to evaluate the effects of laboratory performance on individual sample matrices.

All samples submitted for VOC determinations were spiked with the appropriate number of surrogate compounds prior to sample analysis.

Each individual surrogate compound is expected to meet the laboratory control limits.

Surrogate recoveries were assessed against laboratory control limits. All surrogate recoveries were within the laboratory criteria.

10. Internal Standards (IS) Analyses

IS data were evaluated for all VOC sample analyses.

To ensure that changes in the GC/MS sensitivity and response do not affect sample analysis results, IS compounds are added to each sample prior to analysis. All results are then calculated as a ratio of the IS responses.

The sample IS results were evaluated against the following criteria:

1. The retention time of the IS must not vary more than ±30 seconds from the associated calibration standard.
2. IS area counts must not vary by more than a factor of two (50 percent to +100 percent) from the associated calibration standard.

All IS recoveries and retention times met the above criteria.

11. Laboratory Control Sample Analyses

LCS and LCS/laboratory duplicates (LCSD) are analyzed as samples to assess the analytical efficiencies of the methods employed, independent of sample matrix effects.

For this study, LCS and LCS/LCSD were analyzed at a minimum frequency of 1 per 20 investigative samples and/or 1 per analytical batch.

The LCS and LCS/LCSD contained all compounds of interest. All LCS recoveries and RPDs were within the laboratory control limits, demonstrating acceptable analytical accuracy and precision with the exception of some high LCS recoveries. All associated sample results were non detect and would not have been impacted by the implied high bias.

12. Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analyses

To evaluate the effects of sample matrices on the preparation process, measurement procedures, and accuracy of a particular analysis, samples are spiked with a known concentration of the analyte of concern and analyzed as MS/MSD samples. The RPD between the MS and MSD is used to assess analytical precision.

MS/MSD analyses were performed as specified in Table 1.

The MS/MSD samples were spiked with all compounds of. All percent recoveries and RPD values were within the laboratory control limits, demonstrating acceptable analytical accuracy and precision, with the exception of high recovery values methyl acetate. All associated sample results were non detect and would not have been affected by the implied high bias.

13. Field QA/QC Samples

The field QA/QC consisted of one trip blank sample and one field duplicate sample set.

13.1 Trip Blank Sample Analysis

To evaluate contamination from sample collection, transportation, storage, and analytical activities, one trip blank was submitted to the laboratory for VOC analysis. All results were non-detect for the compounds of interest.

13.2 Field Duplicate Sample Analysis

To assess the analytical and sampling protocol precision, one field duplicate sample set was collected and submitted "blind" to the laboratory, as specified in Table 1. The RPDs associated with this duplicate sample must be less than 50 percent for water samples. If the reported concentration in either the investigative sample or its duplicate is less than five times the reporting limit (RL), the evaluation criteria is one times the RL value.

All field duplicate results met the above criteria, demonstrating acceptable sampling and analytical precision.

14. Analyte Reporting

The laboratory reported detected results down to the laboratory's MDL for each analyte. Positive analyte detections less than the RL but greater than the MDL were qualified as estimated (J) in Table 2 unless qualified otherwise in this memorandum. Non detect results were presented as non detect at the RL in Table 2.

15. Target Compound Identification

To minimize erroneous compound identification during organic analyses, qualitative criteria including compound retention time and mass spectra were evaluated according to the identification criteria established by the method. The samples identified in Table 1 were reviewed. The organic compounds reported adhered to the specified identification criteria.

16. Conclusion

Based on the assessment detailed in the foregoing, the data summarized in Table 2 are acceptable with the specific qualifications noted herein.

