2016 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, Buffalo, New York 14202 USA

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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. 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), tank 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 of additional impact soils to be excavated. Reporting for the site investigation and IRM activities was not provided to the City.

An IRM 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. Confirmatory soil samples were collected from the previously impacted area. After confirmatory soil sampling, analytical test results were reported below the Restricted Commercial Use Soil Cleanup Objectives, and backfill of the excavation was completed.

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815 RIVER ROAD SITE

NORTH TONAWANDA, NEW YORK

FIGURE 1
SITE LOCATION

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 report was completed in January 2008 and selected institutional controls for both impacted soils and groundwater media. The completed 2007 IRM has achieved the SI/RAR reported Restricted Commercial Soil Cleanup Objectives. An environmental easement was administered for the imposition of a deed restriction that requires compliance with an approved Soil Management Plan and the future use of groundwater from the site. The Soil Management Plan dictates deed restrictions that prohibit the installation of potable wells at the site.

1.4 Institutional and Engineering Controls

Institutional controls have been 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 Soil Management Plan (SMP) addresses the excavation procedures for the remaining soils during future redevelopment. The SMP 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 was required the imposition of a deed restriction that requires compliance with the approved SMP and the future use of groundwater from the site. Deed restrictions are to be instituted that prohibit the installation of potable wells at the site. Any future use of groundwater at the site is prohibited. Annually, future owners are required to certify to the NYSDEC that the implemented remedy has been maintained in accordance with the Site Management Plan.

2. Groundwater Monitoring Activities

The Monitoring Plan includes the necessary actions required to ready and maintain the site post construction. This Monitoring Plan includes a description of a long term environmental monitoring program, very 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 would act as the regional discharge zone. This is likely the case in a regional sense. 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 recorded to range in depth between 4 to 5 feet. Standard sewer construction consists of a sewer pipe laid on a gravel pipe 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 sewer trench is then deeper than the top of silty clay unit. Any groundwater emitting 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 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 will be 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 can be dropped from the monitoring program. Annual summary reports are submitted to the NYSDEC.

2.3 Groundwater Monitoring

The 2016 monitoring program at the 815 River Road site consisted of one annual sampling event. Groundwater was sampled from monitoring wells MW-1 and MW-2 on October 21, 2016. The location of groundwater monitoring wells MW-1 and MW-2 are approximately 10 feet from the curb line along the 815 River Road property that bounds River Road. This sampling event represents the fourth event of the groundwater monitoring program. A site plan is presented on Figure 2.

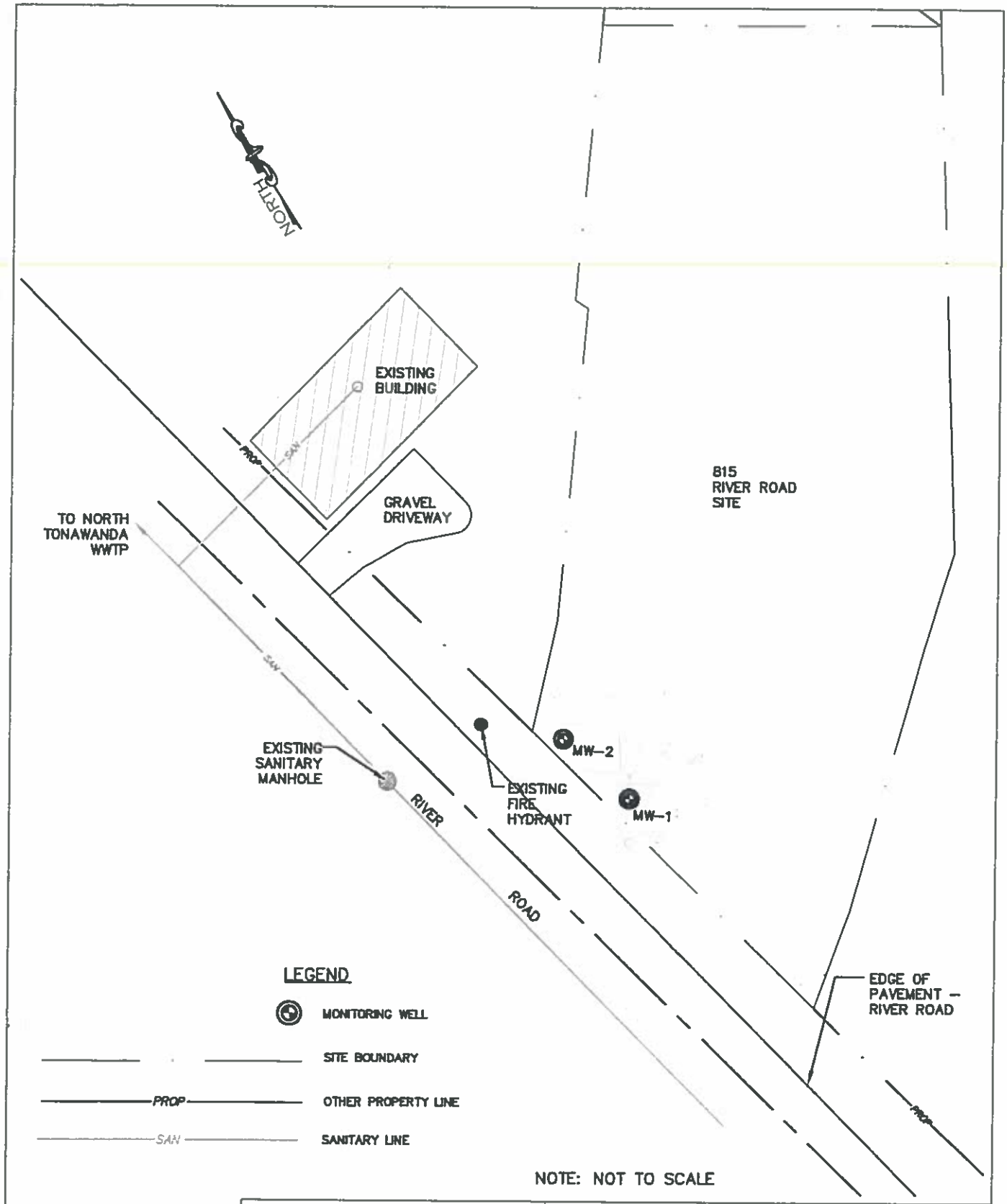
Groundwater sampling of monitoring wells MW-1 and MW-2 was collected using low-flow purging and sampling techniques. Prior to sampling, the monitoring well was purged using a disposable bailer. Groundwater parameters of pH, conductance, dissolved oxygen (DO), temperature, and oxidation-reduction potential (ORP) were recorded. After the field parameters were recorded, groundwater sampling was collected with a disposable bailer into sample containers provided by the testing laboratory. Groundwater elevation data was recorded. Purge water generated from each monitoring well 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 a chain of custody to ESC Lab Sciences for analysis of Volatile Organic Compounds (VOCs) by USEPA SW-846 Method 8260 TCL. 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.

3. Groundwater Monitoring Results

3.1 2016 Groundwater Monitoring

This section includes the analytical test results of the 2016 annual groundwater sampling event and is 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.



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815 RIVER ROAD SITE
NORTH TONAWANDA, NEW YORK

FIGURE 2
SITE PLAN

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
1,1,1-Trichloroethane	5	µg/L	ND	ND	ND	ND
1,1,2,2-Tetrachloroethane	5	µg/L	ND	ND	ND	ND
1,1,2-Trichlo-1,2,2-trifluoroethane	5	µg/L	ND	ND	ND	ND
1,1,2-Trichloroethane	1	µg/L	ND	ND	ND	ND
1,1-Dichloroethane	5	µg/L	ND	ND	ND	ND
1,1-Dichloroethene	5	µg/L	ND	ND	ND	ND
1,2,3-Trichlorobenzene	5	µg/L	-	ND	**0.41J**	ND
1,2,4-Trichlorobenzene	5	µg/L	-	ND	ND	ND
1,2-Dibromo-3-Chloropropane DBCP	0.04	µg/L	-	ND	ND	ND
1,2-Dibromoethane (EDB)	NE	µg/L	-	ND	ND	ND
1,2-Dichlorobenzene	3	µg/L	-	ND	ND	ND
1,2-Dichloroethane	0.6	µg/L	ND	ND	ND	ND
1,2-Dichloropropane	5	µg/L	ND	ND	ND	ND
1,3-Dichlorobenzene	3	µg/L	-	ND	ND	ND
1,4-Dichlorobenzene	3	µg/L	-	ND	ND	ND
2-Hexanone	50	µg/L	ND	ND	ND	ND
Acetone	50	µg/L	ND	ND	**88.8**	ND
Benzene	1	µg/L	ND	ND	ND	ND
Bromoform	50	µg/L	ND	ND	ND	ND
Bromomethane	5	µg/L	ND	ND	ND	ND
Bromodichloromethane	50	µg/L	ND	ND	ND	ND
Bromochloromethane	5	µg/L	-	ND	ND	ND
Carbon disulfide	60	µg/L	ND	ND	ND	ND
Carbon tetrachloride	5	µg/L	ND	ND	ND	ND
Chlorobenzene	5	µg/L	ND	ND	ND	ND
Chloroethane	5	µg/L	ND	ND	ND	ND
Chloroform	7	µg/L	ND	ND	ND	ND
Chloromethane	NE	µg/L	ND	ND	ND	ND
cis-1,2-Dichloroethene	5	µg/L	ND	ND	ND	ND
cis-1,3-Dichloropropene	0.40	µg/L	ND	ND	ND	ND
Cyclohexane	NE	µg/L	ND	**82**	ND	**8.64**
Dibromochloromethane	50	µg/L	ND	ND	-	-
Chlorodibromomethane	NE	µg/L	-	ND	ND	ND
Dichlorodifluoromethane	5	µg/L	-	ND	ND	ND
Ethylbenzene	5	µg/L	**2J**	**18**	**8.6**	**17.0**
Isopropylbenzene	5	µg/L	ND	**33**	**19.0**	**31.7**
Methyl acetate	NE	µg/L	-	ND	ND	ND
Methyl Ethyl Ketone (MEK)	50	µg/L	-	ND	ND	ND
Methylcyclohexane	NE	µg/L	ND	**15**	ND	ND
Methylene chloride	5	µg/L	ND	ND	ND	ND
4-Methyl 2-Pentanone	NE	µg/L	-	-	ND	ND
Methyl-t-Butyl Ether (MTBE)	10	µg/L	-	ND	-	-
Methyl tert-butyl esther	NE	µg/L	-	ND	ND	ND
m,p-Xylene	5	µg/L	**4J**	-	-	-
o-Xylene	5	µg/L	ND	-	-	-
Styrene	5	µg/L	ND	ND	ND	ND
Tetrachloroethene	5	µg/L	ND	ND	ND	ND
Toluene	5	µg/L	ND	ND	ND	ND
Total Xylenes	5	µg/L	**4J**	ND	ND	ND
trans-1, 2-Dichloroethene	5	µg/L	ND	ND	ND	ND
trans-1,3-Dichloropropene	0.4	µg/L	ND	ND	ND	ND
Trichloroethene	5	µg/L	ND	ND	ND	ND
Trichlorofluoromethane	5	µg/L	-	ND	ND	ND
Vinyl Chloride	2	µg/L	ND	ND	ND	ND
Total VOCs		µg/L	6	148	28	57
Total VOCs		mg/L	0.006	0.148	0.028	0.057

