



2024 Evaluation of Enhanced Attenuation, Endoline Area Chlorinated Solvent Plume General Motors Tonawanda Engine Plant

General Motors, LLC

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Contents

1.	Introduction	1
1.1	Purpose of this report	1
1.2	Scope and limitations	1
2.	Background	1
3.	Groundwater Monitoring Program	2
4.	Monitoring Results	3
4.1	Chlorinated Volatile Organic Compounds	3
4.2	Dissolved Gases	3
4.3	Natural Attenuation Parameters	4
4.4	Field Parameters	4
4.5	Plume Migration	4
5.	Conclusions and Recommendations	5
5.1	Conclusions	5
5.2	Recommendations	5

Table index

Table 1	Analytical Results Summary – Natural Attenuation Monitoring
Table 2	Analytical Results Summary – Plume Migration Monitoring
Table 3	Groundwater Monitoring Parameters

Figure index

Figure 1	Site Location Map
Figure 2	Site Plan
Figure 3	Well Locations
Figure 4	Concentration versus Time Plot for Well MW-2
Figure 5	Concentration versus Time Plot for Well MW-2
Figure 6	Concentration versus Time Plot for Well MW-2
Figure 7	Concentration versus Time Plot for Well MW-2
Figure 8	Concentration versus Time Plot for Well MW-11
Figure 9	Concentration versus Time Plot for Well MW-11
Figure 10	Concentration versus Time Plot for Well MW-11
Figure 11	Concentration versus Time Plot for Well MW-11
Figure 12	Concentration versus Time Plot for Well MW-12
Figure 13	Concentration versus Time Plot for Well MW-12

Figure 14 Concentration versus Time Plot for Well MW-12
Figure 15 Concentration versus Time Plot for Well MW-12

Appendices

Appendix A Field Sampling Forms
Appendix B Laboratory Analytical Report
Appendix C Data Validation Report

1. Introduction

On behalf of General Motors, LLC (GM), GHD Services, Inc. (GHD) completed groundwater monitoring on February 27, 2024 as part of the Enhanced Attenuation (EA) program to address the Endline Area chlorinated solvent plume at the GM Tonawanda Engine Plant located in Tonawanda, New York (Site). A site location map is provided as Figure 1, while the Endline Area is shown on the site plan provided as Figure 2. New York State Department of Environmental Conservation (NYSDEC) Spill Number 9875474 has been assigned to this Site.

1.1 Purpose

The purpose of this report is to summarize the groundwater monitoring activities, present the data in comparison to regulatory criteria and the historical record for the Endline Area, provide an assessment of the current conditions and progress of the enhanced attenuation program, and provide a recommendation for future activities. The report was revised in response to the NYSDEC comment letter dated January 5, 2026.

1.2 Scope and Limitations

This report: has been prepared by GHD for General Motors, LLC and may only be used and relied on by General Motors, LLC and the NYSDEC for the purpose agreed between GHD and General Motors, LLC as set out in section 1.1 of this report.

GHD otherwise disclaims responsibility to any person other than General Motors, LLC and the NYSDEC arising in connection with this report. GHD also excludes implied warranties and conditions, to the extent legally permissible.

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

The opinions, conclusions and any recommendations in this report are based on conditions encountered and information reviewed at the date of preparation of the report. GHD has no responsibility or obligation to update this report to account for events or changes occurring subsequent to the date that the report was prepared.

The opinions, conclusions and any recommendations in this report are based on assumptions made by GHD described in this report. GHD disclaims liability arising from any of the assumptions being incorrect.

The opinions, conclusions and any recommendations in this report are based on information obtained from, and testing undertaken at or in connection with, specific sample points. Site conditions at other parts of the site may be different from the site conditions found at the specific sample points.

Investigations undertaken in respect of this report are constrained by the particular site conditions, such as the location of buildings, services and vegetation. As a result, not all relevant site features and conditions may have been identified in this report.

2. Background

Beginning in 2005, GHD conducted multi-phased investigation activities to delineate the chlorinated solvent plume and performed a remedial technology evaluation to identify feasible remedial options for the Endline Area. GHD submitted the "Report of Findings for the Supplemental Phase I and Phase II of the Endline Area Chlorinated Solvent Subsurface Investigation" to the NYSDEC on July 1, 2008. Based on the results of the investigation and remedial technology evaluation, monitored natural attenuation (MNA) was the recommended remedial alternative. The NYSDEC approved the report and agreed with the selection of MNA as the remedial alternative for the Site in a letter dated July 9, 2008.

The first MNA groundwater monitoring program was completed between October 2008 and April 2010. An evaluation of the effectiveness of the MNA remedy was prepared and submitted to the NYSDEC in October 2010. The evaluation recommended the implementation of an In Situ Enhanced Biodegradation (ISEB) program to promote attenuation

consisting of the application of a carbon source and an additional 2 years of monitoring followed by an evaluation of the progress of attenuation.

A work plan for implementation of the ISEB program was submitted to the NYSDEC in February 2011. The NYSDEC approved the work plan in a letter dated March 14, 2011. Baseline sampling was completed in April 2011, and the injection program was completed in September 2011, followed by 2 years of post-injection monitoring. Samples were also collected annually to monitor the concentrations of residual petroleum compounds in monitoring wells MW-2, MW-3, MW-4, and MW-5.

An evaluation of the ISEB program was prepared and submitted to NYSDEC in August 2014. The evaluation report recommended a second round of injections followed by another 2 years of monitoring and evaluation. The NYSDEC approved the injections in an email dated May 15, 2015.

The second round of ISEB injections was completed in November and December 2015. Monitoring events were completed at 90- and 180-days post-injection with the 180-day event being the first semi-annual event. The four semi-annual events were completed in May 2016, November 2016, May 2017, and November 2017. In addition to the second round of post-injection monitoring, samples were also collected in May of 2016 to monitor the concentrations of residual petroleum compounds in monitoring wells MW-2, MW-3, MW-4, and MW-5.

GHD submitted a third evaluation report dated June 2021, which indicated attenuation was occurring at a slow rate and recommended triennial sampling for the chlorinated solvent and MNA parameters and elimination of the petroleum monitoring. The NYSDEC approved the triennial groundwater monitoring in a letter dated June 25, 2021.

The groundwater monitoring event completed on February 27, 2024 is the first triennial event. This report summarizes the groundwater monitoring for this event and evaluates the ISEB program to date.

3. Groundwater Monitoring Program

The groundwater monitoring program was designed to assess the attenuation of the chlorinated solvent contamination and monitor for any migration of the chlorinated solvent plume.

Groundwater monitoring wells MW-2, MW-11, and MW-12, located within the chlorinated solvent plume, were sampled to monitor the progress of attenuation. Monitoring wells MW-1, MW-9, MW-101, and MW-102 were sampled to monitor for plume migration. MW-103 was previously included for plume migration, but it was inaccessible during this sampling event. Groundwater monitoring well locations are shown on Figure 3. The groundwater monitoring field forms are included as Appendix A.

The groundwater samples collected from MW-2, MW-11, and MW-12 were analyzed for Target Compound List (TCL) volatile organic compounds (VOCs), and the following natural attenuation parameters:

- | | |
|-----------------------------------|--|
| 1. Total organic carbon (TOC) | 8. Orthophosphate phosphorus |
| 2. Chemical oxygen demand (COD) | 9. Alkalinity |
| 3. Biological oxygen demand (BOD) | 10. Methane |
| 4. Sulfate | 11. Ethane |
| 5. Sulfide | 12. Total nitrogen (as ammonia) |
| 6. Nitrate | 13. Total heterotrophic microbial count |
| 7. Nitrite | 14. Total 1,1,1-TCA-specific microbial count |

The laboratory analytical report is provided as Appendix B. Table 1 presents the historical analytical results as well as the analytical results for the sampling conducted on February 27, 2024 for plume monitoring wells MW-2, MW-11, and MW-12.

The groundwater samples collected from perimeter monitoring wells MW-1, MW-9, MW-101, and MW-102 were analyzed for TCL VOCs to monitor plume migration. Monitoring well MW-103, located within Plant 1, was under machinery and was not accessible at the time of the 2024 sampling. The analytical results for the plume migration monitoring conducted on February 27, 2024 as well as historical analytical results are presented on Table 2.

The data was validated by GHD. Application of quality assurance criteria was consistent with "National Functional Guidelines for Organic Superfund Methods Data Review," United States Environmental Protection Agency (EPA)-540-R-20-005, November 2020, and "National Functional Guidelines for Inorganic Superfund Methods Data Review," EPA-542-R-20-006, November 2020. The data were found to exhibit acceptable levels of accuracy and precision with the qualifiers noted on the tables. The data validation report is included as Appendix C.

4. Monitoring Results

4.1 Chlorinated Volatile Organic Compounds

The data for 1,1,1-trichloroethane (1,1,1-TCA) at monitoring well MW-2 demonstrates a 96% reduction from 12,000 µg/L in April 2011 to non-detect in February 2024, although the elevated detection limits observed in February 2024 result in a low bias for the % reduction. The daughter/breakdown product concentrations at well MW-2 have increased, as expected, and are now exhibiting a downward trend as they convert to ethane.

The 1,1,1-TCA data for well MW-11 show a 67% reduction (730 µg/L to 240 µg/L) at MW-11 since 2011, with expected increases in breakdown products during this period.

Although 1,1,1-TCA was never detected at MW-12, the breakdown product 1,1,-dichloroethane (1,1-DCA) has been detected. Concentrations of 1,1-DCA have exhibited a 41% reduction during the 2011 to 2024 monitoring period.

This data is shown in Table 1 and graphically on Figures 4 through 7 for MW-2, Figures 8 through 11 for MW-11, and Figures 12 through 15 for MW-12. Where results are reported as non-detect, a value of ½ the laboratory detection limit has been used to generate the graphs.

4.2 Dissolved Gases

The dissolved gases monitored in the groundwater included ethane, which is the final product of the anaerobic biodegradation of 1,1,1 TCA, and methane, which is produced under strictly anaerobic conditions. Methane is an indicator that highly anaerobic conditions have been established.

The ethane and methane concentrations at well MW 2 both remain high suggesting that conditions are anaerobic and complete dechlorination of 1,1,1-TCA is occurring.

Methane concentrations have been slowly increasing at MW-11. The ethane concentration is low but detectable and gradually increasing at MW-11 indicating that biodegradation continues at a slow rate at this location.

The ethane concentration at MW-12 has increased slightly since the second injection in 2015 as 1,1-DCA slowly breaks down. The methane concentration at MW-12 has decreased from an average of 3,550 µg/L in October 2018 to 1,900 µg/L in February 2024, but indicates that conditions are still anaerobic and biodegradation is progressing at a slow rate.

4.3 Natural Attenuation Parameters

Alkalinity remained relatively constant during the 2011 to 2024 monitoring period, but remains high in all monitoring wells suggesting a slow but steady rate of biodegradation.

Nitrate and nitrite were not detected above their detection limits in any of the wells either before or after EVO treatment, which indicates that the conditions were anaerobic before the injection event and continue to be anaerobic long after the injection event.

Concentrations of ammonia nitrogen increased after the EVO injection events, particularly in monitoring well MW-2, but have decreased in the last 3 years. Ammonia nitrogen is currently present at 1,600 µg/L in well MW-2, 310 µg/L in well MW-11, and 130 µg/L in well MW-12. These levels are sufficient to sustain microbial activity at a low level.

Orthophosphate phosphorus remained present at low concentrations throughout the monitoring period. Increased concentrations were not observed after injection events. Low levels of orthophosphate are required for microbial activity so the low phosphate concentrations may have limited microbial growth.

BOD, COD, and TOC all showed increases in well MW-2 after each injection event and have decreased between 2018 and 2020. BOD and COD have increased in Well MW-2 in 2024, but the concentration still remains lower than before the second injection event in 2015. TOC is currently present at 29 mg/L in well MW 2, 6.9 mg/L in well MW-11, and 14 mg/L in well MW-12. These concentrations may sustain a low level of ongoing biodegradation.

The sulfate concentration at well MW 2 was low initially (5.6 mg/L) and decreased further to non-detect levels. Sulfate fluctuated between low and non-detect levels in well MW-2, but showed an increase in 2024. Sulfide was detected in well MW-2 during some monitoring events; however, sulfide is not soluble in water and tends to settle out of groundwater so its absence does not mean that sulfate reduction is not occurring. Sulfate is significantly higher in wells MW-11 and MW-12, while sulfide remains non-detect at 1 mg/L. Sulfate is reduced to sulfide under anaerobic conditions; therefore, the sulfate/sulfide data suggests that conditions are more highly anaerobic at well MW 2, than at MW-11 and MW-12.

Total aerobic and anaerobic microbial counts increased in well MW-2 after each of the injection events but then stabilized. Microbial counts remain at a similar level through the October 2020 monitoring event. These microbial numbers suggest that biodegradation is ongoing. The 2020 microbial counts were much lower for wells MW-11 and MW-12 and suggest that biodegradation is not proceeding as quickly in these wells. In 2024, the highest concentrations of heterotrophs were found in well MW-12 where concentrations of CVOCs are lowest and higher concentrations of anaerobic TCA degraders were found in the wells where CVOCs were higher. This suggests that the presence of CVOCs inhibits overall microbial growth, but that CVOC degraders are present in all wells and higher where higher concentrations of CVOCs are present.

4.4 Field Parameters

Dissolved oxygen (DO) and oxidation-reduction potential (ORP) in well MW-2 were low before the injection events and ORP has remained low negative to low positive range throughout the monitoring period indicating that conditions are naturally anaerobic in this well. DO appears to be fluctuating, however. More fluctuations in DO and ORP have been observed in wells MW-11 and MW-12 than in well MW-2. In both MW-11 and MW-12, DO has generally been low, although 2024 DO values were in the moderate range for well MW-12. In MW-11, ORP has been fairly high, which may indicate the potential for aerobic activity in this well. In MW-12, ORP is in the low negative to low positive range, indicating that conditions are fairly anaerobic in this well. In 2024, pH was in the neutral range in wells MW-2, MW-11 and MW-12.

4.5 Plume Migration

A review of the VOC data for perimeter monitoring wells MW 1, MW 9, MW 101, and MW 102 shows that there are no detections of 1,1,1-TCA or associated daughter/breakdown products in any of the perimeter wells. This indicates that the plume is stable and not migrating.

5. Conclusions and Recommendations

5.1 Conclusions

The plume well data continues to show that biodegradation is progressing at a slow rate in the plume monitoring wells, and the soil conditions are sufficient for anaerobic biodegradation to continue. The perimeter well data confirms that the tight clay soils continue to prevent migration of the plume.

5.2 Recommendations

Conditions in the perimeter monitoring wells appear to be stable and no degradation of water quality has been observed over the last 3 years. Chlorinated solvents continue to biodegrade at a slow pace. GHD is recommending continuing to sample on a triennial basis. Sampling will be completed in 2026 and 2029. The monitoring parameters for the plume wells MW-2, MW-11, and MW-12 are presented on Table 3. Samples from the perimeter wells, MW-1, MW-9, MW-101, and MW-102 will continue to be analyzed for only the VOC parameters listed on Table 3.

GHD will continue to evaluate the effectiveness of the remedy after each triennial event.

Table 1

Analytical Results Summary - Natural Attenuation Monitoring
Endoline Area Chlorinated Solvent Plume Monitoring Program
GM Tonawanda Engine Plant
Tonawanda, New York

Location ID:				MW-2	MW-2	MW-2	MW-2	MW-2	MW-2	MW-2	MW-2
Sample Name:				GW-17390-042611-KL-04	WG-17390-121911-KL-01	WG-17390-032612-KL-01	WG-17390-032612-KL-02	WG-17390-092012-001	WG-17390-031113-KL-002	WG-17390-092713-KL-010	WG-17390-091615-006
Sample Date:				4/26/2011	12/19/2011	3/26/2012	3/26/2012 (Duplicate)	9/20/2012	3/11/2013	9/27/2013	9/16/2015
Parameters	Units	NYSDEC TOGs	Guidance Value Standard								
Volatile Organic Compounds											
1,1,1-Trichloroethane	ug/L	NC	5	12000	24000	7400	7500	1300 U	170 J	420 U	1000 U
1,1,2,2-Tetrachloroethane	ug/L	NC	5	330 U	710 U	830 U	630 U	1300 U	330 U	420 U	1000 U
1,1,2-Trichloroethane	ug/L	NC	1	330 U	710 U	830 U	630 U	1300 U	330 U	420 U	1000 U
1,1-Dichloroethane	ug/L	NC	5	4700	23000	24000	22000	1300 U	3600	1500	710 J
1,1-Dichloroethene	ug/L	NC	5	140 J	1100	190 J	170 J	1300 U	330 U	420 U	1000 U
1,2-Dichloroethane	ug/L	NC	0.6	330 U	710 U	830 U	630 U	1300 U	330 U	420 U	1000 U
1,2-Dichloroethene (total)	ug/L	5	NC	670 U	-	-	-	-	-	-	2000 U
1,2-Dichloropropane	ug/L	NC	1	330 U	710 U	830 U	630 U	1300 U	330 U	420 U	1000 U
1,4-Dioxane	ug/L	0.35	NC	17000 U	-	42000 U	31000 U	63000 U	17000 U	21000 U	50000 U
2-Butanone (Methyl ethyl ketone) (MEK)	ug/L	50	NC	3300 U	7100 U	8300 U	6300 U	13000 U	3300 U	4200 U	10000 U
2-Hexanone	ug/L	50	NC	3300 U	7100 U	8300 U	6300 U	13000 U	3300 U	4200 U	10000 U
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	ug/L	NC	NC	3300 U	7100 U	8300 U	6300 U	13000 U	3300 U	4200 U	10000 U
Acetone	ug/L	50	NC	3300 U	7100 U	1200 J	980 J	13000 U	3300 U	1600 J	10000 U
Benzene	ug/L	NC	1	330 U	200 J	270 J	260 J	320 J	190 J	170 J	1000 U
Bromodichloromethane	ug/L	50	NC	330 U	710 U	830 U	630 U	1300 U	330 U	420 U	1000 U
Bromoform	ug/L	50	NC	330 U	710 U	830 U	630 U	1300 U	330 U	420 U	1000 U
Bromomethane (Methyl bromide)	ug/L	NC	5	330 U	710 U	830 U	630 U	1300 U	330 U	420 U	1000 U
Carbon disulfide	ug/L	60	60	330 U	710 U	830 U	630 U	1300 U	330 U	420 U	1000 U
Carbon tetrachloride	ug/L	NC	5	330 U	710 U	830 U	630 U	1300 U	330 U	420 U	1000 U
Chlorobenzene	ug/L	NC	5	330 U	710 U	830 U	630 U	1300 U	330 U	420 U	1000 U
Chloroethane	ug/L	NC	5	740	3700	4200 J	2400 J	42000	13000	10000	22000
Chloroform (Trichloromethane)	ug/L	NC	7	330 U	710 U	830 U	630 U	1300 U	330 U	420 U	1000 U
Chloromethane (Methyl chloride)	ug/L	NC	5	330 U	710 U	830 U	630 U	1300 U	330 U	420 U	1000 U
cis-1,2-Dichloroethene	ug/L	NC	5	-	710 U	830 U	630 U	1300 U	330 U	420 U	-
cis-1,3-Dichloropropene	ug/L	NC	NC	330 U	710 U	830 U	630 U	1300 U	330 U	420 U	1000 U
Dibromochloromethane	ug/L	50	NC	330 U	710 U	830 U	630 U	1300 U	330 U	420 U	1000 U
Ethylbenzene	ug/L	NC	5	80 J	120 J	160 J	140 J	1300 U	90 J	84 J	1000 U
Methylene chloride	ug/L	NC	5	330 U	710 U	320 J	230 J	1300 U	340 U	420 U	1000 U
Styrene	ug/L	NC	5	330 U	710 U	830 U	630 U	1300 U	330 U	420 U	1000 U
Tetrachloroethene	ug/L	NC	5	330 U	710 U	830 U	630 U	1300 U	330 U	420 U	1000 U
Toluene	ug/L	NC	5	68 J	190 J	180 J	170 J	390 J	220 J	200 J	1000 U
trans-1,2-Dichloroethene	ug/L	NC	5	-	710 U	830 U	630 U	1300 U	330 U	420 U	-
trans-1,3-Dichloropropene	ug/L	NC	NC	330 U	710 U	830 U	630 U	1300 U	330 U	420 U	1000 U
Trichloroethene	ug/L	NC	5	330 U	710 U	830 U	630 U	1300 U	330 U	420 U	1000 U
Vinyl chloride	ug/L	NC	2	330 U	710 U	830 U	630 U	1300 U	330 U	420 U	1000 U
Xylenes (total)	ug/L	NC	5	380 J	590 J	680 J	600 J	410 J	450 J	480 J	2000 U
Dissolved Gases											
Ethane	ug/L	NC	NC	19	25	11	18	54	48	79	240
Methane	ug/L	NC	NC	5800	3700	2700	3300	1200	6300	3500	5100
Wet Chemistry											
Alkalinity, total (as CaCO3)	ug/L	NC	NC	209000	240000	260000 J	280000	230000	330000	220000	310000
Ammonia	ug/L	NC	2000	3000	4200	3600	3600	4200	3400 J	2900	2100
Biochemical oxygen demand (BOD)	ug/L	NC	NC	12000	43000 J	94000	98000	91000 J	71000	69000	24000 U
Chemical oxygen demand (COD)	ug/L	NC	NC	35000	200000	190000 J	180000	210000	130000	84000	81000
Dehalobacter spp.	unknown	NC	NC	absent	present	present	-	-	-	-	-
Dehalococcoides spp.	unknown	NC	NC	present	present	present	-	-	-	-	-
Nitrate (as N)	ug/L	NC	10000	100 U	100 U	100 U	100 U	100 U	100 U	100 U	500 U
Nitrite (as N)	ug/L	NC	1000	100 U	100 U	100 U	100 U	100 U	100 U	100 U	500 U
Orthophosphate	ug/L	NC	NC	-	-	61 J	54 J	40 J	45 J	500 U	-
Phosphorus	ug/L	NC	NC	200	130	-	-	-	-	-	80 J
Sulfate	ug/L	NC	250000	6000	1000	460 J	400 J	4700	850 J	4300	5600
Sulfide	ug/L	50	NC	1400	2400	1100	960 J	2100	1000 U	470 J	5500
Total organic carbon (TOC)	ug/L	NC	NC	10000	65000	46000	43000	78000	37000	22000	24000
Anaerobic 1,1,1-TCA specific microbial population	cfu/mL	NC	NC	1260	1470	10900	-	-	-	-	-
Total microbial population - aerobic	cfu/mL	NC	NC	56640	1770	15200	-	-	-	-	-
Total microbial population - anaerobic	cfu/mL	NC	NC	11880	3520	13900	-	-	-	-	-

Table 1

Analytical Results Summary - Natural Attenuation Monitoring
Endoline Area Chlorinated Solvent Plume Monitoring Program
GM Tonawanda Engine Plant
Tonawanda, New York

Location ID:				MW-2	MW-2	MW-2	MW-2	MW-2	MW-2	MW-2	MW-2
Sample Name:				GW-17390-042611-KL-04	WG-17390-121911-KL-01	WG-17390-032612-KL-01	WG-17390-032612-KL-02	WG-17390-092012-001	WG-17390-031113-KL-002	WG-17390-092713-KL-010	WG-17390-091615-006
Sample Date:				4/26/2011	12/19/2011	3/26/2012	3/26/2012 (Duplicate)	9/20/2012	3/11/2013	9/27/2013	9/16/2015

Notes:
¹ - NYSDEC TOGs Groundwater Standards and Guidance - NYSDEC Division of Water Technical and Operational Guidance Series (1.1.1) Ambient Water Quality Standards and Guidance Values, dated June 1998 and addenda.
ug/L - micrograms per liter or parts per billion (ppb)
NC - No Criteria
3.1 J - Estimated Concentration. Analyte was detected at a concentration below the reporting limit
100 U - result is non-detect at the associated value

Table 1

Analytical Results Summary - Natural Attenuation Monitoring
Endoline Area Chlorinated Solvent Plume Monitoring Program
GM Tonawanda Engine Plant
Tonawanda, New York

Location ID:	MW-2	MW-2	MW-2	MW-2	MW-2	MW-2	MW-2	MW-2	
Sample Name:	WG-17390-022916-001	WG-17390-051016-002	WG-17390-111516-KL-08	WG-17390-111516-KL-09	WG-17390-051817-DO-005	WG-17390-051817-DO-006	WG-17390-103117-005	WG-17390-102918-001	
Sample Date:	2/29/2016	5/10/2016	11/15/2016	11/15/2016 (Duplicate)	5/18/2017	5/18/2017 Duplicate	10/31/17	10/29/2018	
Parameters	Units								
Volatile Organic Compounds									
1,1,1-Trichloroethane	ug/L	620 J	1700 U	2500 U	2500 U	1300 U	1300 U	1000 U	
1,1,2,2-Tetrachloroethane	ug/L	1000 U	1700 U	2500 U	2500 U	1300 U	1300 U	1000 U	
1,1,2-Trichloroethane	ug/L	1000 U	1700 U	2500 U	2500 U	1300 U	1300 U	1000 U	
1,1-Dichloroethane	ug/L	11000	8900	2400 J	2600	1300 U	630 J	4200	3500
1,1-Dichloroethene	ug/L	1000 U	1700 U	2500 U	2500 U	1300 U	1300 U	1000 U	1000 U
1,2-Dichloroethane	ug/L	1000 U	1700 U	2500 U	2500 U	1300 U	1300 U	1000 U	1000 U
1,2-Dichloroethene (total)	ug/L	2000 U	3300 U	5000 U	5000 U	2500 U	2500 U	2000 U	2000 U
1,2-Dichloropropane	ug/L	1000 U	1700 U	2500 U	2500 U	1300 U	1300 U	1000 U	1000 U
1,4-Dioxane	ug/L	50000 U	83000 U	130000 U	130000 U	63000 U	63000 U	50000 U	50000 U
2-Butanone (Methyl ethyl ketone) (MEK)	ug/L	10000 U	17000 U	25000 U	25000 U	13000 U	13000 U	10000 U	10000 U
2-Hexanone	ug/L	10000 U	17000 U	25000 U	25000 U	13000 U	13000 U	10000 U	10000 U
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	ug/L	10000 U	17000 U	25000 U	25000 U	13000 U	13000 U	10000 U	10000 U
Acetone	ug/L	1100 JB	17000 U	25000 U	25000 U	13000 U	13000 U	10000 U	10000 U
Benzene	ug/L	1000 U	1700 U	2500 U	2500 U	1300 U	1300 U	1000 U	230 J
Bromodichloromethane	ug/L	1000 U	1700 U	2500 U	2500 U	1300 U	1300 U	1000 U	1000 U
Bromoform	ug/L	1000 U	1700 U	2500 U	2500 U	1300 U	1300 U	1000 U	1000 U
Bromomethane (Methyl bromide)	ug/L	1000 U	1700 U	2500 U	2500 U	1300 U	1300 U	1000 U	1000 U
Carbon disulfide	ug/L	1000 U	1700 U	2500 U	2500 U	1300 U	1300 U	1000 U	1000 U
Carbon tetrachloride	ug/L	1000 U	1700 U	2500 U	2500 U	1300 U	1300 U	1000 U	1000 U
Chlorobenzene	ug/L	1000 U	1700 U	2500 U	2500 U	1300 U	1300 U	1000 U	1000 U
Chloroethane	ug/L	26000	34000	45000	49000	37000	38000	60000	45000
Chloroform (Trichloromethane)	ug/L	1000 U	1700 U	2500 U	2500 U	1300 U	1300 U	1000 U	1000 U
Chloromethane (Methyl chloride)	ug/L	1000 U	1700 U	2500 U	2500 U	1300 U	1300 U	1000 U	1000 U
cis-1,2-Dichloroethene	ug/L	-	1700 U	2500 U	2500 U	1300 U	1300 U	1000 U	1000 U
cis-1,3-Dichloropropene	ug/L	1000 U	1700 U	2500 U	2500 U	1300 U	1300 U	1000 U	1000 U
Dibromochloromethane	ug/L	1000 U	1700 U	2500 U	2500 U	1300 U	1300 U	1000 U	1000 U
Ethylbenzene	ug/L	1000 U	1700 U	2500 U	2500 U	1300 U	1300 U	1000 U	1000 U
Methylene chloride	ug/L	1000 U	1700 U	2500 U	3850 U	1300 U	1300 U	1000 U	5000 U
Styrene	ug/L	1000 U	1700 U	2500 U	2500 U	1300 U	1300 U	1000 U	1000 U
Tetrachloroethene	ug/L	1000 U	1700 U	2500 U	2500 U	1300 U	1300 U	1000 U	1000 U
Toluene	ug/L	1000 U	1700 U	2500 U	2500 U	1300 U	1300 U	1000 U	1000 U
trans-1,2-Dichloroethene	ug/L	-	1700 U	2500 U	2500 U	1300 U	1300 U	1000 U	1000 U
trans-1,3-Dichloropropene	ug/L	1000 U	1700 U	2500 U	2500 U	1300 U	1300 U	1000 U	1000 U
Trichloroethene	ug/L	1000 U	1700 U	2500 U	2500 U	1300 U	1300 U	1000 U	1000 U
Vinyl chloride	ug/L	1000 U	1700 U	2500 U	2500 U	1300 U	1300 U	1000 U	1000 U
Xylenes (total)	ug/L	2000 U	3300 U	5000 U	5000 U	2500 U	2500 U	350 J	240 J
Dissolved Gases									
Ethane	ug/L	-	140	170	180	230	230	290	410
Methane	ug/L	-	6300	4400	5200	9600	9000	9800	14000
Wet Chemistry									
Alkalinity, total (as CaCO3)	ug/L	350000	360000	310000	320000	280000	290000	260000	250000
Ammonia	ug/L	1500	1700 B	2800 B	2800 B	--	--	3500	3300
Biochemical oxygen demand (BOD)	ug/L	26000	43000	60000 B	68000 B	95000 J	82000 J	35000	9300
Chemical oxygen demand (COD)	ug/L	120000	140000	250000 J	240000 J	230000	220000	250000	180000
Dehalobacter spp.	unknown	-	-	-	-	-	-	-	-
Dehalococcoides spp.	unknown	-	-	-	-	-	-	-	-
Nitrate (as N)	ug/L	100 U	100 U	100 U	100 U	100 UJ	100 UJ	100 U	100 U
Nitrite (as N)	ug/L	100 U	500 U	100 U	100 U	100 UJ	100 UJ	100 U	100 U
Orthophosphate	ug/L	-	-	-	-	--	--	--	-
Phosphorus	ug/L	100 U	-	61 J	100 U	96 J	68 J	54 J	90 J
Sulfate	ug/L	1400	810 J	760 J	1300	1000 U	1000 U	1000 U	3100
Sulfide	ug/L	1000 U	1000 U	1000 U	1000 U	1000 U	1000 U	1000 U	1000 U
Total organic carbon (TOC)	ug/L	29000	30000	68000	66000	37000	36000	75000	27000
Anaerobic 1,1,1-TCA specific microbial population	cfu/mL	-	-	-	-	--	--	--	-
Total microbial population - aerobic	cfu/mL	-	-	-	-	-	-	-	-
Total microbial population - anaerobic	cfu/mL	-	-	-	-	-	-	-	-

Table 1
Analytical Results Summary - Natural Attenuation Monitoring
Endoline Area Chlorinated Solvent Plume Monitoring Program
GM Tonawanda Engine Plant
Tonawanda, New York

Location ID:		MW-2	MW-2	MW-2	MW-2	MW-2	MW-2	MW-2	MW-2
Sample Name:		WG-17390-022916-001	WG-17390-051016-002	WG-17390-111516-KL-08	WG-17390-111516-KL-09	WG-17390-051817-DO-005	WG-17390-051817-DO-006	WG-17390-103117-005	WG-17390-102918-001
Sample Date:		2/29/2016	5/10/2016	11/15/2016	11/15/2016 (Duplicate)	5/18/2017	5/18/2017 Duplicate	10/31/17	10/29/2018
Parameters	Units								
Field Parameters									
Conductivity	mS/cm	1.51	1.36	1.65	1.65	1.48	1.48	1.86	1.71
Dissolved oxygen (DO)	ug/L	0	3800	580	580	0.24	0.24	0.98	--
Oxidation reduction potential (ORP)	millivolts	-152	-	-101	-101	-145	-145	-52	-156
pH	s.u.	7.67	7.43	7.71	7.71	7.29	7.29	7.11	6.95
Temperature	Deg C	8.02	14.87	14.0	14.0	17.58	17.58	13.77	14.3
Turbidity	NTU	4.04	3.8	3.6	3.6	2.52	2.52	28.6	13.2

Notes:
1 - NYSDEC TOGs Groundwater Standards and Guidance - NYSDEC Division of Water ` Operational Guidance Series (1.1.1) Ambient Water Quality Standards and Guidance June 1998 and addenda.
ug/L - micrograms per liter or parts per billion (ppb)
NC - No Criteria
3.1 J - Estimated Concentration. Analyte was detected at a concentration below the 100 U - result is non-detect at the associated value