Regards,

Linda Waters

Linda Waters
Data Management – Data Intelligence Chemist

Table 1

Sample Collection and Analysis Summary
North Tonawanda 815 River Road Groundwater Sampling
City of North Tonawanda
North Tonawanda, New York
October 2023

					Analysis/Parameters	
Sample Identification	**Location**	**Matrix**	**Collection Date (mm/dd/yyyy)**	**Collection Time (hr:min)**	**VOC**	**Comments**
WG-11230275-103023-KM-001	MW-1	Water	10/30/2023	10:45	X	MS/MSD
WG-11230275-103023-KM-002	MW-2	Water	10/30/2023	11:45	X	
WG-11230275-103023-KM-003	MW-2	Water	10/30/2023	11:45	X	Field duplicate of WG-11230275-103023-KM-002
TB-11230275-103023-KM	-	Water	10/30/2023	-	X	Trip Blank

Notes:

VOC - Volatile Organic Compound
"-" - Not Applicable
MS/MSD - Matrix Spiike/Matrix Spike Duplicate

Table 2

Analytical Results Summary
North Tonawanda 815 River Road Groundwater Sampling
City of North Tonawanda
North Tonawanda, New York
October 2023

	Location ID:	MW-1	MW-2	MW-2
	Sample Name:	WG-11230275-103023-KM-001	WG-11230275-103023-KM-002	WG-11230275-103023-KM-003
	Sample Date:	10/30/2023	10/30/2023	10/30/2023
				Duplicate
Parameters	**Unit**			
Volatile Organic Compounds				
1,1,1-Trichloroethane	µg/L	10 U	10 U	10 U
1,1,2,2-Tetrachloroethane	µg/L	10 U	10 U	10 U
1,1,2-Trichloroethane	µg/L	10 U	10 U	10 U
1,1-Dichloroethane	µg/L	10 U	10 U	10 U
1,1-Dichloroethene	µg/L	10 U	10 U	10 U
1,2,3-Trichlorobenzene	µg/L	10 U	10 U	10 U
1,2,4-Trichlorobenzene	µg/L	10 U	10 U	10 U
1,2-Dibromo-3-chloropropane (DBCP)	µg/L	10 U	10 U	10 U
1,2-Dibromoethane (Ethylene dibromide)	µg/L	10 U	10 U	10 U
1,2-Dichlorobenzene	µg/L	10 U	10 U	10 U
1,2-Dichloroethane	µg/L	10 U	10 U	10 U
1,2-Dichloropropane	µg/L	10 U	10 U	10 U
1,3-Dichlorobenzene	µg/L	10 U	10 U	10 U
1,4-Dichlorobenzene	µg/L	10 U	10 U	10 U
2-Butanone (Methyl ethyl ketone) (MEK)	µg/L	100 U	100 U	100 U
2-Hexanone	µg/L	50 U	50 U	50 U
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	µg/L	50 U	50 U	50 U
Acetone	µg/L	100 UJ	100 UJ	100 UJ
Benzene	µg/L	10 U	40	40
Bromodichloromethane	µg/L	10 U	10 U	10 U
Bromoform	µg/L	10 U	10 U	10 U
Bromomethane (Methyl bromide)	µg/L	10 U	10 U	10 U
Carbon disulfide	µg/L	10 U	10 U	10 U
Carbon tetrachloride	µg/L	10 UJ	10 UJ	10 UJ
Chlorobenzene	µg/L	10 U	10 U	10 U
Chlorobromomethane	µg/L	10 U	10 U	10 U
Chloroethane	µg/L	10 U	10 U	10 U
Chloroform (Trichloromethane)	µg/L	10 U	10 U	10 U
Chloromethane (Methyl chloride)	µg/L	10 U	10 U	10 U
cis-1,2-Dichloroethene	µg/L	10 U	10 U	10 U
cis-1,3-Dichloropropene	µg/L	10 U	10 U	10 U
Cyclohexane	µg/L	57	10 U	10 U
Dibromochloromethane	µg/L	10 U	10 U	10 U
Dichlorodifluoromethane (CFC-12)	µg/L	10 U	10 U	10 U
Ethylbenzene	µg/L	10 U	250	270
Isopropyl benzene	µg/L	11	240	240
Methyl acetate	µg/L	25 U	25 U	25 U
Methyl cyclohexane	µg/L	8.4 J	8.4 J	10 U

Table 2

Analytical Results Summary
North Tonawanda 815 River Road Groundwater Sampling
City of North Tonawanda
North Tonawanda, New York
October 2023

