2019 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

GHD | 285 Delaware Avenue Suite 500 Buffalo New York 14202 USA

11110868 | Report No 4 | February 28, 2020

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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

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815 RIVER ROAD SITE

NORTH TONAWANDA, NEW YORK

FIGURE 1
SITE LOCATION

results were reported below the Restricted Commercial Use Soil Cleanup Objectives, and the excavation was backfilled.

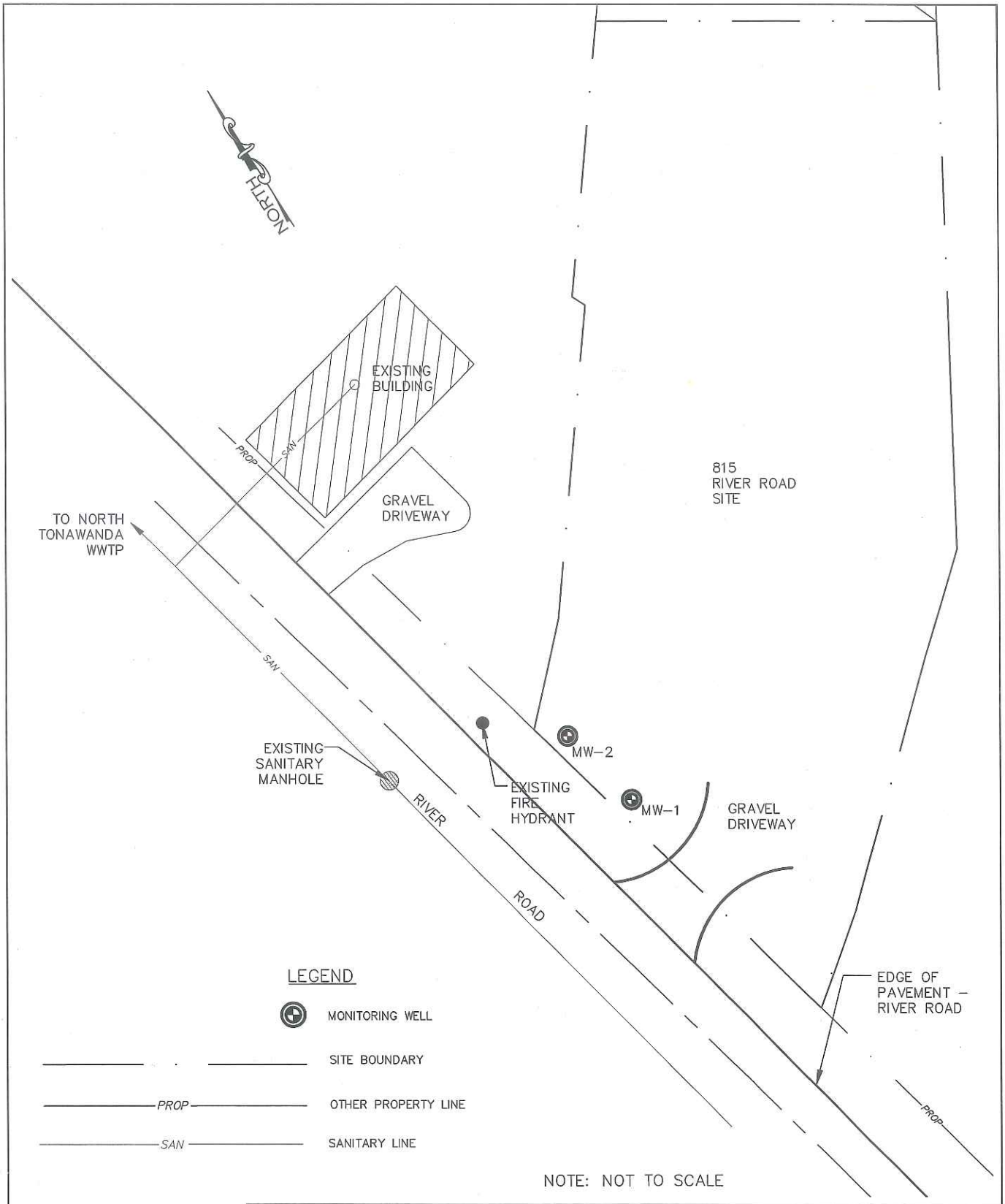
1.3 Site Investigation/Remedial Alternatives Report

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.



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815 RIVER ROAD SITE
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FIGURE 2
SITE PLAN

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 on groundwater samples for a minimum period of 30 years or at a reduced frequency and period as approved by NYSDEC. 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. The extent and frequency of the sampling and analysis is evaluated by the NYSDEC periodically to determine if sampling points or analytes could be dropped from the monitoring program.

2.3 Groundwater Monitoring

The 2019 monitoring program at the 815 River Road Site consisted of one annual sampling event. Groundwater was sampled from monitoring well MW-2 on January 28, 2020. Monitoring well MW-1 was found in a damaged condition with the well's protective casing bent to the extent that a bailer could not be advanced down the well casing. The location 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 7th event of the groundwater monitoring program. A Site plan is presented on Figure 2.

Groundwater sampling of monitoring well MW-2 was 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 well MW-2 was discharged to the ground. Groundwater Field Sampling Records are presented in Appendix A.

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

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

Volatile 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
1,1,1-Trichloroethane	5	µg/L	ND	ND	ND	ND	ND	ND	NA
1,1,2,2-Tetrachloroethane	5	µg/L	ND	ND	ND	ND	ND	ND	NA
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
1,1-Dichloroethane	5	µg/L	ND	ND	ND	ND	ND	ND	NA
1,1-Dichloroethene	5	µg/L	ND	ND	ND	ND	ND	ND	NA
1,2,3-Trichlorobenzene	5	µg/L	-	ND	**0.41J**	ND	ND	ND	NA
1,2,4-Trichlorobenzene	5	µg/L	-	ND	ND	ND	ND	ND	NA
1,2-Dibromo-3-Chloropropane DBCP	0.04	µg/L	-	ND	ND	ND	ND	ND	NA
1,2-Dibromoethane (EDB)	NE	µg/L	-	ND	ND	ND	ND	ND	NA
1,2-Dichlorobenzene	3	µg/L	-	ND	ND	ND	ND	ND	NA
1,2-Dichloroethane	0.6	µg/L	ND	ND	ND	ND	ND	ND	NA
1,2-Dichloropropane	5	µg/L	ND	ND	ND	ND	ND	ND	NA
1,3-Dichlorobenzene	3	µg/L	-	ND	ND	ND	ND	ND	NA
1,4-Dichlorobenzene	3	µg/L	-	ND	ND	ND	ND	ND	NA
2-Hexanone	50	µg/L	ND	ND	ND	ND	ND	ND	NA
Acetone	50	µg/L	ND	ND	**88.8**	ND	ND	ND	NA
Benzene	1	µg/L	ND	ND	ND	ND	ND	ND	NA
Bromoform	50	µg/L	ND	ND	ND	ND	ND	ND	NA
Bromomethane	5	µg/L	ND	ND	ND	ND	ND	ND	NA
Bromodichloromethane	50	µg/L	ND	ND	ND	ND	ND	ND	NA
Bromochloromethane	5	µg/L	-	ND	ND	ND	ND	ND	NA
Carbon disulfide	60	µg/L	ND	ND	ND	ND	ND	ND	NA
Carbon tetrachloride	5	µg/L	ND	ND	ND	ND	ND	ND	NA
Chlorobenzene	5	µg/L	ND	ND	ND	ND	ND	ND	NA
Chloroethane	5	µg/L	ND	ND	ND	ND	ND	ND	NA
Chloroform	7	µg/L	ND	ND	ND	ND	ND	ND	NA
Chloromethane	NE	µg/L	ND	ND	ND	ND	ND	ND	NA
cis-1,2-Dichloroethene	5	µg/L	ND	ND	ND	ND	ND	ND	NA
cis-1,3-Dichloropropene	0.40	µg/L	ND	ND	ND	ND	ND	ND	NA
Cyclohexane	NE	µg/L	ND	**82**	ND	**8.64**	**29.10**	**39.10**	NA
Dibromochloromethane	50	µg/L	ND	ND	-	-	-	-	NA
Chlorodibromomethane	NE	µg/L	-	ND	ND	ND	ND	ND	NA
Dichlorodifluoromethane	5	µg/L	-	ND	ND	ND	ND	ND	NA
Ethylbenzene	5	µg/L	**2J**	**18**	**8.6**	**17.0**	**20.5**	**11.1**	NA
Isopropylbenzene	5	µg/L	ND	**33**	**19.0**	**31.7**	**42.7**	**19.2**	NA
Methyl acetate	NE	µg/L	-	ND	ND	ND	ND	ND	NA
Methyl Ethyl Ketone (MEK)	50	µg/L	-	ND	ND	ND	ND	ND	NA
Methylcyclohexane	NE	µg/L	ND	**15**	ND	ND	**20.5**	ND	NA
Methylene chloride	5	µg/L	ND	ND	ND	ND	ND	ND	NA
4-Methyl 2-Pentanone	NE	µg/L	-	-	ND	ND	ND	ND	NA
Methyl-t-Butyl Ether (MTBE)	10	µg/L	-	ND	-	-	-	-	NA
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
Tetrachloroethene	5	µg/L	ND	ND	ND	ND	ND	ND	NA
Toluene	5	µg/L	ND	ND	ND	ND	ND	ND	NA
Total Xylenes	5	µg/L	**4J**	ND	ND	ND	ND	**4.9**	NA
trans-1, 2-Dichloroethene	5	µg/L	ND	ND	ND	ND	ND	ND	NA
trans-1,3-Dichloropropene	0.4	µg/L	ND	ND	ND	ND	ND	ND	NA
Trichloroethene	5	µg/L	ND	ND	ND	ND	ND	ND	NA
Trichlorofluoromethane	5	µg/L	-	ND	ND	ND	ND	ND	NA
Vinyl Chloride	2	µg/L	ND	ND	ND	ND	ND	ND	NA
Total VOCs		µg/L	6.0	148.0	28.0	57.3	112.8	74.3	NA
Total VOCs		mg/L	0.006	0.148	0.028	0.057	0.113	0.074	NA

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)

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 1B
Monitoring Well MW-2
Volatile Organic Analytical Test Results
815 River Road Site

Volatile 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
1,1,1-Trichloroethane	5	µg/L	ND	ND	ND	ND	ND	ND	ND
1,1,2,2-Tetrachloroethane	5	µg/L	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
1,1-Dichloroethane	5	µg/L	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethene	5	µg/L	ND	ND	ND	ND	ND	ND	ND
1,2,3-Trichlorobenzene	5	µg/L	-	ND	ND	ND	ND	ND	ND
1,2,4-Trichlorobenzene	5	µg/L	-	ND	ND	ND	ND	ND	ND
1,2-Dibromo-3-Chloropropane DBCP	0.04	µg/L	-	ND	ND	ND	ND	ND	ND
1,2-Dibromoethane (EDB)	NE	µg/L	-	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	3	µg/L	-	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	0.6	µg/L	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloropropane	5	µg/L	**40J**	ND	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	3	µg/L	-	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	3	µg/L	-	ND	ND	ND	ND	ND	ND
2-Hexanone	50	µg/L	ND	ND	ND	ND	ND	ND	ND
Acetone	50	µg/L	ND	ND	**188J**	ND	ND	ND	ND
Benzene	1	µg/L	**140**	**560**	**151**	**280J6**	**207**	**269**	**192**
Bromoform	50	µg/L	ND	ND	ND	ND	ND	ND	ND
Bromomethane	5	µg/L	ND	ND	ND	ND	ND	ND	ND
Bromodichloromethane	50	µg/L	ND	ND	ND	ND	ND	ND	ND
Bromochloromethane	5	µg/L	-	ND	ND	ND	ND	ND	ND
Carbon disulfide	60	µg/L	ND	ND	ND	ND	ND	ND	ND
Carbon tetrachloride	5	µg/L	ND	ND	ND	ND	ND	ND	ND
Chlorobenzene	5	µg/L	ND	ND	ND	ND	ND	ND	ND
Chloroethane	5	µg/L	ND	ND	ND	ND	ND	ND	ND
Chloroform	7	µg/L	ND	ND	ND	ND	ND	ND	ND
Chloromethane	NE	µg/L	ND	ND	ND	ND	ND	ND	ND
cis-1,2-Dichloroethene	5	µg/L	ND	ND	ND	ND	ND	ND	ND
cis-1,3-Dichloropropene	0.40	µg/L	ND	ND	ND	ND	ND	ND	ND
Cyclohexane	NE	µg/L	ND	**210**	**71.2**	**169**	**111J6**	**336**	**283**
Dibromochloromethane	50	µg/L	ND	ND	-	-	-	-	-
Chlorodibromomethane	NE	µg/L	-	ND	ND	ND	ND	ND	ND
Dichlorodifluoromethane	5	µg/L	-	ND	ND	ND	ND	ND	ND
Ethylbenzene	5	µg/L	**460**	**1,500**	**878V**	**2030**	**2050**	**2000**	**1410**
Isopropylbenzene	5	µg/L	ND	**220**	**115**	**277J6**	**247**	**237**	**200**
Methyl acetate	NE	µg/L	-	ND	ND	ND	ND	ND	ND
Methyl Ethyl Ketone (MEK)	50	µg/L	-	ND	ND	ND	ND	ND	ND
Methylcyclohexane	NE	µg/L	ND	**15**	**19.8**	**58.9**	**43.3J6**	ND	**103.0**
Methylene chloride	5	µg/L	ND	ND	ND	ND	ND	ND	ND
4-Methyl 2-Pentanone	NE	µg/L	-	-	ND	ND	ND	ND	ND
Methyl-t-Butyl Ether (MTBE)	10	µg/L	-	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
Tetrachloroethene	5	µg/L	ND	ND	ND	ND	ND	ND	ND
Toluene	5	µg/L	**70J**	ND	**19.1J**	**39.4**	**13.4**	**42.7**	**48.3**
Total Xylenes	5	µg/L	-	**840**	**424**	**620**	**99**	**655**	**557**
trans-1, 2-Dichloroethene	5	µg/L	ND	ND	ND	ND	ND	ND	ND
trans-1,3-Dichloropropene	0.4	µg/L	ND	ND	ND	ND	ND	ND	ND
Trichloroethene	5	µg/L	ND	ND	ND	ND	ND	ND	ND
Trichlorofluoromethane	5	µg/L	-	ND	ND	ND	ND	ND	ND
Vinyl Chloride	2	µg/L	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
Total VOCs		mg/L	1.230	3.345	1.866	3.474	2.771	3.540	2.793