Table 1

Analytical Results Summary - Natural Attenuation Monitoring Endoline Area Chlorinated Solvent Plume Monitoring Program GM Tonawanda Engine Plant Tonawanda, New York									
Location ID:	MW-2	MW-2	MW-2	MW-2	MW-2	MW-11	MW-11	MW-11	
Sample Name:	WG-17390-102319-003	WG-17390-102319-004	WG-17390-101520-001	WG-17390-101520-002	WG-017390-022724-KM-001	GW-17390-042611-KL-07	WG-17390-121911-KL-02	WG-17390-121911-KL-03	
Sample Date:	10/23/2019	10/23/2019 Duplicate	10/15/2020	10/15/2020 Duplicate	2/27/2024	4/26/2011	12/19/2011	12/19/2011 (Duplicate)	
Parameters	Units								
Volatile Organic Compounds									
1,1,1-Trichloroethane	ug/L	400 U	400 U	13 J	45 J	1000 U	730	760	730
1,1,2,2-Tetrachloroethane	ug/L	400 U	400 U	4.0 U	130 U	1000 U	71 U	130 U	130 U
1,1,2-Trichloroethane	ug/L	400 U	400 U	4.0 U	130 U	1000 U	71 U	130 U	130 U
1,1-Dichloroethane	ug/L	28000	24000	1600 J	20000 J	1800	2400	2600	2500
1,1-Dichloroethene	ug/L	400 U	400 U	6.0	130 U	1000 U	1800	2100	2100
1,2-Dichloroethane	ug/L	400 U	400 U	4.0 U	130 U	1000 U	16 J	130 U	130 U
1,2-Dichloroethene (total)	ug/L	400 U	400 U	6.5	130 U	1000 U	98 J	-	-
1,2-Dichloropropane	ug/L	400 U	400 U	4.0 U	130 U	1000 U	71 U	130 U	130 U
1,4-Dioxane	ug/L	20000 U	20000 U	200 U	6300 U	50000 U	3600 U	-	-
2-Butanone (Methyl ethyl ketone) (MEK)	ug/L	4000 U	4000 U	40 U	1300 U	10000 U	710 U	1300 U	1300 U
2-Hexanone	ug/L	4000 U	4000 U	40 U	1300 U	10000 U	710 U	1300 U	1300 U
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	ug/L	4000 U	4000 U	40 U	1300 U	10000 U	710 U	1300 U	1300 U
Acetone	ug/L	4000 U	4000 U	40 U	1300 U	10000 U	710 U	1300 U	1300 U
Benzene	ug/L	180 J	190 J	300 J	160 J	1000 U	71 U	130 U	130 U
Bromodichloromethane	ug/L	400 U	400 U	4.0 U	130 U	1000 U	71 U	130 U	130 U
Bromoform	ug/L	400 U	400 U	4.0 U	130 U	1000 U	71 U	130 U	130 U
Bromomethane (Methyl bromide)	ug/L	400 U	400 U	4.0 U	130 U	1000 U	71 U	130 U	130 U
Carbon disulfide	ug/L	400 U	400 U	4.0 U	130 U	1000 U	71 U	130 U	130 U
Carbon tetrachloride	ug/L	400 U	400 U	4.0 U	130 U	1000 U	71 U	130 U	130 U
Chlorobenzene	ug/L	400 U	400 U	4.0 U	130 U	1000 U	71 U	130 U	130 U
Chloroethane	ug/L	36000	37000	32000	30000	28000	22 J	130 U	36 J
Chloroform (Trichloromethane)	ug/L	400 U	400 U	4.0 U	130 U	1000 U	71 U	130 U	130 U
Chloromethane (Methyl chloride)	ug/L	400 U	400 U	4.0 U	130 U	1000 U	71 U	130 U	130 U
cis-1,2-Dichloroethene	ug/L	400 U	400 U	2.8 J	130 U	1000 U	-	110 J	110 J
cis-1,3-Dichloropropene	ug/L	400 U	400 U	4.0 U	130 U	1000 U	71 U	130 U	130 U
Dibromochloromethane	ug/L	400 U	400 U	4.0 U	130 U	1000 U	71 U	130 U	130 U
Ethylbenzene	ug/L	400 U	400 U	43 J	24 J	1000 U	71 U	130 U	130 U
Methylene chloride	ug/L	2000 U	2000 U	20 U	630 U	630 U	71 U	130 U	130 U
Styrene	ug/L	400 U	400 U	4.0 U	130 U	1000 U	71 U	130 U	130 U
Tetrachloroethene	ug/L	400 U	400 U	4.0 U	130 U	1000 U	71 U	130 U	130 U
Toluene	ug/L	400 U	400 U	13	18 J	1000 U	71 U	130 U	130 U
trans-1,2-Dichloroethene	ug/L	400 U	400 U	3.7 J	130 U	1000 U	-	130 U	130 U
trans-1,3-Dichloropropene	ug/L	400 U	400 U	4.0 U	130 U	1000 U	71 U	130 U	130 U
Trichloroethene	ug/L	400 U	400 U	4.0 U	130 U	1000 U	71 U	130 U	130 U
Vinyl chloride	ug/L	400 U	400 U	12 J	31 J	1000 U	31 J	130 U	130 U
Xylenes (total)	ug/L	93 J	98 J	300 J	120 J	2000 U	140 U	250 U	250 U
Dissolved Gases									
Ethane	ug/L	370	-	290 J	570 J	380	4.0	5.9	6.2
Methane	ug/L	11000	-	7700 J	16000 J	8900	860	1200	1200
Wet Chemistry									
Alkalinity, total (as CaCO3)	ug/L	290000	-	290000	-	400000	422000	450000	460000
Ammonia	ug/L	3400	-	4300	-	1600	2000 U	2000 U	2000 U
Biochemical oxygen demand (BOD)	ug/L	8400 J	-	15000 J	-	12000	2000 U	2000 UJ	2000 UJ
Chemical oxygen demand (COD)	ug/L	120000	-	140000	-	95000	180000	190000	160000
Dehalobacter spp.	unknown	-	-	-	-	-	present	present	-
Dehalococcoides spp.	unknown	-	-	-	-	-	absent	absent	-
Nitrate (as N)	ug/L	500 UJ	-	100 UJ	-	250 U	100 U	500 U	500 U
Nitrite (as N)	ug/L	100 UJ	-	100 UJ	-	250 U	5000 U	500 U	5000 U
Orthophosphate	ug/L	-	-	-	-	-	-	-	-
Phosphorus	ug/L	100 U	-	57 J	-	100 U	40 J	100 U	100 U
Sulfate	ug/L	3000	-	3100	-	17000	1960000	2000000	2000000
Sulfide	ug/L	1000 U	-	1500	-	1000 U	1000 U	1000 U	1000 U
Total organic carbon (TOC)	ug/L	26000	-	29000	-	19000	5000	6500	6900
Anaerobic 1,1,1-TCA specific microbial population	cfu/mL	-	-	15400	-	2250	3360	115	-
Total microbial population - aerobic	cfu/mL	-	-	20900	-	280	40800	1670	-
Total microbial population - anaerobic	cfu/mL	-	-	15400	-	1490	6080	1450	-

Table 1

Analytical Results Summary - Natural Attenuation Monitoring
Endoline Area Chlorinated Solvent Plume Monitoring Program
GM Tonawanda Engine Plant
Tonawanda, New York

Location ID:		MW-2	MW-2	MW-2	MW-2	MW-2	MW-11	MW-11	MW-11
Sample Name:		WG-17390-102319-003	WG-17390-102319-004	WG-17390-101520-001	WG-17390-101520-002	WG-017390-022724-KM-001	GW-17390-042611-KL-07	WG-17390-121911-KL-02	WG-17390-121911-KL-03
Sample Date:		10/23/2019	10/23/2019	10/15/2020	10/15/2020	2/27/2024	4/26/2011	12/19/2011	12/19/2011
			Duplicate		Duplicate				(Duplicate)
Parameters	Units								
Field Parameters									
Conductivity	mS/cm	2.14	-	1.49	-	1.48	-	14.67	-
Dissolved oxygen (DO)	ug/L	310	-	6.58	-	3510	-	230	-
Oxidation reduction potential (ORP)	millivolts	-187	-	-148	-	-70	-	-12.7	-
pH	s.u.	7.71	-	7.32	-	6.99	-	6.12	-
Temperature	Deg C	15.9	-	11,0	-	13,36	-	10.04	-
Turbidity	NTU	50.2	-	11	-	2.73	-	5.2	-

Notes:
¹ - NYSDEC TOGs Groundwater Standards and Guidance - NYSDEC Division of Water ` Operational Guidance Series (1.1.1) Ambient Water Quality Standards and Guidance June 1998 and addenda.
ug/L - micrograms per liter or parts per billion (ppb)
NC - No Criteria
3.1 J - Estimated Concentration. Analyte was detected at a concentration below the 100 U - result is non-detect at the associated value

Table 1

Analytical Results Summary - Natural Attenuation Monitoring
Endoline Area Chlorinated Solvent Plume Monitoring Program
GM Tonawanda Engine Plant
Tonawanda, New York

Location ID:	MW-11	MW-11	MW-11	MW-11	MW-11	MW-11	MW-11	MW-11	MW-11	
Sample Name:	WG-17390-032612-KL-03	WG-17390-092112-003	WG-17390-031113-KL-001	WG-17390-092713-KL-005	WG-17390-091615-009	WG-17390-030316-004	WG-17390-051016-001	WG-17390-111516-KL-07	WG-17390-051817-DO-007	
Sample Date:	3/26/2012	9/21/2012	3/11/2013	9/27/2013	9/16/2015	3/3/2016	5/10/2016	11/15/2016	5/18/2017	
Parameters	Units									
Volatile Organic Compounds										
1,1,1-Trichloroethane	ug/L	550	640	690	730	460	510	470	380	440
1,1,2,2-Tetrachloroethane	ug/L	83 U	91 U	67 U	40 U	200 U	100 U	100 U	83 U	83 U
1,1,2-Trichloroethane	ug/L	83 U	91 U	67 U	40 U	200 U	100 U	100 U	83 U	83 U
1,1-Dichloroethane	ug/L	2500	2500	2600	2800	2200	2800	2400	2200	2300
1,1-Dichloroethene	ug/L	1800	2000	2000	2200	1500	1800	1500	1300	1100
1,2-Dichloroethane	ug/L	83 U	91 U	67 U	14 J	200 U	100 U	100 U	83 U	83 U
1,2-Dichloroethene (total)	ug/L	-	-	-	-	89 J	110 J	100 J	89 J	83 J
1,2-Dichloropropane	ug/L	83 U	91 U	67 U	40 U	200 U	100 U	100 U	83 U	83 U
1,4-Dioxane	ug/L	4200 U	4500 U	3300 U	2000 U	10000 U	5000 U	5000 U	4170 U	4200 U
2-Butanone (Methyl ethyl ketone) (MEK)	ug/L	830 U	910 U	670 U	400 U	2000 U	1000 U	1000 U	830 U	830 U
2-Hexanone	ug/L	830 U	910 U	670 U	400 U	2000 U	1000 U	1000 U	830 U	830 U
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	ug/L	830 U	910 U	670 U	400 U	2000 U	1000 U	1000 U	830 U	830 U
Acetone	ug/L	130 J	910 U	670 U	400 U	2000 U	110 JB	1000 U	830 U	830 U
Benzene	ug/L	83 U	91 U	67 U	40 U	200 U	100 U	100 U	83 U	83 U
Bromodichloromethane	ug/L	83 U	91 U	67 U	40 U	200 U	100 U	100 U	83 U	83 U
Bromoform	ug/L	83 U	91 U	67 U	40 U	200 U	100 U	100 U	83 U	83 UJ
Bromomethane (Methyl bromide)	ug/L	83 U	91 U	67 U	40 U	200 U	100 U	100 U	83 U	83 U
Carbon disulfide	ug/L	83 U	91 U	67 U	40 U	200 U	100 U	100 U	83 U	83 U
Carbon tetrachloride	ug/L	83 U	91 U	67 U	40 U	200 U	100 U	100 U	83 U	83 U
Chlorobenzene	ug/L	83 U	91 U	67 U	40 U	200 U	100 U	100 U	83 U	83 U
Chloroethane	ug/L	83 U	91 U	26 J	17 J	200 U	100 U	100 U	83 U	83 U
Chloroform (Trichloromethane)	ug/L	83 U	91 U	67 U	40 U	200 U	100 U	100 U	83 U	83 U
Chloromethane (Methyl chloride)	ug/L	83 U	91 U	67 U	40 U	200 U	100 U	100 U	83 U	83 U
cis-1,2-Dichloroethene	ug/L	110	100	100	120	-	-	100	89	83
cis-1,3-Dichloropropene	ug/L	83 U	91 U	67 U	40 U	200 U	100 U	100 U	83 U	83 U
Dibromochloromethane	ug/L	83 U	91 U	67 U	40 U	200 U	100 U	100 U	83 U	83 U
Ethylbenzene	ug/L	83 U	91 U	67 U	40 U	200 U	100 U	100 U	83 U	83 U
Methylene chloride	ug/L	83 U	91 U	83 U	40 U	200 U	100 U	100 U	83 U	83 U
Styrene	ug/L	83 U	91 U	67 U	40 U	200 U	100 U	100 U	83 U	83 U
Tetrachloroethene	ug/L	83 U	91 U	67 U	40 U	200 U	100 U	100 U	83 U	83 U
Toluene	ug/L	83 U	91 U	67 U	40 U	200 U	100 U	100 U	83 U	83 U
trans-1,2-Dichloroethene	ug/L	83 U	91 U	67 U	40 U	-	-	100 U	83 U	83 U
trans-1,3-Dichloropropene	ug/L	83 U	91 U	67 U	40 U	200 U	100 U	100 U	83 U	83 U
Trichloroethene	ug/L	16 J	16 J	20 J	19 J	200 U	100 U	100 U	83 U	83 U
Vinyl chloride	ug/L	83 U	91 U	67 U	23 J	200 U	260	150	240	74 J
Xylenes (total)	ug/L	170 U	180 U	130 U	80 U	400 U	200 U	200 U	170 U	170 U
Dissolved Gases										
Ethane	ug/L	0.65	1.5	0.42 J	1.8	5.6	-	5.1	3.4	3.7
Methane	ug/L	93	280	59	340	1200	-	1200	670	840
Wet Chemistry										
Alkalinity, total (as CaCO3)	ug/L	440000 J	450000	470000	440000	480000	490000	460000	440000	410000
Ammonia	ug/L	2000 U	2000 U	2000 U	870 J	6300	670	170 JB	260 B	350
Biochemical oxygen demand (BOD)	ug/L	2000 U	2000 U	2000 U	2000 U	3500	2000 U	2000 U	2000 U	2600 J
Chemical oxygen demand (COD)	ug/L	100000 J	160000	99000	220000	150000	17000	62000	52000 J	56000
Dehalobacter spp.	unknown	present	-	-	-	-	-	-	-	-
Dehalococcoides spp.	unknown	absent	-	-	-	-	-	-	-	-
Nitrate (as N)	ug/L	100 U	100 U	100 U	100 U	5000 U	500 U	100 U	1000 U	100 UJ
Nitrite (as N)	ug/L	2500 U	100 U	2500 U	500 U	5000 U	500 U	2500 U	1000 U	100 UJ
Orthophosphate	ug/L	100 U	R	100 U	500 U	-	-	-	-	-
Phosphorus	ug/L	-	-	-	-	82 J	100 U	-	100 U	100 U
Sulfate	ug/L	3100000	3900000	2600000	2300000	1700000	930000	2000000	2200000	2000000
Sulfide	ug/L	1000 U	1000 U	1000 U	1000 U	1000 U	1000 U	1000 U	1000 U	1000 U
Total organic carbon (TOC)	ug/L	3100	4000	4800	4300	28000	1600	1300	2300	3200
Anaerobic 1,1,1-TCA specific microbial population	cfu/mL	200	-	-	-	-	-	-	-	-
Total microbial population - aerobic	cfu/mL	555	-	-	-	-	-	-	-	-
Total microbial population - anaerobic	cfu/mL	215	-	-	-	-	-	-	-	-

Table 1

Analytical Results Summary - Natural Attenuation Monitoring
Endoline Area Chlorinated Solvent Plume Monitoring Program
GM Tonawanda Engine Plant
Tonawanda, New York

Location ID:		MW-11	MW-11	MW-11	MW-11	MW-11	MW-11	MW-11	MW-11	MW-11
Sample Name:		WG-17390-032612-KL-03	WG-17390-092112-003	WG-17390-031113-KL-001	WG-17390-092713-KL-005	WG-17390-091615-009	WG-17390-030316-004	WG-17390-051016-001	WG-17390-111516-KL-07	WG-17390-051817-DO-007
Sample Date:		3/26/2012	9/21/2012	3/11/2013	9/27/2013	9/16/2015	3/3/2016	5/10/2016	11/15/2016	5/18/2017
Parameters	Units									
Field Parameters										
Conductivity	mS/cm	16.3	15.6	15.5	26.1	13.9	18.4	14.2	20.5	14.7
Dissolved oxygen (DO)	ug/L	-	5030	1120	-	5120	0	8100	460	0.26
Oxidation reduction potential (ORP)	millivolts	97	-73	155	-58	-146	-110	-	15	-33
pH	s.u.	6.27	6.23	7.08	6.86	6.75	7.53	6.86	7.15	7.01
Temperature	Deg C	10.1	19.4	9.74	18.62	24.99	7.75	12.59	15.7	16.44
Turbidity	NTU	-	0	3.4	0	4.84	1.07	11.2	1.6	2.41

Notes:

¹ - NYSDEC TOGs Groundwater Standards and Guidance - NYSDEC Division of Water ` Operational Guidance Series (1.1.1) Ambient Water Quality Standards and Guidance June 1998 and addenda.

ug/L - micrograms per liter or parts per billion (ppb)

NC - No Criteria

3.1 J - Estimated Concentration. Analyte was detected at a concentration below the 100 U - result is non-detect at the associated value

Table 1

Analytical Results Summary - Natural Attenuation Monitoring
Endoline Area Chlorinated Solvent Plume Monitoring Program
GM Tonawanda Engine Plant
Tonawanda, New York

Location ID:	MW-11	MW-11	MW-11	MW-11	MW-11	MW-11	MW-12	MW-12	
Sample Name:	WG-17390-103017-001	WG-17390-103018-003	WG-17390-103018-004	WG-17390-102319-002	WG-17390-101520-003	WG-017390-022724-JK-008	GW-17390-042611-KL-06	WG-17390-121911-KL-04	
Sample Date:	10/30/17	10/30/2018	10/30/2018 Duplicate	10/23/2019	10/15/2020	2/27/2024	4/26/2011	12/19/2011	
Parameters	Units								
Volatile Organic Compounds									
1,1,1-Trichloroethane	ug/L	400	370	360	330	250	240	2.0 U	3.3 U
1,1,2,2-Tetrachloroethane	ug/L	63 U	50 U	50 U	130 U	50 U	100 U	2.0 U	3.3 U
1,1,2-Trichloroethane	ug/L	63 U	50 U	50 U	130 U	50 U	100 U	2.0 U	3.3 U
1,1-Dichloroethane	ug/L	2400	2800	2800	2700	2500	3500	68	83
1,1-Dichloroethene	ug/L	1500	1800	1700	1700	1500	1800	2.0 U	3.3 U
1,2-Dichloroethane	ug/L	63 U	15 J	15 J	130 U	11 J	100 U	2.0 U	3.3 U
1,2-Dichloroethene (total)	ug/L	94 J	100	100	100 J	76	91 J	4.0 U	-
1,2-Dichloropropane	ug/L	63 U	50 U	50 U	130 U	50 U	100 U	2.0 U	3.3 U
1,4-Dioxane	ug/L	3100 U	2500 U	2500 U	6300 U	2500 U	5000 U	100 U	-
2-Butanone (Methyl ethyl ketone) (MEK)	ug/L	630 U	500 U	62 J	1300 U	500 U	1000 U	20 U	33 U
2-Hexanone	ug/L	630 U	500 U	500 U	1300 U	500 U	1000 U	20 U	33 U
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	ug/L	630 U	500 U	500 U	1300 U	500 U	1000 U	20 U	33 U
Acetone	ug/L	630 U	500 U	500 U	1300 U	500 U	1000 U	20 U	33 U
Benzene	ug/L	63 U	50 U	50 U	130 U	50 U	100 U	2.0 U	3.3 U
Bromodichloromethane	ug/L	63 U	50 U	50 U	130 U	50 U	100 U	2.0 U	3.3 U
Bromoform	ug/L	63 U	50 U	50 U	130 U	50 U	100 U	2.0 U	3.3 U
Bromomethane (Methyl bromide)	ug/L	63 U	50 U	50 U	130 U	50 U	100 U	2.0 U	3.3 U
Carbon disulfide	ug/L	63 U	50 U	50 U	130 U	50 U	100 U	2.0 U	3.3 U
Carbon tetrachloride	ug/L	63 U	50 U	50 U	130 U	50 U	100 U	2.0 U	3.3 U
Chlorobenzene	ug/L	63 U	50 U	50 U	130 U	50 U	100 U	2.0 U	3.3 U
Chloroethane	ug/L	63 U	50 U	50 U	130 U	50 U	100 U	2.0 U	3.3 U
Chloroform (Trichloromethane)	ug/L	63 U	50 U	50 U	130 U	50 U	100 U	2.0 U	3.3 U
Chloromethane (Methyl chloride)	ug/L	63 U	50 U	50 U	130 U	50 U	100 U	2.0 U	3.3 U
cis-1,2-Dichloroethene	ug/L	94	100	100	100 J	76	91 J	-	3.3 U
cis-1,3-Dichloropropene	ug/L	63 U	50 U	50 U	130 U	50 U	100 U	2.0 U	3.3 U
Dibromochloromethane	ug/L	63 U	50 U	50 U	130 U	50 U	100 U	2.0 U	3.3 U
Ethylbenzene	ug/L	63 U	50 U	50 U	130 U	50 U	100 U	2.0 U	3.3 U
Methylene chloride	ug/L	63 U	250 U	250 U	630 U	250 U	500 U	2.0 U	3.3 U
Styrene	ug/L	63 U	50 U	50 U	130 U	50 U	100 U	2.0 U	3.3 U
Tetrachloroethene	ug/L	63 U	50 U	50 U	130 U	50 U	100 U	2.0 U	3.3 U
Toluene	ug/L	63 U	10 J	10 J	130 U	7.9 J	100 U	2.0 U	3.3 U
trans-1,2-Dichloroethene	ug/L	63 U	50 U	50 U	130 U	50 U	100 U	-	3.3 U
trans-1,3-Dichloropropene	ug/L	63 U	50 U	50 U	130 U	50 U	100 U	2.0 U	3.3 U
Trichloroethene	ug/L	63 U	16 J	15 J	19 J	15 J	100 U	2.0 U	3.3 U
Vinyl chloride	ug/L	58 J	54	49 J	130 U	56	320	2.0 U	3.3 U
Xylenes (total)	ug/L	130 U	100 U	100 U	250 U	100 U	200 U	4.0 U	6.7 U
Dissolved Gases									
Ethane	ug/L	5.1	7.7	8.1	9.5	6.9	11	0.50 U	0.50 U
Methane	ug/L	1100	2200	2200	2300	2400	4400	0.50	8.1
Wet Chemistry									
Alkalinity, total (as CaCO3)	ug/L	410000	520000	-	490000	450000	490000	484000	510000
Ammonia	ug/L	350	270	-	670	140 J	310	2000 U	2000 U
Biochemical oxygen demand (BOD)	ug/L	2600 J	2000 U	-	2000 UJ	1900 J	5800	2000 U	2000 UJ
Chemical oxygen demand (COD)	ug/L	56000	53000	-	63000	58000	56000	56000	72000
Dehalobacter spp.	unknown	-	-	-	-	-	-	present	present
Dehalococcoides spp.	unknown	-	-	-	-	-	-	absent	absent
Nitrate (as N)	ug/L	100 UJ	500 U	-	10000 UJ	4000 UJ	2500 U	53 J	500 U
Nitrite (as N)	ug/L	100 UJ	500 U	-	1000 UJ	4000 UJ	2500 U	1000 U	500 U
Orthophosphate	ug/L	-	-	-	-	-	-	-	-
Phosphorus	ug/L	100 U	96 J	-	880	100 U	100 U	40 J	100 U
Sulfate	ug/L	2000000	2000000	-	1900000	1800000	1700000	1020000	130000
Sulfide	ug/L	1000 U	1000 U	-	1000 U	1000 U	1000 U	1000 U	1000 U
Total organic carbon (TOC)	ug/L	3200	3200	-	2500	6900	4800	7000	8400
Anaerobic 1,1,1-TCA specific microbial population	cfu/mL	-	-	-	-	0	3200	490	0 U
Total microbial population - aerobic	cfu/mL	-	-	-	-	25	965	3440	10
Total microbial population - anaerobic	cfu/mL	-	-	-	-	0	1115	42400	10

Table 1

Analytical Results Summary - Natural Attenuation Monitoring
Endoline Area Chlorinated Solvent Plume Monitoring Program
GM Tonawanda Engine Plant
Tonawanda, New York

Location ID:		MW-11	MW-11	MW-11	MW-11	MW-11	MW-11	MW-12	MW-12
Sample Name:		WG-17390-103017-001	WG-17390-103018-003	WG-17390-103018-004	WG-17390-102319-002	WG-17390-101520-003	WG-017390-022724-JK-008	GW-17390-042611-KL-06	WG-17390-121911-KL-04
Sample Date:		10/30/17	10/30/2018	10/30/2018	10/23/2019	10/15/2020	2/27/2024	4/26/2011	12/19/2011
Parameters	Units								
Field Parameters									
Conductivity	mS/cm	18.3	18.2	-	17.8	15.5	18.5	-	5.775
Dissolved oxygen (DO)	ug/L	0.88	-	-	140	1.12	2230	-	1610
Oxidation reduction potential (ORP)	millivolts	43	-61	-	-44	155	122	-	43.8
pH	s.u.	6.66	6.76	-	7.28	7.08	6.66	-	6.52
Temperature	Deg C	14.27	14.3	-	16.5	9.74	12.99	-	10
Turbidity	NTU	3.3	13	-	164	3.4	7.75	-	0.2

Notes:
¹ - NYSDEC TOGs Groundwater Standards and Guidance - NYSDEC Division of Water ` Operational Guidance Series (1.1.1) Ambient Water Quality Standards and Guidance June 1998 and addenda.
ug/L - micrograms per liter or parts per billion (ppb)
NC - No Criteria
3.1 J - Estimated Concentration. Analyte was detected at a concentration below the 100 U - result is non-detect at the associated value

Table 1

Analytical Results Summary - Natural Attenuation Monitoring
Endoline Area Chlorinated Solvent Plume Monitoring Program
GM Tonawanda Engine Plant
Tonawanda, New York

Location ID:	MW-12	MW-12	MW-12	MW-12	MW-12	MW-12	MW-12	MW-12	MW-12	MW-12	
Sample Name:	WG-17390-032712-KL-04	WG-17390-092112-004	WG-17390-031113-KL-003	WG-17390-092713-KL-006	WG-17390-092713-KL-007	WG-17390-091615-007	WG-17390-091615-008	WG-17390-030316-002	WG-17390-030316-003	WG-17390-051016-003	
Sample Date:	3/27/2012	9/21/2012	3/11/2013	9/27/2013	9/27/2013 (Duplicate)	9/16/2015	9/16/2015 (Duplicate)	3/3/2016	3/3/2016 (Duplicate)	5/10/2016	
Parameters	Units										
Volatile Organic Compounds											
1,1,1-Trichloroethane	ug/L	3.3 U	3.3 U	2.5 U	2.5 U	3.3 U	2.0 U	2.0 U	4.0 U	2.0 U	2.5 U
1,1,2,2-Tetrachloroethane	ug/L	3.3 U	3.3 U	2.5 U	2.5 U	3.3 U	2.0 U	2.0 U	4.0 U	2.0 U	2.5 U
1,1,2-Trichloroethane	ug/L	3.3 U	3.3 U	2.5 U	2.5 U	3.3 U	2.0 U	2.0 U	4.0 U	2.0 U	2.5 U
1,1-Dichloroethane	ug/L	72	88	48	75	76	58	53	72	72	61
1,1-Dichloroethene	ug/L	3.3 U	3.3 U	2.5 U	2.5 U	3.3 U	2.0 U	2.0 U	4.0 U	2.0 U	2.5 U
1,2-Dichloroethane	ug/L	3.3 U	3.3 U	2.5 U	2.5 U	3.3 U	2.0 U	2.0 U	4.0 U	2.2	2.5 U
1,2-Dichloroethene (total)	ug/L	-	-	-	-	-	4.0 U	4.0 U	8.0 U	4.0 U	5.0 U
1,2-Dichloropropane	ug/L	3.3 U	3.3 U	2.5 U	2.5 U	3.3 U	2.0 U	2.0 U	4.0 U	2.0 U	2.5 U
1,4-Dioxane	ug/L	170 U	170 U	130 U	130 U	170 U	100 U	100 U	200 U	100 U	130 U
2-Butanone (Methyl ethyl ketone) (MEK)	ug/L	33 U	33 U	25 U	25 U	33 U	20 U	20 U	40 U	20 U	25 U
2-Hexanone	ug/L	33 U	33 U	25 U	25 U	33 U	20 U	20 U	40 U	20 U	25 U
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	ug/L	33 U	33 U	25 U	25 U	33 U	20 U	20 U	40 U	20 U	25 U
Acetone	ug/L	33 U	33 U	25 U	25 U	33 U	20 U	20 U	4.7 JB	2.9 JB	25 U
Benzene	ug/L	3.3 U	3.3 U	2.5 U	2.5 U	3.3 U	2.0 U	2.0 U	4.0 U	2.0 U	2.5 U
Bromodichloromethane	ug/L	3.3 U	3.3 U	2.5 U	2.5 U	3.3 U	2.0 U	2.0 U	4.0 U	2.0 U	2.5 U
Bromoform	ug/L	3.3 U	3.3 U	2.5 U	2.5 U	3.3 U	2.0 U	2.0 U	4.0 U	2.0 U	2.5 U
Bromomethane (Methyl bromide)	ug/L	3.3 U	3.3 U	2.5 U	2.5 U	3.3 U	2.0 U	2.0 U	4.0 U	2.0 U	2.5 U
Carbon disulfide	ug/L	3.3 U	3.3 U	2.5 U	2.5 U	3.3 U	2.0 U	2.0 U	4.0 U	2.0 U	2.5 U
Carbon tetrachloride	ug/L	3.3 U	3.3 U	2.5 U	2.5 U	3.3 U	2.0 U	2.0 U	4.0 U	2.0 U	2.5 U
Chlorobenzene	ug/L	3.3 U	3.3 U	2.5 U	2.5 U	3.3 U	2.0 U	2.0 U	4.0 U	2.0 U	2.5 U
Chloroethane	ug/L	3.3 U	3.3 U	2.5 U	2.5 U	3.3 U	2.0 U	2.0 U	4.0 U	2.0 U	2.5 U
Chloroform (Trichloromethane)	ug/L	3.3 U	3.3 U	2.5 U	2.5 U	3.3 U	2.0 U	2.0 U	4.0 U	2.0 U	2.5 U
Chloromethane (Methyl chloride)	ug/L	3.3 U	3.3 U	2.5 U	2.5 U	3.3 U	2.0 U	2.0 U	4.0 U	2.0 U	2.5 U
cis-1,2-Dichloroethene	ug/L	3.3 U	3.3 U	2.5 U	2.5 U	3.3 U	-	-	-	-	2.5 U
cis-1,3-Dichloropropene	ug/L	3.3 U	3.3 U	2.5 U	2.5 U	3.3 U	2.0 U	2.0 U	4.0 U	2.0 U	2.5 U
Dibromochloromethane	ug/L	3.3 U	3.3 U	2.5 U	2.5 U	3.3 U	2.0 U	2.0 U	4.0 U	2.0 U	2.5 U
Ethylbenzene	ug/L	3.3 U	3.3 U	2.5 U	2.5 U	3.3 U	2.0 U	2.0 U	4.0 U	2.0 U	2.5 U
Methylene chloride	ug/L	3.3 U	3.3 U	2.5 U	2.5 U	3.3 U	2.0 U	2.0 U	4.0 U	2.0 U	2.5 U
Styrene	ug/L	3.3 U	3.3 U	2.5 U	2.5 U	3.3 U	2.0 U	2.0 U	4.0 U	2.0 U	2.5 U
Tetrachloroethene	ug/L	3.3 U	3.3 U	2.5 U	2.5 U	3.3 U	2.0 U	2.0 U	4.0 U	2.0 U	2.5 U
Toluene	ug/L	3.3 U	3.3 U	2.5 U	2.5 U	3.3 U	2.0 U	2.0 U	4.0 U	2.0 U	2.5 U
trans-1,2-Dichloroethene	ug/L	3.3 U	3.3 U	2.5 U	2.5 U	3.3 U	-	-	-	-	2.5 U
trans-1,3-Dichloropropene	ug/L	3.3 U	3.3 U	2.5 U	2.5 U	3.3 U	2.0 U	2.0 U	4.0 U	2.0 U	2.5 U
Trichloroethene	ug/L	3.3 U	3.3 U	2.5 U	2.5 U	3.3 U	2.0 U	2.0 U	4.0 U	2.0 U	2.5 U
Vinyl chloride	ug/L	3.3 U	3.3 U	2.5 U	2.5 U	3.3 U	2.0 U	2.0 U	4.0 U	2.0 U	2.5 U
Xylenes (total)	ug/L	6.7 U	6.7 U	5.0 U	5.0 U	6.7 U	4.0 U	4.0 U	8.0 U	4.0 U	5.0 U
Dissolved Gases											
Ethane	ug/L	0.50 U	0.50 U	0.50 U	0.50 U	-	0.50 U	-	-	-	0.25 J
Methane	ug/L	1.1	5.1	5.8	14	-	3.1	-	-	-	32
Wet Chemistry											
Alkalinity, total (as CaCO3)	ug/L	500000	510000	450000	490000	-	460000	-	430000	-	480000
Ammonia	ug/L	2000 U	2000 U	850 J	2000 U	-	200 U	-	200 U	-	64 JB
Biochemical oxygen demand (BOD)	ug/L	2000 U	2000 U	2000 U	2000 U	-	2000 U	-	2000 U	-	2000 U
Chemical oxygen demand (COD)	ug/L	45000	27000	25000	35000 U	-	37000	-	30000	-	20000
Dehalobacter spp.	unknown	present	-	-	-	-	-	-	-	-	-
Dehalococcoides spp.	unknown	absent	-	-	-	-	-	-	-	-	-
Nitrate (as N)	ug/L	100 U	100 U	150	100 U	-	2500 U	-	500 U	-	100 U
Nitrite (as N)	ug/L	2000 U	100 U	1000 U	500 U	-	2500 U	-	500 U	-	2500 U
Orthophosphate	ug/L	100 U	R	100 U	500 U	-	-	-	-	-	-
Phosphorus	ug/L	-	-	-	-	-	100 U	-	100 U	-	-
Sulfate	ug/L	1100000	1900000	1100000	1400000	-	780000	-	900000	-	960000
Sulfide	ug/L	1000 U	1000 U	1000 U	1000 U	-	1000 U	-	1000 U	-	1000 U
Total organic carbon (TOC)	ug/L	5500	5700	6100	6500	-	1800	-	1900	-	1400
Anaerobic 1,1,1-TCA specific microbial population	cfu/mL	10	-	-	-	-	-	-	-	-	-
Total microbial population - aerobic	cfu/mL	80	-	-	-	-	-	-	-	-	-
Total microbial population - anaerobic	cfu/mL	10	-	-	-	-	-	-	-	-	-