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.
- = 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
1,1,1-Trichloroethane	5	µg/L	ND	ND	ND	ND
1,1,2,2-Tetrachloroethane	5	µg/L	ND	ND	ND	ND
1,1,2-Trichlo-1,2,2-trifluoroethane	5	µg/L	ND	ND	ND	ND
1,1,2-Trichloroethane	1	µg/L	ND	ND	ND	ND
1,1-Dichloroethane	5	µg/L	ND	ND	ND	ND
1,1-Dichloroethene	5	µg/L	ND	ND	ND	ND
1,2,3-Trichlorobenzene	5	µg/L	-	ND	ND	ND
1,2,4-Trichlorobenzene	5	µg/L	-	ND	ND	ND
1,2-Dibromo-3-Chloropropane DBCP	0.04	µg/L	-	ND	ND	ND
1,2-Dibromoethane (EDB)	NE	µg/L	-	ND	ND	ND
1,2-Dichlorobenzene	3	µg/L	-	ND	ND	ND
1,2-Dichloroethane	0.6	µg/L	ND	ND	ND	ND
1,2-Dichloropropane	5	µg/L	**40J**	ND	ND	ND
1,3-Dichlorobenzene	3	µg/L	-	ND	ND	ND
1,4-Dichlorobenzene	3	µg/L	-	ND	ND	ND
2-Hexanone	50	µg/L	ND	ND	ND	ND
Acetone	50	µg/L	ND	ND	**188J**	ND
Benzene	1	µg/L	**140**	**560**	**151**	**280J6**
Bromoform	50	µg/L	ND	ND	ND	ND
Bromomethane	5	µg/L	ND	ND	ND	ND
Bromodichloromethane	50	µg/L	ND	ND	ND	ND
Bromochloromethane	5	µg/L	-	ND	ND	ND
Carbon disulfide	60	µg/L	ND	ND	ND	ND
Carbon tetrachloride	5	µg/L	ND	ND	ND	ND
Chlorobenzene	5	µg/L	ND	ND	ND	ND
Chloroethane	5	µg/L	ND	ND	ND	ND
Chloroform	7	µg/L	ND	ND	ND	ND
Chloromethane	NE	µg/L	ND	ND	ND	ND
cis-1,2-Dichloroethene	5	µg/L	ND	ND	ND	ND
cis-1,3-Dichloropropene	0.40	µg/L	ND	ND	ND	ND
Cyclohexane	NE	µg/L	ND	**210**	**71.2**	**169**
Dibromochloromethane	50	µg/L	ND	ND	-	-
Chlorodibromomethane	NE	µg/L	-	ND	ND	ND
Dichlorodifluoromethane	5	µg/L	-	ND	ND	ND
Ethylbenzene	5	µg/L	**460**	**1,500**	**878V**	**2030**
Isopropylbenzene	5	µg/L	ND	**220**	**115**	**277J6**
Methyl acetate	NE	µg/L	-	ND	ND	ND
Methyl Ethyl Ketone (MEK)	50	µg/L	-	ND	ND	ND
Methylcyclohexane	NE	µg/L	ND	**15**	**19.8**	**58.9**
Methylene chloride	5	µg/L	ND	ND	ND	ND
4-Methyl 2-Pentanone	NE	µg/L	-	-	ND	ND
Methyl-t-Butyl Ether (MTBE)	10	µg/L	-	ND	-	-
Methyl tert-butyl esther	NE	µg/L	-	ND	ND	ND
m,p-Xylene	5	µg/L	**480**	-	-	-
o-Xylene	5	µg/L	**40J**	-	-	-
Styrene	5	µg/L	ND	ND	ND	ND
Tetrachloroethene	5	µg/L	ND	ND	ND	ND
Toluene	5	µg/L	**70J**	ND	**19.1J**	**39.4**
Total Xylenes	5	µg/L	-	**840**	**424**	**620**
trans-1, 2-Dichloroethene	5	µg/L	ND	ND	ND	ND
trans-1,3-Dichloropropene	0.4	µg/L	ND	ND	ND	ND
Trichloroethene	5	µg/L	ND	ND	ND	ND
Trichlorofluoromethane	5	µg/L	-	ND	ND	ND
Vinyl Chloride	2	µg/L	ND	ND	ND	ND
Total VOCs		µg/L	1,230	3,345	1,866	3,474
Total VOCs		mg/L	1.230	3.345	1.866	3.474

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

Table 2 – 2016 Field Groundwater Parameters

Parameter	Monitoring Well Location	
	MW-1	MW-2
Temperature (°C)	19.58	19.42
pH	7.43	7.20
Conductivity (mS/cm)	1.88	2.17
Dissolved Oxygen (mg/L)	7.6	6.15
Turbidity (NTUs)(1)	263	322
ORP (mV)	-82	-92

Data Usability Summary Reporting completed by Vali-Data of WNY, LLC on December 1, 2016 is presented in Appendix C. The QA/QC measurements examined for the data were within method specified or laboratory derived limits. No data were rejected as a result of the data validation.

Groundwater in the southwest corner of the site has been impacted with concentrations of VOCs. VOC concentrations were detected in groundwater collected from monitoring wells MW-1 and MW-2 that exceed groundwater standards. VOC concentrations detected in groundwater from the sampling conducted in 2007, 2012, 2015 and the current sampling event on October 21, 2016 were compared to determine a trending anaylsis.

3.2 Monitoring Well MW-1 Test Results

Groundwater test results from monitoring well MW-1 detected an increase in total VOC concentrations reported in 2007 of 6 µg/L to 2012 of 148 µg/L and a decrease reported in 2015 of 28 µg/L followed by 57 µg/L in 2016. Groundwater tested during the 2012, 2015 and 2016 sampling events detected VOC concentrations that exceeded the groundwater standard included: ethylbenzene and isopropylbenzene. A trending graph of detected VOCs as reported for 2007, 2012, 2015 and 2016 is presented on Figure 3. Concentrations of cyclohexane were detected in 2012 and 2016; however, no groundwater quality standard is established.

3.3 Monitoring Well MW-2 Test Results

Groundwater test results from monitoring well MW-2 detected an increase in total VOC concentrations reported in 2007 of 1,230 µg/L to 2012 of 3,345 µg/L and a decrease reported in 2015 of 1,866 µg/L followed by 3,474 µg/L in 2016. Groundwater tested during the 2007, 2012, 2015 and 2016 sampling events detected VOC concentrations that exceeded the groundwater standard. A trending graph of detected VOCs as reported for 2007, 2012, 2015 and 2016 is presented on Figure 4.

- Compounds that exceeded the groundwater standard in 2015 and 2016 included: benzene, ethylbenzene, isopropylbenzene, toluene, total xylenes. At the request of DEC, acetone was not included as this compound is a common lab contaminant.
- Compounds that exceeded the groundwater standard from the 2012 sampling event included: benzene, ethylbenzene, isopropylbenzene, and total xylenes.

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

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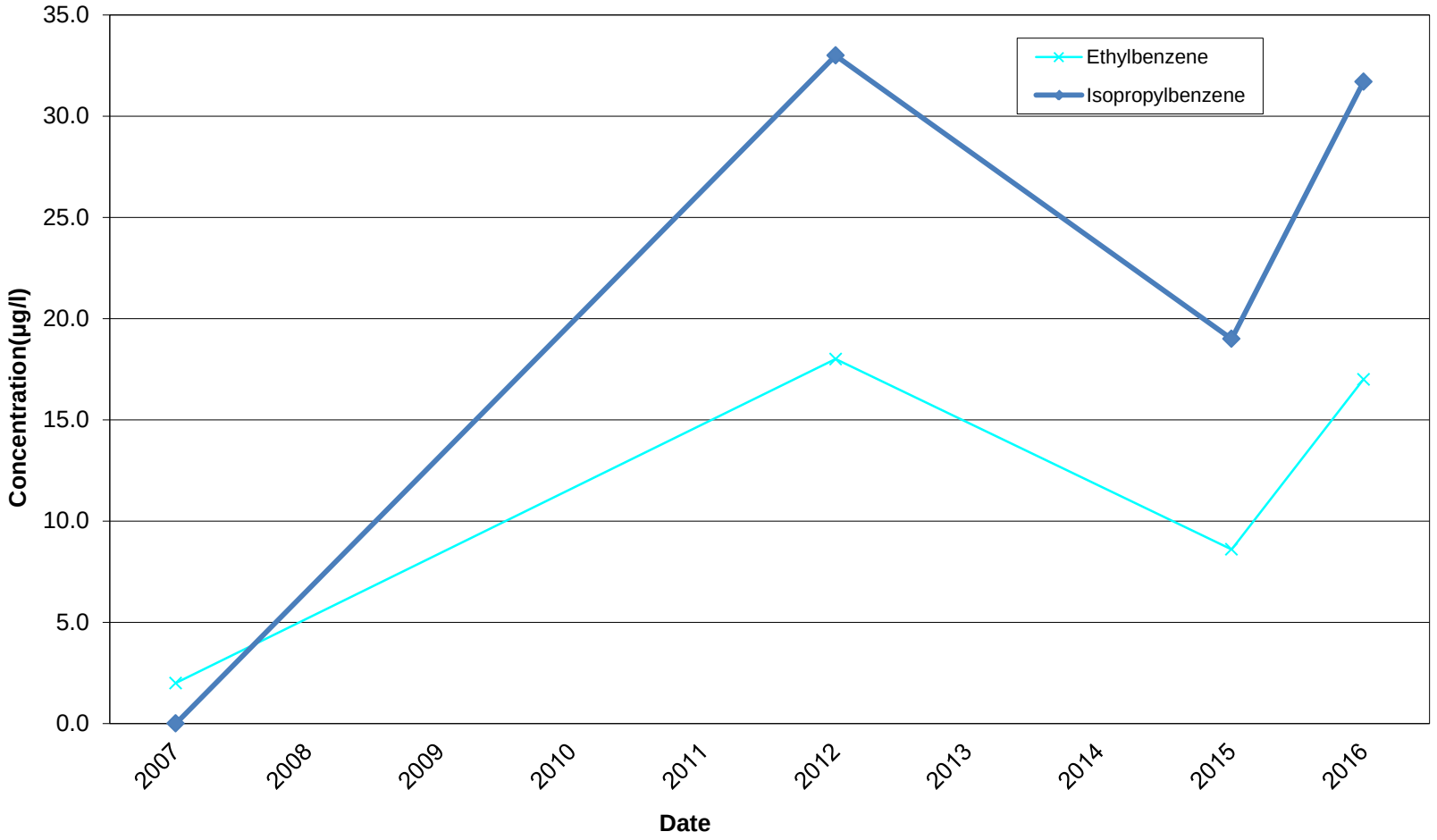
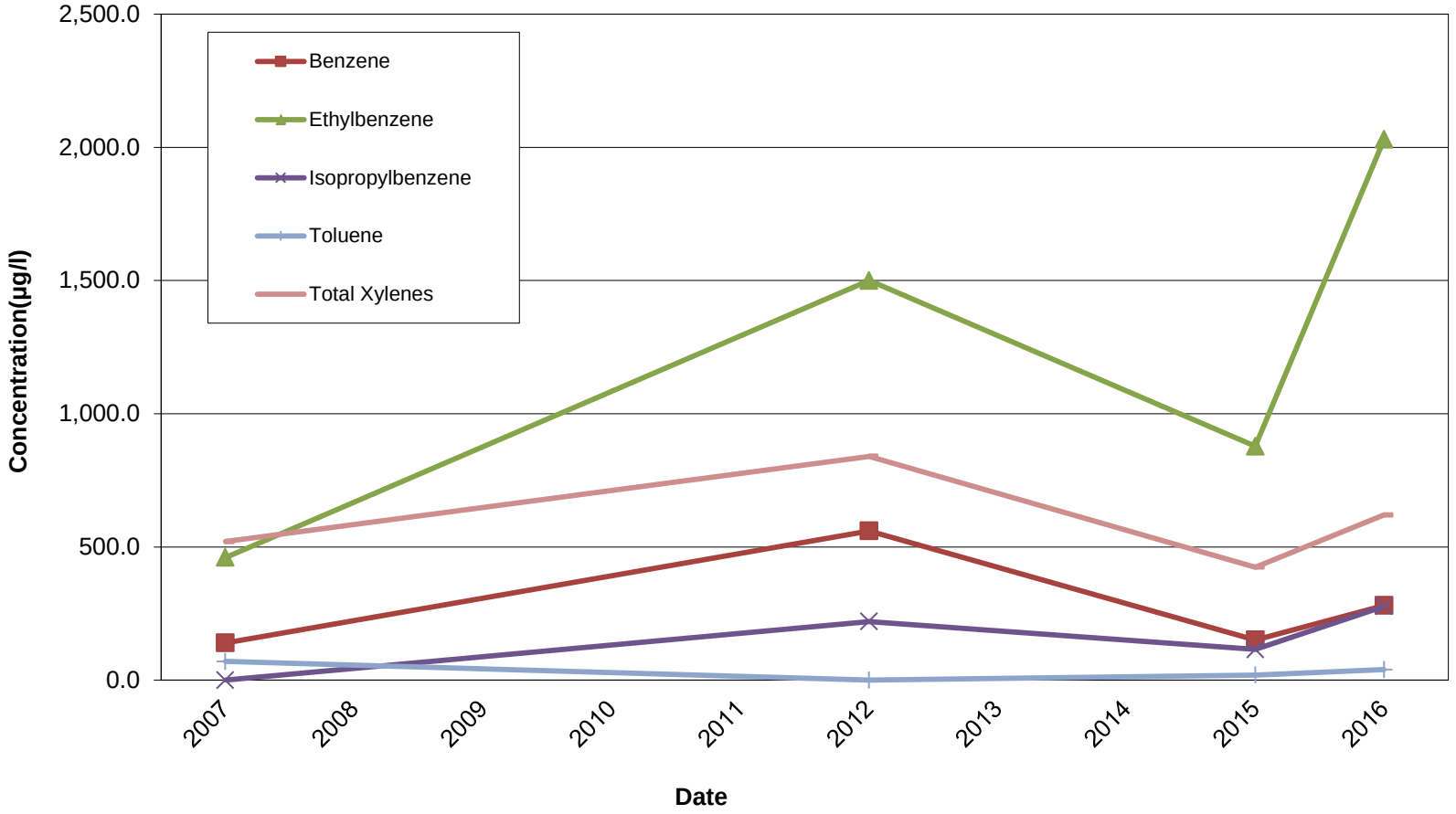