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)

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

3. Groundwater Monitoring Results

3.1 2019 Groundwater Monitoring

This section includes analytical test results of the annual groundwater sampling event dated January 28, 2020 and represents groundwater monitoring for the 2019 reporting year. Test results are presented in Table 1 and Appendix B. Sampling field parameters are presented on Table 2. 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 2 Field Groundwater Parameters

Parameter	Monitoring Well Location	
	MW-1	MW-2
Temperature (°C)	NA[1]	6.5
pH	NA[1]	6.70
Conductivity (mS/cm)	NA[1]	2.26
Dissolved Oxygen (mg/L)	NA[1]	3.52
Turbidity (NTUs)(1)	NA[1]	245
ORP (mV)	NA[1]	-86

Note 1 - Monitoring Well MW-1 was not sampled due to damaged condition.

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 well MW-2 that exceed groundwater standards. Groundwater was not sampled from monitoring well MW-1 due to the well found in a damaged condition. VOC concentrations detected in groundwater from the sampling conducted in 2007, 2012, 2015, 2016, 2017, 2018 and the 2019 sampling event completed on January 28, 2020 were compared to determine a trending analysis.

FIGURE 3
Groundwater VOC Concentrations in MW-1 vs. Time

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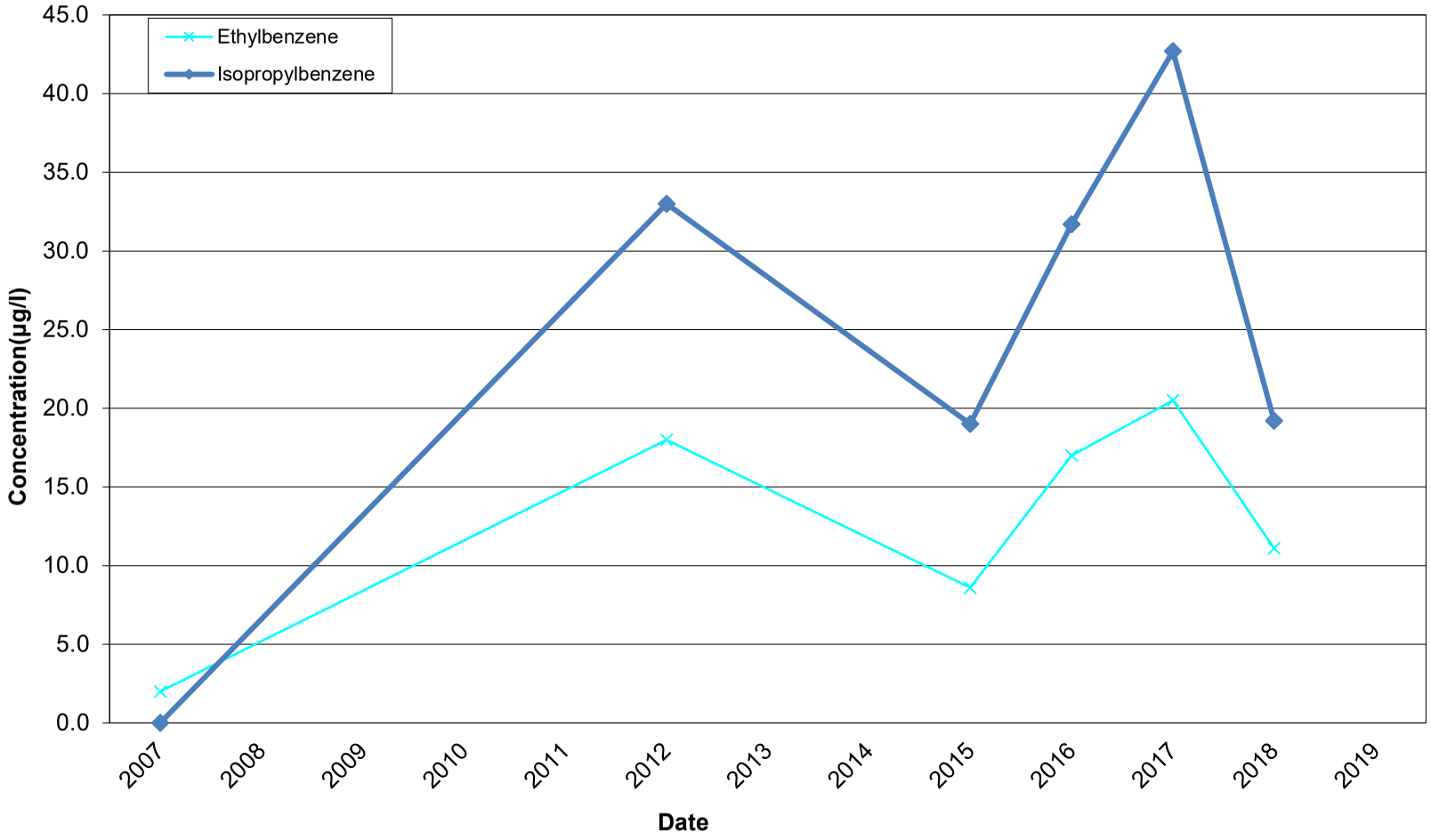

FIGURE 4
Groundwater VOC Concentrations in MW-2 vs. Time

815 River Road Site - North Tonawanda, NY
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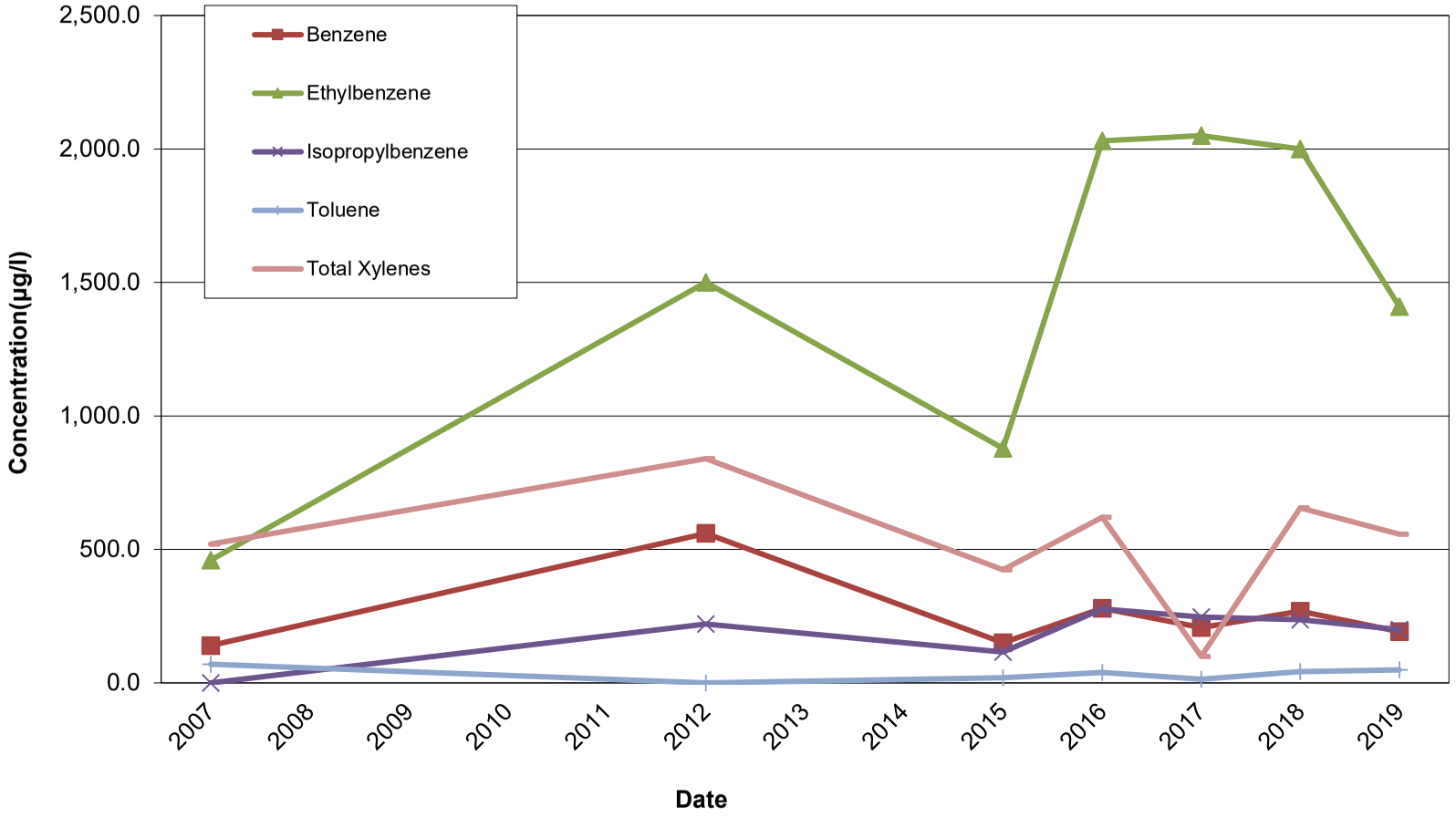


3.2 Monitoring Well MW-1 Test Results

Groundwater test results from monitoring well MW-1 detected the following total VOC concentrations from 2007, 2012, 2015, 2016, 2017, and 2018. No groundwater test results for 2019 from monitoring well MW-1 is available.

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
2018	74.3 µg/L

Groundwater monitoring for the reporting years of 2012, 2015, 2016, 2017 and 2018 detected VOC concentrations that exceeded the groundwater standard for the following parameters: ethylbenzene and isopropylbenzene. A trending graph shows an upward trend since 2015 to 2017 and a decreasing trend for 2018 of detected VOCs as presented on Figure 3.

Concentrations of cyclohexane were detected in 2012, 2016, 2017, and 2018. Concentrations of methylcyclohexane were detected in 2012 and 2017. 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, and 2018.

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
2018	3,539.7 µg/L
2019	2,407.3 µg/L

Groundwater monitoring for the reporting years of 2012, 2015, 2016, 2017, 2018, and 2019 detected VOC concentrations that exceeded the groundwater standard. A trending graph shows a generally stationary trend from 2016 to 2019 of detected VOCs with the exception of total xylenes and ethylbenzene as presented on Figure 4. Total xylenes is decreasing in 2019. Ethylbenzene decreased in 2017 and increased back in 2018 to concentrations observed in recent years.

- Compounds that exceeded the groundwater standard in 2015, 2016, 2017, 2018, and 2019 included: benzene, ethylbenzene, isopropylbenzene, toluene, total xylenes. Compounds that exceeded the groundwater standard from the 2012 sampling event included: benzene, ethylbenzene, isopropylbenzene, and total xylenes.
- Detected compounds from 2019 groundwater monitoring that decreased in concentrations from the 2018 sampling event included: benzene, ethylbenzene, isopropylbenzene, and total xylenes.
- Detected compounds from the 2019 sampling event that increased in concentrations from the 2018 sampling event included: toluene.