	Location ID:	MW-1	MW-2	MW-2
	Sample Name:	WG-11230275-103023-KM-001	WG-11230275-103023-KM-002	WG-11230275-103023-KM-003
	Sample Date:	10/30/2023	10/30/2023	10/30/2023
				Duplicate
Parameters	**Unit**			
Volatile Organic Compounds				
Methyl tert butyl ether (MTBE)	µg/L	10 U	10 U	10 U
Methylene chloride	µg/L	10 U	10 U	10 U
Styrene	µg/L	10 U	10 U	10 U
Tetrachloroethene	µg/L	10 UJ	10 UJ	10 UJ
Toluene	µg/L	10 U	10 U	10 U
trans-1,2-Dichloroethene	µg/L	10 U	10 U	10 U
trans-1,3-Dichloropropene	µg/L	10 U	10 U	10 U
Trichloroethene	µg/L	10 U	10 U	10 U
Trichlorofluoromethane (CFC-11)	µg/L	10 U	10 U	10 U
Trifluorotrichloroethane (CFC-113)	µg/L	10 U	10 U	10 U
Vinyl chloride	µg/L	10 U	10 U	10 U
Xylenes (total)	µg/L	20 U	20 U	20 U

Notes:

J - Estimated concentration
U - Not detected at the associated reporting limit
UJ - Not detected; associated reporting limit is estimated

Table 3

Analytical Methods
North Tonawanda 815 River Road Groundwater Sampling
City of North Tonawanda
North Tonawanda, New York
October 2023

Parameter	Method	Matrix	Preservation	Collection to Analysis (Days)
Volatile Organic Compounds (VOCs)	SW-846 8260C	water	pH < 2 and Iced, 0-6° C	14

Method References:

SW-846 - "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", SW-846, Third Edition, 1986, with subsequent revisions

Table 4

Qualified Sample Results Due to Outlying Continuing Calibration Results
North Tonawanda 815 River Road Groundwater Sampling
City of North Tonawanda
North Tonawanda, New York
October 2023

Parameter	Analyte	Calibration Date (mm/dd/yyyy)	%D	Associated Sample ID	Qualified Result	Units
VOCs	Acetone	11/03/2023	22.1	WG-11230275-103023-KM-001	100 UJ	µg/L
				WG-11230275-103023-KM-002	100 UJ	µg/L
				WG-11230275-103023-KM-003	100 UJ	µg/L
VOCs	Carbon tetrachloride	11/03/2023	35.0	WG-11230275-103023-KM-001	10 UJ	µg/L
				WG-11230275-103023-KM-002	10 UJ	µg/L
				WG-11230275-103023-KM-003	10 UJ	µg/L
VOCs	Tetrachloroethene	11/03/2023	21.6	WG-11230275-103023-KM-001	10 UJ	µg/L
				WG-11230275-103023-KM-002	10 UJ	µg/L
				WG-11230275-103023-KM-003	10 UJ	µg/L

Notes:

%D - Percent difference
UJ - Not detected; associated reporting limit is estimated
VOCs - Volatile Organic Compounds

Appendix D

IC EC Certification

Enclosure 2

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
Site Management Periodic Review Report Notice
Institutional and Engineering Controls Certification Form

Site Details **Box 1**

Site No. **B00178**

Site Name 815 River Road Investigation

Site Address: 815 River Road Zip Code: 14120
City/Town: North Tonawanda
County: Niagara
Site Acreage: 0.857

Reporting Period: February 01, ~~2019~~ 2023 to February 01, ~~2020~~ 2024

	YES	NO
1. Is the information above correct?	☑	☐
If NO, include handwritten above or on a separate sheet.		
2. Has some or all of the site property been sold, subdivided, merged, or undergone a tax map amendment during this Reporting Period?	☐	☑
3. Has there been any change of use at the site during this Reporting Period (see 6NYCRR 375-1.11(d))?	☐	☑
4. Have any federal, state, and/or local permits (e.g., building, discharge) been issued for or at the property during this Reporting Period?	☐	☑
If you answered YES to questions 2 thru 4, include documentation or evidence that documentation has been previously submitted with this certification form.		
5. Is the site currently undergoing development?	☐	☑

Box 2

	YES	NO
6. Is the current site use consistent with the use(s) listed below? Commercial and Industrial	☑	☐
7. Are all ICs/ECs in place and functioning as designed?	☑	☐

IF THE ANSWER TO EITHER QUESTION 6 OR 7 IS NO, sign and date below and DO NOT COMPLETE THE REST OF THIS FORM. Otherwise continue.