FIGURE 4
Groundwater VOC Concentrations in MW-2 vs. Time

815 River Road Site - North Tonawanda, NY
2016 Periodic Review Report



- Detected compounds from the 2015 sampling event that increased in concentrations from the 2012 sampling event include toluene.
- Detected compounds from the 2016 sampling event that increased in concentrations from the 2015 sampling event included: benzene, ethylbenzene, isopropylbenzene, toluene and total xylenes.

Concentrations of cyclcohexane and methylcyclohexane were detected in 2015 and 2016; however, no groundwater quality standard is established.

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 concentrations that appeared to be the most impacting included xylene and ethylbenzene. Semi-volatile concentrations to a lesser degree were detected to include 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 sewer trench is then deeper than the top of silty clay unit. Any groundwater emitting from the site should

follow the top of clay and infiltrate into the gravel backfilled sewer trench. Once in the trench, groundwater will enter the sewer through infiltration and 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 consisting of existing non-impacted fill soils overlay the remaining impacted soils located within the River Road ROW. Soil borings completed near the River Road ROW have been logged to report 3-6 feet of non-impacted soil overlays the residually impacted soils. The existing non-impacted soils provides 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, as described in Section 4, 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 of 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 2-3 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 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), 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 360-1.2(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, 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 SCOCLs, 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 crushing recycling operation. Concrete, brick and other materials are hauled to the site from demolition sites in the surrounding area, 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 2016.

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

Analytical testing from the 2016 sampling event detected the following VOCs in groundwater sampled from monitoring wells MW-1 and MW-2: benzene (MW-2), ethylbenzene (MW-1 and MW-2), isopropylbenzene (MW-1 and MW-2), toluene (MW-2) and total xylenes (MW-2) at concentrations that were equal to or exceed the groundwater standard. Trend analysis of VOCs comparing site historical analytical test results as reported in dated 2007, 2012, 2015, and 2016 indicates that VOC concentrations are fluctuating in groundwater at both monitoring wells with exception for acetone which was only detected in groundwater sampled from monitoring well MW-2 in 2015. As directed by DEC, acetone was excluded from trend figure and VOC totals as this compound is a common lab contaminant.

The concentrations of ethylbenzene at monitoring well MW-1 have fluctuated over the reported four sampling events. 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 2016 sampling event detected the concentration of ethylbenzene at 17.0 µg/L, which represents an increase from 8.6 µg/L reported in 2015 after the decrease from that of 18 µg/L. The long term trend for ethylbenzene indicates a fluctuation in concentration at the monitoring well MW-1 location.

Concentrations of isopropylbenzene at monitoring well MW-1 have similarly fluctuated over the reported four sampling events. Isopropylbenzene was not detected at monitoring well MW-1 in 2007. Test results from the 2015 sampling event detected concentrations of isopropylbenzene at19 µg/L, which represents a 42 percent decrease as reported in 2012 of 33 µg/L; however, the 2016 sampling event detected an increase to 31.7 µg/L. The long term trend for isopropylbenzene indicates a fluctuation in concentrations detected in groundwater from monitoring well MW-1.

Concentrations of benzene at monitoring well MW-2 have fluctuated over the reported four sampling events. In 2012, concentrations of benzene were detected at 560 µg/L, which represented a 300 percent increase as reported in 2007 that detected benzene at 140 µg/L Test results from the 2015 sampling event detected the concentration of benzene at 151 µg/L, which represents a 73 percent decrease as reported in 2012 of 560 µgL; and test results from the most recent 2016 sampling event detected the concentration of benzene at 280 µg/L, which represents an 85 percent increase from 2015 test results. The long term trend for benzene indicates fluctuation with a decrease in concentration at the monitoring well MW-2 location.

Concentrations of toluene at monitoring well MW-2 have fluctuated over the reported four sampling events. The 2007 sampling event detected concentrations of toluene at an estimated 70 µg/L (ppb). Concentrations of toluene were not detected in 2012. Test results from the 2015 sampling event detected the concentrations of toluene at 19.1 µg/L, which represents a 73 percent decrease as reported in 2007; and test results from the most recent 2016 sampling event detected the concentration of toluene at 39.4 µg/L, which represents a 100 percent increase from 2015 test results. The long term trend for toluene indicates a decrease in concentration at the monitoring well MW-2 location.

Concentrations of total xylenes at monitoring well MW-2 have fluctuated over the reported four sampling events. Total xylenes were detected in the groundwater at monitoring well MW-2 in 2007

at 520 µg/L. The 2012 concentrations of total xylenes were detected at 840 µg/L representing a 62 percent increase as reported in 2007. In 2015 detected total xylenes concentrations in groundwater at monitoring well MW-2 at 424 µg/L represented a 50 percent decrease as reported in 2015; and, in 2016 detected total xylenes concentrations in groundwater at monitoring well MW-2 at 620 µg/L represented a 46 percent increase as reporting in 2015. The long term trend for total xylenes indicates fluctuation with an increase in concentration at the monitoring well MW-2 location over the most recent monitoring period.

Total VOCs concentrations detected in groundwater increased in both monitoring wells MW-1 and MW-2 from 2007 to 2012: from 6 µg/L to 148 µg/L in monitoring well MW-1 and from 1,230 µg/L to 3,345 µg/L in monitoring well MW-2. Concentrations of total VOCs decreased in both locations from 2012 to 2015: from 148 µg/L to 28 µg/L in monitoring well MW-1 and from 3,345 µg/L to 1,866 µg/L in monitoring well MW-2. However, concentrations of total VOCs have increased in both locations from 2015 to 2016; from 28 µg/L to 57 µg/L in monitoring well MW-1 and from 1,866 µg/L to 3,474 µg/L in monitoring well MW-2.

Appendices

Appendix A
Groundwater Sampling Field Logs

GHD INC.
GROUNDWATER FIELD SAMPLING RECORD

SITE 815 River Road DATE 10/21/16

Sampler: Dave Rowlinson SAMPLE ID MW-1

Depth of well (from top of casing).....	14.33 ft	EL	562.71
Initial static water level (from top of casing)....	7.4 ft	EL	569.6
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:	6.9	ft. of water x .16 =	1.11 gallons
Bailer	X	>>> No. of bails		3 in. casing:		ft. of water x .36 =	gallons

Well Volume Calculation

Volume of water removed 3.33 gals.

> 3 volumes: **yes** no

dry: yes **no**

Field Tests:

Temp:	19.58	C
pH	7.43	
Conductivity	1.88	mS/cm
DO	7.6	mg/L
Turbidity	263	NTUs
Oxidation Reduction Potential (ORP)	-82	mV

Sampling: Time: 2:00 PM

Sampling Method:

Peristaltic Pump	
Disposable Bailer	X
Disposable Tubing	

Observations:

Weather/Temperature: Rain, 55° F

Physical Appearance and Odor of Sample: Slight chemical odor; clear then grayish color, turbid.

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

GHD INC.
GROUNDWATER FIELD SAMPLING RECORD

SITE 815 River Road DATE 10/21/16

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)....	7.3 ft	EL	569.7
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:	7.0	ft. of water x .16 =	1.12 gallons
Bailer	X	>>> No. of bails		3 in. casing:		ft. of water x .36 =	gallons

Well Volume Calculation

Volume of water removed 3.37 gals.

> 3 volumes: **yes** no

dry: yes **no**

Field Tests:

Temp:	19.42	C
pH	7.20	
Conductivity	2.17	mS/cm
DO	6.15	mg/L
Turbidity	322	NTUs
Oxidation Reduction Potential (ORP)	-92	mV

Sampling: Time: 2:00 PM

Sampling Method:

Peristaltic Pump	
Disposable Bailer	X
Disposable Tubing	

Observations:

Weather/Temperature: Rain, 55° F

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

Comments: Well pad has heaved.