Concentrations of cyclcohexane were detected in 2015, 2016, 2017, 2018, and 2019. Concentrations of methylcyclohexane were detected in 2015, 2016, 2017, and 2019. No groundwater quality standard is established for cyclcohexane and methylcyclohexane. At the request of NYSDEC, acetone was not included in this analysis as reported in 2015 since this compound is a common laboratory contaminant.

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. Inspection will be

documented and a letter will be submitted to the NYSDEC. 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 Restricted Commercial on Table 3: Imported Backfill Limits.

- 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 Table 3 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 2019.

Table 3
Imported Backfill Limits

	Unrestricted	Residential	Restricted - Residential	**Restricted - Commercial or Industrial**	Ecological Limit For Sites Which Have Ecological Resources
METALS					
Arsenic	13	16	16	**16**	13
Barium	350	350	400	**400**	433
Beryllium	7.2	14	47	**47**	10
Cadmium	2.5	2.5	4.3	**7.5**	4
Chromium, Hexavalent[1]	1	19	19	**19**	1
Chromium, Trivalent[1]	30	36	180	**1500**	41
Copper	50	270	270	**270**	50
Cyanide	27	27	27	**27**	NS[2]
Lead	63	400	400	**450**	63
Manganese	1600	2000	2000	**2000**	1600
Mercury (total)	0.18	0.73	0.73	**0.73**	0.18
Nickel	30	130	130	**130**	30
Selenium	3.9	4	4	**4**	3.9
Silver	2	8.3	8.3	**8.3**	2
Zinc	109	2200	2480	**2480**	109
PCBs/PESTICIDES					
2,4,5-TP Acid (Silvex)	3.8	3.8	3.8	**3.8**	NS[2]
4,4'-DDE	0.0033	1.8	8.9	**17**	0.0033
4,4'-DDT	0.0033	1.7	7.9	**47**	0.0033
4,4'-DDD	0.0033	2.6	13	**14**	0.0033
Aldrin	0.005	0.019	0.097	**0.19**	0.14
Alpha-BHC	0.02	0.02	0.02	**0.02**	0.04
Beta-BHC	0.036	0.072	0.09	**0.09**	0.6
Chlordane (alpha)	0.094	0.91	2.9	**2.9**	1.3
Delta-BHC	0.04	0.25	0.25	**0.25**	0.04
Dibenzofuran	7	14	59	**210**	NS[2]
Dieldrin	0.005	0.039	0.1	**0.1**	0.006
Endosulfan I	2.4	4.8	24	**102**	NS[2]
Endosulfan II	2.4	4.8	24	**102**	NS[2]
Endosulfan sulfate	2.4	4.8	24	**200**	NS[2]
Endrin	0.014	0.06	0.06	**0.06**	0.014
Heptachlor	0.042	0.38	0.38	**0.38**	0.14
Lindane	0.1	0.1	0.1	**0.1**	6
Polychlorinated biphenyls	0.1	1	1	**1**	1
SEMIVOLATILE ORGANIC COMPOUNDS					
Acenaphthene	20	98	98	**98**	20
Acenaphthylene	100	100	100	**107**	NS[2]
Anthracene	100	100	100	**500**	NS[2]
Benzo(a)anthracene	1	1	1	**1**	NS[2]
Benzo(a)pyrene	1	1	1	**1**	2.6
Benzo(b)fluoranthene	1	1	1	**1.7**	NS[2]
Benzo(g,h,i)perylene	100	100	100	**500**	NS[2]
Benzo(k)fluoranthene	0.8	1	1.7	**1.7**	NS[2]
Chrysene	1	1	1	**1**	NS[2]
Dibenz(a,h)anthracene	0.33	0.33	0.33	**0.56**	NS[2]
Fluoranthene	100	100	100	**500**	NS[2]
Fluorene	30	100	100	**386**	30
Indeno(1,2,3-cd)pyrene	0.5	0.5	0.5	**5.6**	NS[2]
m-Cresol(s)	0.33	0.33	0.33	**0.33**	NS[2]
Naphthalene	12	12	12	**12**	NS[2]
SEMIVOLATILE ORGANIC COMPOUNDS					
o-Cresol(s)	0.33	0.33	0.33	**0.33**	NS[2]

Table 3
Imported Backfill Limits

	Unrestricted	Residential	Restricted - Residential	**Restricted - Commercial or Industrial**	Ecological Limit For Sites Which Have Ecological Resources
p-Cresol(s)	0.33	0.33	0.33	**0.33**	NS[2]
Pentachlorophenol	0.8	0.8	0.8	**0.8**	0.8
Phenanthrene	100	100	100	**500**	NS[2]
Phenol	0.33	0.33	0.33	**0.33**	30
Pyrene	100	100	100	**500**	NS[2]
VOLATILE ORGANIC COMPOUNDS					
1,1,1-Trichloroethane	0.68	0.68	0.68	**0.68**	NS[2]
1,1-Dichloroethane	0.27	0.27	0.27	**0.27**	NS[2]
1,1-Dichloroethene	0.33	0.33	0.33	**0.33**	NS[2]
1,2-Dichlorobenzene	1.1	1.1	1.1	**1.1**	NS[2]
1,2-Dichloroethane	0.02	0.02	0.02	**0.02**	10
1,2-Dichloroethene(cis)	0.25	0.25	0.25	**0.25**	NS[2]
1,2-Dichloroethene(trans)	0.19	0.19	0.19	**0.19**	NS[2]
1,3-Dichlorobenzene	2.4	2.4	2.4	**2.4**	NS[2]
1,4-Dichlorobenzene	1.8	1.8	1.8	**1.8**	20
1,4-Dioxane	0.1	0.1	0.1	**0.1**	0.1
Acetone	0.05	0.05	0.05	**0.05**	2.2
Benzene	0.06	0.06	0.06	**0.06**	70
Butylbenzene	12	12	12	**12**	NS[2]
Carbon tetrachloride	0.76	0.76	0.76	**0.76**	NS[2]
Chlorobenzene	1.1	1.1	1.1	**1.1**	40
Chloroform	0.37	0.37	0.37	**0.37**	12
Ethylbenzene	1	1	1	**1**	NS[2]
Hexachlorobenzene	0.33	0.33	1.2	**3.2**	NS[2]
Methyl ethyl ketone	0.12	0.12	0.12	**0.12**	100
Methyl tert-butyl ether	0.93	0.93	0.93	**0.93**	NS[2]
Methylene chloride	0.05	0.05	0.05	**0.05**	12
Propylbenzene-n	3.9	3.9	3.9	**3.9**	NS[2]
Sec-Butylbenzene	11	11	11	**11**	NS[2]
Tert-Butylbenzene	5.9	5.9	5.9	**5.9**	NS[2]
Tetrachloroethene	1.3	1.3	1.3	**1.3**	2
Toluene	0.7	0.7	0.7	**0.7**	36
Trichloroethene	0.47	0.47	0.47	**0.47**	2
Trimethylbenzene-1,2,4	3.6	3.6	3.6	**3.6**	NS[2]
Trimethylbenzene-1,3,5	8.4	8.4	8.4	**8.4**	NS[2]
Vinyl chloride	0.02	0.02	0.02	**0.02**	NS[2]
Xylene (mixed)	0.26	1.6	1.6	**1.6**	0.26

Notes:

1) The SCO for Hexavalent or Trivalent Chromium is considered to be met if the analysis for the total species of this contaminant is below the specific SCO for Hexavalent Chromium.

2) NS = Not Specified. Protection of ecological resources for SCOs were not developed for contaminants identified in the above table with "NS". Where such contaminants appear in the above table, the applicant may be required by the Department to calculate a protection of ecological resources SCO.

5. Conclusions

5.1 Monitoring Well MW-1 Results

Analytical testing from the 2019 groundwater monitoring detected the following VOCs in groundwater sampled from monitoring well MW-2: benzene, ethylbenzene, isopropylbenzene, toluene, and total xylenes at concentrations that were equal to or exceeded the groundwater standard.

During 2019 groundwater sampling, monitoring well MW-1 was found in a damaged condition with the well's protective casing bent to the extent that a bailer could not be advanced down the well casing. Groundwater sampling for 2019 could not be collected. No test data is available for 2019.

Trend analysis of total VOCs comparing Site historical analytical test results as reported in 2007, 2012, 2015, 2016, 2017, and 2018 indicates that total VOC concentrations shows an upward trend since 2015 to 2017 and decreasing in 2018 in groundwater from monitoring well MW-1. Total VOC concentrations in groundwater from monitoring well MW-2 show a downward trend from 2016 to 2017 and increasing in 2018 with the exception of ethylbenezene.

The concentrations of ethylbenzene at monitoring well MW-1 have fluctuated over the reported six reporting periods. 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 most recent 2018 groundwater monitoring detected the concentration of ethylbenzene at 11.1 µg/L, which represents a decrease from the previous year.

Concentrations of isopropylbenzene at monitoring well MW-1 have similarly fluctuated over the reported six sampling events. Isopropylbenzene was not detected at monitoring well MW-1 in 2007. Test results from the 2012 sampling event detected concentrations of isopropylbenzene at 33 µg/L. Test results from the most recent 2018 groundwater monitoring detected the concentration of isopropylbenzene at 19.2 µg/L, which represents a decrease from the previous year.

5.2 Monitoring Well MW-2 Results

Concentrations of benzene at monitoring well MW-2 have fluctuated over the seven reporting periods of 2007, 2012, 2015, 2016, 2017, 2018, and 2019. 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
2018	269 µg/L	30% increase
2019	192 µg/L	29% decrease

Concentrations of ethylbenzene at monitoring well MW-2 have fluctuated over the seven reporting periods of 2007, 2012, 2015, 2016, 2017, 2018, and 2019. 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
2018	2,000 µg/L	2% decrease
2019	1,410 µg/L	30% decrease

Concentrations of isopropylbenzene at monitoring well MW-2 have fluctuated over the seven reporting periods of 2007, 2012, 2015, 2016, 2017, 2018, and 2019. 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
2018	237 µg/L	4% decrease
2019	200 µg/L	16% decrease

Concentrations of toluene at monitoring well MW-2 have fluctuated over the seven reporting periods of 2007, 2012, 2015, 2016, 2017, 2018, and 2019. 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
2018	42.7 µg/L	218% increase
2019	48.3 µg/L	13% increase

Concentrations of total xylenes at monitoring well MW-2 have fluctuated over the seven reporting periods of 2007, 2012, 2015, 2016, 2017, 2018, and 2019. 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

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 2015, 2016, 2017, and 2018 Periodic Review. 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. The City has responded to the NYSDEC with a letter dated January 14, 2020 and referenced in Appendix E.

Appendices

Appendix A
Groundwater Sampling Field Logs

GHD INC.
GROUNDWATER FIELD SAMPLING RECORD

SITE 815 River Road DATE 01/28/20

Sampler: Dave Rowlinson SAMPLE ID MW-1 (Nearest to Driveway)

Depth of well (from top of casing).....	14.33 ft	EL 562.71
Initial static water level (from top of casing)....	3.8 ft	EL 573.2
Top of PVC Casing Elevation	577.04	

Evacuation Method:

Peristaltic		Centrifugal		1 in. casing:		ft. of water x .09 =	gallons
Airlift		Pos. Displ.		2 in. casing:	10.5	ft. of water x .16 =	1.68 gallons
Bailer	X	>>> No. of bails		3 in. casing:		ft. of water x .36 =	gallons

Well Volume Calculation

Volume of water removed NA gals. (See Comments below)

> 3 volumes: **yes** no

dry: yes **no**

Field Tests:

Temp:	NA	C
pH	NA	
Conductivity	NA	mS/cm
DO	NA	mg/L
Turbidity	NA	NTUs
Oxidation Reduction Potential (ORP)	NA	mV

Sampling: Time: 10:30 AM

Sampling Method:

Peristaltic Pump	
Disposable Bailer	X
Disposable Tubing	

Observations:

Weather/Temperature:

Physical Appearance and Odor of Sample: NA

Comments: Unable to replace well lock due to damaged protective casing.
Well was found in damaged condition.
Well's protective steel casing was bent to the extent that a bailer could not be advanced down the PVC well casing.

GHD INC.
GROUNDWATER FIELD SAMPLING RECORD

SITE 815 River Road DATE 01/28/20

Sampler: Dave Rowlinson SAMPLE ID MW-2

Depth of well (from top of casing).....	14.33 ft	EL 562.71
Initial static water level (from top of casing)....	5.3 ft	EL 571.7
Top of PVC Casing Elevation	577.04	

Evacuation Method:

Peristaltic		Centrifugal		1 in. casing:		ft. of water x .09 =	gallons
Airlift		Pos. Displ.		2 in. casing:	9.0	ft. of water x .16 =	1.44 gallons
Bailer	X	>>> No. of bails		3 in. casing:		ft. of water x .36 =	gallons

Well Volume Calculation

Volume of water removed 4.33 gals.