Analytical Results Summary - Natural Attenuation Monitoring
Endoline Area Chlorinated Solvent Plume Monitoring Program
GM Tonawanda Engine Plant
Tonawanda, New York

Location ID:		MW-12	MW-12	MW-12	MW-12	MW-12	MW-12	MW-12	MW-12	MW-12	MW-12
Sample Name:		WG-17390-032712-KL-04	WG-17390-092112-004	WG-17390-031113-KL-003	WG-17390-092713-KL-006	WG-17390-092713-KL-007	WG-17390-091615-007	WG-17390-091615-008	WG-17390-030316-002	WG-17390-030316-003	WG-17390-051016-003
Sample Date:		3/27/2012	9/21/2012	3/11/2013	9/27/2013	9/27/2013 (Duplicate)	9/16/2015	9/16/2015 (Duplicate)	3/3/2016	3/3/2016 (Duplicate)	5/10/2016
Parameters	Units										
Field Parameters											
Conductivity	mS/cm	5.03	4.94	4.63	4.63	-	8.22	-	7.57	-	6.5
Dissolved oxygen (DO)	ug/L	3700	6150	7530	2930	-	4170	-	0	-	4480
Oxidation reduction potential (ORP)	millivolts	79	19	125	-32	-	65	-	-147	-	-
pH	s.u.	6.99	6.5	7.47	5.53	-	6.97	-	7.79	-	7.21
Temperature	Deg C	8.5	19.6	13.17	18.43	-	20.93	-	9.56	-	15.02
Turbidity	NTU	140	0	0	76.2	-	0.61	-	1.2	-	1.71

Notes:
¹ - NYSDEC TOGs Groundwater Standards and Guidance - NYSDEC Division of Water ` Operational Guidance Series (1.1.1) Ambient Water Quality Standards and Guidance June 1998 and addenda.
ug/L - micrograms per liter or parts per billion (ppb)
NC - No Criteria
3.1 J - Estimated Concentration. Analyte was detected at a concentration below the 100 U - result is non-detect at the associated value

Table 1

Analytical Results Summary - Natural Attenuation Monitoring
Endoline Area Chlorinated Solvent Plume Monitoring Program
GM Tonawanda Engine Plant
Tonawanda, New York

Location ID:	MW-12	MW-12	MW-12	MW-12	MW-12	MW-12	MW-12	MW-12
Sample Name:	WG-17390-051016-004	VG-17390-111516-KL-01	WG-17390-051817-DO-008	WG-17390-103017-003	WG-17390-103018-002	WG-17390-102319-001	WG-17390-101520-004	WG-017390-022724-JK-006
Sample Date:	5/10/2016	11/15/2016	5/18/2017	10/30/17	10/30/2018	10/23/2019	10/15/2020	2/27/2024
	(Duplicate)							
Parameters	Units							
Volatile Organic Compounds								
1,1,1-Trichloroethane	ug/L	2.5 U	3.3 U	1.7 U	1.7 U	1.0 U	2.0 U	1.0 U
1,1,2,2-Tetrachloroethane	ug/L	2.5 U	3.3 U	1.7 U	1.7 U	1.0 U	2.0 U	1.0 U
1,1,2-Trichloroethane	ug/L	2.5 U	3.3 U	1.7 U	1.7 U	1.0 U	2.0 U	1.0 U
1,1-Dichloroethane	ug/L	64	82	67	64	50	46	40
1,1-Dichloroethene	ug/L	2.5 U	3.3 U	1.7 U	1.7 U	0.19 J	2.0 U	1.0 U
1,2-Dichloroethane	ug/L	2.5 U	3.3 U	1.7 U	1.7 U	1.0 U	2.0 U	1.0 U
1,2-Dichloroethene (total)	ug/L	5.0 U	6.7 U	3.3 U	3.3 U	0.57 J	2.0 U	1.0 U
1,2-Dichloropropane	ug/L	2.5 U	3.3 U	1.7 U	1.7 U	1.0 U	2.0 U	1.0 U
1,4-Dioxane	ug/L	130 U	170 U	34 J	62 J	49 J	60 J	54
2-Butanone (Methyl ethyl ketone) (MEK)	ug/L	25 U	33 U	17 U	17 U	10 U	20 U	10 U
2-Hexanone	ug/L	25 U	33 U	17 U	17 U	10 U	20 U	10 U
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	ug/L	25 U	33 U	17 U	17 U	10 U	20 U	10 U
Acetone	ug/L	25 U	33 U	17 U	18 U	410	340	140
Benzene	ug/L	2.5 U	3.3 U	1.7 U	1.2 J	0.72 J	0.54 J	0.40 J
Bromodichloromethane	ug/L	2.5 U	3.3 U	1.7 U	1.7 U	1.0 U	2.0 U	1.0 U
Bromoform	ug/L	2.5 U	3.3 U	1.7 U	1.7 U	1.0 U	2.0 U	1.0 U
Bromomethane (Methyl bromide)	ug/L	2.5 U	3.3 U	1.7 U	1.7 U	1.0 U	2.0 U	1.0 U
Carbon disulfide	ug/L	2.5 U	3.3 U	1.7 U	1.7 U	1.0 U	2.0 U	1.0 U
Carbon tetrachloride	ug/L	2.5 U	3.3 U	1.7 U	1.7 U	1.0 U	2.0 U	1.0 U
Chlorobenzene	ug/L	2.5 U	3.3 U	1.7 U	1.7 U	1.0 U	2.0 U	1.0 U
Chloroethane	ug/L	2.5 U	3.3 U	1.7 U	1.7 U	1.7	2.0 U	1.2
Chloroform (Trichloromethane)	ug/L	2.5 U	3.3 U	1.7 U	1.7 U	1.0 U	2.0 U	1.0 U
Chloromethane (Methyl chloride)	ug/L	2.5 U	3.3 U	1.7 U	1.7 U	1.0 U	2.0 U	1.0 U
cis-1,2-Dichloroethene	ug/L	2.5 U	3.3 U	1.7 U	0.50 J	0.57 J	0.61 J	0.40 J
cis-1,3-Dichloropropene	ug/L	2.5 U	3.3 U	1.7 U	1.7 U	1.0 U	2.0 U	1.0 U
Dibromochloromethane	ug/L	2.5 U	3.3 U	1.7 U	1.7 U	1.0 U	2.0 U	1.0 U
Ethylbenzene	ug/L	2.5 U	3.3 U	1.7 U	1.7 U	1.0 U	2.0 U	1.0 U
Methylene chloride	ug/L	2.5 U	3.3 U	1.7 U	1.7 U	5.0 U	10 U	5.0 U
Styrene	ug/L	2.5 U	3.3 U	1.7 U	1.7 U	1.0 U	2.0 U	1.0 U
Tetrachloroethene	ug/L	2.5 U	3.3 U	1.7 U	1.7 U	1.0 U	2.0 U	1.0 U
Toluene	ug/L	2.5 U	3.3 U	1.7 U	1.7 U	1.0 U	2.0 U	1.0 U
trans-1,2-Dichloroethene	ug/L	2.5 U	3.3 U	1.7 U	1.7 U	1.0 U	2.0 U	1.0 U
trans-1,3-Dichloropropene	ug/L	2.5 U	3.3 U	1.7 U	1.7 U	1.0 U	2.0 U	1.0 U
Trichloroethene	ug/L	2.5 U	3.3 U	1.7 U	1.7 U	1.0 U	2.0 U	1.0 U
Vinyl chloride	ug/L	2.5 U	3.3 U	1.7 U	1.7 U	0.60 J	2.0 U	0.43 J
Xylenes (total)	ug/L	5.0 U	6.7 U	3.3 U	3.3 U	2.0 U	4.0 U	2.0 U
Dissolved Gases								
Ethane	ug/L	0.33 J	0.67	1.2	0.71 J	2.4 / 2.6	2.0	2.3
Methane	ug/L	51	590	1300	3200	4100 / 3000	2600	2400
Wet Chemistry								
Alkalinity, total (as CaCO3)	ug/L	490000	540000	480000	480000	640000	660000	610000
Ammonia	ug/L	44 JB	200 U	-	-	530	1800	900
Biochemical oxygen demand (BOD)	ug/L	2000 U	2000 U	2000 UJ	2000 UJ	5700	4200 J	3600
Chemical oxygen demand (COD)	ug/L	20000	30000 J	19000	19000	81000	49000	51000
Dehalobacter spp.	unknown	-	-	-	-	-	-	-
Dehalococcoides spp.	unknown	-	-	-	-	-	-	-
Nitrate (as N)	ug/L	100 U	2000 U	100 UJ	100 UJ	200 U	2000 UJ	2000 UJ
Nitrite (as N)	ug/L	2500 U	2000 U	100 UJ	100 UJ	200 U	100 UJ	2000 UJ
Orthophosphate	ug/L	-	-	-	-	-	-	-
Phosphorus	ug/L	-	100 U	100 U	100 U	120	93 J	93 J
Sulfate	ug/L	950000	1000000	1600000	1600000	460000	610000	560000
Sulfide	ug/L	1000 U	1000 U	1000 U	1000 U	1000 U	1000 U	1000 U
Total organic carbon (TOC)	ug/L	1300	3800	2200	2200	15000	15000	14000
Anaerobic 1,1,1-TCA specific microbial population	cfu/mL	-	-	-	-	-	-	1460
Total microbial population - aerobic	cfu/mL	-	-	-	-	-	-	5100
Total microbial population - anaerobic	cfu/mL	-	-	-	-	-	-	4360

Table 1

Analytical Results Summary - Natural Attenuation Monitoring
Endoline Area Chlorinated Solvent Plume Monitoring Program
GM Tonawanda Engine Plant
Tonawanda, New York

Location ID:		MW-12	MW-12	MW-12	MW-12	MW-12	MW-12	MW-12	MW-12
Sample Name:		WG-17390-051016-004	VG-17390-111516-KL-01	WG-17390-051817-DO-008	WG-17390-103017-003	WG-17390-103018-002	WG-17390-102319-001	WG-17390-101520-004	WG-017390-022724-JK-006
Sample Date:		5/10/2016	11/15/2016	5/18/2017	10/30/17	10/30/2018	10/23/2019	10/15/2020	2/27/2024
		(Duplicate)							
Parameters	Units								
Field Parameters									
Conductivity	mS/cm	-	6.23	4.93	6.66	7.15	7.10	4.63	7.92
Dissolved oxygen (DO)	ug/L	-	540	0.32	0	-	250	7.53	2810
Oxidation reduction potential (ORP)	millivolts	-	-19	-76	.61	1164	-148	125	46
pH	s.u.	-	6.67	7.14	6.69	6.78	7.19	7.47	6.77
Temperature	Deg C	-	16.4	18.12	14.5	15.7	16.3	13.17	14.53
Turbidity	NTU	-	1.8	1.09	15	62.4	57.6	0.7	11.5

Notes:

¹ - NYSDEC TOGs Groundwater Standards and Guidance - NYSDEC Division of Water Operational Guidance Series (1.1.1) Ambient Water Quality Standards and Guidance June 1998 and addenda.

ug/L - micrograms per liter or parts per billion (ppb)

NC - No Criteria

3.1 J - Estimated Concentration. Analyte was detected at a concentration below the 100 U - result is non-detect at the associated value

Table 2

Analytical Results Summary - Plume Migration Monitoring
Endoline Area Chlorinated Solvent Plume Monitoring Program
GM Tonawanda Engine Plant
Tonawanda, New York

Location ID:				MW-1	MW-1	MW-1	MW-1	MW-1	MW-1	MW-1		
Sample Name:				GW-17390-042511-KL-02	WG-17390-032712-KL-11	WG-17390-092112-007	WG-17390-031113-KL-006	WG-17390-092613-KL-002	WG-17390-091515-001	WG-17390-051016-005	WG-17390-111416-KL-03	
Sample Date:				4/25/2011	3/27/2012	9/21/2012	3/11/2013	9/26/2013	9/15/2015	5/10/2016	11/14/2016	
				Groundwater								
Parameters				Units	Guidance Value	Standard						
Volatile Organic Compounds												
1,1,1-Trichloroethane	ug/L	NC	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	
1,1,2,2-Tetrachloroethane	ug/L	NC	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	
1,1,2-Trichloroethane	ug/L	NC	1	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	
1,1-Dichloroethane	ug/L	NC	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	
1,1-Dichloroethene	ug/L	NC	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	
1,2-Dichloroethane	ug/L	NC	0.6	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	
1,2-Dichloroethene (total)	ug/L	5	NC	2.0 U	-	-	-	-	2.0 U	2.0 U	2.0 U	
1,2-Dichloropropane	ug/L	NC	1	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	
1,4-Dioxane	ug/L	0.35	NC	50 U	50 U	50 U	50 U	20 J	50 U	50 U	26 J	
2-Butanone (Methyl ethyl ketone) (MEK)	ug/L	50	NC	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	
2-Hexanone	ug/L	50	NC	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	ug/L	NC	NC	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	
Acetone	ug/L	50	NC	10 U	10 U	1.1 J	10 U	10 U	10 U	10 U	10 U	
Benzene	ug/L	NC	1	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	
Bromodichloromethane	ug/L	50	NC	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	
Bromoform	ug/L	50	NC	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	
Bromomethane (Methyl bromide)	ug/L	NC	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	
Carbon disulfide	ug/L	60	60	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	
Carbon tetrachloride	ug/L	NC	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	
Chlorobenzene	ug/L	NC	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	
Chloroethane	ug/L	NC	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	
Chloroform (Trichloromethane)	ug/L	NC	7	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	
Chloromethane (Methyl chloride)	ug/L	NC	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	
cis-1,2-Dichloroethene	ug/L	NC	5	-	1.0 U	1.0 U	1.0 U	1.0 U	-	1.0 U	1.0 U	
cis-1,3-Dichloropropene	ug/L	NC	NC	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	
Dibromochloromethane	ug/L	50	NC	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	
Ethylbenzene	ug/L	NC	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	
Methylene chloride	ug/L	NC	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	
Styrene	ug/L	NC	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	
Tetrachloroethene	ug/L	NC	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	
Toluene	ug/L	NC	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	
trans-1,2-Dichloroethene	ug/L	NC	5	-	1.0 U	1.0 U	1.0 U	1.0 U	-	1.0 U	1.0 U	
trans-1,3-Dichloropropene	ug/L	NC	NC	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	
Trichloroethene	ug/L	NC	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	
Vinyl chloride	ug/L	NC	2	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	
Xylenes (total)	ug/L	NC	5	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	
Field Parameters												
Conductivity	mS/cm	NC	NC	-	3.92	4.17	4.22	4.53	4.77	6.07	6.65	
Dissolved oxygen (DO)	ug/L	NC	NC	-	20	4820	1260	4380	3220	6730	1130	
Oxidation reduction potential (ORP)	millivolts	NC	NC	-	-20	-127	176	-144	-163	-	160	
pH	s.u.	NC	NC	-	7.05	6.44	7.1	6.65	6.54	6.96	6.62	
Temperature, field	Deg C	NC	NC	-	11.7	21.2	10.45	20.2	22.46	17.26	14.5	
Turbidity	NTU	NC	NC	-	0	0	12.2	73.9	1.5	2.84	2.40	

Notes:
¹ - NYSDEC TOGs Groundwater Standards and Guidance - NYSDEC Division of Water Technical and Operational Guidance Series (1.1.1) Ambient Water Quality Standards and Guidance Values, dated June 1998 and addenda.
ug/L - micrograms per liter or parts per billion (ppb)
NC - No Criteria
3.1 J - Estimated Concentration. Analyte was detected at a concentration below the reporting limit
100 U - result is non-detect at the associated value

Table 2

Analytical Results Summary - Plume Migration Monitoring
Endoline Area Chlorinated Solvent Plume Monitoring Program
GM Tonawanda Engine Plant
Tonawanda, New York

Location ID:		MW-1	MW-1	MW-1	MW-1	MW-1	MW-1	MW-9	MW-9	MW-9
Sample Name:		WG-17390-051717-DO-001	WG-17390-103017-004	WG-17390-110118-007	WG-17390-102419-006	WG-17390-101620-006	WG-017390-022724-KM-005	GW-17390-042711-KL-10	GW-17390-042711-KL-11	WG-17390-032712-KL-05
Sample Date:		5/17/2017	10/30/17	11/01/2018	10/24/2019	10/16/2020	2/27/2024	4/28/2011	4/28/2011 (Duplicate)	3/27/2012
Parameters	Units									
Volatile Organic Compounds										
1,1,1-Trichloroethane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1,2,2-Tetrachloroethane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1,2-Trichloroethane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.3	1.3	1.7
1,1-Dichloroethene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dichloroethane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dichloroethene (total)	ug/L	2.0 U	2.0 U	2.0 U	1.0 U	1.0 U	1.0 U	2.0 U	2.0 U	-
1,2-Dichloropropane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,4-Dioxane	ug/L	36 J	34 J	15 J	39 J	18 J	28 J+	50 U	50 U	50 U
2-Butanone (Methyl ethyl ketone) (MEK)	ug/L	10 U	10 U	2.2 J	10 U	10 U	10 U	10 U	10 U	10 U
2-Hexanone	ug/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	ug/L	10 U	10 U	0.96 J	10 U	10 U	10 U	10 U	10 U	10 U
Acetone	ug/L	10 U	10 U	6.9 J	10 U	10 U	10 U	10 U	10 U	10 U
Benzene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Bromodichloromethane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Bromoform	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Bromomethane (Methyl bromide)	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Carbon disulfide	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Carbon tetrachloride	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chlorobenzene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chloroethane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chloroform (Trichloromethane)	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chloromethane (Methyl chloride)	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
cis-1,2-Dichloroethene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	-	-	1.0 U
cis-1,3-Dichloropropene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Dibromochloromethane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Ethylbenzene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Methylene chloride	ug/L	1.0 U	1.0 U	5.0 U	5.0 U	5.0 U	5.0 U	1.0 U	1.0 U	1.0 U
Styrene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Tetrachloroethene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Toluene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
trans-1,2-Dichloroethene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	-	-	1.0 U
trans-1,3-Dichloropropene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Trichloroethene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Vinyl chloride	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Xylenes (total)	ug/L	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
Field Parameters										
Conductivity	mS/cm	6.51	8.06	7.67	8.83	3.44	11.7	-	-	2.61
Dissolved oxygen (DO)	ug/L	0.26	0.41	3030	220	1.38	3240	-	-	3870
Oxidation reduction potential (ORP)	millivolts	-3	2	-49	-70	-247	43	-	-	93
pH	s.u.	7.03	6.71	6.09	7.32	7.61	6.89	-	-	7.35
Temperature, field	Deg C	18.82	15.05	15.1	16.3	15.3	10.25	-	-	4.9
Turbidity	NTU	1.65	4.2	--	12.1	13	2.84	-	-	0

Notes:
¹ - NYSDEC TOGs Groundwater Standards and Guidance - NYSDEC Division of Water
Operational Guidance Series (1.1.1) Ambient Water Quality Standards and Guidance
June 1998 and addenda.
ug/L - micrograms per liter or parts per billion (ppb)
NC - No Criteria
3.1 J - Estimated Concentration. Analyte was detected at a concentration below 100 U
100 U - result is non-detect at the associated value

Table 2

Analytical Results Summary - Plume Migration Monitoring
Endoline Area Chlorinated Solvent Plume Monitoring Program
GM Tonawanda Engine Plant
Tonawanda, New York

Location ID:		MW-9	MW-9	MW-9	MW-9	MW-9R	MW-9R	MW-9R	MW-9R	MW-9R
Sample Name:		WG-17390-092012-002	WG-17390-031213-KL-010	WG-17390-092613-KL-004	WG-17390-091515-005	WG-17390-051116-010	WG-17390-111416-KL-01	WG-17390-051717-DO-003	WG-17390-103117-009	WG-17390-103018-006
Sample Date:		9/20/2012	3/12/2013	9/26/2013	9/15/2015	5/11/2016	11/14/2016	5/17/2017	10/31/17	10/30/2018
Parameters	Units									
Volatile Organic Compounds										
1,1,1-Trichloroethane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1,2,2-Tetrachloroethane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1,2-Trichloroethane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethane	ug/L	1.5	1.6	1.2	1.2	1.9	1.8	1.5	0.69 J	1.3
1,1-Dichloroethene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dichloroethane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dichloroethene (total)	ug/L	-	-	-	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
1,2-Dichloropropane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,4-Dioxane	ug/L	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U
2-Butanone (Methyl ethyl ketone) (MEK)	ug/L	10 U	10 U	10 U	10 U	2.7 J	10 U	10 U	10 U	10 U
2-Hexanone	ug/L	10 U	10 U	10 U	10 U	1.2 J	10 U	10 U	10 U	10 U
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	ug/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Acetone	ug/L	10 U	10 U	10 U	10 U	5.6 J	10 U	1.9 J	10 U	10 U
Benzene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Bromodichloromethane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Bromoform	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Bromomethane (Methyl bromide)	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Carbon disulfide	ug/L	0.87 J	1.0 U	1.0 U	1.0 U	11	1.0 U	1.0 U	1.0 U	1.0 U
Carbon tetrachloride	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chlorobenzene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chloroethane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	0.68 J	1.0 U
Chloroform (Trichloromethane)	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chloromethane (Methyl chloride)	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
cis-1,2-Dichloroethene	ug/L	1.0 U	1.0 U	1.0 U	-	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
cis-1,3-Dichloropropene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Dibromochloromethane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Ethylbenzene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Methylene chloride	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U
Styrene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Tetrachloroethene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Toluene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
trans-1,2-Dichloroethene	ug/L	1.0 U	1.0 U	1.0 U	-	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
trans-1,3-Dichloropropene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Trichloroethene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Vinyl chloride	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Xylenes (total)	ug/L	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
Field Parameters										
Conductivity	mS/cm	2.82	2.71	97.6	1.95	5.7	6.29	5.19	5.34	4.91
Dissolved oxygen (DO)	ug/L	5830	1330	6870	230	3600	620	0.1	1.31	-
Oxidation reduction potential (ORP)	millivolts	-36	54	-64	17	-	-49	-126	-43	-112
pH	s.u.	7.05	7.68	6.87	7.36	6.88	6.36	7.12	6.89	7.08
Temperature, field	Deg C	19.3	7.16	18.01	22.82	13.77	14.8	16.74	15.14	15.6
Turbidity	NTU	0	3	14.53	18.2	12.9	29	6.17	0.2	75.3

Notes:

¹ - NYSDEC TOGs Groundwater Standards and Guidance - NYSDEC Division of Water Operational Guidance Series (1.1.1) Ambient Water Quality Standards and Guidance June 1998 and addenda.

ug/L - micrograms per liter or parts per billion (ppb)

NC - No Criteria

3.1 J - Estimated Concentration. Analyte was detected at a concentration below 100 U - result is non-detect at the associated value

Table 2

Analytical Results Summary - Plume Migration Monitoring
Endoline Area Chlorinated Solvent Plume Monitoring Program
GM Tonawanda Engine Plant
Tonawanda, New York

Location ID:	MW-9R	MW-9R	MW-9R	MW-101	MW-101	MW-101	MW-101	MW-101	MW-101
Sample Name:	WG-17390-102419-008	WG-17390-101620-008	WG-017390-022724-KM-007	GW-17390-042611-KL-05	WG-17390-032812-KL-14	WG-17390-092112-005	WG-17390-092112-006	WG-17390-031113-KL-005	WG-17390-092613-KL-003
Sample Date:	10/24/2019	10/16/2020	2/27/2024	4/26/2011	3/28/2012	9/21/2012	9/21/2012 (Duplicate)	3/11/2013	9/26/2013
Parameters	Units								
<i>Volatile Organic Compounds</i>									
1,1,1-Trichloroethane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	0.41 J
1,1,2,2-Tetrachloroethane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1,2-Trichloroethane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethane	ug/L	1.2	1.2	1.2	1.0 U	1.0 U	0.39 J	1.0 U	1.0 U
1,1-Dichloroethene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dichloroethane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dichloroethene (total)	ug/L	1.0 U	1.0 U	1.0 U	2.0 U	-	-	-	-
1,2-Dichloropropane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,4-Dioxane	ug/L	50 U	50 U	50 U	50 U	-	50 U	50 U	50 U
2-Butanone (Methyl ethyl ketone) (MEK)	ug/L	10 U	10 U	10 U	0.98 J	10 U	10 U	10 U	10 U
2-Hexanone	ug/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	ug/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Acetone	ug/L	10 U	10 U	10 U	3.9 J	10 U	1.1 J	1.4 J	1.8 J
Benzene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Bromodichloromethane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Bromoform	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Bromomethane (Methyl bromide)	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Carbon disulfide	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Carbon tetrachloride	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chlorobenzene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chloroethane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0	0.53 J	1.0 U
Chloroform (Trichloromethane)	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chloromethane (Methyl chloride)	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
cis-1,2-Dichloroethene	ug/L	1.0 U	1.0 U	1.0 U	-	1.0 U	1.0 U	1.0 U	1.0 U
cis-1,3-Dichloropropene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Dibromochloromethane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Ethylbenzene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Methylene chloride	ug/L	5.0 U	5.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Styrene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Tetrachloroethene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Toluene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
trans-1,2-Dichloroethene	ug/L	1.0 U	1.0 U	1.0 U	-	1.0 U	1.0 U	1.0 U	1.0 U
trans-1,3-Dichloropropene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Trichloroethene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Vinyl chloride	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Xylenes (total)	ug/L	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
<i>Field Parameters</i>									
Conductivity	mS/cm	4.79	2.71	4.36	-	26.7	24.9	24.9	34.9
Dissolved oxygen (DO)	ug/L	240	1.33	2820	-	2160	4280	4280	1020
Oxidation reduction potential (ORP)	millivolts	-167	54	19	-	70	-161	-161	21
pH	s.u.	7.68	7.68	7.14	-	7.16	6.67	6.67	6.98
Temperature, field	Deg C	16.3	7.16	9.41	-	11.2	22.7	22.7	22.04
Turbidity	NTU	30.9	3.0	29.7	-	0.4	20	20	5.8

Notes:
¹ - NYSDEC TOGs Groundwater Standards and Guidance - NYSDEC Division of Water
Operational Guidance Series (1.1.1) Ambient Water Quality Standards and Guidance
June 1998 and addenda.
ug/L - micrograms per liter or parts per billion (ppb)
NC - No Criteria
3.1 J - Estimated Concentration. Analyte was detected at a concentration below 1
100 U - result is non-detect at the associated value

Table 2

Analytical Results Summary - Plume Migration Monitoring
Endoline Area Chlorinated Solvent Plume Monitoring Program
GM Tonawanda Engine Plant
Tonawanda, New York

Location ID:		MW-101	MW-101	MW-101	MW-101	MW-101	MW-101	MW-101	MW-101
Sample Name:		WG-17390-091515-003	WG-17390-051016-007	WG-17390-111416-KL-02	WG-17390-051717-DO-004	WG-17390-103117-007	WG-17390-103018-005	WG-17390-102419-007	WG-17390-101620-005
Sample Date:		9/15/2015	5/10/2016	11/14/2016	5/17/2017	10/31/17	10/30/2018	10/24/2019	10/16/2020
Parameters	Units								
Volatile Organic Compounds									
1,1,1-Trichloroethane	ug/L	1.0 U	1.0 U	0.31 J	1.0 U	1.0 U	0.25 J	1.0 U	1.0 U
1,1,2,2-Tetrachloroethane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1,2-Trichloroethane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dichloroethane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dichloroethene (total)	ug/L	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	1.0 U	1.0 U
1,2-Dichloropropane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,4-Dioxane	ug/L	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U
2-Butanone (Methyl ethyl ketone) (MEK)	ug/L	0.99 J	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2-Hexanone	ug/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	ug/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Acetone	ug/L	2.4 J	1.5 J	1.0 U	2.0 J	10 U	10 U	10 U	10 U
Benzene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Bromodichloromethane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Bromoform	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Bromomethane (Methyl bromide)	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Carbon disulfide	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Carbon tetrachloride	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chlorobenzene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chloroethane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chloroform (Trichloromethane)	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chloromethane (Methyl chloride)	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
cis-1,2-Dichloroethene	ug/L	-	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
cis-1,3-Dichloropropene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Dibromochloromethane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Ethylbenzene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Methylene chloride	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	5.0 U	5.0 U
Styrene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Tetrachloroethene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Toluene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
trans-1,2-Dichloroethene	ug/L	-	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
trans-1,3-Dichloropropene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Trichloroethene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Vinyl chloride	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Xylenes (total)	ug/L	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
Field Parameters									
Conductivity	mS/cm	49.2	58.4	62	39.5	49.1	47	45.9	69.6
Dissolved oxygen (DO)	ug/L	2900	3430	720	0.64	0.91	-	230	1.83
Oxidation reduction potential (ORP)	millivolts	-136	-	-48	-64	-12	-62	9	66
pH	s.u.	6.81	7.47	7.37	7.36	6.9	7.06	7.66	7.22
Temperature, field	Deg C	28.35	15.97	15.1	20.72	10.61	15.8	16.7	10.96
Turbidity	NTU	19.6	4.2	24	4.65	16.9	59.2	26.4	9.4

Notes:

¹ - NYSDEC TOGs Groundwater Standards and Guidance - NYSDEC Division of Water Operational Guidance Series (1.1.1) Ambient Water Quality Standards and Guidance June 1998 and addenda.

ug/L - micrograms per liter or parts per billion (ppb)

NC - No Criteria

3.1 J - Estimated Concentration. Analyte was detected at a concentration below 100 U - result is non-detect at the associated value

Table 2

Analytical Results Summary - Plume Migration Monitoring
Endoline Area Chlorinated Solvent Plume Monitoring Program
GM Tonawanda Engine Plant
Tonawanda, New York