Appendix B
Analytical Test Results

ANALYTICAL REPORT

October 31, 2016

GHD

Sample Delivery Group:	L867820
Samples Received:	10/22/2016
Project Number:	8612191-01
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
Technical Service Representative

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by ESC is performed per guidance provided in laboratory standard operating procedures: 060302, 060303, and 060304.

TABLE OF CONTENTS

MW-1 L867820-01 GW

Collected by: Dave Rowlinson | Collected date/time: 10/21/16 14:00 | Received date/time: 10/22/16 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Volatile Organic Compounds (GC/MS) by Method 8260C	WG920488	1	10/28/16 15:00	10/28/16 15:00	DAH

MW-2 L867820-02 GW

Collected by: Dave Rowlinson | Collected date/time: 10/21/16 14:00 | Received date/time: 10/22/16 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Volatile Organic Compounds (GC/MS) by Method 8260C	WG920488	5	10/25/16 16:32	10/25/16 16:32	BMB
Volatile Organic Compounds (GC/MS) by Method 8260C	WG920488	50	10/28/16 16:02	10/28/16 16:02	DAH

TRIP BLANK L867820-03 GW

Collected by: Dave Rowlinson | Collected date/time: 10/21/16 14:00 | Received date/time: 10/22/16 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Volatile Organic Compounds (GC/MS) by Method 8260C	WG920488	1	10/25/16 17:53	10/25/16 17:53	BMB

FD@ MW-1 L867820-04 GW

Collected by: Dave Rowlinson | Collected date/time: 10/21/16 14:00 | Received date/time: 10/22/16 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Volatile Organic Compounds (GC/MS) by Method 8260C	WG920488	1	10/28/16 15:21	10/28/16 15:21	DAH

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times. 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
Technical Service Representative

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	J3	10.0	50.0	1	10/28/2016 15:00	WG920488
Benzene	U		0.331	1.00	1	10/28/2016 15:00	WG920488
Bromochloromethane	U		0.520	1.00	1	10/28/2016 15:00	WG920488
Bromodichloromethane	U		0.380	1.00	1	10/28/2016 15:00	WG920488
Bromoform	U		0.469	1.00	1	10/28/2016 15:00	WG920488
Bromomethane	U		0.866	5.00	1	10/28/2016 15:00	WG920488
Carbon disulfide	U		0.275	1.00	1	10/28/2016 15:00	WG920488
Carbon tetrachloride	U		0.379	1.00	1	10/28/2016 15:00	WG920488
Chlorobenzene	U		0.348	1.00	1	10/28/2016 15:00	WG920488
Chlorodibromomethane	U		0.327	1.00	1	10/28/2016 15:00	WG920488
Chloroethane	U		0.453	5.00	1	10/28/2016 15:00	WG920488
Chloroform	U		0.324	5.00	1	10/28/2016 15:00	WG920488
Chloromethane	U		0.276	2.50	1	10/28/2016 15:00	WG920488
Cyclohexane	8.64		0.390	1.00	1	10/28/2016 15:00	WG920488
1,2-Dibromo-3-Chloropropane	U		1.33	5.00	1	10/28/2016 15:00	WG920488
1,2-Dibromoethane	U		0.381	1.00	1	10/28/2016 15:00	WG920488
1,2-Dichlorobenzene	U		0.349	1.00	1	10/28/2016 15:00	WG920488
1,3-Dichlorobenzene	U		0.220	1.00	1	10/28/2016 15:00	WG920488
1,4-Dichlorobenzene	U		0.274	1.00	1	10/28/2016 15:00	WG920488
Dichlorodifluoromethane	U		0.551	5.00	1	10/28/2016 15:00	WG920488
1,1-Dichloroethane	U		0.259	1.00	1	10/28/2016 15:00	WG920488
1,2-Dichloroethane	U		0.361	1.00	1	10/28/2016 15:00	WG920488
1,1-Dichloroethene	U		0.398	1.00	1	10/28/2016 15:00	WG920488
cis-1,2-Dichloroethene	U		0.260	1.00	1	10/28/2016 15:00	WG920488
trans-1,2-Dichloroethene	U		0.396	1.00	1	10/28/2016 15:00	WG920488
1,2-Dichloropropane	U		0.306	1.00	1	10/28/2016 15:00	WG920488
cis-1,3-Dichloropropene	U		0.418	1.00	1	10/28/2016 15:00	WG920488
trans-1,3-Dichloropropene	U		0.419	1.00	1	10/28/2016 15:00	WG920488
Ethylbenzene	17.0		0.384	1.00	1	10/28/2016 15:00	WG920488
2-Hexanone	U	J3	3.82	10.0	1	10/28/2016 15:00	WG920488
Isopropylbenzene	31.7		0.326	1.00	1	10/28/2016 15:00	WG920488
2-Butanone (MEK)	U	J3	3.93	10.0	1	10/28/2016 15:00	WG920488
Methyl Acetate	U		4.30	20.0	1	10/28/2016 15:00	WG920488
Methyl Cyclohexane	U		0.380	1.00	1	10/28/2016 15:00	WG920488
Methylene Chloride	U		1.00	5.00	1	10/28/2016 15:00	WG920488
4-Methyl-2-pentanone (MIBK)	U	J3	2.14	10.0	1	10/28/2016 15:00	WG920488
Methyl tert-butyl ether	U		0.367	1.00	1	10/28/2016 15:00	WG920488
Styrene	U		0.307	1.00	1	10/28/2016 15:00	WG920488
1,1,2,2-Tetrachloroethane	U		0.130	1.00	1	10/28/2016 15:00	WG920488
Tetrachloroethene	U		0.372	1.00	1	10/28/2016 15:00	WG920488
Toluene	U		0.780	5.00	1	10/28/2016 15:00	WG920488
1,2,3-Trichlorobenzene	U		0.230	1.00	1	10/28/2016 15:00	WG920488
1,2,4-Trichlorobenzene	U		0.355	1.00	1	10/28/2016 15:00	WG920488
1,1,1-Trichloroethane	U		0.319	1.00	1	10/28/2016 15:00	WG920488
1,1,2-Trichloroethane	U		0.383	1.00	1	10/28/2016 15:00	WG920488
Trichloroethene	U	J3	0.398	1.00	1	10/28/2016 15:00	WG920488
Trichlorofluoromethane	U		1.20	5.00	1	10/28/2016 15:00	WG920488
1,1,2-Trichlorotrifluoroethane	U		0.303	1.00	1	10/28/2016 15:00	WG920488
Vinyl chloride	U		0.259	1.00	1	10/28/2016 15:00	WG920488
Xylenes, Total	U		1.06	3.00	1	10/28/2016 15:00	WG920488
(S) Toluene-d8	*98.0*			*90.0-115*		*10/28/2016 15:00*	WG920488
(S) Dibromofluoromethane	*92.9*			*79.0-121*		*10/28/2016 15:00*	WG920488
(S) a,a,a-Trifluorotoluene	*105*			*90.4-116*		*10/28/2016 15:00*	WG920488
(S) 4-Bromofluorobenzene	*93.0*			*80.1-120*		*10/28/2016 15:00*	WG920488

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	J3	50.0	250	5	10/25/2016 16:32	WG920488
Benzene	280	J6	1.66	5.00	5	10/25/2016 16:32	WG920488
Bromochloromethane	U	J6	2.60	5.00	5	10/25/2016 16:32	WG920488
Bromodichloromethane	U	J3 J6	1.90	5.00	5	10/25/2016 16:32	WG920488
Bromoform	U	J6	2.34	5.00	5	10/25/2016 16:32	WG920488
Bromomethane	U	J3	4.33	25.0	5	10/25/2016 16:32	WG920488
Carbon disulfide	U		1.38	5.00	5	10/25/2016 16:32	WG920488
Carbon tetrachloride	U		1.90	5.00	5	10/25/2016 16:32	WG920488
Chlorobenzene	U	J6	1.74	5.00	5	10/25/2016 16:32	WG920488
Chlorodibromomethane	U	J6	1.64	5.00	5	10/25/2016 16:32	WG920488
Chloroethane	U		2.26	25.0	5	10/25/2016 16:32	WG920488
Chloroform	U		1.62	25.0	5	10/25/2016 16:32	WG920488
Chloromethane	U		1.38	12.5	5	10/25/2016 16:32	WG920488
Cyclohexane	169		1.95	5.00	5	10/25/2016 16:32	WG920488
1,2-Dibromo-3-Chloropropane	U	J6	6.65	25.0	5	10/25/2016 16:32	WG920488
1,2-Dibromoethane	U	J6	1.90	5.00	5	10/25/2016 16:32	WG920488
1,2-Dichlorobenzene	U	J6	1.74	5.00	5	10/25/2016 16:32	WG920488
1,3-Dichlorobenzene	U	J6	1.10	5.00	5	10/25/2016 16:32	WG920488
1,4-Dichlorobenzene	U	J3 J6	1.37	5.00	5	10/25/2016 16:32	WG920488
Dichlorodifluoromethane	U		2.76	25.0	5	10/25/2016 16:32	WG920488
1,1-Dichloroethane	U	J6	1.30	5.00	5	10/25/2016 16:32	WG920488
1,2-Dichloroethane	U	J6	1.80	5.00	5	10/25/2016 16:32	WG920488
1,1-Dichloroethene	U		1.99	5.00	5	10/25/2016 16:32	WG920488
cis-1,2-Dichloroethene	U	J3 J6	1.30	5.00	5	10/25/2016 16:32	WG920488
trans-1,2-Dichloroethene	U	J6	1.98	5.00	5	10/25/2016 16:32	WG920488
1,2-Dichloropropane	U	J6	1.53	5.00	5	10/25/2016 16:32	WG920488
cis-1,3-Dichloropropene	U	J6	2.09	5.00	5	10/25/2016 16:32	WG920488
trans-1,3-Dichloropropene	U	J6	2.10	5.00	5	10/25/2016 16:32	WG920488
Ethylbenzene	2030		19.2	50.0	50	10/28/2016 16:02	WG920488
2-Hexanone	U	J3 J6	19.1	50.0	5	10/25/2016 16:32	WG920488
Isopropylbenzene	277	J6	1.63	5.00	5	10/25/2016 16:32	WG920488
2-Butanone (MEK)	U	J3	19.6	50.0	5	10/25/2016 16:32	WG920488
Methyl Acetate	U		21.5	100	5	10/25/2016 16:32	WG920488
Methyl Cyclohexane	58.9		1.90	5.00	5	10/25/2016 16:32	WG920488
Methylene Chloride	U	J6	5.00	25.0	5	10/25/2016 16:32	WG920488
4-Methyl-2-pentanone (MIBK)	U	J3 J6	10.7	50.0	5	10/25/2016 16:32	WG920488
Methyl tert-butyl ether	U	J6	1.84	5.00	5	10/25/2016 16:32	WG920488
Styrene	U	J6	1.54	5.00	5	10/25/2016 16:32	WG920488
1,1,2,2-Tetrachloroethane	U	J6	0.650	5.00	5	10/25/2016 16:32	WG920488
Tetrachloroethene	U		1.86	5.00	5	10/25/2016 16:32	WG920488
Toluene	39.4	J6	3.90	25.0	5	10/25/2016 16:32	WG920488
1,2,3-Trichlorobenzene	U	J6	1.15	5.00	5	10/25/2016 16:32	WG920488
1,2,4-Trichlorobenzene	U	J6	1.78	5.00	5	10/25/2016 16:32	WG920488
1,1,1-Trichloroethane	U		1.60	5.00	5	10/25/2016 16:32	WG920488
1,1,2-Trichloroethane	U	J6	1.92	5.00	5	10/25/2016 16:32	WG920488
Trichloroethene	U	J3	1.99	5.00	5	10/25/2016 16:32	WG920488
Trichlorofluoromethane	U		6.00	25.0	5	10/25/2016 16:32	WG920488
1,1,2-Trichlorotrifluoroethane	U		1.52	5.00	5	10/25/2016 16:32	WG920488
Vinyl chloride	U		1.30	5.00	5	10/25/2016 16:32	WG920488
Xylenes, Total	620	J6	5.30	15.0	5	10/25/2016 16:32	WG920488
(S) Toluene-d8	*98.2*			*90.0-115*		*10/25/2016 16:32*	WG920488
(S) Toluene-d8	*99.6*			*90.0-115*		*10/28/2016 16:02*	WG920488
(S) Dibromofluoromethane	*93.2*			*79.0-121*		*10/28/2016 16:02*	WG920488
(S) Dibromofluoromethane	*96.8*			*79.0-121*		*10/25/2016 16:32*	WG920488
(S) a,a,a-Trifluorotoluene	*103*			*90.4-116*		*10/25/2016 16:32*	WG920488
(S) a,a,a-Trifluorotoluene	*105*			*90.4-116*		*10/28/2016 16:02*	WG920488