> 3 volumes: **yes** no

dry: yes **no**

Field Tests:

Temp:	6.5	C
pH	6.70	
Conductivity	2.26	mS/cm
DO	3.52	mg/L
Turbidity	245	NTUs
Oxidation Reduction Potential (ORP)	-87	mV

Sampling: Time: 10:30 AM

Sampling Method:

Peristaltic Pump	
Disposable Bailer	X
Disposable Tubing	

Observations:

Weather/Temperature:

Physical Appearance and Odor of Sample: Distinct chemical odor; clear then grey color, very turbid

Comments: Well lock replaced.
Well pad is intact and the stickup protective cover is in good condition.

Appendix B
Analytical Test Results

Pace Analytical®
National Center for Testing & Innovation

ANALYTICAL REPORT

February 05, 2020

GHD

Sample Delivery Group:	L1183904
Samples Received:	01/29/2020
Project Number:	11110868-20033701254
Description:	815 River Road Site
Site:	N. TONAWANDA, NY
Report To:	Mr. Dave Rowlinson 285 Delaware Ave. Suite 500 Buffalo, NY 14202

Entire Report Reviewed By:

T. Alan Harvill
Project Manager

TABLE OF CONTENTS

MW-2 L1183904-01 GW

Collected by: D. Rowlinson | Collected date/time: 01/28/20 10:30 | Received date/time: 01/29/20 08:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1419393	50	01/30/20 02:22	01/30/20 02:22	ACG	Mt. Juliet, TN

FD@MW-2 L1183904-02 GW

Collected by: D. Rowlinson | Collected date/time: 01/28/20 10:30 | Received date/time: 01/29/20 08:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1419393	10	01/30/20 02:46	01/30/20 02:46	ACG	Mt. Juliet, TN

TRIP BLANK L1183904-03 GW

Collected by: D. Rowlinson | Collected date/time: 01/28/20 10:30 | Received date/time: 01/29/20 08:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1419393	1	01/30/20 00:44	01/30/20 00:44	ACG	Mt. Juliet, TN

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

T. Alan Harvill
Project Manager

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Acetone	U		500	2500	50	01/30/2020 02:22	WG1419393
Benzene	192		16.6	50.0	50	01/30/2020 02:22	WG1419393
Bromochloromethane	U		26.0	50.0	50	01/30/2020 02:22	WG1419393
Bromodichloromethane	U		19.0	50.0	50	01/30/2020 02:22	WG1419393
Bromoform	U	J0	23.5	50.0	50	01/30/2020 02:22	WG1419393
Bromomethane	U		43.3	250	50	01/30/2020 02:22	WG1419393
Carbon disulfide	U	J0	13.8	50.0	50	01/30/2020 02:22	WG1419393
Carbon tetrachloride	U		19.0	50.0	50	01/30/2020 02:22	WG1419393
Chlorobenzene	U		17.4	50.0	50	01/30/2020 02:22	WG1419393
Chlorodibromomethane	U		16.4	50.0	50	01/30/2020 02:22	WG1419393
Chloroethane	U		22.7	250	50	01/30/2020 02:22	WG1419393
Chloroform	U		16.2	250	50	01/30/2020 02:22	WG1419393
Chloromethane	U	J4 J5	13.8	125	50	01/30/2020 02:22	WG1419393
Cyclohexane	283		19.5	50.0	50	01/30/2020 02:22	WG1419393
1,2-Dibromo-3-Chloropropane	U		66.5	250	50	01/30/2020 02:22	WG1419393
1,2-Dibromoethane	U		19.1	50.0	50	01/30/2020 02:22	WG1419393
1,2-Dichlorobenzene	U		17.4	50.0	50	01/30/2020 02:22	WG1419393
1,3-Dichlorobenzene	U		11.0	50.0	50	01/30/2020 02:22	WG1419393
1,4-Dichlorobenzene	U		13.7	50.0	50	01/30/2020 02:22	WG1419393
Dichlorodifluoromethane	U		27.6	250	50	01/30/2020 02:22	WG1419393
1,1-Dichloroethane	U		13.0	50.0	50	01/30/2020 02:22	WG1419393
1,2-Dichloroethane	U		18.1	50.0	50	01/30/2020 02:22	WG1419393
1,1-Dichloroethene	U		19.9	50.0	50	01/30/2020 02:22	WG1419393
cis-1,2-Dichloroethene	U		13.0	50.0	50	01/30/2020 02:22	WG1419393
trans-1,2-Dichloroethene	U		19.8	50.0	50	01/30/2020 02:22	WG1419393
1,2-Dichloropropane	U		15.3	50.0	50	01/30/2020 02:22	WG1419393
cis-1,3-Dichloropropene	U		20.9	50.0	50	01/30/2020 02:22	WG1419393
trans-1,3-Dichloropropene	U		20.9	50.0	50	01/30/2020 02:22	WG1419393
Ethylbenzene	1410		19.2	50.0	50	01/30/2020 02:22	WG1419393
2-Hexanone	U		191	500	50	01/30/2020 02:22	WG1419393
Isopropylbenzene	200		16.3	50.0	50	01/30/2020 02:22	WG1419393
2-Butanone (MEK)	U		197	500	50	01/30/2020 02:22	WG1419393
Methyl Acetate	U		215	1000	50	01/30/2020 02:22	WG1419393
Methyl Cyclohexane	103	B	19.0	50.0	50	01/30/2020 02:22	WG1419393
Methylene Chloride	U		50.0	250	50	01/30/2020 02:22	WG1419393
4-Methyl-2-pentanone (MIBK)	U		107	500	50	01/30/2020 02:22	WG1419393
Methyl tert-butyl ether	U		18.4	50.0	50	01/30/2020 02:22	WG1419393
Styrene	U		15.4	50.0	50	01/30/2020 02:22	WG1419393
1,1,2,2-Tetrachloroethane	U		6.50	50.0	50	01/30/2020 02:22	WG1419393
Tetrachloroethene	U		18.6	50.0	50	01/30/2020 02:22	WG1419393
Toluene	48.3	J	20.6	50.0	50	01/30/2020 02:22	WG1419393
1,2,3-Trichlorobenzene	U		11.5	50.0	50	01/30/2020 02:22	WG1419393
1,2,4-Trichlorobenzene	U		17.8	50.0	50	01/30/2020 02:22	WG1419393
1,1,1-Trichloroethane	U		15.9	50.0	50	01/30/2020 02:22	WG1419393
1,1,2-Trichloroethane	U		19.2	50.0	50	01/30/2020 02:22	WG1419393
Trichloroethene	U		19.9	50.0	50	01/30/2020 02:22	WG1419393
Trichlorofluoromethane	U		60.0	250	50	01/30/2020 02:22	WG1419393
1,1,2-Trichlorotrifluoroethane	U		15.2	50.0	50	01/30/2020 02:22	WG1419393
Vinyl chloride	U		13.0	50.0	50	01/30/2020 02:22	WG1419393
Xylenes, Total	557		53.0	150	50	01/30/2020 02:22	WG1419393
(S) Toluene-d8	*109*			*80.0-120*		*01/30/2020 02:22*	WG1419393
(S) 4-Bromofluorobenzene	*109*			*77.0-126*		*01/30/2020 02:22*	WG1419393
(S) 1,2-Dichloroethane-d4	*105*			*70.0-130*		*01/30/2020 02:22*	WG1419393

1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al
9 Sc

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Acetone	U		100	500	10	01/30/2020 02:46	WG1419393
Benzene	198		3.31	10.0	10	01/30/2020 02:46	WG1419393
Bromochloromethane	U		5.20	10.0	10	01/30/2020 02:46	WG1419393
Bromodichloromethane	U		3.80	10.0	10	01/30/2020 02:46	WG1419393
Bromoform	U	J0	4.69	10.0	10	01/30/2020 02:46	WG1419393
Bromomethane	U		8.66	50.0	10	01/30/2020 02:46	WG1419393
Carbon disulfide	U	J0	2.75	10.0	10	01/30/2020 02:46	WG1419393
Carbon tetrachloride	U		3.79	10.0	10	01/30/2020 02:46	WG1419393
Chlorobenzene	U		3.48	10.0	10	01/30/2020 02:46	WG1419393
Chlorodibromomethane	U		3.27	10.0	10	01/30/2020 02:46	WG1419393
Chloroethane	U		4.53	50.0	10	01/30/2020 02:46	WG1419393
Chloroform	U		3.24	50.0	10	01/30/2020 02:46	WG1419393
Chloromethane	U	J4	2.76	25.0	10	01/30/2020 02:46	WG1419393
Cyclohexane	247		3.90	10.0	10	01/30/2020 02:46	WG1419393
1,2-Dibromo-3-Chloropropane	U		13.3	50.0	10	01/30/2020 02:46	WG1419393
1,2-Dibromoethane	U		3.81	10.0	10	01/30/2020 02:46	WG1419393
1,2-Dichlorobenzene	U		3.49	10.0	10	01/30/2020 02:46	WG1419393
1,3-Dichlorobenzene	U		2.20	10.0	10	01/30/2020 02:46	WG1419393
1,4-Dichlorobenzene	U		2.74	10.0	10	01/30/2020 02:46	WG1419393
Dichlorodifluoromethane	U		5.51	50.0	10	01/30/2020 02:46	WG1419393
1,1-Dichloroethane	U		2.59	10.0	10	01/30/2020 02:46	WG1419393
1,2-Dichloroethane	U		3.61	10.0	10	01/30/2020 02:46	WG1419393
1,1-Dichloroethene	U		3.98	10.0	10	01/30/2020 02:46	WG1419393
cis-1,2-Dichloroethene	U		2.60	10.0	10	01/30/2020 02:46	WG1419393
trans-1,2-Dichloroethene	U		3.96	10.0	10	01/30/2020 02:46	WG1419393
1,2-Dichloropropane	U		3.06	10.0	10	01/30/2020 02:46	WG1419393
cis-1,3-Dichloropropene	U		4.18	10.0	10	01/30/2020 02:46	WG1419393
trans-1,3-Dichloropropene	U		4.19	10.0	10	01/30/2020 02:46	WG1419393
Ethylbenzene	1300		3.84	10.0	10	01/30/2020 02:46	WG1419393
2-Hexanone	U		38.2	100	10	01/30/2020 02:46	WG1419393
Isopropylbenzene	203		3.26	10.0	10	01/30/2020 02:46	WG1419393
2-Butanone (MEK)	U		39.3	100	10	01/30/2020 02:46	WG1419393
Methyl Acetate	U		43.0	200	10	01/30/2020 02:46	WG1419393
Methyl Cyclohexane	74.2		3.80	10.0	10	01/30/2020 02:46	WG1419393
Methylene Chloride	U		10.0	50.0	10	01/30/2020 02:46	WG1419393
4-Methyl-2-pentanone (MIBK)	U		21.4	100	10	01/30/2020 02:46	WG1419393
Methyl tert-butyl ether	U		3.67	10.0	10	01/30/2020 02:46	WG1419393
Styrene	U		3.07	10.0	10	01/30/2020 02:46	WG1419393
1,1,2,2-Tetrachloroethane	U		1.30	10.0	10	01/30/2020 02:46	WG1419393
Tetrachloroethene	U		3.72	10.0	10	01/30/2020 02:46	WG1419393
Toluene	44.5		4.12	10.0	10	01/30/2020 02:46	WG1419393
1,2,3-Trichlorobenzene	U		2.30	10.0	10	01/30/2020 02:46	WG1419393
1,2,4-Trichlorobenzene	U		3.55	10.0	10	01/30/2020 02:46	WG1419393
1,1,1-Trichloroethane	U		3.19	10.0	10	01/30/2020 02:46	WG1419393
1,1,2-Trichloroethane	U		3.83	10.0	10	01/30/2020 02:46	WG1419393
Trichloroethene	U		3.98	10.0	10	01/30/2020 02:46	WG1419393
Trichlorofluoromethane	U		12.0	50.0	10	01/30/2020 02:46	WG1419393
1,1,2-Trichlorotrifluoroethane	U		3.03	10.0	10	01/30/2020 02:46	WG1419393
Vinyl chloride	U		2.59	10.0	10	01/30/2020 02:46	WG1419393
Xylenes, Total	415		10.6	30.0	10	01/30/2020 02:46	WG1419393
(S) Toluene-d8	*105*			*80.0-120*		*01/30/2020 02:46*	WG1419393
(S) 4-Bromofluorobenzene	*132*	J1		*77.0-126*		*01/30/2020 02:46*	WG1419393
(S) 1,2-Dichloroethane-d4	*104*			*70.0-130*		*01/30/2020 02:46*	WG1419393