Location ID:	MW-101	MW-101	MW-102	MW-102	MW-102	MW-102	MW-102	MW-102	MW-102
Sample Name:	WG-017390-022724-JK-002	WG-017390-022724-JK-004	GW-17390-042511-KL-01	WG-17390-032712-KL-09	WG-17390-092112-008	WG-17390-031213-KL-011	WG-17390-092613-KL-001	WG-17390-091515-002	WG-17390-051016-006
Sample Date:	2/27/2024	2/27/2024 (Duplicate)	4/25/2011	3/27/2012	9/21/2012	3/12/2013	9/26/2013	9/15/2015	5/10/2016
Parameters	Units								
Volatile Organic Compounds									
1,1,1-Trichloroethane	ug/L	1.0 U	1.0 U	1.0 U	1.7 U	1.5 U	1.0 U	1.0 U	1.0 U
1,1,2,2-Tetrachloroethane	ug/L	1.0 U	1.0 U	1.0 U	1.7 U	1.5 U	1.0 U	1.0 U	1.0 U
1,1,2-Trichloroethane	ug/L	1.0 U	1.0 U	1.0 U	1.7 U	1.5 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethane	ug/L	1.0 U	1.0 U	2.6	2.7	3.2	2.1	1.7	1.9
1,1-Dichloroethene	ug/L	1.0 U	1.0 U	1.0 U	1.7 U	1.5 U	1.0 U	1.0 U	1.0 U
1,2-Dichloroethane	ug/L	1.0 U	1.0 U	1.0 U	1.7 U	1.5 U	1.0 U	1.0 U	1.0 U
1,2-Dichloroethene (total)	ug/L	1.0 U	1.0 U	2.0 U	-	-	-	2.0 U	2.0 U
1,2-Dichloropropane	ug/L	1.0 U	1.0 U	1.0 U	1.7 U	1.5 U	1.0 U	1.0 U	1.0 U
1,4-Dioxane	ug/L	50 U	50 U	50 U	84 U	77 U	50 U	50 U	50 U
2-Butanone (Methyl ethyl ketone) (MEK)	ug/L	10 U	10 U	10 U	17 U	15 U	10 U	10 U	10 U
2-Hexanone	ug/L	10 U	10 U	10 U	17 U	15 U	10 U	10 U	10 U
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	ug/L	10 U	10 U	10 U	17 U	15 U	10 U	10 U	10 U
Acetone	ug/L	10 U	10 U	10 U	17 U	2.1 J	10 U	10 U	10 U
Benzene	ug/L	1.0 U	1.0 U	1.0 U	1.7 U	1.5 U	1.1	1.0 U	1.0 U
Bromodichloromethane	ug/L	1.0 U	1.0 U	1.0 U	1.7 U	1.5 U	1.0 U	1.0 U	1.0 U
Bromoform	ug/L	1.0 U	1.0 U	1.0 U	1.7 U	1.5 U	1.0 U	1.0 U	1.0 U
Bromomethane (Methyl bromide)	ug/L	1.0 U	1.0 U	1.0 U	1.7 U	1.5 U	1.0 U	1.0 U	1.0 U
Carbon disulfide	ug/L	1.0 U	1.0 U	1.0 U	1.7 U	1.5 U	1.0 U	1.0 U	1.0 U
Carbon tetrachloride	ug/L	1.0 U	1.0 U	1.0 U	1.7 U	1.5 U	1.0 U	1.0 U	1.0 U
Chlorobenzene	ug/L	1.0 U	1.0 U	1.0 U	1.7 U	1.5 U	1.0 U	1.0 U	1.0 U
Chloroethane	ug/L	1.0 U	1.0 U	1.0 U	1.7 U	1.5 U	1.0 U	1.0 U	1.0 U
Chloroform (Trichloromethane)	ug/L	1.0 U	1.0 U	1.0 U	1.7 U	1.5 U	1.0 U	1.0 U	1.0 U
Chloromethane (Methyl chloride)	ug/L	1.0 U	1.0 U	1.0 U	1.7 U	1.5 U	1.0 U	1.0 U	1.0 U
cis-1,2-Dichloroethene	ug/L	1.0 U	1.0 U	-	1.7 U	1.5 U	1.0 U	1.0 U	1.0 U
cis-1,3-Dichloropropene	ug/L	1.0 U	1.0 U	1.0 U	1.7 U	1.5 U	1.0 U	1.0 U	1.0 U
Dibromochloromethane	ug/L	1.0 U	1.0 U	1.0 U	1.7 U	1.5 U	1.0 U	1.0 U	1.0 U
Ethylbenzene	ug/L	1.0 U	1.0 U	1.0 U	1.7 U	1.5 U	1.0 U	1.0 U	1.0 U
Methylene chloride	ug/L	5.0 U	5.0 U	1.0 U	1.7 U	1.5 U	1.0 U	1.0 U	1.0 U
Styrene	ug/L	1.0 U	1.0 U	1.0 U	1.7 U	1.5 U	1.0 U	1.0 U	1.0 U
Tetrachloroethene	ug/L	1.0 U	1.0 U	1.0 U	1.7 U	1.5 U	1.0 U	1.0 U	1.0 U
Toluene	ug/L	1.0 U	1.0 U	1.0 U	1.7 U	1.5 U	1.0 U	1.0 U	1.0 U
trans-1,2-Dichloroethene	ug/L	1.0 U	1.0 U	-	1.7 U	1.5 U	1.0 U	1.0 U	1.0 U
trans-1,3-Dichloropropene	ug/L	1.0 U	1.0 U	1.0 U	1.7 U	1.5 U	1.0 U	1.0 U	1.0 U
Trichloroethene	ug/L	1.0 U	1.0 U	1.0 U	1.7 U	1.5 U	1.0 U	1.0 U	1.0 U
Vinyl chloride	ug/L	1.0 U	1.0 U	1.0 U	1.7 U	1.5 U	1.0 U	1.0 U	1.0 U
Xylenes (total)	ug/L	2.0 U	2.0 U	2.0 U	3.3 U	3.1 U	2.0 U	2.0 U	2.0 U
Field Parameters									
Conductivity	mS/cm	32.5	32.5	-	1.6	1.8	1.57	13.4	0.884
Dissolved oxygen (DO)	ug/L	860	860	-	210	5250	2110	480	8060
Oxidation reduction potential (ORP)	millivolts	90	90	-	-100	-136	-5	-159	-
pH	s.u.	7.11	7.11	-	7.24	6.59	7.25	7.01	7.12
Temperature, field	Deg C	12.83	12.83	-	10.1	19.5	8.5	19.31	15.52
Turbidity	NTU	6.3	6.3	-	0	12	17	0	8.76

Notes:

¹ - NYSDEC TOGs Groundwater Standards and Guidance - NYSDEC Division of Water Operational Guidance Series (1.1.1) Ambient Water Quality Standards and Guidance June 1998 and addenda.

ug/L - micrograms per liter or parts per billion (ppb)

NC - No Criteria

3.1 J - Estimated Concentration. Analyte was detected at a concentration below 100 U - result is non-detect at the associated value

Table 2

Analytical Results Summary - Plume Migration Monitoring
Endoline Area Chlorinated Solvent Plume Monitoring Program
GM Tonawanda Engine Plant
Tonawanda, New York

Location ID:		MW-102	MW-102	MW-102	MW-102	MW-102	MW-102	MW-102	MW-103
Sample Name:		WG-17390-111416-KL-04	WG-17390-051717-DO-002	WG-17390-103117-006	WG-17390-110118-008	WG-17390-102419-005	WG-17390-101620-007	WG-017390-022724-KM-003	WG-17390-032812-KL-13
Sample Date:		11/14/2016	5/17/2017	10/31/2017	11/01/2018	10/24/2019	10/16/2020	2/27/2024	3/28/2012
Parameters	Units								
Volatile Organic Compounds									
1,1,1-Trichloroethane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1,2,2-Tetrachloroethane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1,2-Trichloroethane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethane	ug/L	2.6	1.8	0.40 J	0.33 J	1.1	1.7	1.5	1.0 U
1,1-Dichloroethene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dichloroethane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dichloroethene (total)	ug/L	2.0 U	2.0 U	2.0 U	2.0 U	1.0 U	1.0 U	1.0 U	-
1,2-Dichloropropane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,4-Dioxane	ug/L	50 U	50 U	50 U	50 U	50 U	50 U	50 U	-
2-Butanone (Methyl ethyl ketone) (MEK)	ug/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2-Hexanone	ug/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	ug/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Acetone	ug/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Benzene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Bromodichloromethane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Bromoform	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Bromomethane (Methyl bromide)	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Carbon disulfide	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Carbon tetrachloride	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chlorobenzene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chloroethane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chloroform (Trichloromethane)	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chloromethane (Methyl chloride)	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
cis-1,2-Dichloroethene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
cis-1,3-Dichloropropene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Dibromochloromethane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Ethylbenzene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Methylene chloride	ug/L	1.0 U	1.0 U	1.0 U	5.0 U	5.0 U	5.0 U	5.0 U	1.0 U
Styrene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Tetrachloroethene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Toluene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
trans-1,2-Dichloroethene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
trans-1,3-Dichloropropene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Trichloroethene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Vinyl chloride	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Xylenes (total)	ug/L	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
Field Parameters									
Conductivity	mS/cm	1.82	1.42	1.42	1.37	1.72	1.57	1.38	3.62
Dissolved oxygen (DO)	ug/L	810	0.33	0.8	3650	240	2.11	1630	640
Oxidation reduction potential (ORP)	millivolts	-21	108	-30	-145	-166	-5	-4	-65
pH	s.u.	6.42	7.21	7.07	6.47	7.69	7.25	7.09	7.78
Temperature, field	Deg C	13.7	21.26	11.34	15.9	15.8	18.5	15.11	16.8
Turbidity	NTU	2.75	1.23	5.4	-	16.8	17	1.3	-

Notes:

¹ - NYSDEC TOGs Groundwater Standards and Guidance - NYSDEC Division of Water Operational Guidance Series (1.1.1) Ambient Water Quality Standards and Guidance June 1998 and addenda.

ug/L - micrograms per liter or parts per billion (ppb)

NC - No Criteria

3.1 J - Estimated Concentration. Analyte was detected at a concentration below 100 U - result is non-detect at the associated value

Table 2

Analytical Results Summary - Plume Migration Monitoring
Endoline Area Chlorinated Solvent Plume Monitoring Program
GM Tonawanda Engine Plant
Tonawanda, New York

Location ID:		MW-103	MW-103	MW-103	MW-103	MW-103	MW-103	MW-103	MW-103	MW-103
Sample Name:		WG-17390-092112-009	WG-17390-031213-KL-015	WG-17390-092713-KL-012	WG-17390-091515-004	WG-17390-051116-012	WG-17390-111416-KL-05	WG-17390-103117-008	WG-17390-110118-009	WG-17390-102419-009
Sample Date:		9/21/2012	3/12/2013	9/27/2013	9/15/2015	5/11/2016	11/14/2016	10/31/17	11/01/2018	10/24/2019
Parameters	Units									
Volatile Organic Compounds										
1,1,1-Trichloroethane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1,2,2-Tetrachloroethane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1,2-Trichloroethane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dichloroethane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dichloroethene (total)	ug/L	-	-	-	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	1.0 U
1,2-Dichloropropane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,4-Dioxane	ug/L	50 U	50 U	50 U	50 U	50 U	18 J	50 U	18 J	50 U
2-Butanone (Methyl ethyl ketone) (MEK)	ug/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2-Hexanone	ug/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	ug/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Acetone	ug/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Benzene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Bromodichloromethane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Bromoform	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Bromomethane (Methyl bromide)	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Carbon disulfide	ug/L	1.0 U	0.17 J	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Carbon tetrachloride	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chlorobenzene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chloroethane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chloroform (Trichloromethane)	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chloromethane (Methyl chloride)	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
cis-1,2-Dichloroethene	ug/L	1.0 U	1.0 U	1.0 U	-	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
cis-1,3-Dichloropropene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Dibromochloromethane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Ethylbenzene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Methylene chloride	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	5.0 U	5.0 U
Styrene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Tetrachloroethene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Toluene	ug/L	1.0 U	1.0 U	0.14 J	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
trans-1,2-Dichloroethene	ug/L	1.0 U	1.0 U	1.0 U	-	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
trans-1,3-Dichloropropene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Trichloroethene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Vinyl chloride	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Xylenes (total)	ug/L	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
Field Parameters										
Conductivity	mS/cm	3.13	3.18	2.98	2.85	-	3.04	3.77	2.84	3.21
Dissolved oxygen (DO)	ug/L	4770	2150	3660	3510	-	1310	0.99	410	310
Oxidation reduction potential (ORP)	millivolts	-47	-52	-45	-102	-	68	28	-40	-32
pH	s.u.	6.38	7.12	5.4	6.81	6	6.25	6.82	7.01	7.41
Temperature, field	Deg C	20.2	18.6	21.16	24.89	-	20.1	16.61	19.5	19.3
Turbidity	NTU	16	0	5.8	2.23	-	1.9	25.1	-	7.3

Notes:
¹ - NYSDEC TOGs Groundwater Standards and Guidance - NYSDEC Division of Water
Operational Guidance Series (1.1.1) Ambient Water Quality Standards and Guidance
June 1998 and addenda.
ug/L - micrograms per liter or parts per billion (ppb)
NC - No Criteria
3.1 J - Estimated Concentration. Analyte was detected at a concentration below 1
100 U - result is non-detect at the associated value

Table 2

Analytical Results Summary - Plume Migration Monitoring
Endoline Area Chlorinated Solvent Plume Monitoring Program
GM Tonawanda Engine Plant
Tonawanda, New York

Location ID: MW-103
Sample Name: WG-17390-101620-009
Sample Date: 10/16/2020

Parameters	Units	
Volatile Organic Compounds		
1,1,1-Trichloroethane	ug/L	1.0 U
1,1,2,2-Tetrachloroethane	ug/L	1.0 U
1,1,2-Trichloroethane	ug/L	1.0 U
1,1-Dichloroethane	ug/L	1.0 U
1,1-Dichloroethene	ug/L	1.0 U
1,2-Dichloroethane	ug/L	1.0 U
1,2-Dichloroethene (total)	ug/L	1.0 U
1,2-Dichloropropane	ug/L	1.0 U
1,4-Dioxane	ug/L	50 U
2-Butanone (Methyl ethyl ketone) (MEK)	ug/L	10 U
2-Hexanone	ug/L	10 U
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	ug/L	10 U
Acetone	ug/L	10 U
Benzene	ug/L	1.0 U
Bromodichloromethane	ug/L	1.0 U
Bromoform	ug/L	1.0 U
Bromomethane (Methyl bromide)	ug/L	1.0 U
Carbon disulfide	ug/L	1.0 U
Carbon tetrachloride	ug/L	1.0 U
Chlorobenzene	ug/L	1.0 U
Chloroethane	ug/L	1.0 U
Chloroform (Trichloromethane)	ug/L	1.0 U
Chloromethane (Methyl chloride)	ug/L	1.0 U
cis-1,2-Dichloroethene	ug/L	1.0 U
cis-1,3-Dichloropropene	ug/L	1.0 U
Dibromochloromethane	ug/L	1.0 U
Ethylbenzene	ug/L	1.0 U
Methylene chloride	ug/L	5.0 U
Styrene	ug/L	1.0 U
Tetrachloroethene	ug/L	1.0 U
Toluene	ug/L	1.0 U
trans-1,2-Dichloroethene	ug/L	1.0 U
trans-1,3-Dichloropropene	ug/L	1.0 U
Trichloroethene	ug/L	1.0 U
Vinyl chloride	ug/L	1.0 U
Xylenes (total)	ug/L	2.0 U

Field Parameters		
Conductivity	mS/cm	3.18
Dissolved oxygen (DO)	ug/L	2.15
Oxidation reduction potential (ORP)	millivolts	-52
pH	s.u.	7.12
Temperature, field	Deg C	18.6
Turbidity	NTU	1

Notes:

¹ - NYSDEC TOGs Groundwater Standards and Guidance - NYSDEC Division of Water Operational Guidance Series (1.1.1) Ambient Water Quality Standards and Guidance June 1998 and addenda.

ug/L - micrograms per liter or parts per billion (ppb)

NC - No Criteria

3.1 J - Estimated Concentration. Analyte was detected at a concentration below 100 U - result is non-detect at the associated value

Table 3

**Groundwater Monitoring Parameters
Endoline Area Chlorinated Solvent Plume Monitoring Program
GM Tonawanda Engine Plant
Tonawanda, New York**

Volatile Organic Compounds

1,1,1-Trichloroethane
1,1,2,2-Tetrachloroethane
1,1,2-Trichloroethane
1,1-Dichloroethane
1,1-Dichloroethene
1,2,4-Trimethylbenzene
1,2-Dichloroethane
1,2-Dichloroethene (total)
1,2-Dichloropropane
1,3,5-Trimethylbenzene
1,4-Dioxane
2-Butanone (Methyl ethyl ketone) (MEK)
2-Hexanone
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)
Acetone
Benzene
Bromodichloromethane
Bromoform
Bromomethane (Methyl bromide)
Carbon disulfide
Carbon tetrachloride
Chlorobenzene
Chloroethane
Chloroform (Trichloromethane)
Chloromethane (Methyl chloride)
cis-1,2-Dichloroethene
cis-1,3-Dichloropropene
Dibromochloromethane
Ethylbenzene
m&p-Xylene
Methylene chloride
o-Xylene
Styrene
Tetrachloroethene
Toluene
trans-1,2-Dichloroethene
trans-1,3-Dichloropropene
Trichloroethene
Vinyl chloride
Xylene (total)

Dissolved Gas

Ethane
Methane

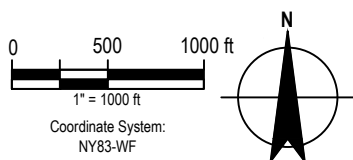
Field Parameters

Conductivity
Dissolved oxygen (DO)
Oxidation reduction potential (ORP)
pH
Temperature, field
Turbidity

Wet Chemistry

Aerobic 1,1,1-TCA specific microbial population
Ammonia
Alkalinity, total (as CaCO₃)
Anaerobic 1,1,1-TCA specific microbial population
Biochemical oxygen demand (BOD)
Nitrate (as N)
Nitrite (as N)
Orthophosphate
Phosphate, total
Sulfate
Sulfite
Chemical oxygen demand (COD)
Total microbial population - aerobic
Total microbial population - anaerobic
Total organic carbon (TOC)

GPS LOCATION
Lat/Long: 42.9611514°, -78.9168869°



GENERAL MOTORS, LLC
ENHANCED ATTENUATION AT THE ENDLINE
AREA CHLORINATED SOLVENT PLUME
GENERAL MOTORS COMPANY
TONAWANDA ENGINE PLANT
TONANWANDA, NEW YORK
SITE LOCATION MAP

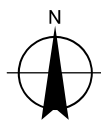
Project No. 17390
Date January 2026

FIGURE 1



Paper Size ANSI A
0 250 500
Feet

Map Projection: Mercator Auxiliary Sphere
Horizontal Datum: WGS 1984
Grid: WGS 1984 Web Mercator Auxiliary Sphere



GENERAL MOTORS, LLC
ENHANCED ATTENUATION AT THE
ENDLINE AREA CHLORINATED SOLVENT PLUME
GENERAL MOTORS COMPANY
TONAWANDA ENGINE PLANT
TONAWANDA, NEW YORK