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
(S) 4-Bromofluorobenzene	*103*			*80.1-120*		*10/28/2016 16:02*	WG920488
(S) 4-Bromofluorobenzene	*99.3*			*80.1-120*		*10/25/2016 16:32*	WG920488

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	J3	10.0	50.0	1	10/25/2016 17:53	WG920488
Benzene	U		0.331	1.00	1	10/25/2016 17:53	WG920488
Bromochloromethane	U		0.520	1.00	1	10/25/2016 17:53	WG920488
Bromodichloromethane	U		0.380	1.00	1	10/25/2016 17:53	WG920488
Bromoform	U		0.469	1.00	1	10/25/2016 17:53	WG920488
Bromomethane	U		0.866	5.00	1	10/25/2016 17:53	WG920488
Carbon disulfide	U		0.275	1.00	1	10/25/2016 17:53	WG920488
Carbon tetrachloride	U		0.379	1.00	1	10/25/2016 17:53	WG920488
Chlorobenzene	U		0.348	1.00	1	10/25/2016 17:53	WG920488
Chlorodibromomethane	U		0.327	1.00	1	10/25/2016 17:53	WG920488
Chloroethane	U		0.453	5.00	1	10/25/2016 17:53	WG920488
Chloroform	U		0.324	5.00	1	10/25/2016 17:53	WG920488
Chloromethane	U		0.276	2.50	1	10/25/2016 17:53	WG920488
Cyclohexane	U		0.390	1.00	1	10/25/2016 17:53	WG920488
1,2-Dibromo-3-Chloropropane	U		1.33	5.00	1	10/25/2016 17:53	WG920488
1,2-Dibromoethane	U		0.381	1.00	1	10/25/2016 17:53	WG920488
1,2-Dichlorobenzene	U		0.349	1.00	1	10/25/2016 17:53	WG920488
1,3-Dichlorobenzene	U		0.220	1.00	1	10/25/2016 17:53	WG920488
1,4-Dichlorobenzene	U		0.274	1.00	1	10/25/2016 17:53	WG920488
Dichlorodifluoromethane	U		0.551	5.00	1	10/25/2016 17:53	WG920488
1,1-Dichloroethane	U		0.259	1.00	1	10/25/2016 17:53	WG920488
1,2-Dichloroethane	U		0.361	1.00	1	10/25/2016 17:53	WG920488
1,1-Dichloroethene	U		0.398	1.00	1	10/25/2016 17:53	WG920488
cis-1,2-Dichloroethene	U		0.260	1.00	1	10/25/2016 17:53	WG920488
trans-1,2-Dichloroethene	U		0.396	1.00	1	10/25/2016 17:53	WG920488
1,2-Dichloropropane	U		0.306	1.00	1	10/25/2016 17:53	WG920488
cis-1,3-Dichloropropene	U		0.418	1.00	1	10/25/2016 17:53	WG920488
trans-1,3-Dichloropropene	U		0.419	1.00	1	10/25/2016 17:53	WG920488
Ethylbenzene	U		0.384	1.00	1	10/25/2016 17:53	WG920488
2-Hexanone	U	J3	3.82	10.0	1	10/25/2016 17:53	WG920488
Isopropylbenzene	U		0.326	1.00	1	10/25/2016 17:53	WG920488
2-Butanone (MEK)	U	J3	3.93	10.0	1	10/25/2016 17:53	WG920488
Methyl Acetate	U		4.30	20.0	1	10/25/2016 17:53	WG920488
Methyl Cyclohexane	U		0.380	1.00	1	10/25/2016 17:53	WG920488
Methylene Chloride	U		1.00	5.00	1	10/25/2016 17:53	WG920488
4-Methyl-2-pentanone (MIBK)	U	J3	2.14	10.0	1	10/25/2016 17:53	WG920488
Methyl tert-butyl ether	U		0.367	1.00	1	10/25/2016 17:53	WG920488
Styrene	U		0.307	1.00	1	10/25/2016 17:53	WG920488
1,1,2,2-Tetrachloroethane	U		0.130	1.00	1	10/25/2016 17:53	WG920488
Tetrachloroethene	U		0.372	1.00	1	10/25/2016 17:53	WG920488
Toluene	U		0.780	5.00	1	10/25/2016 17:53	WG920488
1,2,3-Trichlorobenzene	U		0.230	1.00	1	10/25/2016 17:53	WG920488
1,2,4-Trichlorobenzene	U		0.355	1.00	1	10/25/2016 17:53	WG920488
1,1,1-Trichloroethane	U		0.319	1.00	1	10/25/2016 17:53	WG920488
1,1,2-Trichloroethane	U		0.383	1.00	1	10/25/2016 17:53	WG920488
Trichloroethene	U	J3	0.398	1.00	1	10/25/2016 17:53	WG920488
Trichlorofluoromethane	U		1.20	5.00	1	10/25/2016 17:53	WG920488
1,1,2-Trichlorotrifluoroethane	U		0.303	1.00	1	10/25/2016 17:53	WG920488
Vinyl chloride	U		0.259	1.00	1	10/25/2016 17:53	WG920488
Xylenes, Total	U		1.06	3.00	1	10/25/2016 17:53	WG920488
(S) Toluene-d8	*98.4*			*90.0-115*		*10/25/2016 17:53*	WG920488
(S) Dibromofluoromethane	*95.0*			*79.0-121*		*10/25/2016 17:53*	WG920488
(S) a,a,a-Trifluorotoluene	*101*			*90.4-116*		*10/25/2016 17:53*	WG920488
(S) 4-Bromofluorobenzene	*106*			*80.1-120*		*10/25/2016 17:53*	WG920488

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	J3	10.0	50.0	1	10/28/2016 15:21	WG920488
Benzene	U		0.331	1.00	1	10/28/2016 15:21	WG920488
Bromochloromethane	U		0.520	1.00	1	10/28/2016 15:21	WG920488
Bromodichloromethane	U		0.380	1.00	1	10/28/2016 15:21	WG920488
Bromoform	U		0.469	1.00	1	10/28/2016 15:21	WG920488
Bromomethane	U		0.866	5.00	1	10/28/2016 15:21	WG920488
Carbon disulfide	U		0.275	1.00	1	10/28/2016 15:21	WG920488
Carbon tetrachloride	U		0.379	1.00	1	10/28/2016 15:21	WG920488
Chlorobenzene	U		0.348	1.00	1	10/28/2016 15:21	WG920488
Chlorodibromomethane	U		0.327	1.00	1	10/28/2016 15:21	WG920488
Chloroethane	U		0.453	5.00	1	10/28/2016 15:21	WG920488
Chloroform	U		0.324	5.00	1	10/28/2016 15:21	WG920488
Chloromethane	U		0.276	2.50	1	10/28/2016 15:21	WG920488
Cyclohexane	5.66		0.390	1.00	1	10/28/2016 15:21	WG920488
1,2-Dibromo-3-Chloropropane	U		1.33	5.00	1	10/28/2016 15:21	WG920488
1,2-Dibromoethane	U		0.381	1.00	1	10/28/2016 15:21	WG920488
1,2-Dichlorobenzene	U		0.349	1.00	1	10/28/2016 15:21	WG920488
1,3-Dichlorobenzene	U		0.220	1.00	1	10/28/2016 15:21	WG920488
1,4-Dichlorobenzene	U		0.274	1.00	1	10/28/2016 15:21	WG920488
Dichlorodifluoromethane	U		0.551	5.00	1	10/28/2016 15:21	WG920488
1,1-Dichloroethane	U		0.259	1.00	1	10/28/2016 15:21	WG920488
1,2-Dichloroethane	U		0.361	1.00	1	10/28/2016 15:21	WG920488
1,1-Dichloroethene	U		0.398	1.00	1	10/28/2016 15:21	WG920488
cis-1,2-Dichloroethene	0.483	J	0.260	1.00	1	10/28/2016 15:21	WG920488
trans-1,2-Dichloroethene	U		0.396	1.00	1	10/28/2016 15:21	WG920488
1,2-Dichloropropane	U		0.306	1.00	1	10/28/2016 15:21	WG920488
cis-1,3-Dichloropropene	U		0.418	1.00	1	10/28/2016 15:21	WG920488
trans-1,3-Dichloropropene	U		0.419	1.00	1	10/28/2016 15:21	WG920488
Ethylbenzene	14.9		0.384	1.00	1	10/28/2016 15:21	WG920488
2-Hexanone	U	J3	3.82	10.0	1	10/28/2016 15:21	WG920488
Isopropylbenzene	24.6		0.326	1.00	1	10/28/2016 15:21	WG920488
2-Butanone (MEK)	U	J3	3.93	10.0	1	10/28/2016 15:21	WG920488
Methyl Acetate	U		4.30	20.0	1	10/28/2016 15:21	WG920488
Methyl Cyclohexane	U		0.380	1.00	1	10/28/2016 15:21	WG920488
Methylene Chloride	U		1.00	5.00	1	10/28/2016 15:21	WG920488
4-Methyl-2-pentanone (MIBK)	U	J3	2.14	10.0	1	10/28/2016 15:21	WG920488
Methyl tert-butyl ether	U		0.367	1.00	1	10/28/2016 15:21	WG920488
Styrene	U		0.307	1.00	1	10/28/2016 15:21	WG920488
1,1,2,2-Tetrachloroethane	U		0.130	1.00	1	10/28/2016 15:21	WG920488
Tetrachloroethene	U		0.372	1.00	1	10/28/2016 15:21	WG920488
Toluene	U		0.780	5.00	1	10/28/2016 15:21	WG920488
1,2,3-Trichlorobenzene	U		0.230	1.00	1	10/28/2016 15:21	WG920488
1,2,4-Trichlorobenzene	U		0.355	1.00	1	10/28/2016 15:21	WG920488
1,1,1-Trichloroethane	U		0.319	1.00	1	10/28/2016 15:21	WG920488
1,1,2-Trichloroethane	U		0.383	1.00	1	10/28/2016 15:21	WG920488
Trichloroethene	U	J3	0.398	1.00	1	10/28/2016 15:21	WG920488
Trichlorofluoromethane	U		1.20	5.00	1	10/28/2016 15:21	WG920488
1,1,2-Trichlorotrifluoroethane	U		0.303	1.00	1	10/28/2016 15:21	WG920488
Vinyl chloride	U		0.259	1.00	1	10/28/2016 15:21	WG920488
Xylenes, Total	U		1.06	3.00	1	10/28/2016 15:21	WG920488
(S) Toluene-d8	*97.4*			*90.0-115*		*10/28/2016 15:21*	WG920488
(S) Dibromofluoromethane	*95.1*			*79.0-121*		*10/28/2016 15:21*	WG920488
(S) a,a,a-Trifluorotoluene	*103*			*90.4-116*		*10/28/2016 15:21*	WG920488
(S) 4-Bromofluorobenzene	*99.3*			*80.1-120*		*10/28/2016 15:21*	WG920488