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Acetone	U		10.0	50.0	1	01/30/2020 00:44	WG1419393
Benzene	U		0.331	1.00	1	01/30/2020 00:44	WG1419393
Bromochloromethane	U		0.520	1.00	1	01/30/2020 00:44	WG1419393
Bromodichloromethane	U		0.380	1.00	1	01/30/2020 00:44	WG1419393
Bromoform	U	J0	0.469	1.00	1	01/30/2020 00:44	WG1419393
Bromomethane	U		0.866	5.00	1	01/30/2020 00:44	WG1419393
Carbon disulfide	U	J0	0.275	1.00	1	01/30/2020 00:44	WG1419393
Carbon tetrachloride	U		0.379	1.00	1	01/30/2020 00:44	WG1419393
Chlorobenzene	U		0.348	1.00	1	01/30/2020 00:44	WG1419393
Chlorodibromomethane	U		0.327	1.00	1	01/30/2020 00:44	WG1419393
Chloroethane	U		0.453	5.00	1	01/30/2020 00:44	WG1419393
Chloroform	U		0.324	5.00	1	01/30/2020 00:44	WG1419393
Chloromethane	U	J4	0.276	2.50	1	01/30/2020 00:44	WG1419393
Cyclohexane	U		0.390	1.00	1	01/30/2020 00:44	WG1419393
1,2-Dibromo-3-Chloropropane	U		1.33	5.00	1	01/30/2020 00:44	WG1419393
1,2-Dibromoethane	U		0.381	1.00	1	01/30/2020 00:44	WG1419393
1,2-Dichlorobenzene	U		0.349	1.00	1	01/30/2020 00:44	WG1419393
1,3-Dichlorobenzene	U		0.220	1.00	1	01/30/2020 00:44	WG1419393
1,4-Dichlorobenzene	U		0.274	1.00	1	01/30/2020 00:44	WG1419393
Dichlorodifluoromethane	U		0.551	5.00	1	01/30/2020 00:44	WG1419393
1,1-Dichloroethane	U		0.259	1.00	1	01/30/2020 00:44	WG1419393
1,2-Dichloroethane	U		0.361	1.00	1	01/30/2020 00:44	WG1419393
1,1-Dichloroethene	U		0.398	1.00	1	01/30/2020 00:44	WG1419393
cis-1,2-Dichloroethene	U		0.260	1.00	1	01/30/2020 00:44	WG1419393
trans-1,2-Dichloroethene	U		0.396	1.00	1	01/30/2020 00:44	WG1419393
1,2-Dichloropropane	U		0.306	1.00	1	01/30/2020 00:44	WG1419393
cis-1,3-Dichloropropene	U		0.418	1.00	1	01/30/2020 00:44	WG1419393
trans-1,3-Dichloropropene	U		0.419	1.00	1	01/30/2020 00:44	WG1419393
Ethylbenzene	U		0.384	1.00	1	01/30/2020 00:44	WG1419393
2-Hexanone	U		3.82	10.0	1	01/30/2020 00:44	WG1419393
Isopropylbenzene	U		0.326	1.00	1	01/30/2020 00:44	WG1419393
2-Butanone (MEK)	U		3.93	10.0	1	01/30/2020 00:44	WG1419393
Methyl Acetate	U		4.30	20.0	1	01/30/2020 00:44	WG1419393
Methyl Cyclohexane	U		0.380	1.00	1	01/30/2020 00:44	WG1419393
Methylene Chloride	U		1.00	5.00	1	01/30/2020 00:44	WG1419393
4-Methyl-2-pentanone (MIBK)	U		2.14	10.0	1	01/30/2020 00:44	WG1419393
Methyl tert-butyl ether	U		0.367	1.00	1	01/30/2020 00:44	WG1419393
Styrene	U		0.307	1.00	1	01/30/2020 00:44	WG1419393
1,1,2,2-Tetrachloroethane	U		0.130	1.00	1	01/30/2020 00:44	WG1419393
Tetrachloroethene	U		0.372	1.00	1	01/30/2020 00:44	WG1419393
Toluene	U		0.412	1.00	1	01/30/2020 00:44	WG1419393
1,2,3-Trichlorobenzene	U		0.230	1.00	1	01/30/2020 00:44	WG1419393
1,2,4-Trichlorobenzene	U		0.355	1.00	1	01/30/2020 00:44	WG1419393
1,1,1-Trichloroethane	U		0.319	1.00	1	01/30/2020 00:44	WG1419393
1,1,2-Trichloroethane	U		0.383	1.00	1	01/30/2020 00:44	WG1419393
Trichloroethene	U		0.398	1.00	1	01/30/2020 00:44	WG1419393
Trichlorofluoromethane	U		1.20	5.00	1	01/30/2020 00:44	WG1419393
1,1,2-Trichlorotrifluoroethane	U		0.303	1.00	1	01/30/2020 00:44	WG1419393
Vinyl chloride	U		0.259	1.00	1	01/30/2020 00:44	WG1419393
Xylenes, Total	U		1.06	3.00	1	01/30/2020 00:44	WG1419393
(S) Toluene-d8	*111*			*80.0-120*		*01/30/2020 00:44*	WG1419393
(S) 4-Bromofluorobenzene	*111*			*77.0-126*		*01/30/2020 00:44*	WG1419393
(S) 1,2-Dichloroethane-d4	*103*			*70.0-130*		*01/30/2020 00:44*	WG1419393

1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al
9 Sc

Method Blank (MB)

(MB) R3496796-4 01/29/20 23:13

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Acetone	U		10.0	50.0
Benzene	U		0.331	1.00
Bromodichloromethane	U		0.380	1.00
Bromochloromethane	U		0.520	1.00
Bromoform	U		0.469	1.00
Bromomethane	U		0.866	5.00
Carbon disulfide	U		0.275	1.00
Carbon tetrachloride	U		0.379	1.00
Chlorobenzene	U		0.348	1.00
Chlorodibromomethane	U		0.327	1.00
Chloroethane	U		0.453	5.00
Chloroform	U		0.324	5.00
Chloromethane	U		0.276	2.50
Cyclohexane	U		0.390	1.00
1,2-Dibromo-3-Chloropropane	U		1.33	5.00
1,2-Dibromoethane	U		0.381	1.00
1,2-Dichlorobenzene	U		0.349	1.00
1,3-Dichlorobenzene	U		0.220	1.00
1,4-Dichlorobenzene	U		0.274	1.00
Dichlorodifluoromethane	U		0.551	5.00
1,1-Dichloroethane	U		0.259	1.00
1,2-Dichloroethane	U		0.361	1.00
1,1-Dichloroethene	U		0.398	1.00
cis-1,2-Dichloroethene	U		0.260	1.00
trans-1,2-Dichloroethene	U		0.396	1.00
1,2-Dichloropropane	U		0.306	1.00
cis-1,3-Dichloropropene	U		0.418	1.00
trans-1,3-Dichloropropene	U		0.419	1.00
Ethylbenzene	U		0.384	1.00
2-Hexanone	U		3.82	10.0
Isopropylbenzene	U		0.326	1.00
2-Butanone (MEK)	U		3.93	10.0
Methyl Acetate	U		4.30	20.0
Methyl Cyclohexane	0.412	J	0.380	1.00
Methylene Chloride	U		1.00	5.00
4-Methyl-2-pentanone (MIBK)	U		2.14	10.0
Methyl tert-butyl ether	U		0.367	1.00
Styrene	U		0.307	1.00
1,1,2,2-Tetrachloroethane	U		0.130	1.00
Tetrachloroethene	U		0.372	1.00

Method Blank (MB)

(MB) R3496796-4 01/29/20 23:13

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Toluene	U		0.412	1.00
1,1,2-Trichlorotrifluoroethane	U		0.303	1.00
1,2,3-Trichlorobenzene	U		0.230	1.00
1,2,4-Trichlorobenzene	U		0.355	1.00
1,1,1-Trichloroethane	U		0.319	1.00
1,1,2-Trichloroethane	U		0.383	1.00
Trichloroethene	U		0.398	1.00
Trichlorofluoromethane	U		1.20	5.00
Vinyl chloride	U		0.259	1.00
Xylenes, Total	U		1.06	3.00
(S) Toluene-d8	*111*			*80.0-120*
(S) 4-Bromofluorobenzene	*110*			*77.0-126*
(S) 1,2-Dichloroethane-d4	*106*			*70.0-130*

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3496796-1 01/29/20 21:35 • (LCSD) R3496796-2 01/29/20 22:00

Analyte	Spike Amount ug/l	LCS Result ug/l	LCSD Result ug/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Acetone	25.0	29.0	27.2	116	109	19.0-160			6.41	27
Benzene	5.00	4.78	4.94	95.6	98.8	70.0-123			3.29	20
Bromodichloromethane	5.00	4.25	4.40	85.0	88.0	75.0-120			3.47	20
Bromochloromethane	5.00	5.39	5.29	108	106	76.0-122			1.87	20
Bromoform	5.00	3.95	3.95	79.0	79.0	68.0-132			0.000	20
Bromomethane	5.00	6.60	6.95	132	139	10.0-160			5.17	25
Carbon disulfide	5.00	3.85	3.90	77.0	78.0	61.0-128			1.29	20
Carbon tetrachloride	5.00	4.09	4.10	81.8	82.0	68.0-126			0.244	20
Chlorobenzene	5.00	4.92	5.10	98.4	102	80.0-121			3.59	20
Chlorodibromomethane	5.00	4.15	4.08	83.0	81.6	77.0-125			1.70	20
Chloroethane	5.00	5.01	5.07	100	101	47.0-150			1.19	20
Chloroform	5.00	4.94	4.92	98.8	98.4	73.0-120			0.406	20
Chloromethane	5.00	9.57	9.68	191	194	41.0-142	J4	J4	1.14	20
Cyclohexane	5.00	4.58	4.92	91.6	98.4	71.0-124			7.16	20
1,2-Dibromo-3-Chloropropane	5.00	4.01	3.96	80.2	79.2	58.0-134			1.25	20
1,2-Dibromoethane	5.00	5.19	5.07	104	101	80.0-122			2.34	20
1,2-Dichlorobenzene	5.00	5.08	5.14	102	103	79.0-121			1.17	20
1,3-Dichlorobenzene	5.00	4.78	4.90	95.6	98.0	79.0-120			2.48	20
1,4-Dichlorobenzene	5.00	4.78	4.79	95.6	95.8	79.0-120			0.209	20
Dichlorodifluoromethane	5.00	4.56	5.16	91.2	103	51.0-149			12.3	20

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3496796-1 01/29/20 21:35 • (LCSD) R3496796-2 01/29/20 22:00

Analyte	Spike Amount ug/l	LCS Result ug/l	LCSD Result ug/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
1,1-Dichloroethane	5.00	4.81	4.92	96.2	98.4	70.0-126			2.26	20
1,2-Dichloroethane	5.00	4.89	4.94	97.8	98.8	70.0-128			1.02	20
1,1-Dichloroethene	5.00	5.22	5.10	104	102	71.0-124			2.33	20
cis-1,2-Dichloroethene	5.00	4.81	4.92	96.2	98.4	73.0-120			2.26	20
trans-1,2-Dichloroethene	5.00	4.30	5.01	86.0	100	73.0-120			15.3	20
1,2-Dichloropropane	5.00	4.85	5.10	97.0	102	77.0-125			5.03	20
cis-1,3-Dichloropropene	5.00	4.57	4.63	91.4	92.6	80.0-123			1.30	20
trans-1,3-Dichloropropene	5.00	4.53	4.59	90.6	91.8	78.0-124			1.32	20
Ethylbenzene	5.00	4.90	5.27	98.0	105	79.0-123			7.28	20
2-Hexanone	25.0	26.4	26.6	106	106	67.0-149			0.755	20
Isopropylbenzene	5.00	4.82	5.01	96.4	100	76.0-127			3.87	20
2-Butanone (MEK)	25.0	25.3	24.6	101	98.4	44.0-160			2.81	20
Methyl Acetate	25.0	24.3	28.0	97.2	112	57.0-148			14.1	20
Methyl Cyclohexane	5.00	4.21	4.39	84.2	87.8	68.0-126			4.19	20
Methylene Chloride	5.00	5.37	5.54	107	111	67.0-120			3.12	20
4-Methyl-2-pentanone (MIBK)	25.0	25.0	25.0	100	100	68.0-142			0.000	20
Methyl tert-butyl ether	5.00	4.68	5.40	93.6	108	68.0-125			14.3	20
Styrene	5.00	4.85	5.10	97.0	102	73.0-130			5.03	20
1,1,2,2-Tetrachloroethane	5.00	4.94	4.75	98.8	95.0	65.0-130			3.92	20
Tetrachloroethene	5.00	4.37	5.09	87.4	102	72.0-132			15.2	20
Toluene	5.00	4.78	4.89	95.6	97.8	79.0-120			2.28	20
1,1,2-Trichlorotrifluoroethane	5.00	5.40	5.69	108	114	69.0-132			5.23	20
1,2,3-Trichlorobenzene	5.00	4.54	4.79	90.8	95.8	50.0-138			5.36	20
1,2,4-Trichlorobenzene	5.00	4.78	4.88	95.6	97.6	57.0-137			2.07	20
1,1,1-Trichloroethane	5.00	4.53	4.70	90.6	94.0	73.0-124			3.68	20
1,1,2-Trichloroethane	5.00	4.75	4.98	95.0	99.6	80.0-120			4.73	20
Trichloroethene	5.00	4.67	4.96	93.4	99.2	78.0-124			6.02	20
Trichlorofluoromethane	5.00	4.84	4.99	96.8	99.8	59.0-147			3.05	20
Vinyl chloride	5.00	4.64	4.90	92.8	98.0	67.0-131			5.45	20
Xylenes, Total	15.0	14.3	15.5	95.3	103	79.0-123			8.05	20
(S) Toluene-d8				*108*	*111*	*80.0-120*				
(S) 4-Bromofluorobenzene				*108*	*109*	*77.0-126*				
(S) 1,2-Dichloroethane-d4				*106*	*105*	*70.0-130*				