Project No. 17390
Revision No. -
Date Jan 15, 2026

SITE PLAN

FIGURE 2

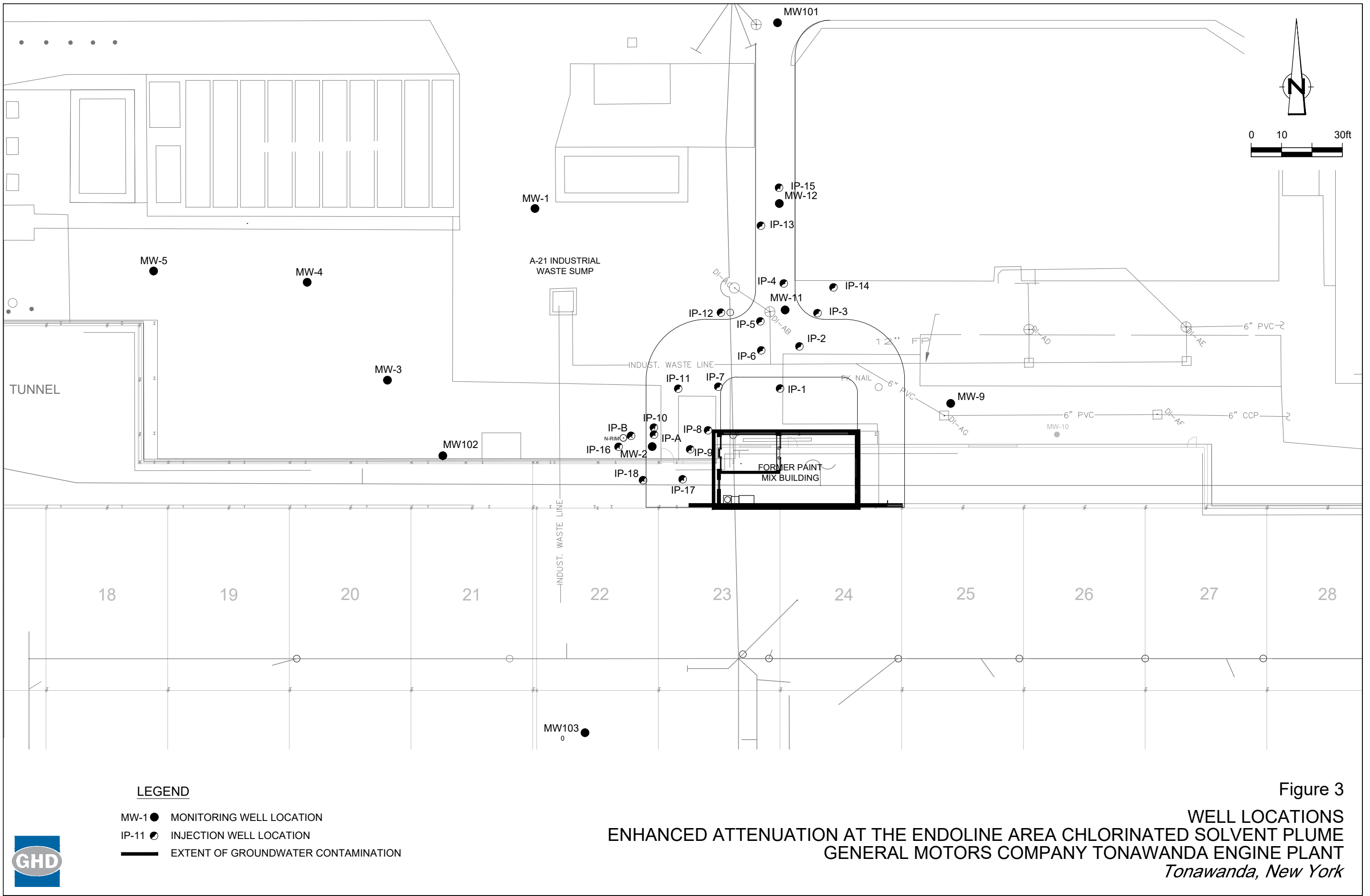


Figure 4. Concentration Versus Time Plot for Well MW-2

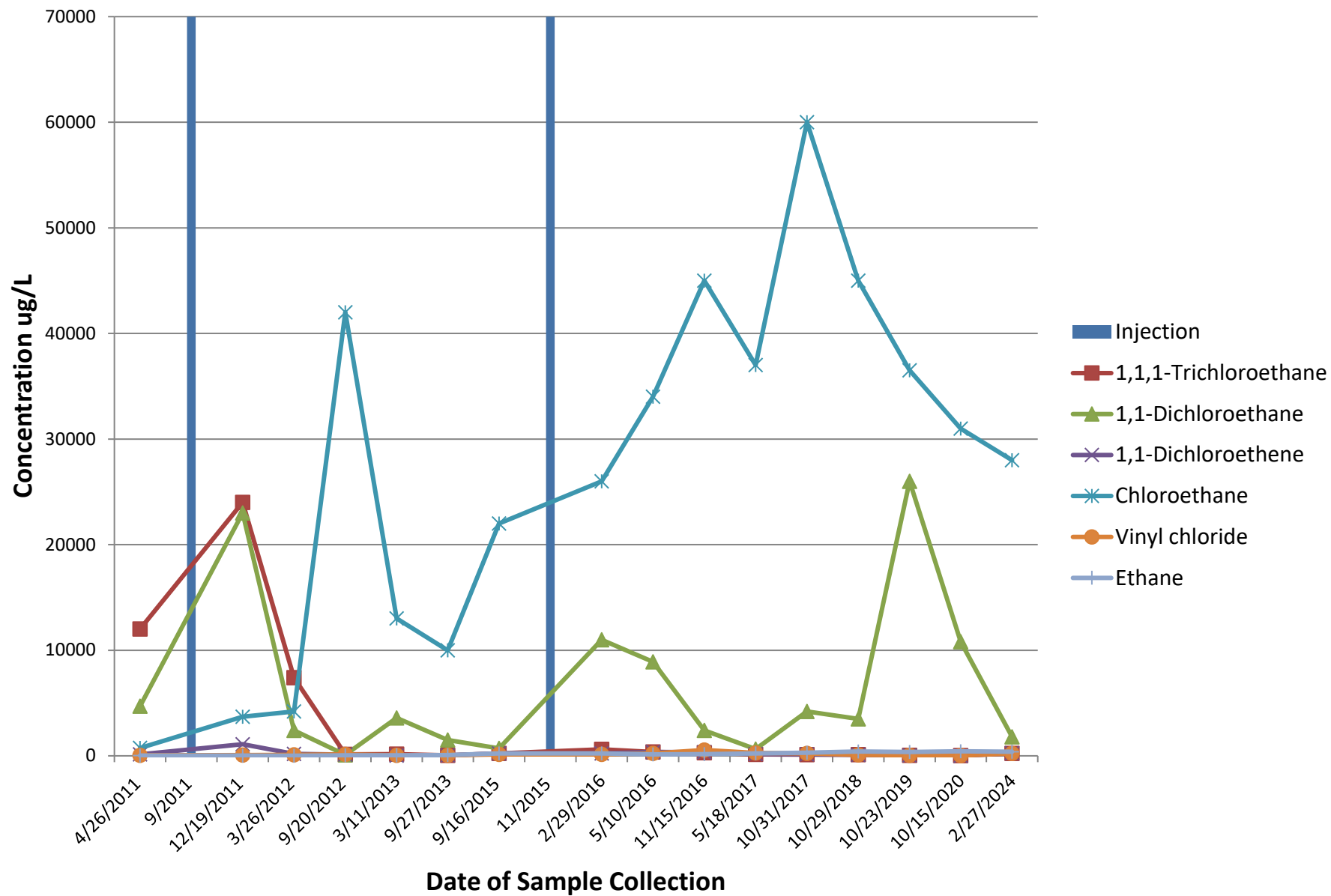


Figure 5. Concentration Versus Time Plot for Well MW-2

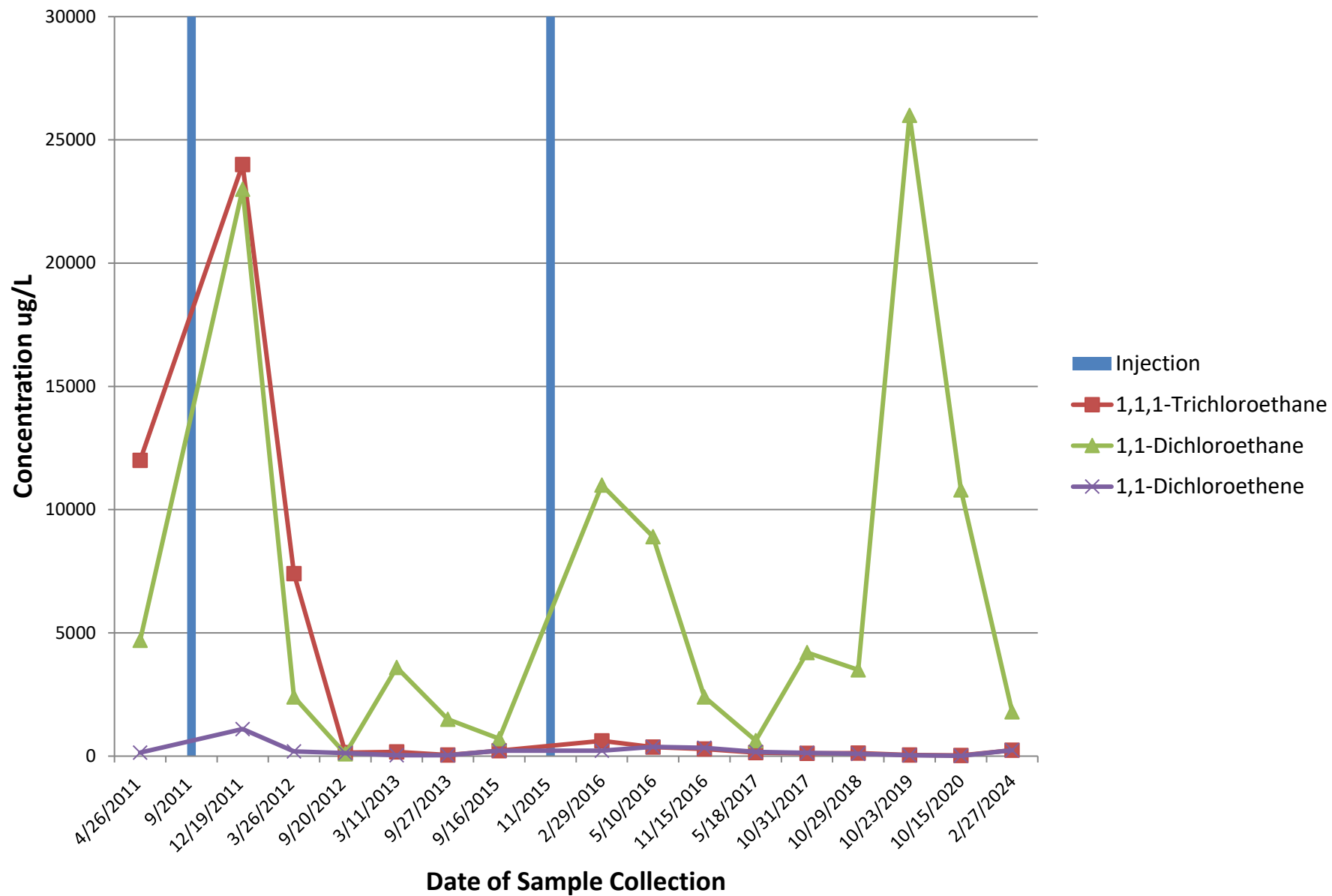


Figure 6. Concentration Versus Time Plot for Well MW-2

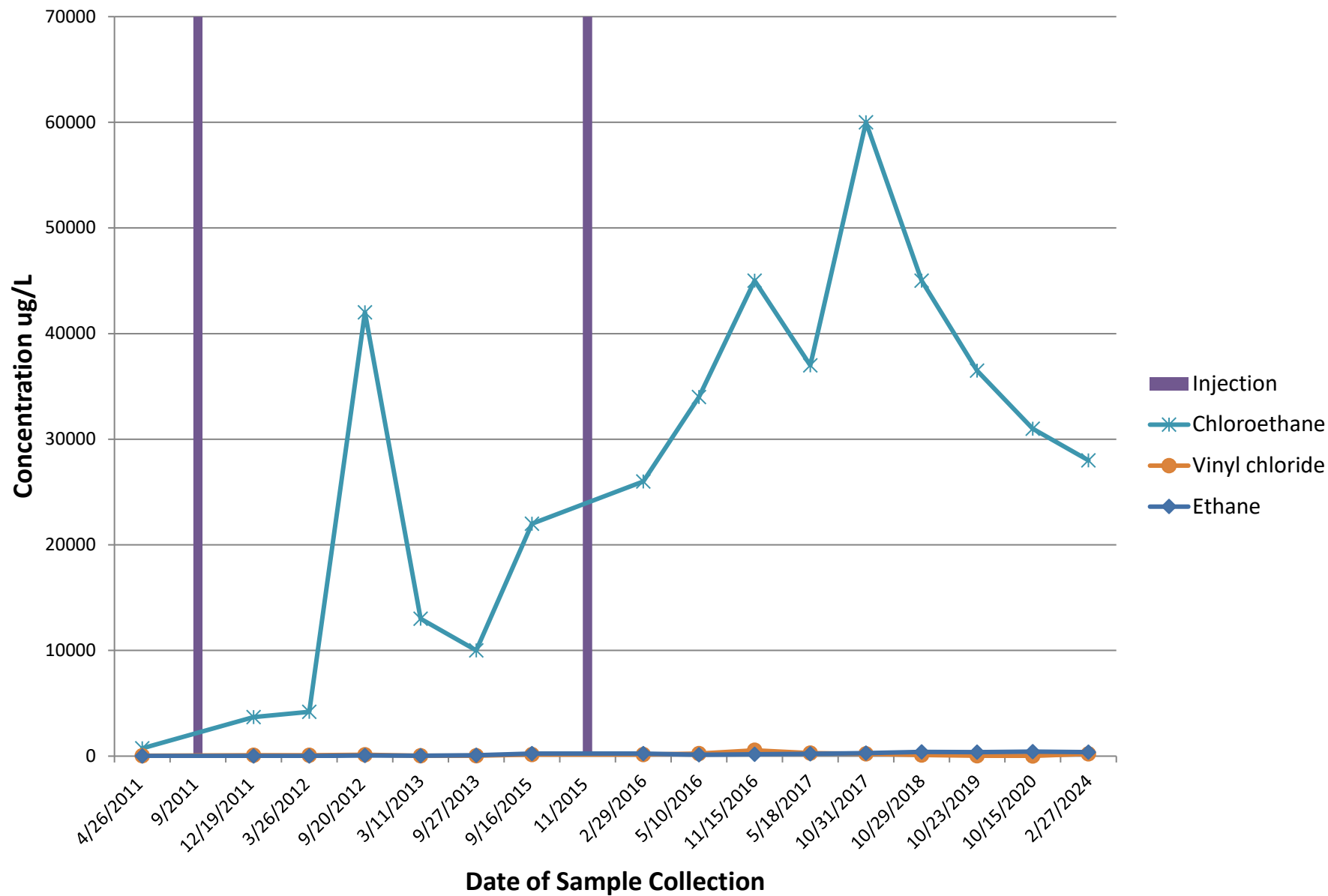


Figure 7. Concentration Versus Time Plot for Well MW-2

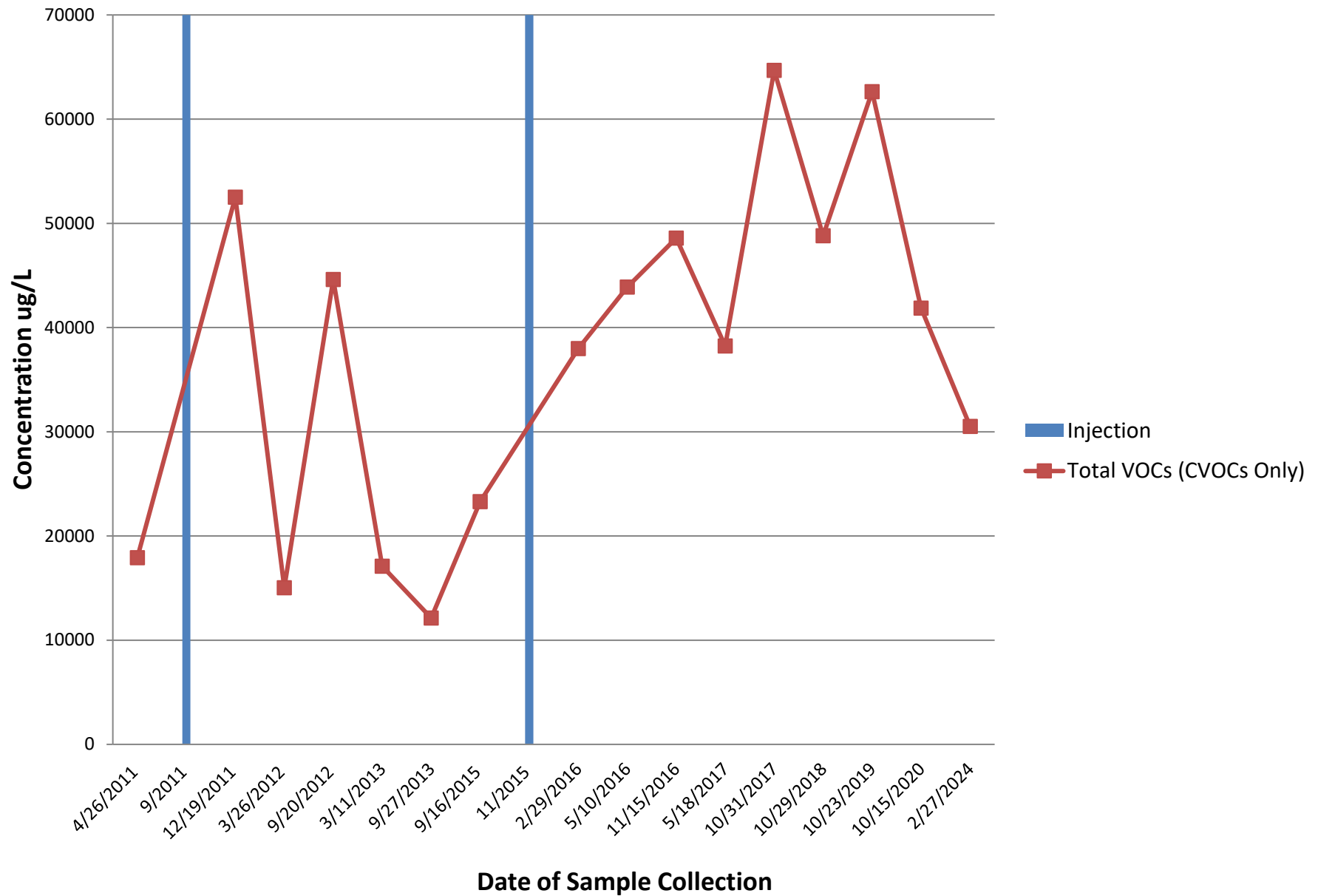


Figure 8. Concentration Versus Time Plot for Well MW-11

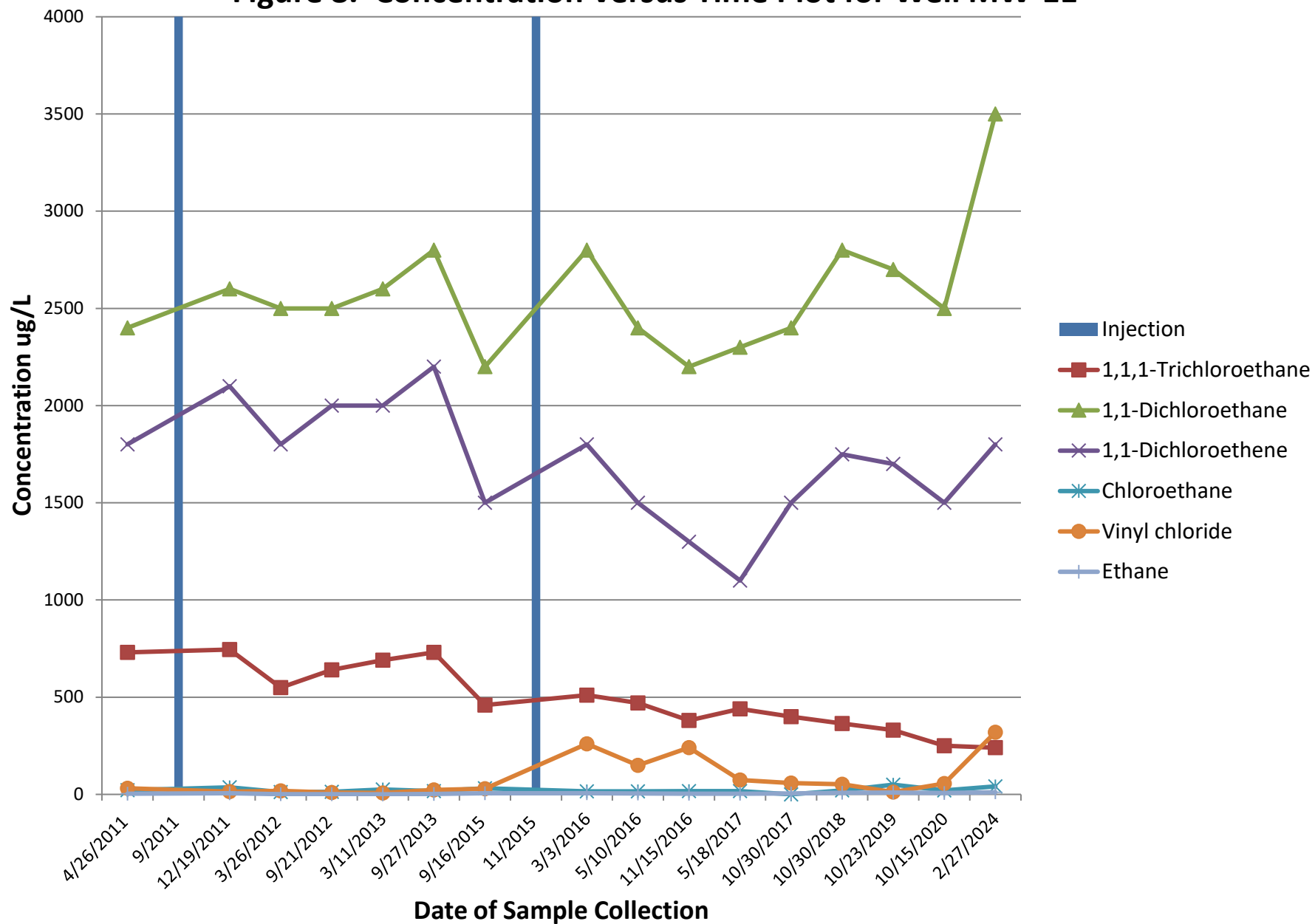


Figure 9. Concentration Versus Time Plot for Well MW-11

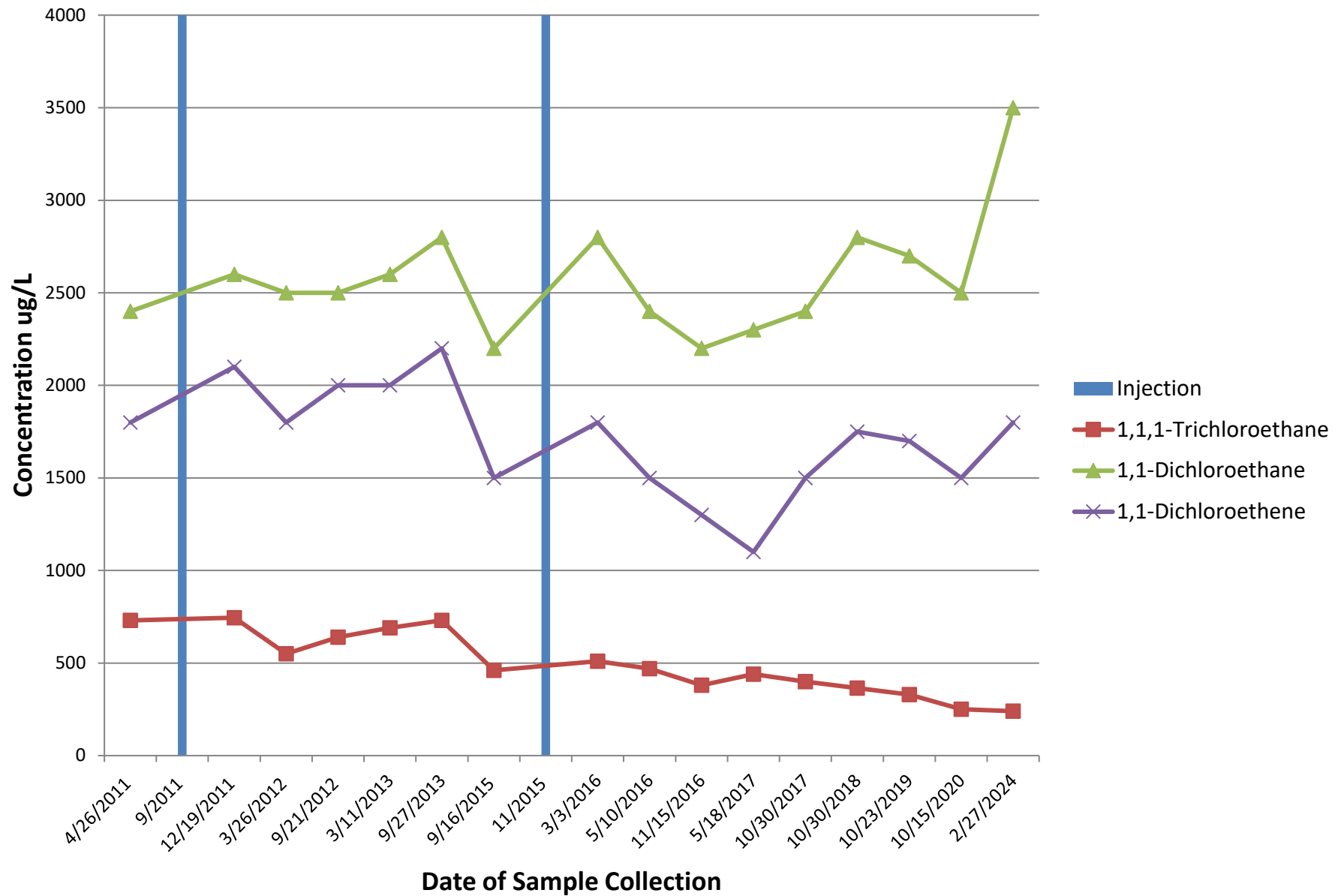


Figure 10. Concentration Versus Time Plot for Well MW-11

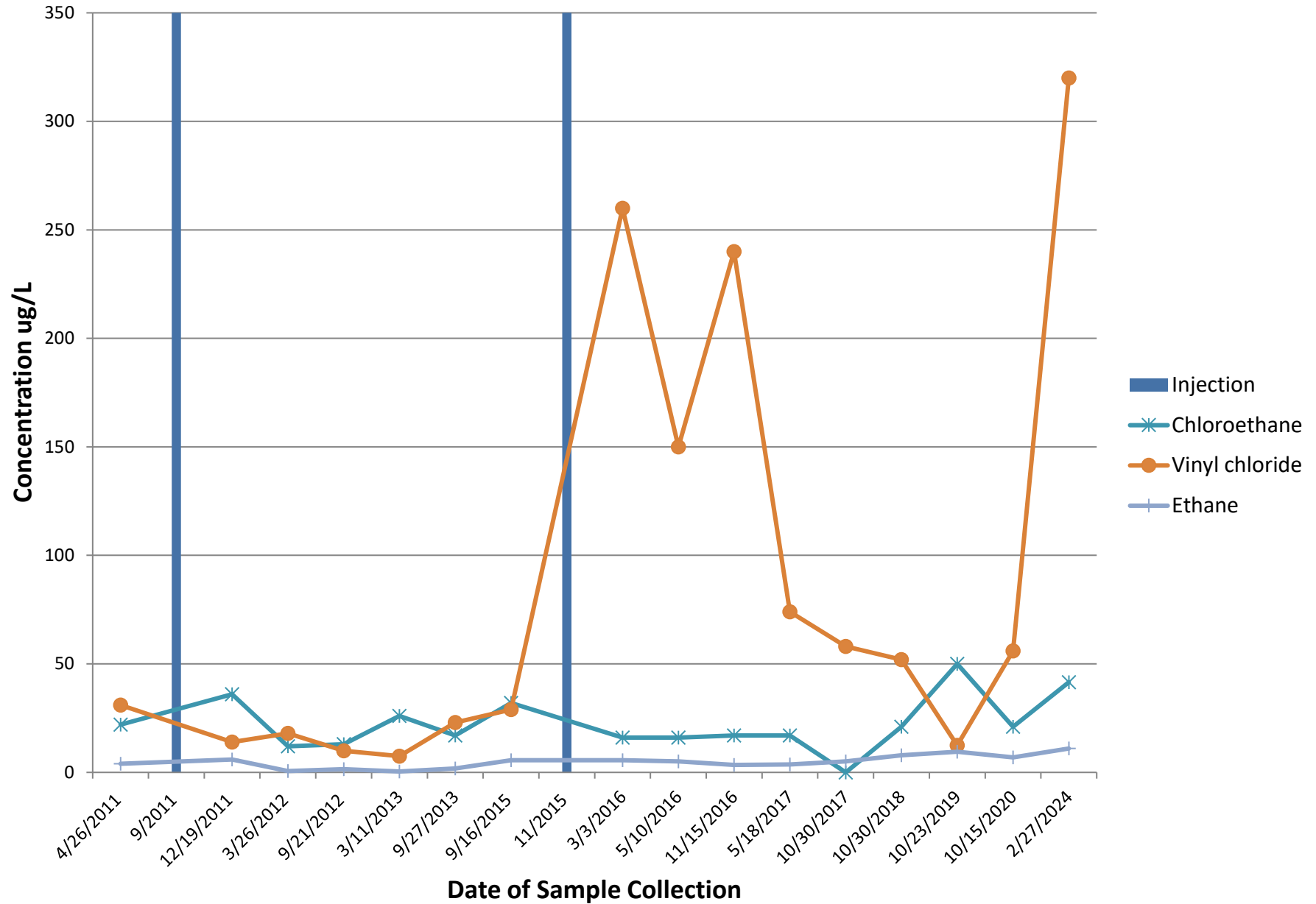


Figure 11. Concentration Versus Time Plot for Well MW-11

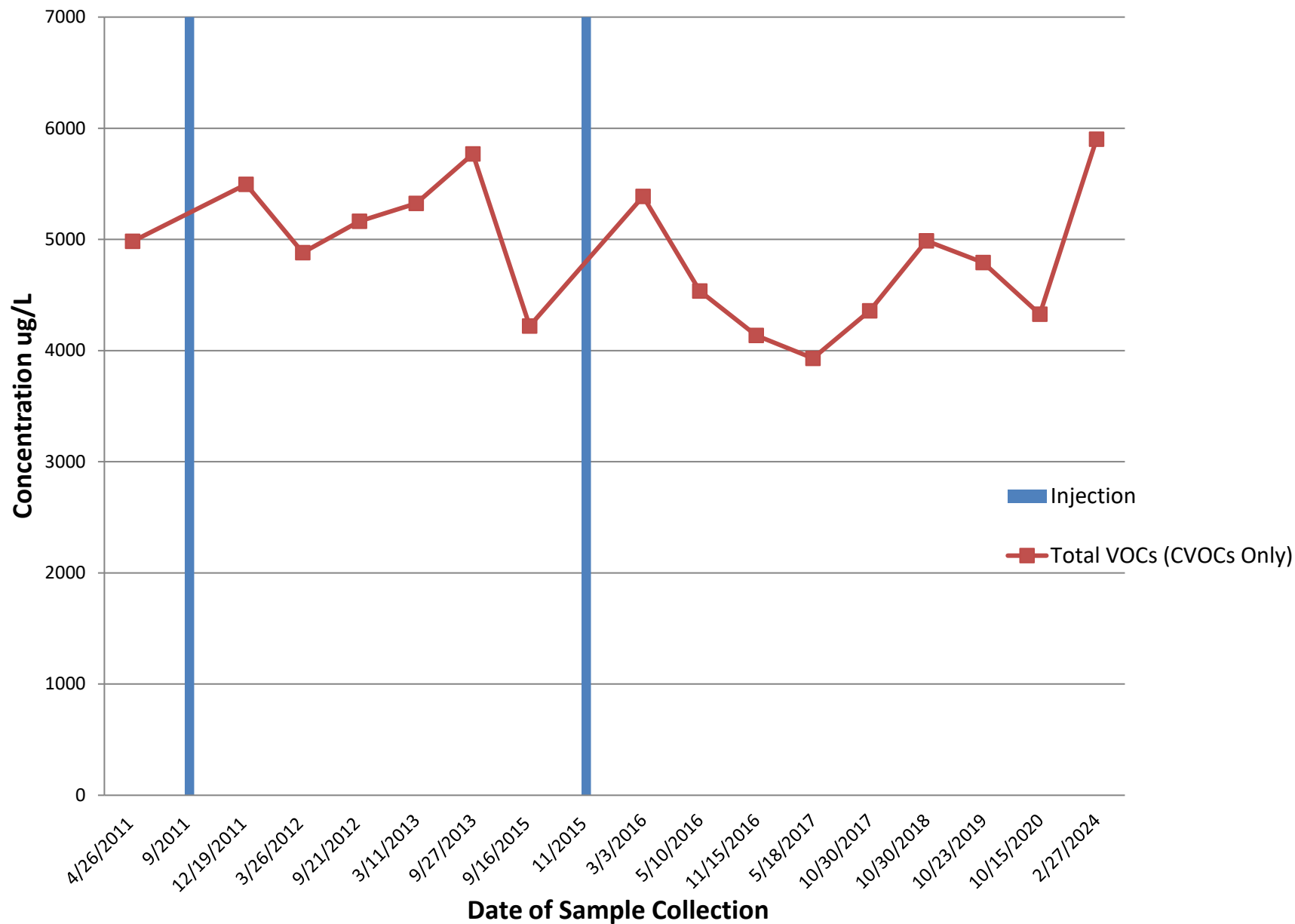


Figure 12. Concentration Versus Time Plot for Well MW-12

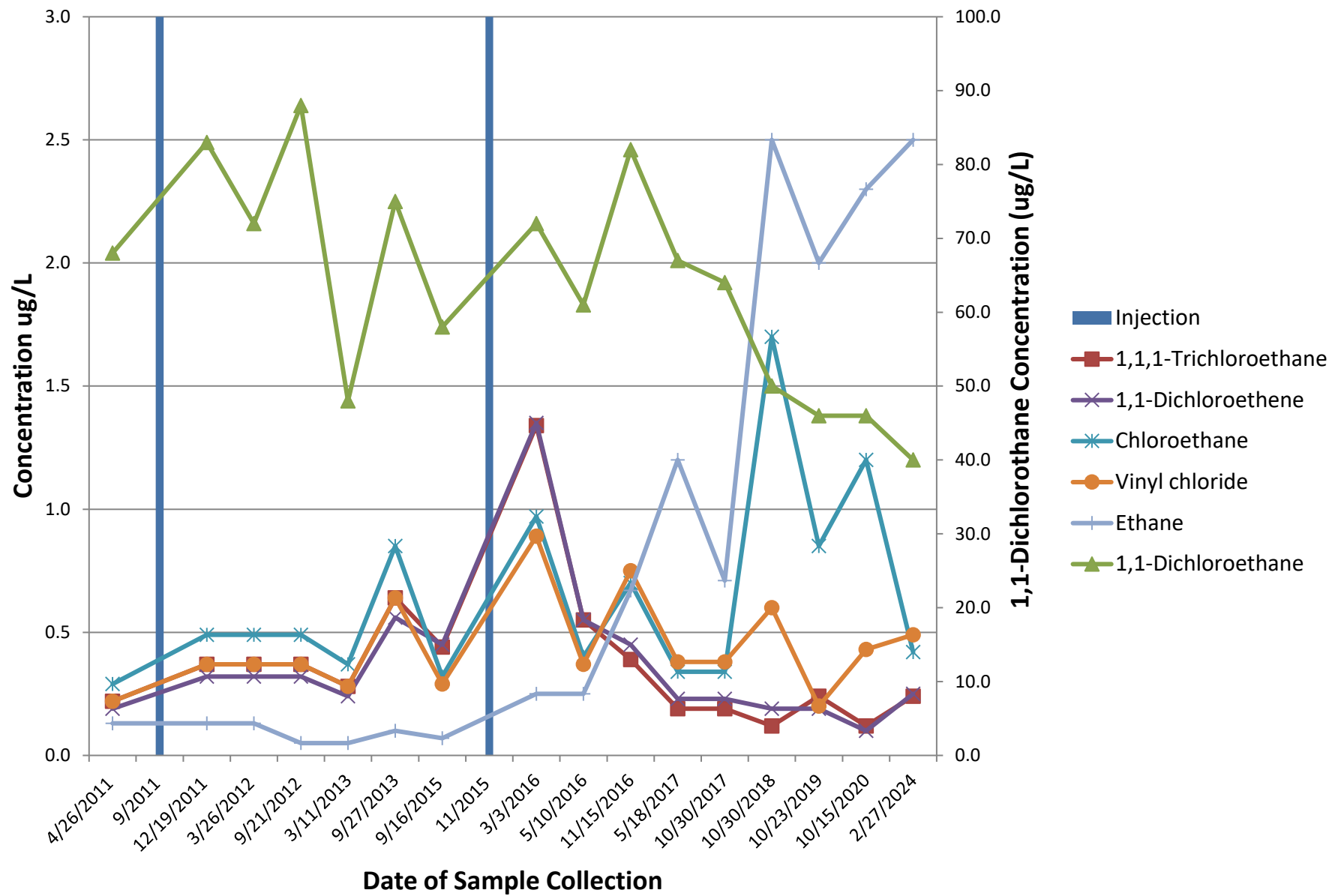


Figure 13. Concentration Versus Time Plot for Well MW-12

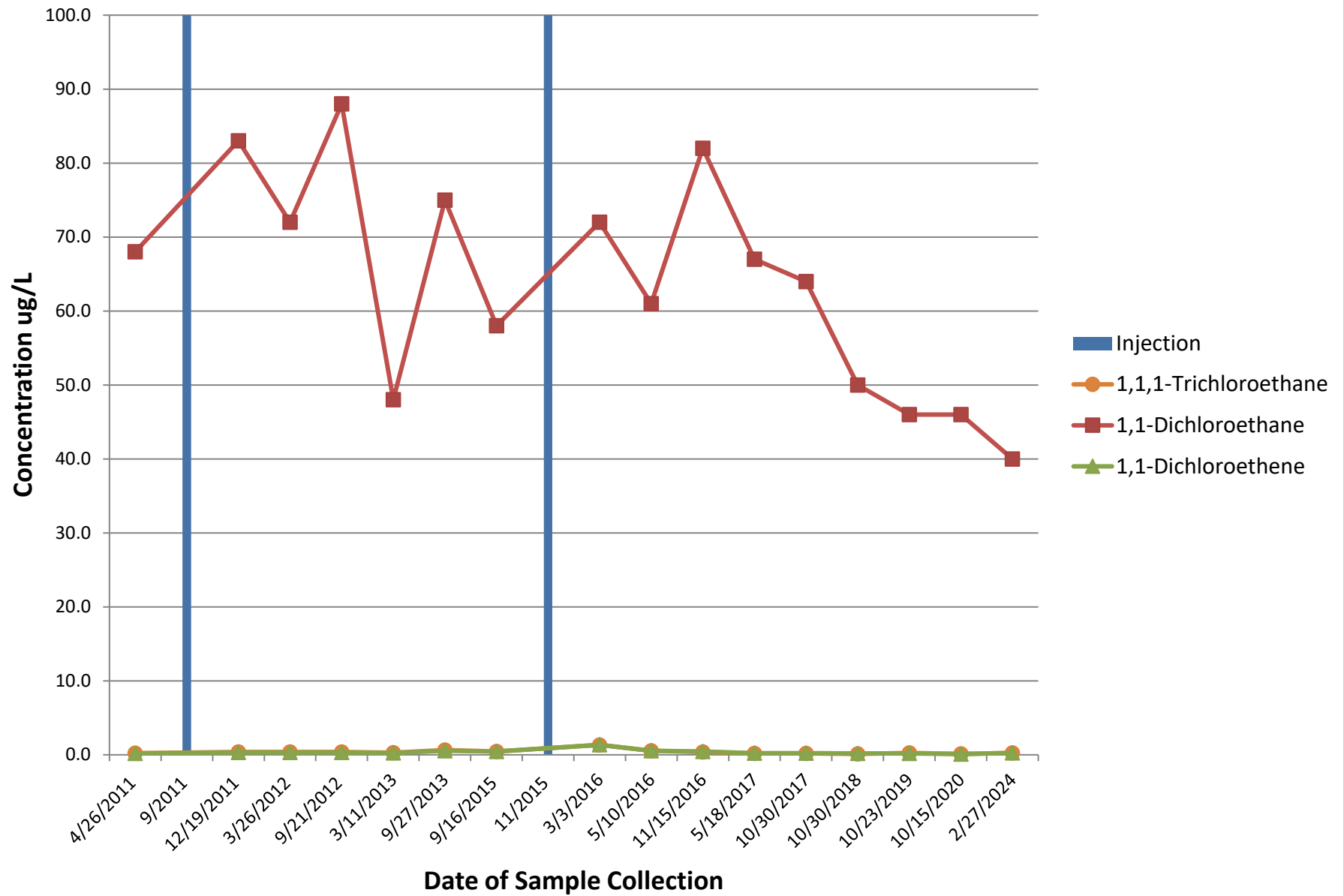


Figure 14. Concentration Versus Time Plot for Well MW-12

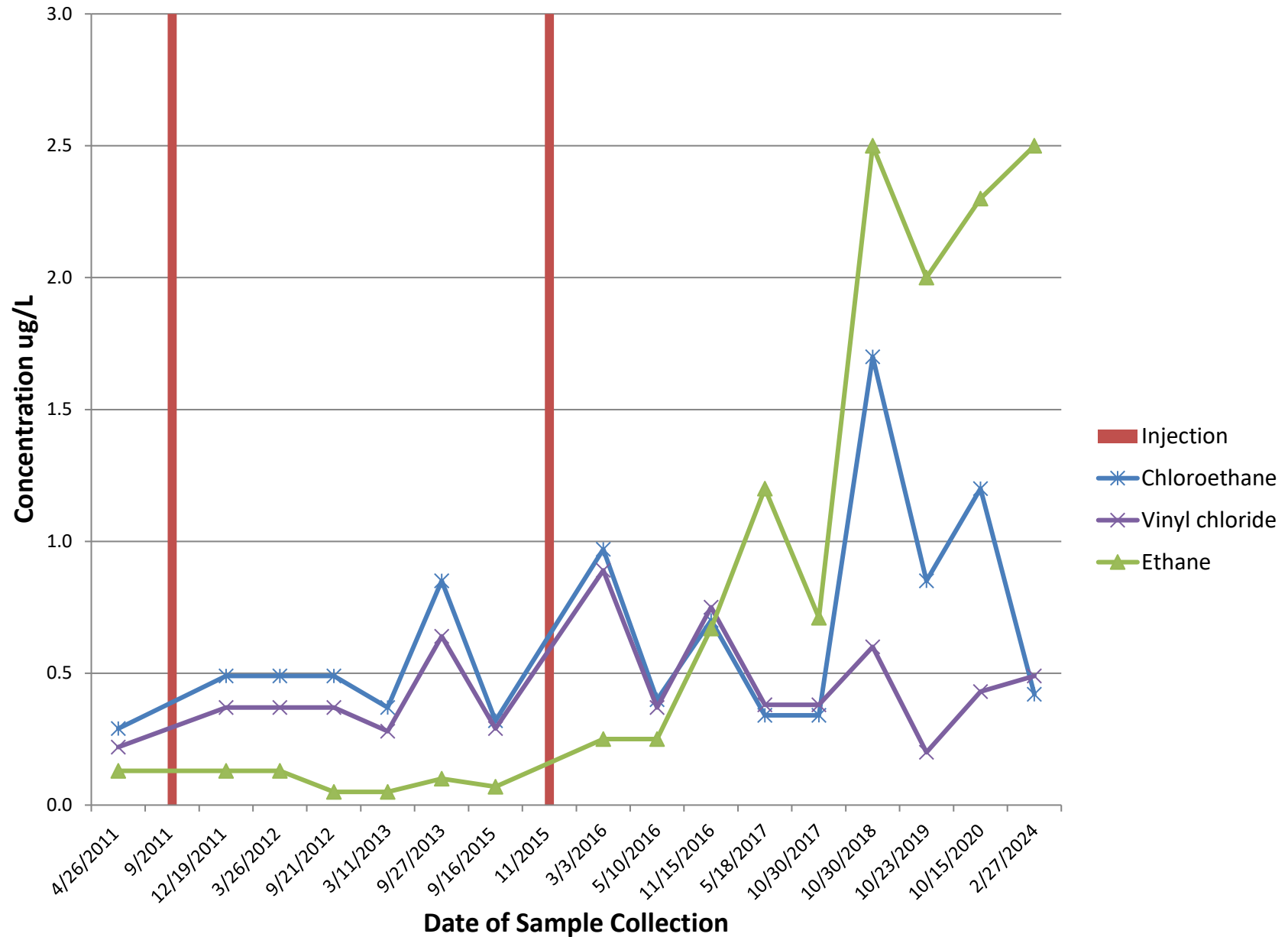
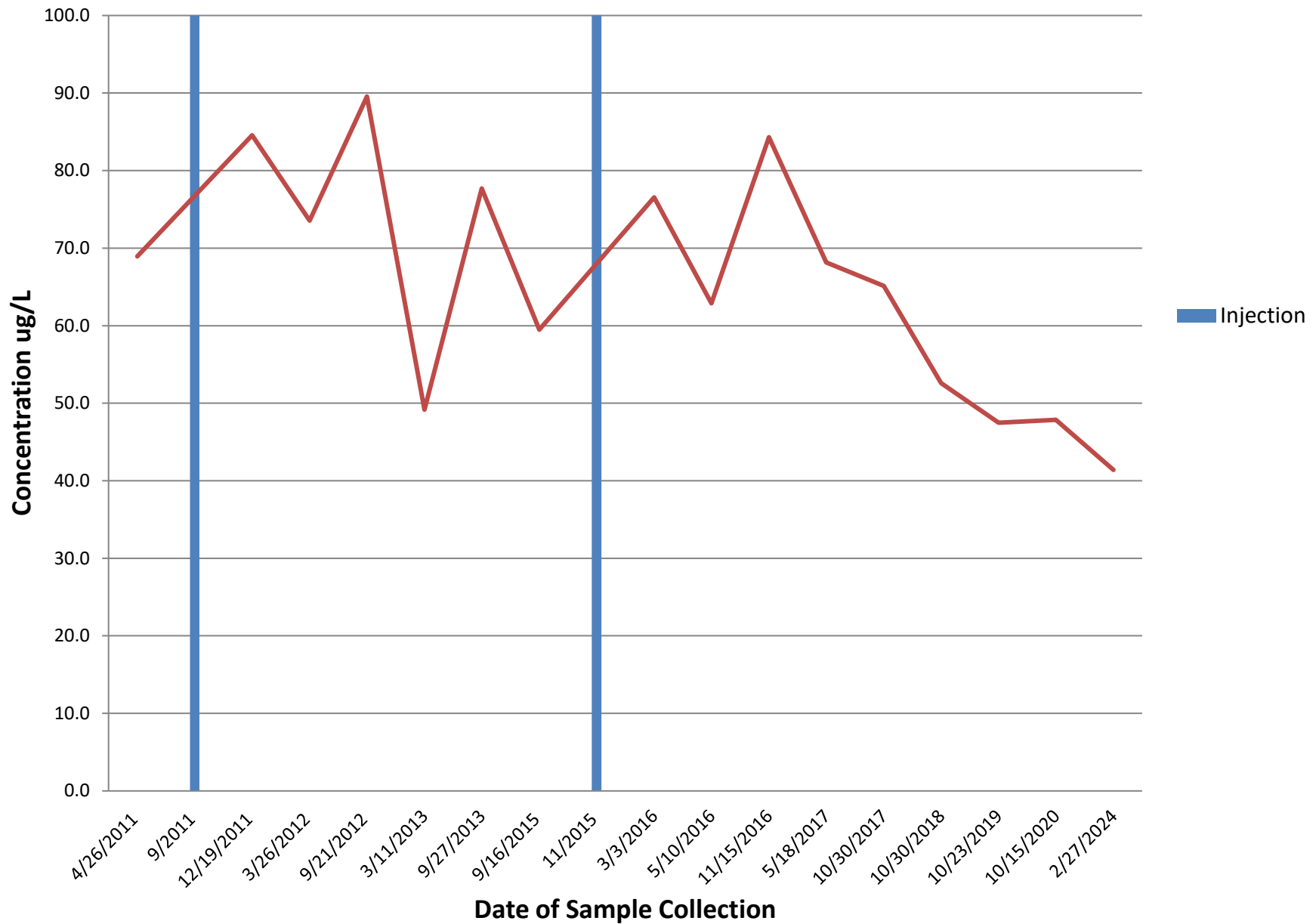