Method Blank (MB)

(MB) R3173154-2 10/25/16 07:17

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	U		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) R3173154-2 10/25/16 07:17

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Toluene	U		0.780	5.00
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	*98.3*			*90.0-115*
(S) Dibromofluoromethane	*94.9*			*79.0-121*
(S) a,a,a-Trifluorotoluene	*102*			*90.4-116*
(S) 4-Bromofluorobenzene	*105*			*80.1-120*

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

(LCS) R3173154-1 10/25/16 05:35 • (LCSD) R3173154-3 10/25/16 09:01

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	125	146	104	117	83.1	28.7-175		J3	33.8	20.9
Benzene	25.0	24.8	21.7	99.2	86.7	73.0-122			13.5	20
Bromodichloromethane	25.0	26.7	23.1	107	92.5	75.5-121			14.3	20
Bromochloromethane	25.0	21.9	20.8	87.7	83.2	78.9-123			5.27	20
Bromoform	25.0	27.8	23.5	111	93.9	71.5-131			16.8	20
Bromomethane	25.0	17.8	14.9	71.1	59.5	22.4-187			17.9	20
Carbon disulfide	25.0	25.3	22.9	101	91.7	53.0-134			9.75	20
Carbon tetrachloride	25.0	27.9	24.4	112	97.5	70.9-129			13.5	20
Chlorobenzene	25.0	26.5	23.1	106	92.5	79.7-122			13.4	20
Chlorodibromomethane	25.0	27.0	23.9	108	95.5	78.2-124			12.4	20
Chloroethane	25.0	26.2	24.4	105	97.8	41.2-153			6.92	20
Chloroform	25.0	25.4	22.5	101	89.9	73.2-125			12.0	20
Chloromethane	25.0	23.8	24.0	95.2	95.9	55.8-134			0.660	20
1,2-Dibromo-3-Chloropropane	25.0	24.6	20.4	98.6	81.7	64.8-131			18.7	20
1,2-Dibromoethane	25.0	27.4	22.9	110	91.6	79.8-122			17.9	20
1,2-Dichlorobenzene	25.0	25.0	22.0	99.9	87.8	84.7-118			12.9	20
1,3-Dichlorobenzene	25.0	26.0	23.0	104	92.0	77.6-127			12.3	20
1,4-Dichlorobenzene	25.0	24.8	21.3	99.0	85.3	82.2-114			14.9	20
Dichlorodifluoromethane	25.0	29.2	27.9	117	112	56.0-134			4.56	20

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

(LCS) R3173154-1 10/25/16 05:35 • (LCSD) R3173154-3 10/25/16 09:01

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	25.0	24.6	21.5	98.3	86.1	71.7-127			13.2	20
1,2-Dichloroethane	25.0	24.0	21.2	96.2	84.6	79.8-122			12.8	20
1,1-Dichloroethene	25.0	27.4	25.2	109	101	59.9-137			8.38	20
cis-1,2-Dichloroethene	25.0	25.5	23.0	102	92.1	77.3-122			10.4	20
trans-1,2-Dichloroethene	25.0	25.3	23.0	101	91.8	72.6-125			9.56	20
1,2-Dichloropropane	25.0	25.9	21.7	104	86.8	77.4-125			17.8	20
cis-1,3-Dichloropropene	25.0	25.1	23.3	101	93.1	77.7-124			7.74	20
trans-1,3-Dichloropropene	25.0	25.2	22.3	101	89.4	73.5-127			12.2	20
Ethylbenzene	25.0	26.9	23.1	108	92.3	80.9-121			15.3	20
2-Hexanone	125	152	113	122	90.4	59.4-151		J3	29.5	20
Isopropylbenzene	25.0	26.2	22.5	105	90.0	81.6-124			15.3	20
2-Butanone (MEK)	125	140	106	112	84.5	46.4-155		J3	28.3	20
Methylene Chloride	25.0	24.4	21.6	97.6	86.3	69.5-120			12.3	20
4-Methyl-2-pentanone (MIBK)	125	134	105	107	83.8	63.3-138		J3	24.7	20
Methyl tert-butyl ether	25.0	24.4	20.1	97.7	80.3	70.1-125			19.6	20
Styrene	25.0	26.8	25.0	107	100	79.9-124			6.83	20
1,1,2,2-Tetrachloroethane	25.0	24.0	21.7	96.0	86.9	79.3-123			10.0	20
Tetrachloroethene	25.0	28.3	23.6	113	94.4	73.5-130			18.1	20
Toluene	25.0	26.1	22.5	104	90.2	77.9-116			14.6	20
1,1,2-Trichlorotrifluoroethane	25.0	30.3	26.9	121	108	62.0-141			12.0	20
1,2,3-Trichlorobenzene	25.0	23.0	19.9	91.8	79.7	75.7-134			14.2	20
1,2,4-Trichlorobenzene	25.0	24.1	21.4	96.5	85.5	76.1-136			12.1	20
1,1,1-Trichloroethane	25.0	25.8	22.2	103	88.6	71.1-129			15.2	20
1,1,2-Trichloroethane	25.0	26.0	22.0	104	87.9	81.6-120			16.8	20
Trichloroethene	25.0	28.7	22.8	115	91.2	79.5-121		J3	22.8	20
Trichlorofluoromethane	25.0	28.6	26.1	115	105	49.1-157			9.15	20
Vinyl chloride	25.0	26.0	24.4	104	97.5	61.5-134			6.31	20
Xylenes, Total	75.0	78.5	68.9	105	91.9	79.2-122			13.0	20
(S) Toluene-d8				*99.5*	*98.6*	*90.0-115*				
(S) Dibromofluoromethane				*96.4*	*98.9*	*79.0-121*				
(S) α,α,α-Trifluorotoluene				*104*	*103*	*90.4-116*				
(S) 4-Bromofluorobenzene				*104*	*103*	*80.1-120*				

L867027-15 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L867027-15 10/25/16 11:52 • (MS) R3173154-4 10/25/16 10:12 • (MSD) R3173154-5 10/25/16 10:32

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	125	ND	4040	4670	64.6	74.7	50	25.0-156			14.5	21.5
Benzene	25.0	7670	8420	9470	60.4	144	50	58.6-133		V	11.7	20
Bromodichloromethane	25.0	ND	1480	1640	118	131	50	69.2-127		J5	10.6	20
Bromochloromethane	25.0	ND	1260	1370	101	109	50	74.4-128			7.86	20
Bromoform	25.0	ND	1440	1690	115	135	50	66.3-140			16.2	20
Bromomethane	25.0	ND	1050	1180	84.2	94.1	50	16.6-183			11.1	20.5
Carbon disulfide	25.0	ND	1580	1740	126	139	50	34.9-138		J5	9.58	20
Carbon tetrachloride	25.0	ND	1660	1850	133	148	50	60.6-139		J5	10.3	20
Chlorobenzene	25.0	ND	1420	1610	114	129	50	70.1-130			12.7	20
Chlorodibromomethane	25.0	ND	1470	1700	117	136	50	71.6-132		J5	15.0	20
Chloroethane	25.0	ND	1670	1840	134	147	50	33.3-155			9.43	20
Chloroform	25.0	ND	1470	1630	118	130	50	66.1-133			10.1	20
Chloromethane	25.0	ND	1650	1860	132	149	50	40.7-139		J5	11.5	20
1,2-Dibromo-3-Chloropropane	25.0	ND	1200	1520	95.9	121	50	63.9-142		J3	23.4	20.2
1,2-Dibromoethane	25.0	ND	1430	1650	114	132	50	73.8-131		J5	14.2	20
1,2-Dichlorobenzene	25.0	ND	1360	1550	109	124	50	77.4-127			12.7	20
1,3-Dichlorobenzene	25.0	ND	1440	1630	115	131	50	67.9-136			12.4	20
1,4-Dichlorobenzene	25.0	ND	1330	1510	107	121	50	74.4-123			12.4	20
Dichlorodifluoromethane	25.0	ND	1890	2070	151	166	50	42.2-146	J5	J5	9.38	20
1,1-Dichloroethane	25.0	ND	1400	1560	112	125	50	64.0-134			10.9	20
1,2-Dichloroethane	25.0	ND	1370	1510	110	121	50	60.7-132			9.68	20
1,1-Dichloroethene	25.0	ND	1690	1870	135	150	50	48.8-144		J5	10.5	20
cis-1,2-Dichloroethene	25.0	ND	1520	1650	122	132	50	60.6-136			7.92	20
trans-1,2-Dichloroethene	25.0	ND	1510	1670	121	134	50	61.0-132		J5	10.2	20
1,2-Dichloropropane	25.0	ND	1420	1550	114	124	50	69.7-130			8.93	20
cis-1,3-Dichloropropene	25.0	ND	1450	1620	116	130	50	71.1-129		J5	11.5	20
trans-1,3-Dichloropropene	25.0	ND	1410	1560	110	122	50	66.3-136			10.2	20
Ethylbenzene	25.0	2980	4040	4670	85.2	135	50	62.7-136			14.3	20
2-Hexanone	125	ND	5780	7180	92.5	115	50	59.4-154		J3	21.6	20.1
Isopropylbenzene	25.0	125	1550	1780	114	132	50	67.4-136			14.1	20
2-Butanone (MEK)	125	ND	5290	6350	84.6	102	50	45.0-156			18.3	20.8
Methylene Chloride	25.0	ND	1440	1550	115	124	50	61.5-125			7.16	20
4-Methyl-2-pentanone (MIBK)	125	ND	6230	7430	99.7	119	50	60.7-150			17.5	20
Methyl tert-butyl ether	25.0	13800	14100	16000	17.2	173	50	61.4-136	E V	E V	13.0	20
Styrene	25.0	ND	1510	1710	121	137	50	68.2-133		J5	12.4	20
1,1,2,2-Tetrachloroethane	25.0	ND	1290	1550	103	124	50	64.9-145			18.6	20
Tetrachloroethene	25.0	ND	1550	1780	124	143	50	57.4-141		J5	14.2	20
Toluene	25.0	2590	3780	4300	95.0	137	50	67.8-124		J5	12.9	20
1,1,2-Trichlorotrifluoroethane	25.0	ND	1860	2070	149	166	50	53.7-150		J5	10.9	20
1,2,3-Trichlorobenzene	25.0	ND	1230	1420	98.1	113	50	65.7-143			14.4	20