A Corrective Measures Work Plan must be submitted along with this form to address these issues.

Signature of Owner, Remedial Party or Designated Representative Date

SITE NO. B00178 **Box 3**

Description of Institutional Controls

Parcel	Owner	Institutional Control
181.12-1-19	Metzger Removal, Inc.	Ground Water Use Restriction Site Management Plan Soil Management Plan Monitoring Plan Landuse Restriction IC/EC Plan

An Environmental Easement was filed with the Niagara County Clerk's Office on November 17, 2014. The Controlled Property may be used for commercial and industrial use as long as the following long-term institutional controls are employed: (1) restrict the use of site groundwater as a source of potable or process water without necessary water quality treatment as determined by the NYSDOH or Niagara County Department of Health; (2) all future activities on the property that will disturb remaining contaminated material must be conducted in accordance with the Site Management Plan; and (3) monitoring to assess the performance and effectiveness of the remedy must be conducted as defined in the Site management Plan.

Box 4

Description of Engineering Controls

Parcel	Engineering Control
181.12-1-19	Monitoring Wells

None required by the December 2008 Record of Decision other than tangible monitoring wells.

Box 5

Periodic Review Report (PRR) Certification Statements

1. I certify by checking "YES" below that:

   a) the Periodic Review report and all attachments were prepared under the direction of, and reviewed by, the party making the certification;

   b) to the best of my knowledge and belief, the work and conclusions described in this certification are in accordance with the requirements of the site remedial program, and generally accepted engineering practices; and the information presented is accurate and compete.

YES	NO
☑	☐

2. If this site has an IC/EC Plan (or equivalent as required in the Decision Document), for each Institutional or Engineering control listed in Boxes 3 and/or 4, I certify by checking "YES" below that all of the following statements are true:

   (a) the Institutional Control and/or Engineering Control(s) employed at this site is unchanged since the date that the Control was put in-place, or was last approved by the Department;

   (b) nothing has occurred that would impair the ability of such Control, to protect public health and the environment;

   (c) access to the site will continue to be provided to the Department, to evaluate the remedy, including access to evaluate the continued maintenance of this Control;

   (d) nothing has occurred that would constitute a violation or failure to comply with the Site Management Plan for this Control; and

   (e) if a financial assurance mechanism is required by the oversight document for the site, the mechanism remains valid and sufficient for its intended purpose established in the document.

YES	NO
☑	☐

IF THE ANSWER TO QUESTION 2 IS NO, sign and date below and DO NOT COMPLETE THE REST OF THIS FORM. Otherwise continue.

A Corrective Measures Work Plan must be submitted along with this form to address these issues.

Signature of Owner, Remedial Party or Designated Representative

Date

IC CERTIFICATIONS
SITE NO. B00178

Box 6

SITE OWNER OR DESIGNATED REPRESENTATIVE SIGNATURE

I certify that all information and statements in Boxes 1,2, and 3 are true. I understand that a false statement made herein is punishable as a Class "A" misdemeanor, pursuant to Section 210.45 of the Penal Law.

I CHELSEA L. SPAHR (print name) at 216 PAYNE AVE., NORTH TONAWANDA, NY 14120 (print business address),

am certifying as CITY ENGINEER (Owner or Remedial Party)

for the Site named in the Site Details Section of this form.

Chelsea L. Spahr
Signature of Owner, Remedial Party, or Designated Representative Rendering Certification

4/25/24
Date

IC/EC CERTIFICATIONS

Box 7

Signature

I certify that all information in Boxes 4 and 5 are true. I understand that a false statement made herein is punishable as a Class "A" misdemeanor, pursuant to Section 210.45 of the Penal Law.

I CHELSEA L. SPAHR at 216 PAYNE AVE., NORTH TONAWANDA, NY 14120
print name print business address

am certifying as a for the CITY ENGINEER (Owner or Remedial Party)

STATE OF NEW YORK
CHELSEA L. SPAHR
093348
LICENSED PROFESSIONAL ENGINEER

Chelsea L. Spahr
Signature of , for the Owner or Remedial Party, Rendering Certification

Stamp (Required for PE)

4/25/24
Date