Figure 15. Concentration Versus Time Plot for Well MW-12



Appendices

Appendix A

Field Sampling Forms

GM Endline GW Sampling

02/27/2023

DAILY LOG

Weather: 60-50 degrees partly cloudy
Winds S 12 mph

07:25- Calibrated Hach U-S2 NFO9029 with autocal soln
4.00 pH / 4.49 mS/cm Lot # 24007124 Exp. 02/2025

pH before: 3.98, after: 4.00

Sp. Cond. before: 4.48, after: 4.48

Calibrated Turbidimeter control # NFO 8992 Standards

10 NTU - Lot A2264 100 NTU - Lot A2239 ~~800~~ 800 Lot A2228

10 NTU - 9.78 100 NTU - 99.8 800 NTU - 779

0830 onsite meet up with Corey Essary to do safety training and receive green books

0930 Doug Oscar gives locations of wells

0945 searched for MW103 - well covered inaccessible

1000 Set up on MW-2 Purge and sample well (all parameters)

1235 set up on MW102 Purge and sample well (VOCs only)

1335 Set up on MW-1 Purge and sample well (VOCs only)

1455 set up on MW-9 Purge and sample well (VOCs only)

1530 Dump purge water Rick coder, Fill out COC

1545 offsite

1KM

K2

017390

GM Embolite Area

017358

02/27/2024

DAILY LOG

0745 Calibrated HANNA US2 GSH10002 w/

Antical Solution lot # 24002781 Exp 08/24

pH before 4.30 standard 4.0 after 3.97

SPC before 4.59 standard 4.45 mS/cm after 4.48

Checked Carl Turbiditymeter NF07613

10 NTU lot A2304 Exp Feb 24 : 10.5

100 NTU lot A2319 Exp Feb 24 : 101

800 NTU lot A2319 Exp Feb 24 : 816

0830 On-site; met up with site contact
for safety briefing

0920 Doug Osear gives well tour

0945 MW103 located; well obstructed

Weather 40-63° mostly cloudy 14 mph winds

1100 Setup on MW101, purge and sample low
flow

1230 Setup on MW12 - purge and sample low flow

1345 Setup on MW11 purge and sample low flow

1530 Pumped purge water

1545 OFF-SITE

JIK

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

Project Data:

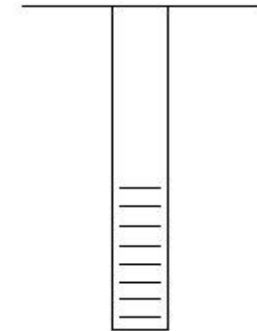
Project Name: GM Endline Area Groundwater Monitoring
Ref. No.: 017390.01.70101

Date: 2/27/2024
Personnel: K. Miller

Monitoring Well Data:

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

Saturated Screen Length (m/ft): _____
Depth to Pump Intake (m/ft)⁽¹⁾: _____
Well Diameter, D (cm/in): 2 inch
Well Screen Volume, V_s (L)⁽⁴⁾: _____
Initial Depth to Water (m/ft): 1.83



Time	Pumping Rate (mL/min)	Depth to Water (m/ft)	Drawdown from Initial Water Level ⁽³⁾ (m/ft)	Temperature °C	Conductivity (mS/cm)	Turbidity NTU	DO (mg/L)	pH	ORP (mV)	Volume Purged, V _p (L)	No. of Well Screen Volumes Purged ⁽⁴⁾
Start Purge at 10:35				Precision Required ⁽⁵⁾ : ±3 %	±0.005 or 0.01 ⁽⁶⁾	±10 %	±10 %	±0.1 Units	±10 mV		
1038	100	2.46	0.63	14.75	1.52	4.71	3.31	6.39	10		
1043	92	2.78		14.56	1.49	3.02	3.49	6.65	-26		
1048	92	3.02		13.91	1.50	2.47	3.38	6.77	-41		
1053	92	3.41		13.45	1.50	2.00	3.41	6.87	-54		
1058	108	3.60		13.35	1.50	1.88	3.44	6.91	-59		
1103	92	3.77		13.51	1.48	2.61	3.63	6.95	-65		
1108	92	3.91		13.42	1.48	2.02	3.55	6.97	-68		
1113	92	4.04		13.36	1.48	2.73	3.51	6.99	-70		

Sample ID: WG-017390-022724-KM-001 MS/MSD collected on VOCs only

Sample Time: 11:20

Notes: Clear and colorless

- (1) The pump intake will be placed at the well screen mid-point or at a minimum of 0.6 m (2 ft) above any sediment accumulated at the well bottom.
- (2) The well screen volume will be based on a 1.52 metres (5-foot) screen length (L). For metric units, $V_s = \pi \cdot (r^2) \cdot L$ in mL, where r (r=D/2) and L are in cm.
For Imperial units, $V_s = \pi \cdot (r^2) \cdot L \cdot (2.54)^3$, where r and L are in inches
- (3) The drawdown from the initial water level should not exceed 0.1 m (0.3 ft). The pumping rate should not exceed 500 mL/min.
- (4) Purging will continue until stabilization is achieved or until 20 well screen volumes have been purged (unless purge water remains visually turbid and appears to be clearing, or unless stabilization parameters are varying slightly outside of the stabilization criteria and appear to be stabilizing), No. of Well Screen Volumes Purged= V_p/V_s.
- (5) For conductivity, the average value of three readings <1 mS/cm ±0.005 mS/cm or where conductivity >1 mS/cm ±0.01 mS/cm.

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

Project Data:

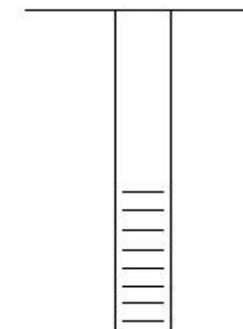
Project Name: GM Endline Area Groundwater Monitoring
Ref. No.: 017390.01.70101

Date: 2/27/2024
Personnel: J. Kawecki
D. Burr

Monitoring Well Data:

Well No.: MW-101
Vapour PID (ppm): _____
Measurement Point: Top of Riser
Constructed Well Depth (m/ft): _____
Measured Well Depth (m/ft): _____
Depth of Sediment (m/ft): _____

Saturated Screen Length (m/ft): _____
Depth to Pump Intake (m/ft)⁽¹⁾: _____
Well Diameter, D (cm/in): 2 inch
Well Screen Volume, V_s (L)⁽⁴⁾: _____
Initial Depth to Water (m/ft): 17.53



Time	Pumping Rate (mL/min)	Depth to Water (m/ft)	Drawdown from Initial Water Level ⁽³⁾ (m/ft)	Temperature °C	Conductivity (mS/cm)	Turbidity NTU	DO (mg/L)	pH	ORP (mV)	Volume Purged, V _p (L)	No. of Well Screen Volumes Purged ⁽⁴⁾
Start Purge at 11:09		Precision Required⁽⁵⁾:		±3 %	±0.005 or 0.01⁽⁶⁾	±10 %	±10 %	±0.1 Units	±10 mV		
1110	192	17.76	0.43	13.79	32.6	120	4.36	6.75	238		
1115	152	17.79	0.46	13.30	33.3	87.8	3.34	7.09	205		
1120	112	17.82	0.49	13.42	33.2	50.9	2.70	7.11	167		
1125	96	17.80	0.47	13.00	33.5	35.2	2.23	7.10	148		
1130	92	17.79	0.46	12.74	33.8	24.7	2.10	7.08	120		
1135	96	17.77	0.44	12.62	33.8	16.4	1.40	7.10	98		
1140	80	17.76	0.43	12.70	34.6	11.8	1.25	7.10	98		
1145	80	17.75	0.42	12.68	34.4	11.1	1.07	7.09	89		
1150	80	17.75	0.42	12.03	34.2	11.7	0.98	7.09	88		
1155	72	17.73	0.40	12.30	33.6	7.12	0.94	7.08	88		
1200	84	17.74	0.41	12.07	33.7	8.41	0.92	7.10	88		
1205	72	17.75	0.42	12.30	33.0	9.47	0.90	7.10	88		
1210	72	17.75	0.42	12.83	32.5	6.30	0.86	7.11	90		

Sample ID: WG-017390-022724-JK-002

Sample Time: 12:15

Notes: WG-017390-022724-JK-004 (DUPLICATE)

Clear and colorless

- (1) The pump intake will be placed at the well screen mid-point or at a minimum of 0.6 m (2 ft) above any sediment accumulated at the well bottom.
- (2) The well screen volume will be based on a 1.52 metres (5-foot) screen length (L). For metric units, $V_s = \pi \cdot (r^2) \cdot L$ in mL, where r (r=D/2) and L are in cm.
For Imperial units, $V_s = \pi \cdot (r^2) \cdot L \cdot (2.54)^3$, where r and L are in inches
- (3) The drawdown from the initial water level should not exceed 0.1 m (0.3 ft). The pumping rate should not exceed 500 mL/min.
- (4) Purging will continue until stabilization is achieved or until 20 well screen volumes have been purged (unless purge water remains visually turbid and appears to be clearing, or unless stabilization parameters are varying slightly outside of the stabilization criteria and appear to be stabilizing), No. of Well Screen Volumes Purged= V_p/V_s.
- (5) For conductivity, the average value of three readings <1 mS/cm ±0.005 mS/cm or where conductivity >1 mS/cm ±0.01 mS/cm.

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

Project Data:

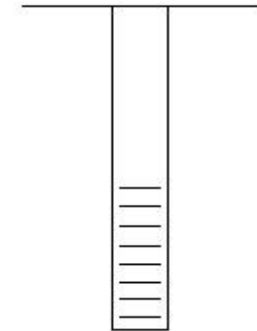
Project Name: GM Endline Area Groundwater Monitoring
Ref. No.: 017390.01.70101

Date: 2/27/2024
Personnel: K. Miller

Monitoring Well Data:

Well No.: MW-102
Vapour PID (ppm): _____
Measurement Point: Top of Riser
Constructed Well Depth (m/ft): _____
Measured Well Depth (m/ft): _____
Depth of Sediment (m/ft): _____

Saturated Screen Length (m/ft): _____
Depth to Pump Intake (m/ft)⁽¹⁾: _____
Well Diameter, D (cm/in): 2 inch
Well Screen Volume, V_s (L)⁽⁴⁾: _____
Initial Depth to Water (m/ft): 4.28



Time	Pumping Rate (mL/min)	Depth to Water (m/ft)	Drawdown from Initial Water Level ⁽³⁾ (m/ft)	Temperature °C	Conductivity (mS/cm)	Turbidity NTU	DO (mg/L)	pH	ORP (mV)	Volume Purged, V _p (L)	No. of Well Screen Volumes Purged ⁽⁴⁾
Start Purge at 12:44		Precision Required ⁽⁵⁾ :		±3 %	±0.005 or 0.01 ⁽⁶⁾	±10 %	±10 %	±0.1 Units	±10 mV		
1248	92	4.97		15.46	1.37	3.11	2.64	7.08	43		
1253	88	5.43		15.05	1.39	2.28	2.01	7.07	23		
1258	80	5.93		14.93	1.39	1.76	1.79	7.09	6		
1303	64	6.27		15.01	1.39	1.97	1.72	7.08	-6		
1308	64	6.65		15.21	1.38	1.47	1.66	7.08	-9		
1313	60	6.96		15.11	1.38	1.30	1.63	7.09	-4		

Sample ID: WG-017390-022724-KM-003

Sample Time: 13:15

Notes: Clear and colorless

- (1) The pump intake will be placed at the well screen mid-point or at a minimum of 0.6 m (2 ft) above any sediment accumulated at the well bottom.
- (2) The well screen volume will be based on a 1.52 metres (5-foot) screen length (L). For metric units, $V_s = \pi \cdot (r^2) \cdot L$ in mL, where r (r=D/2) and L are in cm.
For Imperial units, $V_s = \pi \cdot (r^2) \cdot L \cdot (2.54)^3$, where r and L are in inches
- (3) The drawdown from the initial water level should not exceed 0.1 m (0.3 ft). The pumping rate should not exceed 500 mL/min.
- (4) Purging will continue until stabilization is achieved or until 20 well screen volumes have been purged (unless purge water remains visually turbid and appears to be clearing, or unless stabilization parameters are varying slightly outside of the stabilization criteria and appear to be stabilizing), No. of Well Screen Volumes Purged= V_p/V_s .
- (5) For conductivity, the average value of three readings <1 mS/cm ±0.005 mS/cm or where conductivity >1 mS/cm ±0.01 mS/cm.

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

Project Data:

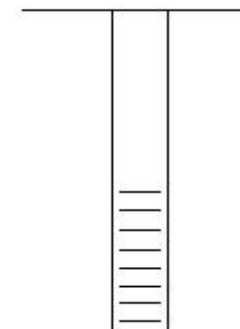
Project Name: GM Endline Area Groundwater Monitoring
Ref. No.: 017390.01.70101

Date: 2/27/2024
Personnel: K. Miller

Monitoring Well Data:

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

Saturated Screen Length (m/ft): _____
Depth to Pump Intake (m/ft)⁽¹⁾: _____
Well Diameter, D (cm/in): 2 inch
Well Screen Volume, V_s (L)⁽⁴⁾: _____
Initial Depth to Water (m/ft): 2.97



Time	Pumping Rate (mL/min)	Depth to Water (m/ft)	Drawdown from Initial Water Level ⁽³⁾ (m/ft)	Temperature °C	Conductivity (mS/cm)	Turbidity NTU	DO (mg/L)	pH	ORP (mV)	Volume Purged, V _p (L)	No. of Well Screen Volumes Purged ⁽⁴⁾
Start Purge at 13:38				Precision Required ⁽⁵⁾ : ±3 %	±0.005 or 0.01 ⁽⁶⁾	±10 %	±10 %	±0.1 Units	±10 mV		
1344	64	3.42		14.79	10.6	4.44	3.35	6.96	7		
1349	64	3.86		12.83	11.0	5.00	3.10	6.93	6		
1354	64	4.00		12.03	11.3	4.48	3.11	6.91	16		
1359	64	4.08		11.47	11.4	4.71	3.07	6.91	21		
1404	64	4.17		11.06	11.5	4.14	3.11	6.90	29		
1409	72	4.30		10.59	11.7	4.36	3.34	6.89	32		
1414	72	4.38		10.27	11.7	2.69	3.25	6.90	36		
1419	72	4.44		10.29	11.7	3.01	3.23	6.89	37		
1424	72	4.52		10.25	11.7	2.84	3.24	6.89	43		

Sample ID: WG-017390-022724-KM-005

Sample Time: 14:30

Notes: Clear and colorless

- (1) The pump intake will be placed at the well screen mid-point or at a minimum of 0.6 m (2 ft) above any sediment accumulated at the well bottom.
- (2) The well screen volume will be based on a 1.52 metres (5-foot) screen length (L). For metric units, $V_s = \pi \cdot (r^2) \cdot L$ in mL, where r (r=D/2) and L are in cm.
For Imperial units, $V_s = \pi \cdot (r^2) \cdot L \cdot (2.54)^3$, where r and L are in inches
- (3) The drawdown from the initial water level should not exceed 0.1 m (0.3 ft). The pumping rate should not exceed 500 mL/min.
- (4) Purging will continue until stabilization is achieved or until 20 well screen volumes have been purged (unless purge water remains visually turbid and appears to be clearing, or unless stabilization parameters are varying slightly outside of the stabilization criteria and appear to be stabilizing), No. of Well Screen Volumes Purged= V_p/V_s.
- (5) For conductivity, the average value of three readings <1 mS/cm ±0.005 mS/cm or where conductivity >1 mS/cm ±0.01 mS/cm.

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

Project Data:

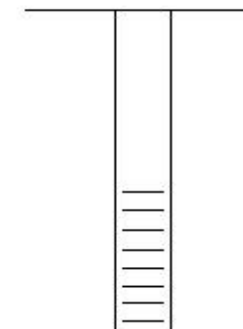
Project Name: GM Endline Area Groundwater Monitoring
Ref. No.: 017390.01.70101

Date: 2/27/2024
Personnel: J. Kawecki
D. Burr

Monitoring Well Data:

Well No.: MW-12
Vapour PID (ppm): _____
Measurement Point: Top of Riser
Constructed Well Depth (m/ft): _____
Measured Well Depth (m/ft): _____
Depth of Sediment (m/ft): _____

Saturated Screen Length (m/ft): _____
Depth to Pump Intake (m/ft)⁽¹⁾: _____
Well Diameter, D (cm/in): 2 inch
Well Screen Volume, V_s (L)⁽⁴⁾: _____
Initial Depth to Water (m/ft): 7.65



Time	Pumping Rate (mL/min)	Depth to Water (m/ft)	Drawdown from Initial Water Level ⁽³⁾ (m/ft)	Temperature °C	Conductivity (mS/cm)	Turbidity NTU	DO (mg/L)	pH	ORP (mV)	Volume Purged, V _p (L)	No. of Well Screen Volumes Purged ⁽⁴⁾
Start Purge at 12:34		Precision Required⁽⁵⁾:		±3 %	±0.005 or 0.01⁽⁶⁾	±10 %	±10 %	±0.1 Units	±10 mV		
1235	100	7.75	0.10	13.30	27.4	12.5	5.36	6.98	84		
1240	180	7.95	0.30	13.48	16.0	14.3	4.93	6.82	90		
1245	80	8.12	0.47	13.57	10.5	13.9	4.60	6.80	84		
1250	80	8.20	0.55	13.72	9.64	14.7	4.34	6.79	78		
1255	100	8.30	0.65	13.85	8.92	15.9	4.07	6.79	70		
1300	80	8.42	0.77	14.11	8.50	14.2	3.80	6.78	62		
1305	80	8.51	0.86	14.17	8.35	14.1	3.61	6.78	64		
1310	80	8.59	0.94	14.24	8.26	13.5	3.47	6.78	57		
1315	80	8.68	1.03	14.34	8.20	14.3	3.34	6.78	51		
1320	80	8.75	1.10	14.35	8.14	13.7	3.26	6.77	55		
1325	80	8.85	1.20	14.24	8.08	11.6	3.10	6.78	45		
1330	80	8.99	1.34	14.50	7.97	11.9	2.87	6.78	47		
1335	80	9.09	1.44	14.53	7.92	11.5	2.81	6.77	46		

Sample ID: WG-017390-022724-JK-006

Sample Time: 13:40

Notes: Clear and colorless

- (1) The pump intake will be placed at the well screen mid-point or at a minimum of 0.6 m (2 ft) above any sediment accumulated at the well bottom.
- (2) The well screen volume will be based on a 1.52 metres (5-foot) screen length (L). For metric units, $V_s = \pi \cdot (r^2) \cdot L$ in mL, where r (r=D/2) and L are in cm.
For Imperial units, $V_s = \pi \cdot (r^2) \cdot L \cdot (2.54)^3$, where r and L are in inches
- (3) The drawdown from the initial water level should not exceed 0.1 m (0.3 ft). The pumping rate should not exceed 500 mL/min.
- (4) Purging will continue until stabilization is achieved or until 20 well screen volumes have been purged (unless purge water remains visually turbid and appears to be clearing, or unless stabilization parameters are varying slightly outside of the stabilization criteria and appear to be stabilizing), No. of Well Screen Volumes Purged= V_p/V_s.
- (5) For conductivity, the average value of three readings <1 mS/cm ±0.005 mS/cm or where conductivity >1 mS/cm ±0.01 mS/cm.

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

Project Data:

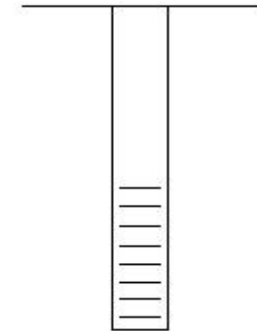
Project Name: GM Endline Area Groundwater Monitoring
Ref. No.: 017390.01.70101

Date: 2/27/2024
Personnel: K. Miller
 D. Burr

Monitoring Well Data:

Well No.: MW-9
Vapour PID (ppm):
Measurement Point: Top of Riser
Constructed Well Depth (m/ft):
Measured Well Depth (m/ft):
Depth of Sediment (m/ft):

Saturated Screen Length (m/ft):
Depth to Pump Intake (m/ft)⁽¹⁾:
Well Diameter, D (cm/in): 2 inch
Well Screen Volume, V_s (L)⁽⁴⁾:
Initial Depth to Water (m/ft): 3.02



Time	Pumping Rate (mL/min)	Depth to Water (m/ft)	Drawdown from Initial Water Level ⁽³⁾ (m/ft)	Temperature °C	Conductivity (mS/cm)	Turbidity NTU	DO (mg/L)	pH	ORP (mV)	Volume Purged, V _p (L)	No. of Well Screen Volumes Purged ⁽⁴⁾
Start Purge at 14:55		Precision Required ⁽⁵⁾ :		±3 %	±0.005 or 0.01 ⁽⁶⁾	±10 %	±10 %	±0.1 Units	±10 mV		
1500	80	3.90	0.88	10.03	4.46	62.5	3.24	7.31	4		
1515	88	4.66	1.64	9.45	4.38	46.9	3.82	7.16	20		
1520	88	4.78	1.76	9.39	4.37	39.8	2.75	7.14	22		
1525	88	4.84	1.82	9.41	4.36	29.7	2.82	7.14	19		

Sample ID: WG-017390-022724-KM-007

Sample Time: 15:30

Notes: Clear and colorless

- (1) The pump intake will be placed at the well screen mid-point or at a minimum of 0.6 m (2 ft) above any sediment accumulated at the well bottom.
- (2) The well screen volume will be based on a 1.52 metres (5-foot) screen length (L). For metric units, $V_s = \pi \cdot (r^2) \cdot L$ in mL, where r (r=D/2) and L are in cm.
For Imperial units, $V_s = \pi \cdot (r^2) \cdot L \cdot (2.54)^3$, where r and L are in inches
- (3) The drawdown from the initial water level should not exceed 0.1 m (0.3 ft). The pumping rate should not exceed 500 mL/min.
- (4) Purging will continue until stabilization is achieved or until 20 well screen volumes have been purged (unless purge water remains visually turbid and appears to be clearing, or unless stabilization parameters are varying slightly outside of the stabilization criteria and appear to be stabilizing), No. of Well Screen Volumes Purged= V_p/V_s .
- (5) For conductivity, the average value of three readings <1 mS/cm ±0.005 mS/cm or where conductivity >1 mS/cm ±0.01 mS/cm.

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

Project Data:

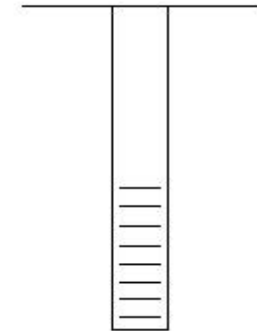
Project Name: GM Endline Area Groundwater Monitoring
Ref. No.: 017390.01.70101

Date: 2/27/2024
Personnel: J. Kawecki
D. Burr

Monitoring Well Data:

Well No.: MW-11
Vapour PID (ppm): _____
Measurement Point: Top of Riser
Constructed Well Depth (m/ft): _____
Measured Well Depth (m/ft): _____
Depth of Sediment (m/ft): _____

Saturated Screen Length (m/ft): _____
Depth to Pump Intake (m/ft)⁽¹⁾: _____
Well Diameter, D (cm/in): 2 inch
Well Screen Volume, V_s (L)⁽⁴⁾: _____
Initial Depth to Water (m/ft): 3.61



Time	Pumping Rate (mL/min)	Depth to Water (m/ft)	Drawdown from Initial Water Level ⁽³⁾ (m/ft)	Temperature °C	Conductivity (mS/cm)	Turbidity NTU	DO (mg/L)	pH	ORP (mV)	Volume Purged, V _p (L)	No. of Well Screen Volumes Purged ⁽⁴⁾
Start Purge at 13:51		Precision Required⁽⁵⁾:		±3 %	±0.005 or 0.01⁽⁶⁾	±10 %	±10 %	±0.1 Units	±10 mV		
1355	60	4.10	0.49	13.96	17.1	14.6	2.47	6.68	81		
1400	60	4.43	0.84	13.32	18.2	9.96	2.37	6.65	102		
1405	120	4.60	0.99	13.24	18.5	10.4	2.44	6.65	114		
1410	100	4.63	1.02	13.04	18.5	8.66	2.25	6.66	121		
1415	100	4.70	1.09	12.99	18.5	7.75	2.23	6.66	122		

Sample ID: WG-017390-022724-JK-008

Sample Time: 14:20

Notes: Clear and colorless, fine red sediment

- (1) The pump intake will be placed at the well screen mid-point or at a minimum of 0.6 m (2 ft) above any sediment accumulated at the well bottom.
- (2) The well screen volume will be based on a 1.52 metres (5-foot) screen length (L). For metric units, $V_s = \pi \cdot (r^2) \cdot L$ in mL, where r (r=D/2) and L are in cm.
For Imperial units, $V_s = \pi \cdot (r^2) \cdot L \cdot (2.54)^3$, where r and L are in inches
- (3) The drawdown from the initial water level should not exceed 0.1 m (0.3 ft). The pumping rate should not exceed 500 mL/min.
- (4) Purging will continue until stabilization is achieved or until 20 well screen volumes have been purged (unless purge water remains visually turbid and appears to be clearing, or unless stabilization parameters are varying slightly outside of the stabilization criteria and appear to be stabilizing), No. of Well Screen Volumes Purged= V_p/V_s .
- (5) For conductivity, the average value of three readings <1 mS/cm ±0.005 mS/cm or where conductivity >1 mS/cm ±0.01 mS/cm.

CHAIN OF CUSTODY RECORD

COC NO.: 61211

Address: 2055 Niagara Falls Blvd. Niagara Falls NY

PAGE 1 OF 1

Phone: (714) 297-1250

Fax:

[illegible]

TAT Required in business days (use separate COCs for different TATs): ☐ 1 Day ☐ 2 Days ☐ 3 Days ☐ 1 Week ☐ 2 Week ☐ Other:				Notes/ Special Requirements:				
RELINQUISHED BY		COMPANY	DATE	TIME	RECEIVED BY	COMPANY	DATE	TIME
1. David Allen		GHS	02/27/24	16:17	1.			
2.					2.			
3.					3.			

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

Distribution: WHITE – Fully Executed Copy (CRA)

YELLOW – Receiving Laboratory Copy

PINK – Shipper

GOLDENROD – Sampling Crew

CRA Form: COC-10B (20110804)

Appendix B

Laboratory Analytical Report

ANALYTICAL REPORT

PREPARED FOR

Attn: Ms. Ruth Mickle
GHD Services Inc.
900 Long Lake Road
Suite 200
New Brighton, Minnesota 55112

Generated 3/13/2024 4:24:03 PM

JOB DESCRIPTION

12616852-133032-01, Endoline

JOB NUMBER

240-200118-1

Eurofins Cleveland

Job Notes

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

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

Authorization



Generated
3/13/2024 4:24:03 PM

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

Table of Contents

Cover Page	1
Table of Contents	3
Definitions/Glossary	4
Case Narrative	5
Method Summary	6
Sample Summary	7
Detection Summary	8
Client Sample Results	10
Surrogate Summary	22
QC Sample Results	23
QC Association Summary	36
Lab Chronicle	39
Certification Summary	42
Chain of Custody	43



Definitions/Glossary

Client: GHD Services Inc.
Project/Site: 12616852-133032-01, Endoline

Job ID: 240-200118-1

Qualifiers

GC/MS VOA

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

GC VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

General Chemistry

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

Glossary

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

Case Narrative

Client: GHD Services Inc.
Project: 12616852-133032-01, Endoline

Job ID: 240-200118-1

Job ID: 240-200118-1

Eurofins Cleveland

Job Narrative 240-200118-1

Receipt

The samples were received on 2/27/2024 4:17 PM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 3.5° C.

Insufficient volume for MS MSD analysis for TOC and Sulfide.

GC/MS VOA

Method 8260D: The laboratory control sample (LCS) and / or laboratory control sample duplicate (LCSD) for analytical batch 240-605327 recovered outside control limits for the following analytes: 1,4-Dioxane. These analytes were biased high in the LCS and were not detected in the associated samples; therefore, the data have been reported.

Method 8260D: The continuing calibration verification (CCV) associated with batch 240-605327 recovered above the upper control limit for 1,4-Dioxane and Chloromethane. The samples associated with this CCV were non-detects for the affected analytes; therefore, the data have been reported. The associated samples are impacted: WG-017390-022724-KM-001 (240-200118-1), WG-017390-022724-JK-002 (240-200118-2), WG-017390-022724-KM-003 (240-200118-3), WG-017390-022724-JK-004 (240-200118-4), WG-017390-022724-KM-005 (240-200118-5), WG-017390-022724-JK-006 (240-200118-6), WG-017390-022724-KM-007 (240-200118-7), WG-017390-022724-JK-008 (240-200118-8) and TB-017390-022724-KM (240-200118-9).

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

HPLC/IC

Method 300.0: The following samples were diluted due to the abundance of non-target analytes: WG-017390-022724-KM-001 (240-200118-1), WG-017390-022724-JK-006 (240-200118-6) and WG-017390-022724-JK-008 (240-200118-8). Elevated reporting limits (RLs) are provided.

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

GC VOA

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

General Chemistry

Method SM 4500 S2 F: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with analytical batch 240-604894.

Method SM 5210B: The results increased with increasing dilutions for the following samples: WG-017390-022724-KM-001 (240-200118-1), WG-017390-022724-JK-006 (240-200118-6), WG-017390-022724-JK-008 (240-200118-8) and (480-217343-A-4 DU). This indicates a potentially toxic substance is being diluted out. The concentration may be biased low.