L867027-15 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L867027-15 10/25/16 11:52 • (MS) R3173154-4 10/25/16 10:12 • (MSD) R3173154-5 10/25/16 10:32

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 %
1,2,4-Trichlorobenzene	25.0	ND	1320	1520	106	122	50	67.0-146			14.1	20
1,1,1-Trichloroethane	25.0	ND	1480	1650	119	132	50	62.8-138			11.0	20
1,1,2-Trichloroethane	25.0	ND	1340	1560	107	125	50	74.1-130			15.2	20
Trichloroethene	25.0	ND	1490	1640	120	131	50	48.9-148			9.04	20
Trichlorofluoromethane	25.0	ND	1800	2020	144	162	50	39.9-165			11.6	20
Vinyl chloride	25.0	ND	1700	1890	136	151	50	44.3-143		J5	10.6	20
Xylenes, Total	75.0	ND	12600	14600	336	389	50	65.6-133	J5	J5	14.6	20
(S) Toluene-d8					*99.7*	*99.6*		*90.0-115*				
(S) Dibromofluoromethane					*102*	*100*		*79.0-121*				
(S) a,a,a-Trifluorotoluene					*104*	*104*		*90.4-116*				
(S) 4-Bromofluorobenzene					*104*	*104*		*80.1-120*				

L867820-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L867820-02 10/25/16 16:32 • (MS) R3173154-6 10/25/16 16:52 • (MSD) R3173154-7 10/25/16 17:13

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	125	U	339	326	54.2	52.1	5	25.0-156			3.91	21.5
Benzene	25.0	280	366	352	69.2	58.1	5	58.6-133		J6	3.86	20
Bromodichloromethane	25.0	U	94.3	77.0	75.4	61.6	5	69.2-127		J3 J6	20.3	20
Bromochloromethane	25.0	U	74.7	62.5	59.8	50.0	5	74.4-128	J6	J6	17.9	20
Bromoform	25.0	U	84.1	73.2	67.3	58.5	5	66.3-140		J6	13.9	20
Bromomethane	25.0	U	68.8	55.5	55.0	44.4	5	16.6-183		J3	21.3	20.5
Carbon disulfide	25.0	U	77.3	65.8	61.8	52.7	5	34.9-138			16.0	20
Carbon tetrachloride	25.0	U	100	84.4	80.0	67.5	5	60.6-139			16.9	20
Chlorobenzene	25.0	U	81.5	71.0	65.2	56.8	5	70.1-130	J6	J6	13.8	20
Chlorodibromomethane	25.0	U	86.2	73.0	68.9	58.4	5	71.6-132	J6	J6	16.5	20
Chloroethane	25.0	U	94.0	80.9	75.2	64.7	5	33.3-155			15.0	20
Chloroform	25.0	U	97.0	84.1	77.6	67.3	5	66.1-133			14.3	20
Chloromethane	25.0	U	87.7	79.8	70.1	63.8	5	40.7-139			9.43	20
1,2-Dibromo-3-Chloropropane	25.0	U	76.9	66.6	61.5	53.2	5	63.9-142	J6	J6	14.4	20.2
1,2-Dibromoethane	25.0	U	85.1	74.3	68.1	59.4	5	73.8-131	J6	J6	13.5	20
1,2-Dichlorobenzene	25.0	U	83.4	72.2	66.7	57.8	5	77.4-127	J6	J6	14.3	20
1,3-Dichlorobenzene	25.0	U	85.8	75.4	68.7	60.3	5	67.9-136		J6	12.9	20
1,4-Dichlorobenzene	25.0	U	ND	71.6	0.000	57.3	5	74.4-123	J6	J3 J6	200	20
Dichlorodifluoromethane	25.0	U	100	84.7	80.3	67.8	5	42.2-146			16.9	20
1,1-Dichloroethane	25.0	U	86.4	73.1	69.1	58.5	5	64.0-134		J6	16.7	20
1,2-Dichloroethane	25.0	U	80.3	68.2	64.2	54.6	5	60.7-132		J6	16.2	20
1,1-Dichloroethene	25.0	U	98.2	81.7	78.6	65.4	5	48.8-144			18.3	20

L867820-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L867820-02 10/25/16 16:32 • (MS) R3173154-6 10/25/16 16:52 • (MSD) R3173154-7 10/25/16 17:13

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 %
cis-1,2-Dichloroethene	25.0	U	90.8	73.4	72.7	58.7	5	60.6-136		J3 J6	21.3	20
trans-1,2-Dichloroethene	25.0	U	88.8	74.8	71.1	59.8	5	61.0-132		J6	17.1	20
1,2-Dichloropropane	25.0	U	90.5	78.4	72.4	62.7	5	69.7-130		J6	14.4	20
cis-1,3-Dichloropropene	25.0	U	84.5	71.9	67.6	57.6	5	71.1-129	J6	J6	16.0	20
trans-1,3-Dichloropropene	25.0	U	83.3	70.2	66.6	56.1	5	66.3-136		J6	17.1	20
Ethylbenzene	25.0	1790	1850	1890	48.5	79.7	5	62.7-136	E V	E	2.08	20
2-Hexanone	125	U	384	331	61.4	53.0	5	59.4-154		J6	14.7	20.1
Isopropylbenzene	25.0	277	361	357	67.2	63.9	5	67.4-136	J6	J6	1.17	20
2-Butanone (MEK)	125	U	399	346	63.8	55.3	5	45.0-156			14.3	20.8
Methylene Chloride	25.0	U	82.3	68.1	65.8	54.5	5	61.5-125		J6	18.9	20
4-Methyl-2-pentanone (MIBK)	125	U	422	362	67.6	58.0	5	60.7-150		J6	15.2	20
Methyl tert-butyl ether	25.0	U	78.7	67.6	63.0	54.0	5	61.4-136		J6	15.3	20
Styrene	25.0	U	89.7	76.0	71.8	60.8	5	68.2-133		J6	16.6	20
1,1,2,2-Tetrachloroethane	25.0	U	84.2	73.1	67.4	58.5	5	64.9-145		J6	14.2	20
Tetrachloroethene	25.0	U	94.8	81.5	75.9	65.2	5	57.4-141			15.1	20
Toluene	25.0	39.4	130	118	72.5	62.9	5	67.8-124		J6	9.63	20
1,1,2-Trichlorotrifluoroethane	25.0	U	106	92.7	85.0	74.2	5	53.7-150			13.6	20
1,2,3-Trichlorobenzene	25.0	U	74.5	64.7	59.6	51.7	5	65.7-143	J6	J6	14.1	20
1,2,4-Trichlorobenzene	25.0	U	77.7	69.8	62.2	55.8	5	67.0-146	J6	J6	10.8	20
1,1,1-Trichloroethane	25.0	U	95.4	79.2	76.3	63.4	5	62.8-138			18.5	20
1,1,2-Trichloroethane	25.0	U	87.6	76.0	70.1	60.8	5	74.1-130	J6	J6	14.1	20
Trichloroethene	25.0	U	93.2	79.3	74.6	63.4	5	48.9-148			16.1	20
Trichlorofluoromethane	25.0	U	104	89.9	82.9	71.9	5	39.9-165			14.2	20
Vinyl chloride	25.0	U	92.3	78.7	73.8	63.0	5	44.3-143			15.9	20
Xylenes, Total	75.0	620	867	850	65.8	61.3	5	65.6-133	J6	J6	1.94	20
(S) Toluene-d8					*99.1*	*99.8*		*90.0-115*				
(S) Dibromofluoromethane					*95.9*	*96.4*		*79.0-121*				
(S) a,a,a-Trifluorotoluene					*104*	*104*		*90.4-116*				
(S) 4-Bromofluorobenzene					*99.7*	*101*		*80.1-120*				

Abbreviations and Definitions

SDG	Sample Delivery Group.
MDL	Method Detection Limit.
RDL	Reported Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
U	Not detected at the Reporting Limit (or MDL where applicable).
RPD	Relative Percent Difference.
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.
(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.
Rec.	Recovery.

Qualifier	Description
E	The analyte concentration exceeds the upper limit of the calibration range of the instrument established by the initial calibration (ICAL).
J	The identification of the analyte is acceptable; the reported value is an estimate.
J3	The associated batch QC was outside the established quality control range for precision.
J5	The sample matrix interfered with the ability to make any accurate determination; spike value is high.
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.

ESC Lab Sciences 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.

State Accreditations

Alabama	40660
Alaska	UST-080
Arizona	AZ0612
Arkansas	88-0469
California	01157CA
Colorado	TN00003
Conneticut	PH-0197
Florida	E87487
Georgia	NELAP
Georgia [1]	923
Idaho	TN00003
Illinois	200008
Indiana	C-TN-01
Iowa	364
Kansas	E-10277
Kentucky [1]	90010
Kentucky [2]	16
Louisiana	AI30792
Maine	TN0002
Maryland	324
Massachusetts	M-TN003
Michigan	9958
Minnesota	047-999-395
Mississippi	TN00003
Missouri	340
Montana	CERT0086
Nebraska	NE-OS-15-05
Nevada	TN-03-2002-34
New Hampshire	2975
New Jersey–NELAP	TN002
New Mexico	TN00003
New York	11742
North Carolina	Env375
North Carolina [1]	DW21704
North Carolina [2]	41
North Dakota	R-140
Ohio–VAP	CL0069
Oklahoma	9915
Oregon	TN200002
Pennsylvania	68-02979
Rhode Island	221
South Carolina	84004
South Dakota	n/a
Tennessee [1 4]	2006
Texas	T 104704245-07-TX
Texas [5]	LAB0152
Utah	6157585858
Vermont	VT2006
Virginia	109
Washington	C1915
West Virginia	233
Wisconsin	9980939910
Wyoming	A2LA

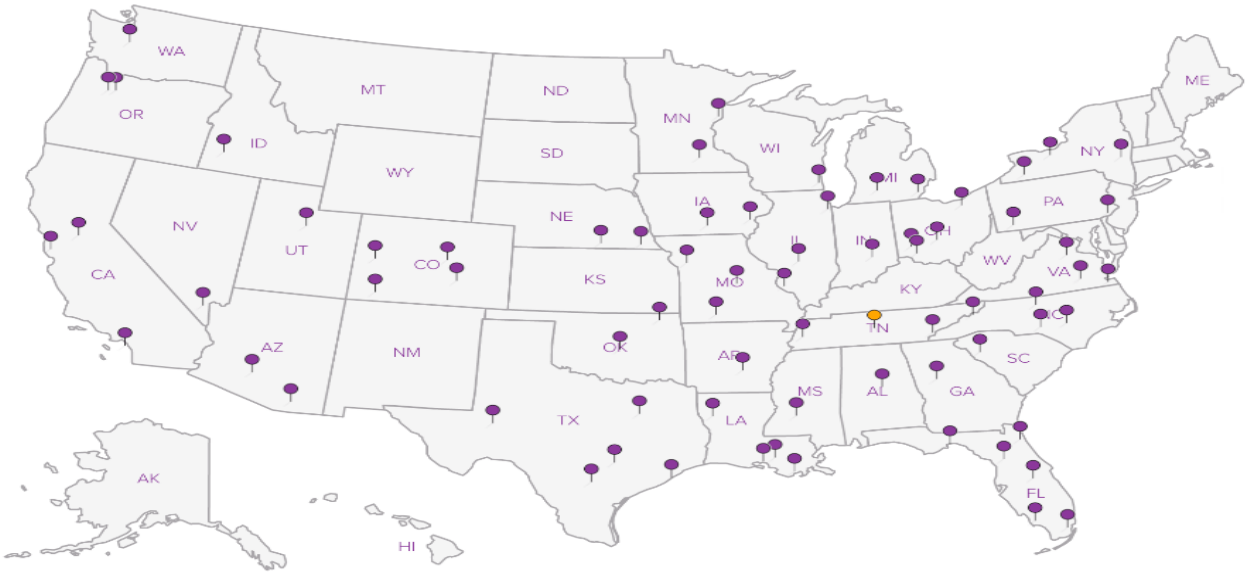
Third Party & Federal Accreditations

A2LA – ISO 17025	1461.01
A2LA – ISO 17025 [5]	1461.02
Canada	1461.01
EPA–Crypto	TN00003
AIHA	100789
DOD	1461.01
USDA	S-67674