L1183904-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1183904-01 01/30/20 02:22 • (MS) R3496796-5 01/30/20 08:53 • (MSD) R3496796-6 01/30/20 09:17

Analyte	Spike Amount ug/l	Original Result ug/l	MS Result ug/l	MSD Result ug/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Acetone	1250	U	1750	1720	140	138	1	10.0-160			1.73	35
Benzene	250	192	485	491	117	120	1	17.0-158			1.23	27
Bromodichloromethane	250	U	248	271	99.2	108	1	31.0-150			8.86	27
Bromochloromethane	250	U	300	299	120	120	1	38.0-142			0.334	26
Bromoform	250	U	227	229	90.8	91.6	1	29.0-150			0.877	29
Bromomethane	250	U	400	395	160	158	1	10.0-160			1.26	38
Carbon disulfide	250	U	227	234	90.8	93.6	1	10.0-156			3.04	28
Carbon tetrachloride	250	U	233	262	93.2	105	1	23.0-159			11.7	28
Chlorobenzene	250	U	295	306	118	122	1	33.0-152			3.66	27
Chlorodibromomethane	250	U	236	240	94.4	96.0	1	37.0-149			1.68	27
Chloroethane	250	U	305	304	122	122	1	10.0-160			0.328	30
Chloroform	250	U	299	313	120	125	1	29.0-154			4.58	28
Chloromethane	250	U	561	604	224	242	1	10.0-160	J5	J5	7.38	29
Cyclohexane	250	283	576	560	117	111	1	19.0-160			2.82	23
1,2-Dibromo-3-Chloropropane	250	U	233	236	93.2	94.4	1	22.0-151			1.28	34
1,2-Dibromoethane	250	U	283	293	113	117	1	34.0-147			3.47	27
1,2-Dichlorobenzene	250	U	282	320	113	128	1	34.0-149			12.6	28
1,3-Dichlorobenzene	250	U	273	292	109	117	1	36.0-146			6.73	27
1,4-Dichlorobenzene	250	U	275	296	110	118	1	35.0-142			7.36	27
Dichlorodifluoromethane	250	U	319	339	128	136	1	10.0-160			6.08	29
1,1-Dichloroethane	250	U	296	307	118	123	1	25.0-158			3.65	27
1,2-Dichloroethane	250	U	281	302	112	121	1	29.0-151			7.20	27
1,1-Dichloroethene	250	U	318	318	127	127	1	11.0-160			0.000	29
cis-1,2-Dichloroethene	250	U	292	295	117	118	1	10.0-160			1.02	27
trans-1,2-Dichloroethene	250	U	290	310	116	124	1	17.0-153			6.67	27
1,2-Dichloropropane	250	U	288	299	115	120	1	30.0-156			3.75	27
cis-1,3-Dichloropropene	250	U	262	277	105	111	1	34.0-149			5.57	28
trans-1,3-Dichloropropene	250	U	265	254	106	102	1	32.0-149			4.24	28
Ethylbenzene	250	1410	1530	1600	48.0	76.0	1	30.0-155			4.47	27
2-Hexanone	1250	U	1400	1400	112	112	1	21.0-160			0.000	29
Isopropylbenzene	250	200	462	480	105	112	1	28.0-157			3.82	27
2-Butanone (MEK)	1250	U	1380	1400	110	112	1	10.0-160			1.44	32
Methyl Acetate	1250	U	1620	1690	130	135	1	18.0-151			4.23	30
Methyl Cyclohexane	250	103	348	353	98.0	100	1	11.0-160			1.43	24
Methylene Chloride	250	U	318	338	127	135	1	23.0-144			6.10	28
4-Methyl-2-pentanone (MIBK)	1250	U	1410	1420	113	114	1	29.0-160			0.707	29
Methyl tert-butyl ether	250	U	301	311	120	124	1	28.0-150			3.27	29
Styrene	250	U	278	284	111	114	1	33.0-155			2.14	28
1,1,2,2-Tetrachloroethane	250	U	281	287	112	115	1	33.0-150			2.11	28
Tetrachloroethene	250	U	274	288	110	115	1	10.0-160			4.98	27

L1183904-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1183904-01 01/30/20 02:22 • (MS) R3496796-5 01/30/20 08:53 • (MSD) R3496796-6 01/30/20 09:17

Analyte	Spike Amount ug/l	Original Result ug/l	MS Result ug/l	MSD Result ug/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Toluene	250	48.3	330	331	113	113	1	26.0-154			0.303	28
1,1,2-Trichlorotrifluoroethane	250	U	364	366	146	146	1	23.0-160			0.548	30
1,2,3-Trichlorobenzene	250	U	261	262	104	105	1	17.0-150			0.382	36
1,2,4-Trichlorobenzene	250	U	255	268	102	107	1	24.0-150			4.97	33
1,1,1-Trichloroethane	250	U	281	300	112	120	1	23.0-160			6.54	28
1,1,2-Trichloroethane	250	U	285	285	114	114	1	35.0-147			0.000	27
Trichloroethene	250	U	287	298	115	119	1	10.0-160			3.76	25
Trichlorofluoromethane	250	U	324	345	130	138	1	17.0-160			6.28	31
Vinyl chloride	250	U	284	311	114	124	1	10.0-160			9.08	27
Xylenes, Total	750	557	1240	1440	91.1	118	1	29.0-154			14.9	28
(S) Toluene-d8					*108*	*107*		*80.0-120*				
(S) 4-Bromofluorobenzene					*104*	*107*		*77.0-126*				
(S) 1,2-Dichloroethane-d4					*107*	*105*		*70.0-130*				

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

Abbreviations and Definitions

MDL	Method Detection Limit.
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state “ND” (Not Detected) or “BDL” (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description
B	The same analyte is found in the associated blank.
J	The identification of the analyte is acceptable; the reported value is an estimate.
J0	J0: The identification of the analyte is acceptable, but the reported concentration is an estimate. The calibration met method criteria.
J1	Surrogate recovery limits have been exceeded; values are outside upper control limits.
J4	The associated batch QC was outside the established quality control range for accuracy.
J5	The sample matrix interfered with the ability to make any accurate determination; spike value is high.

Pace National is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our one location design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be YOUR LAB OF CHOICE.
* Not all certifications held by the laboratory are applicable to the results reported in the attached report.
* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace National.

State Accreditations

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN-03-2002-34
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	n/a
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LAO00356
Kentucky [1 6]	90010	South Carolina	84004
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana [1]	LA180010	Texas	T104704245-18-15
Maine	TN0002	Texas [5]	LAB0152
Maryland	324	Utah	TN00003
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	460132
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA

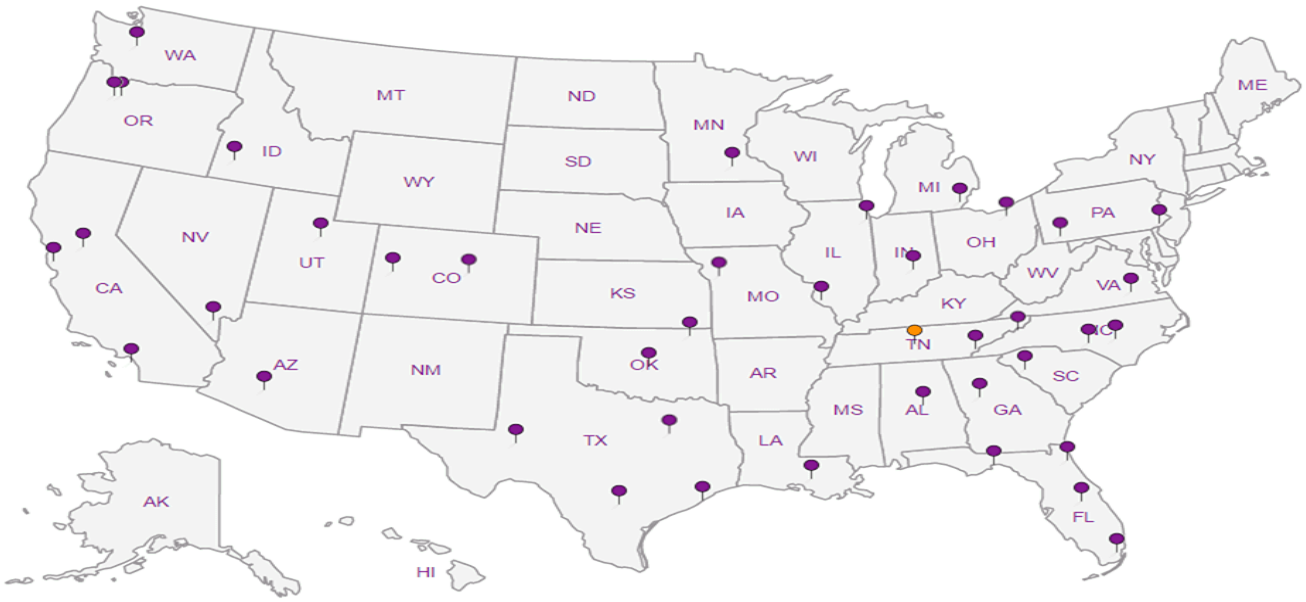
Third Party Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

[1] Drinking Water [2] Underground Storage Tanks [3] Aquatic Toxicity [4] Chemical/Microbiological [5] Mold [6] Wastewater n/a Accreditation not applicable

Our Locations

Pace National has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. Pace National performs all testing at our central laboratory.



GHD 285 Delaware Ave. Suite 500 Buffalo, NY 14202	**Billing Information:** Mr. Dave Rowlinson 285 Delaware Ave. Suite 500 Buffalo, NY 14202	Pres Chk
Report to: **Mr. Dave Rowlinson**	Email To: **dave.rowlinson@ghd.com**	
Project Description: **815 River Road Site**	City/State Collected: **No. TONAWANDA, NY**	Please Circle: PT MT CT ET
Phone: **716-748-6624** Fax:	Client Project # **11110868-~~200~~ 500**	Lab Project # **STEARNSANY-RIVERRD**
Collected by (print): **D. ROWLINSON**	Site/Facility ID # **N. TONAWANDA, NY**	P.O. # **33700981**
Collected by (signature): Immediately Packed on Ice N ___ Y X	***Rush?*** (Lab MUST Be Notified) ___ Same Day ___ Five Day ___ Next Day ___ 5 Day (Rad Only) ___ Two Day ___ 10 Day (Rad Only) ___ Three Day	Quote # Date Results Needed

Analysis / Container / Preservative

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	V8260TCLC 40mlAmb-HCl	V8260TCLC 40mlAmb-HCl-Blk	Remarks	Sample # (lab only)
MW-2	G	GW		01-28-20	10:30AM	2	X			-01
FD @ MW-2	↓	GW		↓	↓	2	X			-02
MS @ MW-2		GW				2	X			-04
MSD @ MW-2		GW				2	X			-01
		GW				2	X			
		GW				2	X			
		GW				2	X			
TRIP BLANK		GW				1		X		-03

Chain of Custody Page ___ of ___

Pace Analytical® National Center for Testing & Innovation

12065 Lebanon Rd
Mount Juliet, TN 37122
Phone: 615-758-5858
Phone: 800-767-5859
Fax: 615-758-5859

SDG # 4183904

Tab 1045

Acctnum: STEARNSANY

Template: T80569

Prelogin: P751396

PM: 3513 - Jennifer Huckaba

PB: JG 1-17-20

Shipped Via: FedEX Ground

* Matrix:
SS - Soil AIR - Air F - Filter
GW - Groundwater B - Bioassay
WW - Wastewater
DW - Drinking Water
OT - Other_____

Remarks:

pH _____ Temp _____

Flow _____ Other _____

Samples returned via:
__ UPS __ FedEx __ Courier _____

Tracking # 1387 4816 C860

Sample Receipt Checklist

COC Seal Present/Intact:	✓NP	__Y __N
COC Signed/Accurate:		__Y __N
Bottles arrive intact:		__Y __N
Correct bottles used:		__Y __N
Sufficient volume sent:		__Y __N
If Applicable		
VOA Zero Headspace:		__Y __N
Preservation Correct/Checked:		✓Y __N
RAD Screen <0.5 mR/hr:		✓Y __N

Relinquished by : (Signature) David Rowlinson	Date: 01/28/20	Time: 2:00pm	Received by: (Signature)	Trip Blank Received: Yes / No (HCl / MeoH) TBR
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Temp: 4.3 °C Bottles Received: 8
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)	Date: 29Jan Time: 0836

If preservation required by Login: Date/Time

Hold:

Condition: NCF / OK

Appendix C
Data Usability Report

Memorandum

February 24, 2020

To:	Dave Rowlinson	Ref. No.:	11110868.200
From:	Linda Waters/cs/1-NF	Tel:	315-679-5792

Subject: **Data Usability Summary Report**
North Tonawanda 815 River Road Groundwater Sampling
City of North Tonawanda
North Tonawanda, New York
January 2020

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. 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 submitted to Pace Analytical Laboratories, in Mt. Juliet, Tennessee. Samples were analyzed in accordance with the methodologies 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, chain of custody forms, calibration data, blank data, and recovery data from surrogate spikes/laboratory control samples (LCS)/matrix spike (MS) 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 methods referenced in Table 3 and applicable guidance from the document entitled: "USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review," USEPA 540-R-2016-002, September 2016 and 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

Deliverables

The data packages were complete as defined under the requirements for Analytical Services Protocol (ASP) Category B deliverables.