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

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Method Summary

Client: GHD Services Inc.
Project/Site: 12616852-133032-01, Endoline

Job ID: 240-200118-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CLE
RSK-175	Dissolved Gases (GC)	RSK	EET CLE
2320B-1997	Alkalinity, Total	SM	EET CLE
300.0	Anions, Ion Chromatography	EPA	EET BUF
300.0	Anions, Ion Chromatography	EPA	EET CLE
4500 NH3 H-2011	Ammonia	SM	EET CLE
4500 S2 F-2000	Sulfide, Total	SM	EET CLE
5220D-1997	Chemical Oxygen Demand	SM	EET CLE
5310C-2000	Total Organic Carbon/Persulfate - Ultrav	SM	EET CLE
SM 5210B	BOD, 5-Day	SM	EET BUF
SM4500 P E-1999	Phosphorus	SM	EET CLE
5030C	Purge and Trap	SW846	EET CLE

Protocol References:

EPA = US Environmental Protection Agency

RSK = Sample Prep And Calculations For Dissolved Gas Analysis In Water Samples Using A GC Headspace Equilibration Technique, RSKSOP-175, Rev. 0, 8/11/94, USEPA Research Lab

SM = "Standard Methods For The Examination Of Water And Wastewater"

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

Laboratory References:

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

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Sample Summary

Client: GHD Services Inc.
Project/Site: 12616852-133032-01, Endoline

Job ID: 240-200118-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-200118-1	WG-017390-022724-KM-001	Water	02/27/24 11:20	02/27/24 16:17
240-200118-2	WG-017390-022724-JK-002	Water	02/27/24 12:15	02/27/24 16:17
240-200118-3	WG-017390-022724-KM-003	Water	02/27/24 13:15	02/27/24 16:17
240-200118-4	WG-017390-022724-JK-004	Water	02/27/24 12:15	02/27/24 16:17
240-200118-5	WG-017390-022724-KM-005	Water	02/27/24 14:30	02/27/24 16:17
240-200118-6	WG-017390-022724-JK-006	Water	02/27/24 13:40	02/27/24 16:17
240-200118-7	WG-017390-022724-KM-007	Water	02/27/24 15:30	02/27/24 16:17
240-200118-8	WG-017390-022724-JK-008	Water	02/27/24 14:20	02/27/24 16:17
240-200118-9	TB-017390-022724-KM	Water	02/27/24 00:00	02/27/24 16:17

Detection Summary

Client: GHD Services Inc.
Project/Site: 12616852-133032-01, Endoline

Job ID: 240-200118-1

Client Sample ID: WG-017390-022724-KM-001

Lab Sample ID: 240-200118-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,1-Dichloroethane	1800		1000	470	ug/L	1000		8260D	Total/NA
Chloroethane	28000		1000	830	ug/L	1000		8260D	Total/NA
Methane	8900		10	1.7	ug/L	10		RSK-175	Total/NA
Ethane	380		1.0	0.29	ug/L	1		RSK-175	Total/NA
Total Alkalinity as CaCO3	400		5.0	2.6	mg/L	1		2320B-1997	Total/NA
Sulfate	17		1.0	0.35	mg/L	1		300.0	Total/NA
Ammonia	1.6	F1	0.20	0.076	mg/L	1		4500 NH3 H-2011	Total/NA
Chemical Oxygen Demand	95		10	1.8	mg/L	1		5220D-1997	Total/NA
Total Organic Carbon	19		1.0	0.44	mg/L	1		5310C-2000	Total/NA
Biochemical Oxygen Demand	12		2.0	2.0	mg/L	1		SM 5210B	Total/NA

Client Sample ID: WG-017390-022724-JK-002

Lab Sample ID: 240-200118-2

No Detections.

Client Sample ID: WG-017390-022724-KM-003

Lab Sample ID: 240-200118-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,1-Dichloroethane	1.5		1.0	0.47	ug/L	1		8260D	Total/NA

Client Sample ID: WG-017390-022724-JK-004

Lab Sample ID: 240-200118-4

No Detections.

Client Sample ID: WG-017390-022724-KM-005

Lab Sample ID: 240-200118-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	28	J *	50	13	ug/L	1		8260D	Total/NA

Client Sample ID: WG-017390-022724-JK-006

Lab Sample ID: 240-200118-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,1-Dichloroethane	40		1.0	0.47	ug/L	1		8260D	Total/NA
1,4-Dioxane	54		50	13	ug/L	1		8260D	Total/NA
Acetone	20		10	5.4	ug/L	1		8260D	Total/NA
Vinyl chloride	0.49	J	1.0	0.45	ug/L	1		8260D	Total/NA
Methane	1900		1.0	0.17	ug/L	1		RSK-175	Total/NA
Ethane	2.5		1.0	0.29	ug/L	1		RSK-175	Total/NA
Total Alkalinity as CaCO3	600		5.0	2.6	mg/L	1		2320B-1997	Total/NA
Sulfate	600		5.0	1.7	mg/L	5		300.0	Total/NA
Ammonia	0.13	J	0.20	0.076	mg/L	1		4500 NH3 H-2011	Total/NA
Chemical Oxygen Demand	50		10	1.8	mg/L	1		5220D-1997	Total/NA
Total Organic Carbon	6.0		1.0	0.44	mg/L	1		5310C-2000	Total/NA
Biochemical Oxygen Demand	2.7		2.0	2.0	mg/L	1		SM 5210B	Total/NA

Client Sample ID: WG-017390-022724-KM-007

Lab Sample ID: 240-200118-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,1-Dichloroethane	1.2		1.0	0.47	ug/L	1		8260D	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins Cleveland

Detection Summary

Client: GHD Services Inc.
Project/Site: 12616852-133032-01, Endoline

Job ID: 240-200118-1

Client Sample ID: WG-017390-022724-JK-008

Lab Sample ID: 240-200118-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,1,1-Trichloroethane	240		100	48	ug/L	100		8260D	Total/NA
1,1-Dichloroethane	3500		100	47	ug/L	100		8260D	Total/NA
1,1-Dichloroethene	1800		100	49	ug/L	100		8260D	Total/NA
1,2-Dichloroethene, Total	91	J	100	33	ug/L	100		8260D	Total/NA
cis-1,2-Dichloroethene	91	J	100	46	ug/L	100		8260D	Total/NA
Vinyl chloride	320		100	45	ug/L	100		8260D	Total/NA
Methane	4400		10	1.7	ug/L	10		RSK-175	Total/NA
Ethane	11		1.0	0.29	ug/L	1		RSK-175	Total/NA
Total Alkalinity as CaCO3	490		5.0	2.6	mg/L	1		2320B-1997	Total/NA
Sulfate	1700		10	3.5	mg/L	10		300.0	Total/NA
Ammonia	0.31		0.20	0.076	mg/L	1		4500 NH3 H-2011	Total/NA
Chemical Oxygen Demand	56		10	1.8	mg/L	1		5220D-1997	Total/NA
Total Organic Carbon	4.8		1.0	0.44	mg/L	1		5310C-2000	Total/NA
Biochemical Oxygen Demand	5.8		2.0	2.0	mg/L	1		SM 5210B	Total/NA

Client Sample ID: TB-017390-022724-KM

Lab Sample ID: 240-200118-9

No Detections.

This Detection Summary does not include radiochemical test results.

Eurofins Cleveland

Client Sample Results

Client: GHD Services Inc.
Project/Site: 12616852-133032-01, Endline

Job ID: 240-200118-1

Client Sample ID: WG-017390-022724-KM-001

Lab Sample ID: 240-200118-1

Date Collected: 02/27/24 11:20

Matrix: Water

Date Received: 02/27/24 16:17

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	1000	U	1000	480	ug/L			03/08/24 02:00	1000
1,1,2,2-Tetrachloroethane	1000	U	1000	600	ug/L			03/08/24 02:00	1000
1,1,2-Trichloroethane	1000	U	1000	480	ug/L			03/08/24 02:00	1000
1,1-Dichloroethane	1800		1000	470	ug/L			03/08/24 02:00	1000
1,1-Dichloroethene	1000	U	1000	490	ug/L			03/08/24 02:00	1000
1,2-Dichloroethane	1000	U	1000	460	ug/L			03/08/24 02:00	1000
1,2-Dichloroethene, Total	1000	U	1000	330	ug/L			03/08/24 02:00	1000
1,2-Dichloropropane	1000	U	1000	470	ug/L			03/08/24 02:00	1000
1,4-Dioxane	50000	U *+ F1	50000	13000	ug/L			03/08/24 02:00	1000
2-Butanone (MEK)	10000	U	10000	1200	ug/L			03/08/24 02:00	1000
2-Hexanone	10000	U	10000	1100	ug/L			03/08/24 02:00	1000
4-Methyl-2-pentanone (MIBK)	10000	U	10000	990	ug/L			03/08/24 02:00	1000
Acetone	10000	U F1	10000	5400	ug/L			03/08/24 02:00	1000
Benzene	1000	U	1000	420	ug/L			03/08/24 02:00	1000
Bromoform	1000	U	1000	760	ug/L			03/08/24 02:00	1000
Bromomethane	1000	U	1000	420	ug/L			03/08/24 02:00	1000
Carbon disulfide	1000	U	1000	590	ug/L			03/08/24 02:00	1000
Carbon tetrachloride	1000	U	1000	260	ug/L			03/08/24 02:00	1000
Chlorobenzene	1000	U	1000	380	ug/L			03/08/24 02:00	1000
Chlorodibromomethane	1000	U	1000	390	ug/L			03/08/24 02:00	1000
Chloroethane	28000		1000	830	ug/L			03/08/24 02:00	1000
Chloroform	1000	U	1000	470	ug/L			03/08/24 02:00	1000
Chloromethane	1000	U	1000	630	ug/L			03/08/24 02:00	1000
cis-1,2-Dichloroethene	1000	U	1000	460	ug/L			03/08/24 02:00	1000
cis-1,3-Dichloropropene	1000	U	1000	610	ug/L			03/08/24 02:00	1000
Dichlorobromomethane	1000	U	1000	380	ug/L			03/08/24 02:00	1000
Ethylbenzene	1000	U	1000	420	ug/L			03/08/24 02:00	1000
Methylene Chloride	5000	U	5000	2600	ug/L			03/08/24 02:00	1000
Styrene	1000	U	1000	450	ug/L			03/08/24 02:00	1000
Tetrachloroethene	1000	U	1000	440	ug/L			03/08/24 02:00	1000
Toluene	1000	U	1000	440	ug/L			03/08/24 02:00	1000
trans-1,2-Dichloroethene	1000	U	1000	510	ug/L			03/08/24 02:00	1000
trans-1,3-Dichloropropene	1000	U	1000	670	ug/L			03/08/24 02:00	1000
Trichloroethene	1000	U	1000	440	ug/L			03/08/24 02:00	1000
Vinyl chloride	1000	U	1000	450	ug/L			03/08/24 02:00	1000
Xylenes, Total	2000	U	2000	420	ug/L			03/08/24 02:00	1000

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	95		78 - 122		03/08/24 02:00	1000
Dibromofluoromethane (Surr)	111		73 - 120		03/08/24 02:00	1000
4-Bromofluorobenzene (Surr)	76		56 - 136		03/08/24 02:00	1000
1,2-Dichloroethane-d4 (Surr)	103		62 - 137		03/08/24 02:00	1000

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Methane	8900		10	1.7	ug/L			03/11/24 15:25	10
Ethane	380		1.0	0.29	ug/L			03/05/24 18:50	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,1,1-Trifluoroethane	97		60 - 140		03/05/24 18:50	1

Eurofins Cleveland

Client Sample Results

Client: GHD Services Inc.
Project/Site: 12616852-133032-01, Endoline

Job ID: 240-200118-1

Client Sample ID: WG-017390-022724-KM-001

Lab Sample ID: 240-200118-1

Date Collected: 02/27/24 11:20

Matrix: Water

Date Received: 02/27/24 16:17

Method: RSK-175 - Dissolved Gases (GC) (Continued)

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,1,1-Trifluoroethane	99		60 - 140		03/11/24 15:25	10

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Alkalinity as CaCO3 (SM 2320B-1997)	400		5.0	2.6	mg/L			03/12/24 03:38	1
Nitrate as N (EPA 300.0)	0.25	U	0.25	0.13	mg/L			02/28/24 16:10	5
Sulfate (EPA 300.0)	17		1.0	0.35	mg/L			03/11/24 16:12	1
Nitrite as N (EPA 300.0)	0.25	U	0.25	0.13	mg/L			02/28/24 16:10	5
Ammonia (SM 4500 NH3 H-2011)	1.6	F1	0.20	0.076	mg/L			03/04/24 17:27	1
Sulfide (SM 4500 S2 F-2000)	1.0	U	1.0	0.27	mg/L			03/04/24 12:57	1
Chemical Oxygen Demand (SM 5220D-1997)	95		10	1.8	mg/L			03/12/24 10:08	1
Total Organic Carbon (SM 5310C-2000)	19		1.0	0.44	mg/L			03/06/24 17:06	1
Biochemical Oxygen Demand (SM 5210B)	12		2.0	2.0	mg/L			02/28/24 13:05	1
Total Phosphorus as P (SM4500 P E-1999)	0.10	U	0.10	0.076	mg/L			03/12/24 16:04	1

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Client Sample Results

Client: GHD Services Inc.
Project/Site: 12616852-133032-01, Endline

Job ID: 240-200118-1

Client Sample ID: WG-017390-022724-JK-002

Lab Sample ID: 240-200118-2

Date Collected: 02/27/24 12:15

Matrix: Water

Date Received: 02/27/24 16:17

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	1.0	U	1.0	0.48	ug/L			03/08/24 03:10	1
1,1,2,2-Tetrachloroethane	1.0	U	1.0	0.60	ug/L			03/08/24 03:10	1
1,1,2-Trichloroethane	1.0	U	1.0	0.48	ug/L			03/08/24 03:10	1
1,1-Dichloroethane	1.0	U	1.0	0.47	ug/L			03/08/24 03:10	1
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			03/08/24 03:10	1
1,2-Dichloroethane	1.0	U	1.0	0.46	ug/L			03/08/24 03:10	1
1,2-Dichloroethene, Total	1.0	U	1.0	0.33	ug/L			03/08/24 03:10	1
1,2-Dichloropropane	1.0	U	1.0	0.47	ug/L			03/08/24 03:10	1
1,4-Dioxane	50	U *+	50	13	ug/L			03/08/24 03:10	1
2-Butanone (MEK)	10	U	10	1.2	ug/L			03/08/24 03:10	1
2-Hexanone	10	U	10	1.1	ug/L			03/08/24 03:10	1
4-Methyl-2-pentanone (MIBK)	10	U	10	0.99	ug/L			03/08/24 03:10	1
Acetone	10	U	10	5.4	ug/L			03/08/24 03:10	1
Benzene	1.0	U	1.0	0.42	ug/L			03/08/24 03:10	1
Bromoform	1.0	U	1.0	0.76	ug/L			03/08/24 03:10	1
Bromomethane	1.0	U	1.0	0.42	ug/L			03/08/24 03:10	1
Carbon disulfide	1.0	U	1.0	0.59	ug/L			03/08/24 03:10	1
Carbon tetrachloride	1.0	U	1.0	0.26	ug/L			03/08/24 03:10	1
Chlorobenzene	1.0	U	1.0	0.38	ug/L			03/08/24 03:10	1
Chlorodibromomethane	1.0	U	1.0	0.39	ug/L			03/08/24 03:10	1
Chloroethane	1.0	U	1.0	0.83	ug/L			03/08/24 03:10	1
Chloroform	1.0	U	1.0	0.47	ug/L			03/08/24 03:10	1
Chloromethane	1.0	U	1.0	0.63	ug/L			03/08/24 03:10	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			03/08/24 03:10	1
cis-1,3-Dichloropropene	1.0	U	1.0	0.61	ug/L			03/08/24 03:10	1
Dichlorobromomethane	1.0	U	1.0	0.38	ug/L			03/08/24 03:10	1
Ethylbenzene	1.0	U	1.0	0.42	ug/L			03/08/24 03:10	1
Methylene Chloride	5.0	U	5.0	2.6	ug/L			03/08/24 03:10	1
Styrene	1.0	U	1.0	0.45	ug/L			03/08/24 03:10	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			03/08/24 03:10	1
Toluene	1.0	U	1.0	0.44	ug/L			03/08/24 03:10	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			03/08/24 03:10	1
trans-1,3-Dichloropropene	1.0	U	1.0	0.67	ug/L			03/08/24 03:10	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			03/08/24 03:10	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			03/08/24 03:10	1
Xylenes, Total	2.0	U	2.0	0.42	ug/L			03/08/24 03:10	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	99		78 - 122		03/08/24 03:10	1
Dibromofluoromethane (Surr)	111		73 - 120		03/08/24 03:10	1
4-Bromofluorobenzene (Surr)	82		56 - 136		03/08/24 03:10	1
1,2-Dichloroethane-d4 (Surr)	105		62 - 137		03/08/24 03:10	1

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Client Sample Results

Client: GHD Services Inc.
Project/Site: 12616852-133032-01, Endline

Job ID: 240-200118-1

Client Sample ID: WG-017390-022724-KM-003

Lab Sample ID: 240-200118-3

Date Collected: 02/27/24 13:15

Matrix: Water

Date Received: 02/27/24 16:17

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	1.0	U	1.0	0.48	ug/L			03/08/24 03:33	1
1,1,2,2-Tetrachloroethane	1.0	U	1.0	0.60	ug/L			03/08/24 03:33	1
1,1,2-Trichloroethane	1.0	U	1.0	0.48	ug/L			03/08/24 03:33	1
1,1-Dichloroethane	1.5		1.0	0.47	ug/L			03/08/24 03:33	1
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			03/08/24 03:33	1
1,2-Dichloroethane	1.0	U	1.0	0.46	ug/L			03/08/24 03:33	1
1,2-Dichloroethene, Total	1.0	U	1.0	0.33	ug/L			03/08/24 03:33	1
1,2-Dichloropropane	1.0	U	1.0	0.47	ug/L			03/08/24 03:33	1
1,4-Dioxane	50	U *+	50	13	ug/L			03/08/24 03:33	1
2-Butanone (MEK)	10	U	10	1.2	ug/L			03/08/24 03:33	1
2-Hexanone	10	U	10	1.1	ug/L			03/08/24 03:33	1
4-Methyl-2-pentanone (MIBK)	10	U	10	0.99	ug/L			03/08/24 03:33	1
Acetone	10	U	10	5.4	ug/L			03/08/24 03:33	1
Benzene	1.0	U	1.0	0.42	ug/L			03/08/24 03:33	1
Bromoform	1.0	U	1.0	0.76	ug/L			03/08/24 03:33	1
Bromomethane	1.0	U	1.0	0.42	ug/L			03/08/24 03:33	1
Carbon disulfide	1.0	U	1.0	0.59	ug/L			03/08/24 03:33	1
Carbon tetrachloride	1.0	U	1.0	0.26	ug/L			03/08/24 03:33	1
Chlorobenzene	1.0	U	1.0	0.38	ug/L			03/08/24 03:33	1
Chlorodibromomethane	1.0	U	1.0	0.39	ug/L			03/08/24 03:33	1
Chloroethane	1.0	U	1.0	0.83	ug/L			03/08/24 03:33	1
Chloroform	1.0	U	1.0	0.47	ug/L			03/08/24 03:33	1
Chloromethane	1.0	U	1.0	0.63	ug/L			03/08/24 03:33	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			03/08/24 03:33	1
cis-1,3-Dichloropropene	1.0	U	1.0	0.61	ug/L			03/08/24 03:33	1
Dichlorobromomethane	1.0	U	1.0	0.38	ug/L			03/08/24 03:33	1
Ethylbenzene	1.0	U	1.0	0.42	ug/L			03/08/24 03:33	1
Methylene Chloride	5.0	U	5.0	2.6	ug/L			03/08/24 03:33	1
Styrene	1.0	U	1.0	0.45	ug/L			03/08/24 03:33	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			03/08/24 03:33	1
Toluene	1.0	U	1.0	0.44	ug/L			03/08/24 03:33	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			03/08/24 03:33	1
trans-1,3-Dichloropropene	1.0	U	1.0	0.67	ug/L			03/08/24 03:33	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			03/08/24 03:33	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			03/08/24 03:33	1
Xylenes, Total	2.0	U	2.0	0.42	ug/L			03/08/24 03:33	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	92		78 - 122		03/08/24 03:33	1
Dibromofluoromethane (Surr)	109		73 - 120		03/08/24 03:33	1
4-Bromofluorobenzene (Surr)	77		56 - 136		03/08/24 03:33	1
1,2-Dichloroethane-d4 (Surr)	100		62 - 137		03/08/24 03:33	1

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Client Sample Results

Client: GHD Services Inc.
Project/Site: 12616852-133032-01, Endline

Job ID: 240-200118-1

Client Sample ID: WG-017390-022724-JK-004

Lab Sample ID: 240-200118-4

Date Collected: 02/27/24 12:15

Matrix: Water

Date Received: 02/27/24 16:17

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	1.0	U	1.0	0.48	ug/L			03/08/24 03:56	1
1,1,2,2-Tetrachloroethane	1.0	U	1.0	0.60	ug/L			03/08/24 03:56	1
1,1,2-Trichloroethane	1.0	U	1.0	0.48	ug/L			03/08/24 03:56	1
1,1-Dichloroethane	1.0	U	1.0	0.47	ug/L			03/08/24 03:56	1
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			03/08/24 03:56	1
1,2-Dichloroethane	1.0	U	1.0	0.46	ug/L			03/08/24 03:56	1
1,2-Dichloroethene, Total	1.0	U	1.0	0.33	ug/L			03/08/24 03:56	1
1,2-Dichloropropane	1.0	U	1.0	0.47	ug/L			03/08/24 03:56	1
1,4-Dioxane	50	U *+	50	13	ug/L			03/08/24 03:56	1
2-Butanone (MEK)	10	U	10	1.2	ug/L			03/08/24 03:56	1
2-Hexanone	10	U	10	1.1	ug/L			03/08/24 03:56	1
4-Methyl-2-pentanone (MIBK)	10	U	10	0.99	ug/L			03/08/24 03:56	1
Acetone	10	U	10	5.4	ug/L			03/08/24 03:56	1
Benzene	1.0	U	1.0	0.42	ug/L			03/08/24 03:56	1
Bromoform	1.0	U	1.0	0.76	ug/L			03/08/24 03:56	1
Bromomethane	1.0	U	1.0	0.42	ug/L			03/08/24 03:56	1
Carbon disulfide	1.0	U	1.0	0.59	ug/L			03/08/24 03:56	1
Carbon tetrachloride	1.0	U	1.0	0.26	ug/L			03/08/24 03:56	1
Chlorobenzene	1.0	U	1.0	0.38	ug/L			03/08/24 03:56	1
Chlorodibromomethane	1.0	U	1.0	0.39	ug/L			03/08/24 03:56	1
Chloroethane	1.0	U	1.0	0.83	ug/L			03/08/24 03:56	1
Chloroform	1.0	U	1.0	0.47	ug/L			03/08/24 03:56	1
Chloromethane	1.0	U	1.0	0.63	ug/L			03/08/24 03:56	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			03/08/24 03:56	1
cis-1,3-Dichloropropene	1.0	U	1.0	0.61	ug/L			03/08/24 03:56	1
Dichlorobromomethane	1.0	U	1.0	0.38	ug/L			03/08/24 03:56	1
Ethylbenzene	1.0	U	1.0	0.42	ug/L			03/08/24 03:56	1
Methylene Chloride	5.0	U	5.0	2.6	ug/L			03/08/24 03:56	1
Styrene	1.0	U	1.0	0.45	ug/L			03/08/24 03:56	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			03/08/24 03:56	1
Toluene	1.0	U	1.0	0.44	ug/L			03/08/24 03:56	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			03/08/24 03:56	1
trans-1,3-Dichloropropene	1.0	U	1.0	0.67	ug/L			03/08/24 03:56	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			03/08/24 03:56	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			03/08/24 03:56	1
Xylenes, Total	2.0	U	2.0	0.42	ug/L			03/08/24 03:56	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	93		78 - 122		03/08/24 03:56	1
Dibromofluoromethane (Surr)	110		73 - 120		03/08/24 03:56	1
4-Bromofluorobenzene (Surr)	78		56 - 136		03/08/24 03:56	1
1,2-Dichloroethane-d4 (Surr)	101		62 - 137		03/08/24 03:56	1

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Client Sample Results

Client: GHD Services Inc.
Project/Site: 12616852-133032-01, Endline

Job ID: 240-200118-1

Client Sample ID: WG-017390-022724-KM-005

Lab Sample ID: 240-200118-5

Date Collected: 02/27/24 14:30

Matrix: Water

Date Received: 02/27/24 16:17

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	1.0	U	1.0	0.48	ug/L			03/08/24 04:19	1
1,1,2,2-Tetrachloroethane	1.0	U	1.0	0.60	ug/L			03/08/24 04:19	1
1,1,2-Trichloroethane	1.0	U	1.0	0.48	ug/L			03/08/24 04:19	1
1,1-Dichloroethane	1.0	U	1.0	0.47	ug/L			03/08/24 04:19	1
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			03/08/24 04:19	1
1,2-Dichloroethane	1.0	U	1.0	0.46	ug/L			03/08/24 04:19	1
1,2-Dichloroethene, Total	1.0	U	1.0	0.33	ug/L			03/08/24 04:19	1
1,2-Dichloropropane	1.0	U	1.0	0.47	ug/L			03/08/24 04:19	1
1,4-Dioxane	28	J **	50	13	ug/L			03/08/24 04:19	1
2-Butanone (MEK)	10	U	10	1.2	ug/L			03/08/24 04:19	1
2-Hexanone	10	U	10	1.1	ug/L			03/08/24 04:19	1
4-Methyl-2-pentanone (MIBK)	10	U	10	0.99	ug/L			03/08/24 04:19	1
Acetone	10	U	10	5.4	ug/L			03/08/24 04:19	1
Benzene	1.0	U	1.0	0.42	ug/L			03/08/24 04:19	1
Bromoform	1.0	U	1.0	0.76	ug/L			03/08/24 04:19	1
Bromomethane	1.0	U	1.0	0.42	ug/L			03/08/24 04:19	1
Carbon disulfide	1.0	U	1.0	0.59	ug/L			03/08/24 04:19	1
Carbon tetrachloride	1.0	U	1.0	0.26	ug/L			03/08/24 04:19	1
Chlorobenzene	1.0	U	1.0	0.38	ug/L			03/08/24 04:19	1
Chlorodibromomethane	1.0	U	1.0	0.39	ug/L			03/08/24 04:19	1
Chloroethane	1.0	U	1.0	0.83	ug/L			03/08/24 04:19	1
Chloroform	1.0	U	1.0	0.47	ug/L			03/08/24 04:19	1
Chloromethane	1.0	U	1.0	0.63	ug/L			03/08/24 04:19	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			03/08/24 04:19	1
cis-1,3-Dichloropropene	1.0	U	1.0	0.61	ug/L			03/08/24 04:19	1
Dichlorobromomethane	1.0	U	1.0	0.38	ug/L			03/08/24 04:19	1
Ethylbenzene	1.0	U	1.0	0.42	ug/L			03/08/24 04:19	1
Methylene Chloride	5.0	U	5.0	2.6	ug/L			03/08/24 04:19	1
Styrene	1.0	U	1.0	0.45	ug/L			03/08/24 04:19	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			03/08/24 04:19	1
Toluene	1.0	U	1.0	0.44	ug/L			03/08/24 04:19	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			03/08/24 04:19	1
trans-1,3-Dichloropropene	1.0	U	1.0	0.67	ug/L			03/08/24 04:19	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			03/08/24 04:19	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			03/08/24 04:19	1
Xylenes, Total	2.0	U	2.0	0.42	ug/L			03/08/24 04:19	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	96		78 - 122		03/08/24 04:19	1
Dibromofluoromethane (Surr)	110		73 - 120		03/08/24 04:19	1
4-Bromofluorobenzene (Surr)	81		56 - 136		03/08/24 04:19	1
1,2-Dichloroethane-d4 (Surr)	102		62 - 137		03/08/24 04:19	1

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Client Sample Results

Client: GHD Services Inc.
Project/Site: 12616852-133032-01, Endline

Job ID: 240-200118-1

Client Sample ID: WG-017390-022724-JK-006

Lab Sample ID: 240-200118-6

Date Collected: 02/27/24 13:40

Matrix: Water

Date Received: 02/27/24 16:17

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	1.0	U	1.0	0.48	ug/L			03/08/24 04:43	1
1,1,2,2-Tetrachloroethane	1.0	U	1.0	0.60	ug/L			03/08/24 04:43	1
1,1,2-Trichloroethane	1.0	U	1.0	0.48	ug/L			03/08/24 04:43	1
1,1-Dichloroethane	40		1.0	0.47	ug/L			03/08/24 04:43	1
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			03/08/24 04:43	1
1,2-Dichloroethane	1.0	U	1.0	0.46	ug/L			03/08/24 04:43	1
1,2-Dichloroethene, Total	1.0	U	1.0	0.33	ug/L			03/08/24 04:43	1
1,2-Dichloropropane	1.0	U	1.0	0.47	ug/L			03/08/24 04:43	1
1,4-Dioxane	54		50	13	ug/L			03/08/24 20:16	1
2-Butanone (MEK)	10	U	10	1.2	ug/L			03/08/24 04:43	1
2-Hexanone	10	U	10	1.1	ug/L			03/08/24 04:43	1
4-Methyl-2-pentanone (MIBK)	10	U	10	0.99	ug/L			03/08/24 04:43	1
Acetone	20		10	5.4	ug/L			03/08/24 04:43	1
Benzene	1.0	U	1.0	0.42	ug/L			03/08/24 04:43	1
Bromoform	1.0	U	1.0	0.76	ug/L			03/08/24 04:43	1
Bromomethane	1.0	U	1.0	0.42	ug/L			03/08/24 04:43	1
Carbon disulfide	1.0	U	1.0	0.59	ug/L			03/08/24 04:43	1
Carbon tetrachloride	1.0	U	1.0	0.26	ug/L			03/08/24 04:43	1
Chlorobenzene	1.0	U	1.0	0.38	ug/L			03/08/24 04:43	1
Chlorodibromomethane	1.0	U	1.0	0.39	ug/L			03/08/24 04:43	1
Chloroethane	1.0	U	1.0	0.83	ug/L			03/08/24 04:43	1
Chloroform	1.0	U	1.0	0.47	ug/L			03/08/24 04:43	1
Chloromethane	1.0	U	1.0	0.63	ug/L			03/08/24 04:43	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			03/08/24 04:43	1
cis-1,3-Dichloropropene	1.0	U	1.0	0.61	ug/L			03/08/24 04:43	1
Dichlorobromomethane	1.0	U	1.0	0.38	ug/L			03/08/24 04:43	1
Ethylbenzene	1.0	U	1.0	0.42	ug/L			03/08/24 04:43	1
Methylene Chloride	5.0	U	5.0	2.6	ug/L			03/08/24 04:43	1
Styrene	1.0	U	1.0	0.45	ug/L			03/08/24 04:43	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			03/08/24 04:43	1
Toluene	1.0	U	1.0	0.44	ug/L			03/08/24 04:43	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			03/08/24 04:43	1
trans-1,3-Dichloropropene	1.0	U	1.0	0.67	ug/L			03/08/24 04:43	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			03/08/24 04:43	1
Vinyl chloride	0.49	J	1.0	0.45	ug/L			03/08/24 04:43	1
Xylenes, Total	2.0	U	2.0	0.42	ug/L			03/08/24 04:43	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	94		78 - 122		03/08/24 04:43	1
Toluene-d8 (Surr)	105		78 - 122		03/08/24 20:16	1
Dibromofluoromethane (Surr)	113		73 - 120		03/08/24 04:43	1
Dibromofluoromethane (Surr)	114		73 - 120		03/08/24 20:16	1
4-Bromofluorobenzene (Surr)	77		56 - 136		03/08/24 04:43	1
4-Bromofluorobenzene (Surr)	95		56 - 136		03/08/24 20:16	1
1,2-Dichloroethane-d4 (Surr)	103		62 - 137		03/08/24 04:43	1
1,2-Dichloroethane-d4 (Surr)	127		62 - 137		03/08/24 20:16	1

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Methane	1900		1.0	0.17	ug/L			03/05/24 19:41	1

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Client Sample Results

Client: GHD Services Inc.
Project/Site: 12616852-133032-01, Endoline

Job ID: 240-200118-1

Client Sample ID: WG-017390-022724-JK-006

Lab Sample ID: 240-200118-6

Date Collected: 02/27/24 13:40

Matrix: Water

Date Received: 02/27/24 16:17

Method: RSK-175 - Dissolved Gases (GC) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ethane	2.5		1.0	0.29	ug/L			03/05/24 19:41	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,1,1-Trifluoroethane	97		60 - 140					03/05/24 19:41	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Alkalinity as CaCO3 (SM 2320B-1997)	600		5.0	2.6	mg/L			03/12/24 03:44	1
Nitrate as N (EPA 300.0)	1.0	U	1.0	0.50	mg/L			02/28/24 16:28	20
Sulfate (EPA 300.0)	600		5.0	1.7	mg/L			03/01/24 11:22	5
Nitrite as N (EPA 300.0)	1.0	U	1.0	0.50	mg/L			02/28/24 16:28	20
Ammonia (SM 4500 NH3 H-2011)	0.13	J	0.20	0.076	mg/L			03/04/24 17:57	1
Sulfide (SM 4500 S2 F-2000)	1.0	U	1.0	0.27	mg/L			03/04/24 12:57	1
Chemical Oxygen Demand (SM 5220D-1997)	50		10	1.8	mg/L			03/12/24 10:04	1
Total Organic Carbon (SM 5310C-2000)	6.0		1.0	0.44	mg/L			03/06/24 17:31	1
Biochemical Oxygen Demand (SM 5210B)	2.7		2.0	2.0	mg/L			02/28/24 13:05	1
Total Phosphorus as P (SM4500 P E-1999)	0.10	U	0.10	0.076	mg/L			03/12/24 16:04	1