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

Our Locations

ESC Lab Sciences 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. **ESC Lab Sciences performs all testing at our central laboratory.**



GHD

285 Delaware Ave.
Suite 500
Buffalo, NY 14202

Billing Information & Quote Number:

Mr. Dave Rowlinson
285 Delaware Ave.
Suite 500
Buffalo, NY 14202

Email To: dave.rowlinson@ghd.com

Report to:
Mr. Dave Rowlinson

Project
Description: **815 River Road Site**

City/State Collected: No Tonawanda, NY

Phone: **716-748-6624**
Fax:

Client Project #

Lab Project #
STEARNSANY-RIVERRD

Collected by (print): Dave Rowlinson

Site/Facility ID #
N. TONAWANDA, NY

P.O. #

Collected by (signature):

Immediately Packed on Ice N ___ Y X

Rush? (Lab MUST Be Notified)
___ Same Day 200%
___ Next Day 100%
___ Two Day 50%
___ Three Day 25%

Date Results Needed

Email? ___No X_Yes
FAX? ___No ___Yes

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	V8260TCL 40mlAmb-HCl	V8260TCL 40mlAmb-HCl-Blk	Rem./Contaminant	Sample # (lab only)
MW-1	G	GW		10/21/16	2:05pm	2	X			01
MW-2	G	GW		10/21/16		2	X			02
TRIP BLANK	—	GW		10/21/16		1		X		03
FD@MW-1	G	GW		10/21/16		2	X			04
MS@MW-2	G	GW		10/21/16		2	X			05
MSD@MW-2	G	GW		10/21/16	↓	2	X			
		GW				2	X			
		GW				2	X			

Analysis / Container / Preservative

Chain of Custody Page ___ of ___

ESC LABSCIENCES
YOUR LAB OF CHOICE
12065 Lebanon Rd
Mount Juliet, TN 37122
Phone: 615-758-5858
Phone: 800-767-5859
Fax: 615-758-5859

L# 86782
A052

Acctnum: **STEARNSANY**
Template: **T80569**
Prelogin: **P573202**
TSR: **364 - T. Alan Harvill**
PB: 10-18-16
Shipped Via: **FedEX Ground**

* Matrix: **SS** - Soil **GW** - Groundwater **WW** - WasteWater **DW** - Drinking Water **OT** - Other_____

pH _____ Temp _____
Flow _____ Other _____

70616812116 51

Remarks:

Hold #

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
Dave Rowlinson	10/21/16	4:00pm	
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)

Samples returned via: ☐ UPS ☐ FedEx ☐ Courier ☐ _____

Temp: 3.1 °C Bottles Received: 11VP

Date: 10.22.16 Time: 920

Condition: (lab use only)

COC Seal Intact: ___Y ___N ___NA

pH Checked: NCF:

ESC
L·A·B S·C·I·E·N·C·E·S
YOUR LAB OF CHOICE

Cooler Receipt Form

Client: STEARNSANY		SDG#	86780
Cooler Received/Opened On: 10/22/16		Temperature Upon Receipt:	3.1 °c
Received By: Nikki Farmer			
Signature:			

Receipt Check List	Yes	No	N/A
Were custody seals on outside of cooler and intact?	✓		
Were custody papers properly filled out?	✓		
Did all bottles arrive in good condition?	✓		
Were correct bottles used for the analyses requested?	✓		
Was sufficient amount of sample sent in each bottle?	✓		
Were all applicable sample containers correctly preserved and checked for preservation? (Any not in accepted range noted on COC)			✓
If applicable, was an observable VOA headspace present?		✓	
Non Conformance Generated. (If yes see attached NCF)			

Appendix C
Data Usability Reporting

Data Usability Summary Report

Vali-Data of WNY, LLC
1514 Davis Rd.
West Falls, NY 14170

815 River Rd.
Project # 8612191-01
ESC Lab Sciences SDG#L867820
December 1, 2016
Sampling date: 10/21/2016

Prepared by:
Jodi Zimmerman
Vali-Data of WNY, LLC
1514 Davis Rd.
West Falls, NY 14170

DELIVERABLES

This Data Usability Summary Report (DUSR) was prepared by evaluating the analytical data package for GHD, project located at 815 River Rd., project # 8612191-01, SDG#L867820, submitted to Vali-Data of WNY, LLC on November 28, 2016. This DUSR has been prepared in general compliance with NYSDEC Analytical Services Protocol and USEPA National Functional Guidelines. The laboratory performed the analysis using USEPA method 8260C (Volatile Organics).

VOLATILE ORGANIC COMPOUNDS

The following items/criteria were reviewed for this analytical suite:

- Data Completeness
-Narrative and Data Reporting Forms
-Chain of Custody and Traffic Reports
-Holding Times
-Internal Standard (IS) Area Performance
-Surrogate Spike Recoveries
-Method Blank
-Field Duplicate Sample Precision
-Laboratory Control Samples
-MS/MSD
-Compound Quantitation
-Initial Calibration
-Continuing Calibration
-GC/MS Performance Check

The items listed above were technically in compliance with the method and SOP criteria with the exceptions discussed in the text below. The data have been reviewed according to the procedures outlined above and qualified accordingly.

OVERALL EVALUATION OF DATA AND POTENTIAL USABILITY ISSUES
The data are acceptable for use except where qualified below in Laboratory Control Samples and MS/MSD.

Sample, MW-2 and its corresponding Matrix Spikes were diluted due to high target analyte concentrations.

DATA COMPLETENESS
All criteria were met.

NARRATIVE AND DATA REPORTING FORMS
All criteria were met except no MDL study was included. Method Detection limits were recorded on the Form 1's.

CHAIN OF CUSTODY AND TRAFFIC REPORTS
All criteria were met.

HOLDING TIMES
All holding times were met. The pH of the samples was not recorded but the samples were run within 7 days, so no further action is required.

INTERNAL STANDARD (IS)
All criteria were met.

SURROGATE SPIKE RECOVERIES
All criteria were met.

METHOD BLANK
All criteria were met.

FIELD DUPLICATE SAMPLE PRECISION
All criteria were met except cis-1,2-Dichloroethene was detected above the MDL, below the reporting limit in FD@MW-1 but was not detected in MW-1.

LABORATORY CONTROL SAMPLES
All criteria were met except the %RPD of Acetone, 2-Hexanone, 2-Butanone, 4-Methyl-2-pentanone and Trichloroethene was outside QC limits, between WG920488LCS and WG920488LSD. These target analytes should be qualified as estimated in the samples and the laboratory control samples.

MS/MSD
All criteria were met except the %Rec of Benzene, Chlorobenzene, Toluene, Bromochloromethane, Chlorodibromomethane, 1,2-Dibromo-3-chloropropane, 1,2-Dibromoethane, 1,2-Dichlorobenzene, 1,4-Dichlorobenzene, cis-1,3-Dichloropropene, Isopropylbenzene, 1,2,3-Trichlorobenzene, 1,2,4-Trichlorobenzene, 1,1,2-Trichloroethane and total Xylenes was outside QC limits, low in MW-2MS/MSD. The RPD of Bromodichloromethane, Bromomethane, 1,4-Dichlorobenzene and cis-1,2-Dichloroethene was outside QC limits between MW-2MS and MW-2MSD. The concentration of Ethylbenzene exceeded the calibration range in MW-2MS/MSD. These target analytes should be qualified as estimated in MW-2 and MW-2MS/MSD.
The %Rec of several other target analytes was outside QC limits in MW-2MS or MW-2MSD but not both, so no further action is required.

COMPOUND QUANTITATION
All criteria were met.

INITIAL CALIBRATION
All criteria were met.
Alternate forms of regression were used on target analytes in which the %RSD >20%, with acceptable results.

CONTINUING CALIBRATION
All criteria were met except the %D of Bromoform was outside QC limits in the continuing calibration file #1025_01.D and #1025_14.D. ASP allows for up to two target analytes to be outside QC limits without further action.

GC/MS PERFORMANCE CHECK
All criteria were met.

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

12/20/2016

Dale Marshall
City Engineer
CITY OF NORTH TONAWANDA
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:

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 03, 2017**. 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, are to be submitted in electronic format to the Department of Environmental Conservation. The Department will not approve the PRR unless all documents and data generated in support of that report have been submitted in accordance with the electronic submissions protocol. In addition, the certification forms are required to be submitted in both paper and electronic formats.

Information on the format of the data submissions can be found at:
http://www.dec.ny.gov/regulations/2586.html

The signed certification forms should be sent to Brian Sadowski, Project Manager, at the following address:

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

Phone number: 716-851-7220. E-mail: brian.sadowski@dec.ny.gov

The contact information above is also provided so that you may notify the project manager about upcoming inspections, or for any other questions or concerns that may arise in regard to the site.

Enclosures

PRR General Guidance
Certification Form Instructions
Certification Forms

ec: w/ enclosures
Brian Sadowski, Project Manager
Mary Mcintosh, Section Chief
Chad Staniszewski, Hazardous Waste Remediation Engineer, Region 9

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: 0.9

Reporting Period: February 01, 2016 to February 01, 2017

	YES	NO
1. Is the information above correct?	X	☐
If NO, include handwritten above or on a separale sheet.		
2. Has some or all of the site property been sold, subdivided, merged, or undergone a tax map amendment during this Reporting Period?	☐	X
3. Has there been any change of use at the site during this Reporting Period (see 6NYCRR 375-1.11(d))?	☐	X
4. Have any federal, state, and/or local permits (e.g., building, discharge) been issued for or at the property during this Reporting Period?	☐	X
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?	☐	X

Box 2

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

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

None Required

Not Applicable/No EC's

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 Dale M. Marshall at 216 Payne Ave N. Tonawanda NY
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.

Dale M Marshall, PE 1/13/17
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 Paul McGarvey at 285 Delaware Ave Suite 500, Buffalo NY 14202
print name print business address

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

STATE OF NEW YORK
PAUL JAMES McGARVEY
073641
LICENSED PROFESSIONAL ENGINEER

Paul J. McGarvey — Signature of , for the Owner or Remedial Party, Rendering Certification

Stamp (Required for PE)

1/17/17 — 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 F
Site Development

www.ghd.com