4. Sample Holding Time and Preservation

The sample holding time criteria for the analyses are summarized in Table 3. The sample chain of custody documents and analytical reports were used to determine sample holding times. All samples were prepared and 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) – Tuning and Mass Calibration (Instrument Performance Check)

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, methods require the analysis of 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 period. 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:

i) All relative response factors (RRFs) must be greater than or equal to 0.050 (greater than or equal to 0.010 for compounds that exhibit poor response)

ii) The percent relative standard deviation (%RSD) values must not exceed 20.0 percent (40.0 percent for compounds that exhibit poor response) or a minimum correlation coefficient (R) and minimum coefficient of determination (R^2) 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:

i) All RRF values must be greater than or equal to 0.050 (greater than or equal to 0.010 for compounds that exhibit poor response)

ii) Percent difference (%D) values must not exceed 20.0 percent (40.0 percent for compounds that exhibit poor response)

Calibration standards were analyzed at the required frequency, and the results met the above criteria for instrument sensitivity and stability for most compounds. High %D values were reported for bromoform, carbon disulfide and chloroethane. The associated sample results were qualified as estimated based on the implied variability (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 20 investigative samples and/or 1 per analytical batch.

Most method blank results were non-detect, indicating that laboratory contamination was not a factor for this investigation. However, a low level concentration of methyl cyclohexane was reported in the method blank reflecting potential laboratory contamination. All associated sample results were significantly higher than the method blank concentration and were reported without qualification.

9. Surrogate Spike Recoveries

In accordance with the methods employed, all samples, blanks, and QC samples analyzed for 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 met the laboratory criteria with the exception of one high recovery. Associated positive sample results were qualified as estimated due to potential high bias (see Table 5).

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 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:

i) The retention time of the IS must not vary more than ±30 seconds from the associated calibration standard

ii) 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/or laboratory control sample duplicates (LCSD) are prepared and analyzed as samples to assess the analytical efficiencies of the methods employed, independent of sample matrix effects. The relative percent difference [RPD] of the LCS/LCSD recoveries is used to evaluate analytical precision.

For this study, LCS/LCSD were analyzed at a minimum frequency of one per analytical batch.

The LCS/LCSD contained all compounds of interest. Most LCS recoveries and RPDs were within the laboratory control limits, demonstrating acceptable analytical accuracy and precision. Chloromethane (Methyl chloride) recovered high, however all associated results were non-detect and were not impacted by the indicated 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. If the original sample concentration is significantly greater than the spike concentration, the

recovery is not assessed. If only the MS or MSD recovery was outside of control limits, no qualification of the data was performed based on the acceptable recovery of the companion spike and the acceptable RPD.

The MS/MSD samples were spiked with the analytes of interest. All percent recoveries and RPD values were within laboratory control limits, demonstrating acceptable analytical accuracy and precision.

13. Field QA/QC Samples

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

Trip Blank Sample Analysis

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

Field Duplicate Sample Analysis

To assess the analytical and sampling protocol precision, one field duplicate sample was collected and submitted "blind" to the laboratory, as specified in Table 1. The RPDs associated with these duplicate samples 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 for water samples.

All field duplicate results were within acceptable agreement, demonstrating acceptable sampling and analytical precision.

14. Analyte Reporting

The laboratory reported detected results down to the laboratory's method detection limit (MDL) for each analyte. Non-detect results were presented as non-detect at the RL and qualified with a "U" 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 methods. 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.

Table 1

Sample Collection and Analysis Summary
North Tonawanda 815 River Road Groundwater Sampling
City of North Tonawanda
North Tonawanda, New York
January 2020

					Analysis/Parameters	
Sample Identification	**Location**	**Matrix**	**Collection Date (mm/dd/yyyy)**	**Collection Time (hr:min)**	**VOC**	**Comments**
MW-2	MW-2	Water	01/28/2020	10:30	X	MS/MSD
FD@MW-2	MW-2	Water	01/28/2020	10:30	X	Field duplicate of MW-2
TRIP BLANK	-	Water	-	-	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
January 2020

Location ID:		**MW-2**	**MW-2**
Sample Name:		**MW-2**	**FD@MW-2**
Sample Date:		**01/28/2020**	**01/28/2020**
			Duplicate
Parameters	**Unit**		
Volatile Organic Compounds			
1,1,1-Trichloroethane	µg/L	50.0 U	10.0 U
1,1,2,2-Tetrachloroethane	µg/L	50.0 U	10.0 U
1,1,2-Trichloroethane	µg/L	50.0 U	10.0 U
1,1-Dichloroethane	µg/L	50.0 U	10.0 U
1,1-Dichloroethene	µg/L	50.0 U	10.0 U
1,2,3-Trichlorobenzene	µg/L	50.0 U	10.0 U
1,2,4-Trichlorobenzene	µg/L	50.0 U	10.0 U
1,2-Dibromo-3-chloropropane (DBCP)	µg/L	250 U	50.0 U
1,2-Dibromoethane (Ethylene dibromide)	µg/L	50.0 U	10.0 U
1,2-Dichlorobenzene	µg/L	50.0 U	10.0 U
1,2-Dichloroethane	µg/L	50.0 U	10.0 U
1,2-Dichloropropane	µg/L	50.0 U	10.0 U
1,3-Dichlorobenzene	µg/L	50.0 U	10.0 U
1,4-Dichlorobenzene	µg/L	50.0 U	10.0 U
2-Butanone (Methyl ethyl ketone) (MEK)	µg/L	500 U	100 U
2-Hexanone	µg/L	500 U	100 U
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	µg/L	500 U	100 U
Acetone	µg/L	2500 U	500 U
Benzene	µg/L	192	198 J+
Bromodichloromethane	µg/L	50.0 U	10.0 U
Bromoform	µg/L	50.0 UJ	10.0 UJ
Bromomethane (Methyl bromide)	µg/L	250 U	50.0 U
Carbon disulfide	µg/L	50.0 UJ	10.0 UJ
Carbon tetrachloride	µg/L	50.0 U	10.0 U
Chlorobenzene	µg/L	50.0 U	10.0 U
Chlorobromomethane	µg/L	50.0 U	10.0 U
Chloroethane	µg/L	250 UJ	50.0 UJ
Chloroform (Trichloromethane)	µg/L	250 U	50.0 U
Chloromethane (Methyl chloride)	µg/L	125 U	25.0 U
cis-1,2-Dichloroethene	µg/L	50.0 U	10.0 U
cis-1,3-Dichloropropene	µg/L	50.0 U	10.0 U
Cyclohexane	µg/L	283	247 J+
Dibromochloromethane	µg/L	50.0 U	10.0 U
Dichlorodifluoromethane (CFC-12)	µg/L	250 U	50.0 U
Ethylbenzene	µg/L	1410	1300 J+
Isopropyl benzene	µg/L	200	203 J+
Methyl acetate	µg/L	1000 U	200 U
Methyl cyclohexane	µg/L	103	74.2 J+
Methyl tert butyl ether (MTBE)	µg/L	50.0 U	10.0 U
Methylene chloride	µg/L	250 U	50.0 U
Styrene	µg/L	50.0 U	10.0 U

Table 2

Analytical Results Summary
North Tonawanda 815 River Road Groundwater Sampling
City of North Tonawanda
North Tonawanda, New York
January 2020

Location ID:		**MW-2**	**MW-2**
Sample Name:		**MW-2**	**FD@MW-2**
Sample Date:		**01/28/2020**	**01/28/2020**
			Duplicate
Parameters	**Unit**		
Volatile Organic Compounds			
Tetrachloroethene	µg/L	50.0 U	10.0 U
Toluene	µg/L	48.3 J	44.5 J+
trans-1,2-Dichloroethene	µg/L	50.0 U	10.0 U
trans-1,3-Dichloropropene	µg/L	50.0 U	10.0 U
Trichloroethene	µg/L	50.0 U	10.0 U
Trichlorofluoromethane (CFC-11)	µg/L	250 U	50.0 U
Trifluorotrichloroethane (CFC-113)	µg/L	50.0 U	10.0 U
Vinyl chloride	µg/L	50.0 U	10.0 U
Xylenes (total)	µg/L	557	415 J+

Notes:

J+ - Estimated concentration, results may be biased high
UJ - Not detected; associated reporting limit is estimated
U - Not detected at the associated reporting limit

Table 3

Analytical Methods
Noth Tonawanda 815 River Road Groundwater Sampling
City of North Tonawanda
North Tonawanda, New York
January 2020

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
January 2020

Parameter	Analyte	Calibration Date (mm/dd/yyyy)	RRF/CF	%D	Associated Sample ID	Qualified Result	Units
VOC	Bromoform	01/29/2020	0.337	-20.9	MW-2	50.0 UJ	µg/L
					FD@MW-2	10.0 UJ	µg/L
	Carbon disulfide	01/29/2020	0.399	-23.1	MW-2	50.0 UJ	µg/L
					FD@MW-2	10.0 UJ	µg/L
	Choroethane	01/29/2020	0.193	-25	MW-2	250.0 UJ	µg/L
					FD@MW-2	50.0 UJ	µg/L

Notes:

-- - Not applicable
%D - Percent difference
RRF - Relative Response Factor
UJ - Not detected; associated reporting limit is estimated
VOC - Volatile Organic Compound

Table 5

Qualified Sample Data Due to Outlying of Surrogate Recoveries
North Tonawanda 815 River Road Groundwater Sampling
City of North Tonawanda
North Tonawanda, New York
January 2020

Parameter	Sample ID	Surrogate	Surrogate % Recovery	Control Limits % Recovery	Analyte	Qualified Result	Units
VOC	FD@MW-2	4-Bromofluorobenzene	132	77 - 126	Benzene	198 J+	µg/L
					Cyclohexane	247 J+	µg/L
					Ethylbenzene	1300 J+	µg/L
					Isopropyl benzene	203 J+	µg/L
					Methyl cyclohexane	74.2 J+	µg/L
					Toluene	44.5 J+	µg/L
					Xylenes (total)	415 J+	µg/L

Notes:

J+ - Estimated concentration, result may be biased high
VOC - Volatile Organic Compound

Appendix D
IC-EC Certification

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
Division of Environmental Remediation
625 Broadway, 11th Floor, Albany, NY 12233-7020
P: (518)402-9543 | F: (518)402-9547
www.dec.ny.gov

12/19/2019

Dale Marshall, P.E.
City Engineer
City of North Tonawanda
City Hall
216 Payne Ave.
North Tonawanda, NY 14120-5493

Re: Reminder Notice: Site Management Periodic Review Report and IC/EC Certification Submittal
Site Name: 815 River Road Investigation
Site No.: B00178
Site Address: 815 River Road
North Tonawanda, NY 14120

Dear Dale Marshall, P.E.:

This letter serves as a reminder that sites in active Site Management (SM) require the submittal of a periodic progress report. This report, referred to as the Periodic Review Report (PRR), must document the implementation of, and compliance with, site-specific SM requirements. Section 6.3(b) of DER-10 *Technical Guidance for Site Investigation and Remediation* (available online at http://www.dec.ny.gov/regulations/67386.html) provides guidance regarding the information that must be included in the PRR. Further, if the site is comprised of multiple parcels, then you as the Certifying Party must arrange to submit one PRR for all parcels that comprise the site. The PRR must be received by the Department no later than **March 02, 2020**. Guidance on the content of a PRR is enclosed.

Site Management is defined in regulation (6 NYCRR 375-1.2(at)) and in Chapter 6 of DER-10. Depending on when the remedial program for your site was completed, SM may be governed by multiple documents (e.g., Operation, Maintenance, and Monitoring Plan; Soil Management Plan) or one comprehensive Site Management Plan.

A Site Management Plan (SMP) may contain one or all of the following elements, as applicable to the site: a plan to maintain institutional controls and/or engineering controls ("IC/EC Plan"); a plan for monitoring the performance and effectiveness of the selected remedy ("Monitoring Plan"); and/or a plan for the operation and maintenance of the selected remedy ("O&M Plan"). Additionally, the technical requirements for SM are stated in the decision document (e.g., Record of Decision) and, in some cases, the legal agreement directing the remediation of the site (e.g., order on consent, voluntary agreement, etc.).

When you submit the PRR (by the due date above), include the enclosed forms documenting that all SM requirements are being met. The Institutional Controls (ICs) portion of the form (Box 6) must be signed by you or your designated representative. If you cannot certify that all SM requirements are being met, you must submit a Corrective Measures Work Plan that identifies the actions to be taken to restore compliance. The work plan must include a schedule to be approved by the Department. The Periodic Review process will not be considered complete until all necessary corrective measures are completed and all required controls are certified. Instructions for completing the certifications are enclosed.

All site-related documents and data, including the PRR, must be submitted in electronic format to the Department of Environmental Conservation. The required format for documents is an Adobe PDF file with optical character recognition and no password protection. Data must be submitted as an electronic data deliverable (EDD) according to the instructions on the following webpage:

https://www.dec.ny.gov/chemical/62440.html

Documents may be submitted to the project manager either through electronic mail or by using the Department's file transfer service at the following webpage:

https://fts.dec.state.ny.us/fts/

The Department will not approve the PRR unless all documents and data generated in support of the PRR have been submitted using the required formats and protocols.

You may contact Brian Sadowski, the Project Manager, at 716-851-7220 or brian.sadowski@dec.ny.gov with any questions or concerns about the site. Please notify the project manager before conducting inspections or field work. You may also write to the project manager at the following address:

New York State Department of Environmental Conservation
270 Michigan Ave
Buffalo, NY 14203-2915

Enclosures

PRR General Guidance
Certification Form Instructions
Certification Forms

ec: w/ enclosures
Brian Sadowski, Project Manager
Stanley Radon, Hazardous Waste Remediation Supervisor, Region 9

GHD - David Rowlinson - Dave.Rowlinson@ghd.com

Enclosure 1

Certification Instructions

I. Verification of Site Details (Box 1 and Box 2):

Answer the three questions in the Verification of Site Details Section. The Owner and/or Qualified Environmental Professional (QEP) may include handwritten changes and/or other supporting documentation, as necessary.

II. Certification of Institutional Controls/ Engineering Controls (IC/ECs)(Boxes 3, 4, and 5)

1.1.1. Review the listed IC/ECs, confirming that all existing controls are listed, and that all existing controls are still applicable. If there is a control that is no longer applicable the Owner / Remedial Party should petition the Department separately to request approval to remove the control.

2. In Box 5, complete certifications for all Plan components, as applicable, by checking the corresponding checkbox.

3. If you cannot certify "YES" for each Control listed in Box 3 & Box 4, sign and date the form in Box 5. Attach supporting documentation that explains why the **Certification** cannot be rendered, as well as a plan of proposed corrective measures, and an associated schedule for completing the corrective measures. Note that this **Certification** form must be submitted even if an IC or EC cannot be certified; however, the certification process will not be considered complete until corrective action is completed.

If the Department concurs with the explanation, the proposed corrective measures, and the proposed schedule, a letter authorizing the implementation of those corrective measures will be issued by the Department's Project Manager. Once the corrective measures are complete, a new Periodic Review Report (with IC/EC Certification) must be submitted within 45 days to the Department. If the Department has any questions or concerns regarding the PRR and/or completion of the IC/EC Certification, the Project Manager will contact you.

III. IC/EC Certification by Signature (Box 6 and Box 7):

If you certified "YES" for each Control, please complete and sign the IC/EC Certifications page as follows:

- For the Institutional Controls on the use of the property, the certification statement in Box 6 shall be completed and may be made by the property owner or designated representative.

- For the Engineering Controls, the certification statement in Box 7 must be completed by a Professional Engineer or Qualified Environmental Professional, as noted on the form.

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 to February 01, 2020

	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 at 216 PAYNE AVENUE, NORTH TONAWANDA, NY 14120
print name 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, PE 2/7/20
Signature of Owner, Remedial Party, or Designated Representative Rendering Certification 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 David Britton at GHD 285 Delaware Ave, Buffalo NY 14202
print name print business address

am certifying as a for the City of Tonawanda
(Owner or Remedial Party)

STATE OF NEW YORK
DAVID M. BRITTON
075722
LICENSED PROFESSIONAL ENGINEER

Signature of , for the Owner or Remedial Party, Rendering Certification

Stamp (Required for PE)

2-10-2020
Date

Enclosure 3
Periodic Review Report (PRR) General Guidance

I. Executive Summary: (1/2-page or less)
   A. Provide a brief summary of site, nature and extent of contamination, and remedial history.
   B. Effectiveness of the Remedial Program - Provide overall conclusions regarding;
      1. progress made during the reporting period toward meeting the remedial objectives for the site
      2. the ultimate ability of the remedial program to achieve the remedial objectives for the site.
   C. Compliance
      1. Identify any areas of non-compliance regarding the major elements of the Site Management Plan (SMP, i.e., the Institutional/Engineering Control (IC/EC) Plan, the Monitoring Plan, and the Operation & Maintenance (O&M) Plan).
      2. Propose steps to be taken and a schedule to correct any areas of non-compliance.
   D. Recommendations
      1. recommend whether any changes to the SMP are needed
      2. recommend any changes to the frequency for submittal of PRRs (increase, decrease)
      3. recommend whether the requirements for discontinuing site management have been met.

II. Site Overview (one page or less)
   A. Describe the site location, boundaries (figure), significant features, surrounding area, and the nature and extent of contamination prior to site remediation.
   B. Describe the chronology of the main features of the remedial program for the site, the components of the selected remedy, cleanup goals, site closure criteria, and any significant changes to the selected remedy that have been made since remedy selection.

III. Evaluate Remedy Performance, Effectiveness, and Protectiveness
   Using tables, graphs, charts and bulleted text to the extent practicable, describe the effectiveness of the remedy in achieving the remedial goals for the site. Base findings, recommendations, and conclusions on objective data. Evaluations and should be presented simply and concisely.

IV. IC/EC Plan Compliance Report (if applicable)
   A. IC/EC Requirements and Compliance
      1. Describe each control, its objective, and how performance of the control is evaluated.
      2. Summarize the status of each goal (whether it is fully in place and its effectiveness).
      3. Corrective Measures: describe steps proposed to address any deficiencies in ICECs.
      4. Conclusions and recommendations for changes.
   B. IC/EC Certification
      1. The certification must be complete (even if there are IC/EC deficiencies), and certified by the appropriate party as set forth in a Department-approved certification form(s).

V. Monitoring Plan Compliance Report (if applicable)
   A. Components of the Monitoring Plan (tabular presentations preferred) - Describe the requirements of the monitoring plan by media (i.e., soil, groundwater, sediment, etc.) and by any remedial technologies being used at the site.
   B. Summary of Monitoring Completed During Reporting Period - Describe the monitoring tasks actually completed during this PRR reporting period. Tables and/or figures should be used to show all data.
   C. Comparisons with Remedial Objectives - Compare the results of all monitoring with the remedial objectives for the site. Include trend analyses where possible.
   D. Monitoring Deficiencies - Describe any ways in which monitoring did not fully comply with the monitoring plan.
   E. Conclusions and Recommendations for Changes - Provide overall conclusions regarding the monitoring completed and the resulting evaluations regarding remedial effectiveness.

VI. Operation & Maintenance (O&M) Plan Compliance Report (if applicable)
   A. Components of O&M Plan - Describe the requirements of the O&M plan including required activities, frequencies, recordkeeping, etc.
   B. Summary of O&M Completed During Reporting Period - Describe the O&M tasks actually completed during this PRR reporting period.
   C. Evaluation of Remedial Systems - Based upon the results of the O&M activities completed, evaluated

the ability of each component of the remedy subject to O&M requirements to perform as designed/expected.

D. O&M Deficiencies - Identify any deficiencies in complying with the O&M plan during this PRR reporting period.

E. Conclusions and Recommendations for Improvements - Provide an overall conclusion regarding O&M for the site and identify any suggested improvements requiring changes in the O&M Plan.

VII. Overall PRR Conclusions and Recommendations

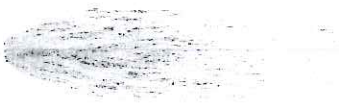
A. Compliance with SMP - For each component of the SMP (i.e., IC/EC, monitoring, O&M), summarize;
   1. whether all requirements of each plan were met during the reporting period
   2. any requirements not met
   3. proposed plans and a schedule for coming into full compliance.

B. Performance and Effectiveness of the Remedy - Based upon your evaluation of the components of the SMP, form conclusions about the performance of each component and the ability of the remedy to achieve the remedial objectives for the site.

C. Future PRR Submittals
   1. Recommend, with supporting justification, whether the frequency of the submittal of PRRs should be changed (either increased or decreased).
   2. If the requirements for site closure have been achieved, contact the Departments Project Manager for the site to determine what, if any, additional documentation is needed to support a decision to discontinue site management.

VIII. Additional Guidance

Additional guidance regarding the preparation and submittal of an acceptable PRR can be obtained from the Departments Project Manager for the site.



Appendix E
NYSDEC Letter

City of North Tonawanda
Department of Engineering
City Hall, 216 Payne Avenue
North Tonawanda, NY 14120-5493
www.northtonawanda.org

Dale W. Marshall, P. E.
City Engineer
Phone: (716) 695-8565
Fax: (716) 695-8568

January 14, 2020

Mr. Brian Sadowski
New York State Department of Environmental Conservation
270 Michigan Avenue
Buffalo, NY 14203

Re: 815 River Road Site (Site Number B00178)
City of North Tonawanda

Dear Mr. Sadowski:

The City of North Tonawanda would like to express our concerns and pursue the following approach for the future management of the 815 River Road Site.

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 Right-of-Way (ROW). The excavation of impacted material near the ROW was limited due to the close proximity of utilities and 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. Analytical test results were reported below the Restricted Commercial Use Soil Cleanup Objectives as presented on Table 3.1 of Final Engineering Report for 2007-2008 Interim Remedial Measures dated June 2008.

During the IRM, it was evident that impacted soils remained at the final location of the southwest excavated wall. The removal of 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. As presented in Table 3.1, confirmatory soil sample CCS-5 test results detected the presence of volatile organic compounds (VOCs). 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 knowingly that groundwater would be impacted and that groundwater test results could be above groundwater standards. As reported in 2015, 2016, 2017, and 2018 Periodic Review. Groundwater Monitoring and Sampling Annual Reporting, a number of VOCs were detected in groundwater equal to or exceed the groundwater standard. As reported, local

groundwater movement at the site is toward the Niagara River and the City's combined River Road sewer. This sewer should act as an interceptor of groundwater ultimately discharging to the City's WWTP and current carbon treatment.

As stated previously, the former City owned 815 River Road Site was remediated in its entirety, where all contaminated soils were removed and replaced with clean fill to the areal extent of the limits of excavation. After the site was released as remediated (clean) by NYSDEC, the property was sold to Metzger Removal to operate their crushed concrete business, achieving the State's Brownfields Program goal of remediation and reuse of viable property. The remaining impacted soils appear to be located at and under NYSDOT Route 265, River Road ROW, which is State, and not City property. The impacted groundwater is the result of the presence of impacted soils located on the State of New York's River Road property.

The City of North Tonawanda acquired the 815 River Road property (former Burgess Motors) in an In Rem tax foreclosure and was not the generator of the pollution found on site. The City voluntarily chose to clean up the site with the State's assistance, and therefore should not be responsible for the continuing expenses of sampling, testing, monitoring and reporting of whatever limited amount of contamination that remains offsite on State Property. The City proposes to the NYSDEC that future management, annual groundwater sampling and/or any further remediation is not the City's responsibility.

If you have any questions or wish to discuss this proposal further, please feel free to contact me at (716) 695-8565.

Very truly yours,

Dale W. Marshall

Dale W. Marshall, P.E.
City Engineer

Cc: file
Robert G. Ortt, State Senator
Arthur G. Pappas, Mayor
Luke Brown, City Attorney
William Davignon, Water/Wastewater Superintendent
Mark Zellner, Superintendent of Public Works
David Rowlinson, GHD

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