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Client Sample Results

Client: GHD Services Inc.
Project/Site: 12616852-133032-01, Endline

Job ID: 240-200118-1

Client Sample ID: WG-017390-022724-KM-007

Lab Sample ID: 240-200118-7

Date Collected: 02/27/24 15:30

Matrix: Water

Date Received: 02/27/24 16:17

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	1.0	U	1.0	0.48	ug/L			03/08/24 05:06	1
1,1,2,2-Tetrachloroethane	1.0	U	1.0	0.60	ug/L			03/08/24 05:06	1
1,1,2-Trichloroethane	1.0	U	1.0	0.48	ug/L			03/08/24 05:06	1
1,1-Dichloroethane	1.2		1.0	0.47	ug/L			03/08/24 05:06	1
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			03/08/24 05:06	1
1,2-Dichloroethane	1.0	U	1.0	0.46	ug/L			03/08/24 05:06	1
1,2-Dichloroethene, Total	1.0	U	1.0	0.33	ug/L			03/08/24 05:06	1
1,2-Dichloropropane	1.0	U	1.0	0.47	ug/L			03/08/24 05:06	1
1,4-Dioxane	50	U *+	50	13	ug/L			03/08/24 05:06	1
2-Butanone (MEK)	10	U	10	1.2	ug/L			03/08/24 05:06	1
2-Hexanone	10	U	10	1.1	ug/L			03/08/24 05:06	1
4-Methyl-2-pentanone (MIBK)	10	U	10	0.99	ug/L			03/08/24 05:06	1
Acetone	10	U	10	5.4	ug/L			03/08/24 05:06	1
Benzene	1.0	U	1.0	0.42	ug/L			03/08/24 05:06	1
Bromoform	1.0	U	1.0	0.76	ug/L			03/08/24 05:06	1
Bromomethane	1.0	U	1.0	0.42	ug/L			03/08/24 05:06	1
Carbon disulfide	1.0	U	1.0	0.59	ug/L			03/08/24 05:06	1
Carbon tetrachloride	1.0	U	1.0	0.26	ug/L			03/08/24 05:06	1
Chlorobenzene	1.0	U	1.0	0.38	ug/L			03/08/24 05:06	1
Chlorodibromomethane	1.0	U	1.0	0.39	ug/L			03/08/24 05:06	1
Chloroethane	1.0	U	1.0	0.83	ug/L			03/08/24 05:06	1
Chloroform	1.0	U	1.0	0.47	ug/L			03/08/24 05:06	1
Chloromethane	1.0	U	1.0	0.63	ug/L			03/08/24 05:06	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			03/08/24 05:06	1
cis-1,3-Dichloropropene	1.0	U	1.0	0.61	ug/L			03/08/24 05:06	1
Dichlorobromomethane	1.0	U	1.0	0.38	ug/L			03/08/24 05:06	1
Ethylbenzene	1.0	U	1.0	0.42	ug/L			03/08/24 05:06	1
Methylene Chloride	5.0	U	5.0	2.6	ug/L			03/08/24 05:06	1
Styrene	1.0	U	1.0	0.45	ug/L			03/08/24 05:06	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			03/08/24 05:06	1
Toluene	1.0	U	1.0	0.44	ug/L			03/08/24 05:06	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			03/08/24 05:06	1
trans-1,3-Dichloropropene	1.0	U	1.0	0.67	ug/L			03/08/24 05:06	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			03/08/24 05:06	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			03/08/24 05:06	1
Xylenes, Total	2.0	U	2.0	0.42	ug/L			03/08/24 05:06	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	88		78 - 122		03/08/24 05:06	1
Dibromofluoromethane (Surr)	106		73 - 120		03/08/24 05:06	1
4-Bromofluorobenzene (Surr)	71		56 - 136		03/08/24 05:06	1
1,2-Dichloroethane-d4 (Surr)	99		62 - 137		03/08/24 05:06	1

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Client Sample Results

Client: GHD Services Inc.
Project/Site: 12616852-133032-01, Endline

Job ID: 240-200118-1

Client Sample ID: WG-017390-022724-JK-008

Lab Sample ID: 240-200118-8

Date Collected: 02/27/24 14:20

Matrix: Water

Date Received: 02/27/24 16:17

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	240		100	48	ug/L			03/08/24 05:29	100
1,1,2,2-Tetrachloroethane	100	U	100	60	ug/L			03/08/24 05:29	100
1,1,2-Trichloroethane	100	U	100	48	ug/L			03/08/24 05:29	100
1,1-Dichloroethane	3500		100	47	ug/L			03/08/24 05:29	100
1,1-Dichloroethene	1800		100	49	ug/L			03/08/24 05:29	100
1,2-Dichloroethane	100	U	100	46	ug/L			03/08/24 05:29	100
1,2-Dichloroethene, Total	91	J	100	33	ug/L			03/08/24 05:29	100
1,2-Dichloropropane	100	U	100	47	ug/L			03/08/24 05:29	100
1,4-Dioxane	5000	U *+	5000	1300	ug/L			03/08/24 05:29	100
2-Butanone (MEK)	1000	U	1000	120	ug/L			03/08/24 05:29	100
2-Hexanone	1000	U	1000	110	ug/L			03/08/24 05:29	100
4-Methyl-2-pentanone (MIBK)	1000	U	1000	99	ug/L			03/08/24 05:29	100
Acetone	1000	U	1000	540	ug/L			03/08/24 05:29	100
Benzene	100	U	100	42	ug/L			03/08/24 05:29	100
Bromoform	100	U	100	76	ug/L			03/08/24 05:29	100
Bromomethane	100	U	100	42	ug/L			03/08/24 05:29	100
Carbon disulfide	100	U	100	59	ug/L			03/08/24 05:29	100
Carbon tetrachloride	100	U	100	26	ug/L			03/08/24 05:29	100
Chlorobenzene	100	U	100	38	ug/L			03/08/24 05:29	100
Chlorodibromomethane	100	U	100	39	ug/L			03/08/24 05:29	100
Chloroethane	100	U	100	83	ug/L			03/08/24 05:29	100
Chloroform	100	U	100	47	ug/L			03/08/24 05:29	100
Chloromethane	100	U	100	63	ug/L			03/08/24 05:29	100
cis-1,2-Dichloroethene	91	J	100	46	ug/L			03/08/24 05:29	100
cis-1,3-Dichloropropene	100	U	100	61	ug/L			03/08/24 05:29	100
Dichlorobromomethane	100	U	100	38	ug/L			03/08/24 05:29	100
Ethylbenzene	100	U	100	42	ug/L			03/08/24 05:29	100
Methylene Chloride	500	U	500	260	ug/L			03/08/24 05:29	100
Styrene	100	U	100	45	ug/L			03/08/24 05:29	100
Tetrachloroethene	100	U	100	44	ug/L			03/08/24 05:29	100
Toluene	100	U	100	44	ug/L			03/08/24 05:29	100
trans-1,2-Dichloroethene	100	U	100	51	ug/L			03/08/24 05:29	100
trans-1,3-Dichloropropene	100	U	100	67	ug/L			03/08/24 05:29	100
Trichloroethene	100	U	100	44	ug/L			03/08/24 05:29	100
Vinyl chloride	320		100	45	ug/L			03/08/24 05:29	100
Xylenes, Total	200	U	200	42	ug/L			03/08/24 05:29	100

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	98		78 - 122		03/08/24 05:29	100
Dibromofluoromethane (Surr)	114		73 - 120		03/08/24 05:29	100
4-Bromofluorobenzene (Surr)	85		56 - 136		03/08/24 05:29	100
1,2-Dichloroethane-d4 (Surr)	106		62 - 137		03/08/24 05:29	100

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Methane	4400		10	1.7	ug/L			03/07/24 12:05	10
Ethane	11		1.0	0.29	ug/L			03/05/24 19:58	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,1,1-Trifluoroethane	98		60 - 140		03/05/24 19:58	1

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Client Sample Results

Client: GHD Services Inc.
Project/Site: 12616852-133032-01, Endoline

Job ID: 240-200118-1

Client Sample ID: WG-017390-022724-JK-008

Lab Sample ID: 240-200118-8

Date Collected: 02/27/24 14:20

Matrix: Water

Date Received: 02/27/24 16:17

Method: RSK-175 - Dissolved Gases (GC) (Continued)

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,1,1-Trifluoroethane	102		60 - 140		03/07/24 12:05	10

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Alkalinity as CaCO3 (SM 2320B-1997)	490		5.0	2.6	mg/L			03/12/24 03:51	1
Nitrate as N (EPA 300.0)	2.5	U	2.5	1.3	mg/L			02/28/24 16:46	50
Sulfate (EPA 300.0)	1700		10	3.5	mg/L			03/01/24 12:02	10
Nitrite as N (EPA 300.0)	2.5	U	2.5	1.3	mg/L			02/28/24 16:46	50
Ammonia (SM 4500 NH3 H-2011)	0.31		0.20	0.076	mg/L			03/04/24 18:00	1
Sulfide (SM 4500 S2 F-2000)	1.0	U	1.0	0.27	mg/L			03/04/24 12:57	1
Chemical Oxygen Demand (SM 5220D-1997)	56		10	1.8	mg/L			03/12/24 10:05	1
Total Organic Carbon (SM 5310C-2000)	4.8		1.0	0.44	mg/L			03/06/24 17:55	1
Biochemical Oxygen Demand (SM 5210B)	5.8		2.0	2.0	mg/L			02/28/24 13:05	1
Total Phosphorus as P (SM4500 P E-1999)	0.10	U	0.10	0.076	mg/L			03/12/24 16:04	1

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Client Sample Results

Client: GHD Services Inc.
Project/Site: 12616852-133032-01, Endline

Job ID: 240-200118-1

Client Sample ID: TB-017390-022724-KM

Lab Sample ID: 240-200118-9

Date Collected: 02/27/24 00:00

Matrix: Water

Date Received: 02/27/24 16:17

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	1.0	U	1.0	0.48	ug/L			03/07/24 23:40	1
1,1,2,2-Tetrachloroethane	1.0	U	1.0	0.60	ug/L			03/07/24 23:40	1
1,1,2-Trichloroethane	1.0	U	1.0	0.48	ug/L			03/07/24 23:40	1
1,1-Dichloroethane	1.0	U	1.0	0.47	ug/L			03/07/24 23:40	1
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			03/07/24 23:40	1
1,2-Dichloroethane	1.0	U	1.0	0.46	ug/L			03/07/24 23:40	1
1,2-Dichloroethene, Total	1.0	U	1.0	0.33	ug/L			03/07/24 23:40	1
1,2-Dichloropropane	1.0	U	1.0	0.47	ug/L			03/07/24 23:40	1
1,4-Dioxane	50	U *+	50	13	ug/L			03/07/24 23:40	1
2-Butanone (MEK)	10	U	10	1.2	ug/L			03/07/24 23:40	1
2-Hexanone	10	U	10	1.1	ug/L			03/07/24 23:40	1
4-Methyl-2-pentanone (MIBK)	10	U	10	0.99	ug/L			03/07/24 23:40	1
Acetone	10	U	10	5.4	ug/L			03/07/24 23:40	1
Benzene	1.0	U	1.0	0.42	ug/L			03/07/24 23:40	1
Bromoform	1.0	U	1.0	0.76	ug/L			03/07/24 23:40	1
Bromomethane	1.0	U	1.0	0.42	ug/L			03/07/24 23:40	1
Carbon disulfide	1.0	U	1.0	0.59	ug/L			03/07/24 23:40	1
Carbon tetrachloride	1.0	U	1.0	0.26	ug/L			03/07/24 23:40	1
Chlorobenzene	1.0	U	1.0	0.38	ug/L			03/07/24 23:40	1
Chlorodibromomethane	1.0	U	1.0	0.39	ug/L			03/07/24 23:40	1
Chloroethane	1.0	U	1.0	0.83	ug/L			03/07/24 23:40	1
Chloroform	1.0	U	1.0	0.47	ug/L			03/07/24 23:40	1
Chloromethane	1.0	U	1.0	0.63	ug/L			03/07/24 23:40	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			03/07/24 23:40	1
cis-1,3-Dichloropropene	1.0	U	1.0	0.61	ug/L			03/07/24 23:40	1
Dichlorobromomethane	1.0	U	1.0	0.38	ug/L			03/07/24 23:40	1
Ethylbenzene	1.0	U	1.0	0.42	ug/L			03/07/24 23:40	1
Methylene Chloride	5.0	U	5.0	2.6	ug/L			03/07/24 23:40	1
Styrene	1.0	U	1.0	0.45	ug/L			03/07/24 23:40	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			03/07/24 23:40	1
Toluene	1.0	U	1.0	0.44	ug/L			03/07/24 23:40	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			03/07/24 23:40	1
trans-1,3-Dichloropropene	1.0	U	1.0	0.67	ug/L			03/07/24 23:40	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			03/07/24 23:40	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			03/07/24 23:40	1
Xylenes, Total	2.0	U	2.0	0.42	ug/L			03/07/24 23:40	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	96		78 - 122		03/07/24 23:40	1
Dibromofluoromethane (Surr)	112		73 - 120		03/07/24 23:40	1
4-Bromofluorobenzene (Surr)	81		56 - 136		03/07/24 23:40	1
1,2-Dichloroethane-d4 (Surr)	104		62 - 137		03/07/24 23:40	1

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Surrogate Summary

Client: GHD Services Inc.
Project/Site: 12616852-133032-01, Endline

Job ID: 240-200118-1

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

Matrix: Water

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Surrogate Recovery (Acceptance Limits)			
		TOL (78-122)	DBFM (73-120)	BFB (56-136)	DCA (62-137)
240-200118-1	WG-017390-022724-KM-001	95	111	76	103
240-200118-1 MS	WG-017390-022724-KM-001	99	104	94	96
240-200118-1 MSD	WG-017390-022724-KM-001	99	105	91	96
240-200118-2	WG-017390-022724-JK-002	99	111	82	105
240-200118-3	WG-017390-022724-KM-003	92	109	77	100
240-200118-4	WG-017390-022724-JK-004	93	110	78	101
240-200118-5	WG-017390-022724-KM-005	96	110	81	102
240-200118-6	WG-017390-022724-JK-006	94	113	77	103
240-200118-6	WG-017390-022724-JK-006	105	114	95	127
240-200118-7	WG-017390-022724-KM-007	88	106	71	99
240-200118-8	WG-017390-022724-JK-008	98	114	85	106
240-200118-9	TB-017390-022724-KM	96	112	81	104
LCS 240-605327/5	Lab Control Sample	101	105	96	94
LCS 240-605519/5	Lab Control Sample	106	107	98	115
MB 240-605327/9	Method Blank	91	104	73	96
MB 240-605519/8	Method Blank	105	111	95	120

Surrogate Legend

TOL = Toluene-d8 (Surr)

DBFM = Dibromofluoromethane (Surr)

BFB = 4-Bromofluorobenzene (Surr)

DCA = 1,2-Dichloroethane-d4 (Surr)

Method: RSK-175 - Dissolved Gases (GC)

Matrix: Water

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Surrogate Recovery (Acceptance Limits)	
		TFE1 (60-140)	
240-200118-1	WG-017390-022724-KM-001	97	
240-200118-1	WG-017390-022724-KM-001	99	
240-200118-1 MS	WG-017390-022724-KM-001	98	
240-200118-1 MS	WG-017390-022724-KM-001	100	
240-200118-1 MSD	WG-017390-022724-KM-001	99	
240-200118-1 MSD	WG-017390-022724-KM-001	101	
240-200118-6	WG-017390-022724-JK-006	97	
240-200118-8	WG-017390-022724-JK-008	98	
240-200118-8	WG-017390-022724-JK-008	102	
240-200118-8 MS	WG-017390-022724-JK-008	105	
240-200118-8 MSD	WG-017390-022724-JK-008	103	
LCS 240-605022/4	Lab Control Sample	104	
LCS 240-605296/4	Lab Control Sample	104	
LCS 240-605650/4	Lab Control Sample	100	
MB 240-605022/3	Method Blank	106	
MB 240-605296/3	Method Blank	107	
MB 240-605650/3	Method Blank	101	

Surrogate Legend

TFE = 1,1,1-Trifluoroethane

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QC Sample Results

Client: GHD Services Inc.
Project/Site: 12616852-133032-01, Endline

Job ID: 240-200118-1

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

Lab Sample ID: MB 240-605327/9

Matrix: Water

Analysis Batch: 605327

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	1.0	U	1.0	0.48	ug/L			03/07/24 23:17	1
1,1,2,2-Tetrachloroethane	1.0	U	1.0	0.60	ug/L			03/07/24 23:17	1
1,1,2-Trichloroethane	1.0	U	1.0	0.48	ug/L			03/07/24 23:17	1
1,1-Dichloroethane	1.0	U	1.0	0.47	ug/L			03/07/24 23:17	1
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			03/07/24 23:17	1
1,2-Dichloroethane	1.0	U	1.0	0.46	ug/L			03/07/24 23:17	1
1,2-Dichloroethene, Total	1.0	U	1.0	0.33	ug/L			03/07/24 23:17	1
1,2-Dichloropropane	1.0	U	1.0	0.47	ug/L			03/07/24 23:17	1
1,4-Dioxane	50	U	50	13	ug/L			03/07/24 23:17	1
2-Butanone (MEK)	10	U	10	1.2	ug/L			03/07/24 23:17	1
2-Hexanone	10	U	10	1.1	ug/L			03/07/24 23:17	1
4-Methyl-2-pentanone (MIBK)	10	U	10	0.99	ug/L			03/07/24 23:17	1
Acetone	10	U	10	5.4	ug/L			03/07/24 23:17	1
Benzene	1.0	U	1.0	0.42	ug/L			03/07/24 23:17	1
Bromoform	1.0	U	1.0	0.76	ug/L			03/07/24 23:17	1
Bromomethane	1.0	U	1.0	0.42	ug/L			03/07/24 23:17	1
Carbon disulfide	1.0	U	1.0	0.59	ug/L			03/07/24 23:17	1
Carbon tetrachloride	1.0	U	1.0	0.26	ug/L			03/07/24 23:17	1
Chlorobenzene	1.0	U	1.0	0.38	ug/L			03/07/24 23:17	1
Chlorodibromomethane	1.0	U	1.0	0.39	ug/L			03/07/24 23:17	1
Chloroethane	1.0	U	1.0	0.83	ug/L			03/07/24 23:17	1
Chloroform	1.0	U	1.0	0.47	ug/L			03/07/24 23:17	1
Chloromethane	1.0	U	1.0	0.63	ug/L			03/07/24 23:17	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			03/07/24 23:17	1
cis-1,3-Dichloropropene	1.0	U	1.0	0.61	ug/L			03/07/24 23:17	1
Dichlorobromomethane	1.0	U	1.0	0.38	ug/L			03/07/24 23:17	1
Ethylbenzene	1.0	U	1.0	0.42	ug/L			03/07/24 23:17	1
Methylene Chloride	5.0	U	5.0	2.6	ug/L			03/07/24 23:17	1
Styrene	1.0	U	1.0	0.45	ug/L			03/07/24 23:17	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			03/07/24 23:17	1
Toluene	1.0	U	1.0	0.44	ug/L			03/07/24 23:17	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			03/07/24 23:17	1
trans-1,3-Dichloropropene	1.0	U	1.0	0.67	ug/L			03/07/24 23:17	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			03/07/24 23:17	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			03/07/24 23:17	1
Xylenes, Total	2.0	U	2.0	0.42	ug/L			03/07/24 23:17	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	91		78 - 122		03/07/24 23:17	1
Dibromofluoromethane (Surr)	104		73 - 120		03/07/24 23:17	1
4-Bromofluorobenzene (Surr)	73		56 - 136		03/07/24 23:17	1
1,2-Dichloroethane-d4 (Surr)	96		62 - 137		03/07/24 23:17	1

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QC Sample Results

Client: GHD Services Inc.
Project/Site: 12616852-133032-01, Endline

Job ID: 240-200118-1

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

Lab Sample ID: LCS 240-605327/5

Matrix: Water

Analysis Batch: 605327

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1,1-Trichloroethane	20.0	18.7		ug/L		94	64 - 131
1,1,2,2-Tetrachloroethane	20.0	22.9		ug/L		114	58 - 157
1,1,2-Trichloroethane	20.0	21.5		ug/L		107	70 - 138
1,1-Dichloroethane	20.0	21.8		ug/L		109	72 - 127
1,1-Dichloroethene	20.0	23.5		ug/L		118	63 - 134
1,2-Dichloroethane	20.0	18.9		ug/L		94	66 - 128
1,2-Dichloroethene, Total	40.0	41.3		ug/L		103	77 - 122
1,2-Dichloropropane	20.0	21.5		ug/L		108	75 - 133
1,4-Dioxane	400	624	*+	ug/L		156	39 - 145
2-Butanone (MEK)	40.0	43.7		ug/L		109	54 - 156
2-Hexanone	40.0	40.2		ug/L		101	43 - 167
4-Methyl-2-pentanone (MIBK)	40.0	40.1		ug/L		100	46 - 158
Acetone	40.0	48.9		ug/L		122	50 - 149
Benzene	20.0	21.0		ug/L		105	77 - 123
Bromoform	20.0	20.9		ug/L		104	57 - 129
Bromomethane	20.0	15.2		ug/L		76	36 - 142
Carbon disulfide	20.0	24.1		ug/L		121	43 - 140
Carbon tetrachloride	20.0	18.2		ug/L		91	55 - 137
Chlorobenzene	20.0	19.4		ug/L		97	80 - 121
Chlorodibromomethane	20.0	20.3		ug/L		101	70 - 124
Chloroethane	20.0	17.2		ug/L		86	38 - 152
Chloroform	20.0	20.9		ug/L		105	74 - 122
Chloromethane	20.0	22.4		ug/L		112	47 - 143
cis-1,2-Dichloroethene	20.0	21.4		ug/L		107	77 - 123
cis-1,3-Dichloropropene	20.0	17.0		ug/L		85	64 - 130
Dichlorobromomethane	20.0	19.0		ug/L		95	69 - 126
Ethylbenzene	20.0	18.3		ug/L		91	80 - 121
Methylene Chloride	20.0	23.4		ug/L		117	71 - 125
m-Xylene & p-Xylene	20.0	18.4		ug/L		92	80 - 120
o-Xylene	20.0	19.1		ug/L		96	80 - 123
Styrene	20.0	18.4		ug/L		92	80 - 135
Tetrachloroethene	20.0	20.2		ug/L		101	76 - 123
Toluene	20.0	19.4		ug/L		97	80 - 123
trans-1,2-Dichloroethene	20.0	19.9		ug/L		100	75 - 124
trans-1,3-Dichloropropene	20.0	18.0		ug/L		90	57 - 129
Trichloroethene	20.0	20.1		ug/L		100	70 - 122
Vinyl chloride	20.0	19.8		ug/L		99	60 - 144
Xylenes, Total	40.0	37.5		ug/L		94	80 - 121

Surrogate	LCS %Recovery	LCS Qualifier	Limits
Toluene-d8 (Surr)	101		78 - 122
Dibromofluoromethane (Surr)	105		73 - 120
4-Bromofluorobenzene (Surr)	96		56 - 136
1,2-Dichloroethane-d4 (Surr)	94		62 - 137

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QC Sample Results

Client: GHD Services Inc.
Project/Site: 12616852-133032-01, Endline

Job ID: 240-200118-1

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

Lab Sample ID: 240-200118-1 MS

Matrix: Water

Analysis Batch: 605327

Client Sample ID: WG-017390-022724-KM-001

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1,1-Trichloroethane	1000	U	20000	17900		ug/L		90	60 - 130
1,1,2,2-Tetrachloroethane	1000	U	20000	22900		ug/L		115	54 - 145
1,1,2-Trichloroethane	1000	U	20000	21100		ug/L		105	69 - 131
1,1-Dichloroethane	1800		20000	22600		ug/L		104	68 - 125
1,1-Dichloroethene	1000	U	20000	22200		ug/L		111	56 - 135
1,2-Dichloroethane	1000	U	20000	18400		ug/L		92	63 - 126
1,2-Dichloroethene, Total	1000	U	40000	39600		ug/L		99	70 - 124
1,2-Dichloropropane	1000	U	20000	20500		ug/L		103	69 - 130
1,4-Dioxane	50000	U *+ F1	400000	658000	F1	ug/L		164	27 - 163
2-Butanone (MEK)	10000	U	40000	41600		ug/L		104	40 - 151
2-Hexanone	10000	U	40000	39000		ug/L		98	35 - 156
4-Methyl-2-pentanone (MIBK)	10000	U	40000	38800		ug/L		97	31 - 153
Acetone	10000	U F1	40000	61900	F1	ug/L		155	33 - 149
Benzene	1000	U	20000	20100		ug/L		100	64 - 128
Bromoform	1000	U	20000	19900		ug/L		99	47 - 125
Bromomethane	1000	U	20000	15100		ug/L		76	28 - 150
Carbon disulfide	1000	U	20000	22700		ug/L		113	38 - 140
Carbon tetrachloride	1000	U	20000	17500		ug/L		88	51 - 133
Chlorobenzene	1000	U	20000	17900		ug/L		90	74 - 121
Chlorodibromomethane	1000	U	20000	19500		ug/L		97	65 - 120
Chloroethane	28000		20000	40800		ug/L		62	10 - 199
Chloroform	1000	U	20000	20500		ug/L		102	70 - 122
Chloromethane	1000	U	20000	22400		ug/L		112	32 - 149
cis-1,2-Dichloroethene	1000	U	20000	20500		ug/L		103	66 - 128
cis-1,3-Dichloropropene	1000	U	20000	15700		ug/L		78	47 - 125
Dichlorobromomethane	1000	U	20000	18100		ug/L		90	62 - 125
Ethylbenzene	1000	U	20000	16800		ug/L		84	67 - 127
Methylene Chloride	5000	U	20000	23500		ug/L		117	62 - 129
m-Xylene & p-Xylene	2000	U	20000	16600		ug/L		83	71 - 123
o-Xylene	1000	U	20000	17500		ug/L		87	70 - 125
Styrene	1000	U	20000	16800		ug/L		84	70 - 139
Tetrachloroethene	1000	U	20000	18600		ug/L		93	62 - 131
Toluene	1000	U	20000	17900		ug/L		90	58 - 135
trans-1,2-Dichloroethene	1000	U	20000	19100		ug/L		95	56 - 136
trans-1,3-Dichloropropene	1000	U	20000	16200		ug/L		81	47 - 120
Trichloroethene	1000	U	20000	17600		ug/L		88	61 - 124
Vinyl chloride	1000	U	20000	20000		ug/L		100	43 - 157
Xylenes, Total	2000	U	40000	34100		ug/L		85	71 - 123

Surrogate	MS %Recovery	MS Qualifier	Limits
Toluene-d8 (Surr)	99		78 - 122
Dibromofluoromethane (Surr)	104		73 - 120
4-Bromofluorobenzene (Surr)	94		56 - 136
1,2-Dichloroethane-d4 (Surr)	96		62 - 137

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QC Sample Results

Client: GHD Services Inc.
Project/Site: 12616852-133032-01, Endline

Job ID: 240-200118-1

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

Lab Sample ID: 240-200118-1 MSD

Matrix: Water

Analysis Batch: 605327

Client Sample ID: WG-017390-022724-KM-001

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1,1-Trichloroethane	1000	U	20000	18500		ug/L		92	60 - 130	3	17
1,1,2,2-Tetrachloroethane	1000	U	20000	23700		ug/L		119	54 - 145	4	15
1,1,2-Trichloroethane	1000	U	20000	21000		ug/L		105	69 - 131	0	14
1,1-Dichloroethane	1800		20000	23300		ug/L		108	68 - 125	3	13
1,1-Dichloroethene	1000	U	20000	22400		ug/L		112	56 - 135	1	26
1,2-Dichloroethane	1000	U	20000	18400		ug/L		92	63 - 126	0	12
1,2-Dichloroethene, Total	1000	U	40000	40500		ug/L		101	70 - 124	2	14
1,2-Dichloropropane	1000	U	20000	21000		ug/L		105	69 - 130	2	13
1,4-Dioxane	50000	U *+ F1	400000	644000		ug/L		161	27 - 163	2	35
2-Butanone (MEK)	10000	U	40000	42600		ug/L		106	40 - 151	2	20
2-Hexanone	10000	U	40000	38300		ug/L		96	35 - 156	2	17
4-Methyl-2-pentanone (MIBK)	10000	U	40000	38600		ug/L		97	31 - 153	0	15
Acetone	10000	U F1	40000	61600	F1	ug/L		154	33 - 149	0	34
Benzene	1000	U	20000	20500		ug/L		103	64 - 128	2	14
Bromoform	1000	U	20000	20100		ug/L		100	47 - 125	1	15
Bromomethane	1000	U	20000	15100		ug/L		76	28 - 150	0	26
Carbon disulfide	1000	U	20000	23900		ug/L		119	38 - 140	5	23
Carbon tetrachloride	1000	U	20000	17700		ug/L		89	51 - 133	1	24
Chlorobenzene	1000	U	20000	18300		ug/L		92	74 - 121	2	14
Chlorodibromomethane	1000	U	20000	19200		ug/L		96	65 - 120	1	13
Chloroethane	28000		20000	41200		ug/L		64	10 - 199	1	30
Chloroform	1000	U	20000	20600		ug/L		103	70 - 122	1	14
Chloromethane	1000	U	20000	22700		ug/L		114	32 - 149	1	27
cis-1,2-Dichloroethene	1000	U	20000	20700		ug/L		104	66 - 128	1	14
cis-1,3-Dichloropropene	1000	U	20000	15800		ug/L		79	47 - 125	1	13
Dichlorobromomethane	1000	U	20000	18400		ug/L		92	62 - 125	1	13
Ethylbenzene	1000	U	20000	16900		ug/L		85	67 - 127	1	15
Methylene Chloride	5000	U	20000	24100		ug/L		121	62 - 129	3	17
m-Xylene & p-Xylene	2000	U	20000	17100		ug/L		85	71 - 123	3	16
o-Xylene	1000	U	20000	17900		ug/L		90	70 - 125	3	15
Styrene	1000	U	20000	17000		ug/L		85	70 - 139	1	18
Tetrachloroethene	1000	U	20000	18700		ug/L		93	62 - 131	0	20
Toluene	1000	U	20000	18200		ug/L		91	58 - 135	1	14
trans-1,2-Dichloroethene	1000	U	20000	19800		ug/L		99	56 - 136	4	15
trans-1,3-Dichloropropene	1000	U	20000	16700		ug/L		83	47 - 120	3	14
Trichloroethene	1000	U	20000	18000		ug/L		90	61 - 124	2	15
Vinyl chloride	1000	U	20000	20200		ug/L		101	43 - 157	1	24
Xylenes, Total	2000	U	40000	35000		ug/L		88	71 - 123	3	15

Surrogate	MSD %Recovery	MSD Qualifier	Limits
Toluene-d8 (Surr)	99		78 - 122
Dibromofluoromethane (Surr)	105		73 - 120
4-Bromofluorobenzene (Surr)	91		56 - 136
1,2-Dichloroethane-d4 (Surr)	96		62 - 137

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QC Sample Results

Client: GHD Services Inc.
Project/Site: 12616852-133032-01, Endoline

Job ID: 240-200118-1

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

Lab Sample ID: MB 240-605519/8

Matrix: Water

Analysis Batch: 605519

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	1.0	U	1.0	0.48	ug/L			03/08/24 18:41	1
1,1,2,2-Tetrachloroethane	1.0	U	1.0	0.60	ug/L			03/08/24 18:41	1
1,1,2-Trichloroethane	1.0	U	1.0	0.48	ug/L			03/08/24 18:41	1
1,1-Dichloroethane	1.0	U	1.0	0.47	ug/L			03/08/24 18:41	1
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			03/08/24 18:41	1
1,2-Dichloroethane	1.0	U	1.0	0.46	ug/L			03/08/24 18:41	1
1,2-Dichloroethene, Total	1.0	U	1.0	0.33	ug/L			03/08/24 18:41	1
1,2-Dichloropropane	1.0	U	1.0	0.47	ug/L			03/08/24 18:41	1
1,4-Dioxane	50	U	50	13	ug/L			03/08/24 18:41	1
2-Butanone (MEK)	10	U	10	1.2	ug/L			03/08/24 18:41	1
2-Hexanone	10	U	10	1.1	ug/L			03/08/24 18:41	1
4-Methyl-2-pentanone (MIBK)	10	U	10	0.99	ug/L			03/08/24 18:41	1
Acetone	10	U	10	5.4	ug/L			03/08/24 18:41	1
Benzene	1.0	U	1.0	0.42	ug/L			03/08/24 18:41	1
Bromoform	1.0	U	1.0	0.76	ug/L			03/08/24 18:41	1
Bromomethane	1.0	U	1.0	0.42	ug/L			03/08/24 18:41	1
Carbon disulfide	1.0	U	1.0	0.59	ug/L			03/08/24 18:41	1
Carbon tetrachloride	1.0	U	1.0	0.26	ug/L			03/08/24 18:41	1
Chlorobenzene	1.0	U	1.0	0.38	ug/L			03/08/24 18:41	1
Chlorodibromomethane	1.0	U	1.0	0.39	ug/L			03/08/24 18:41	1
Chloroethane	1.0	U	1.0	0.83	ug/L			03/08/24 18:41	1
Chloroform	1.0	U	1.0	0.47	ug/L			03/08/24 18:41	1
Chloromethane	1.0	U	1.0	0.63	ug/L			03/08/24 18:41	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			03/08/24 18:41	1
cis-1,3-Dichloropropene	1.0	U	1.0	0.61	ug/L			03/08/24 18:41	1
Dichlorobromomethane	1.0	U	1.0	0.38	ug/L			03/08/24 18:41	1
Ethylbenzene	1.0	U	1.0	0.42	ug/L			03/08/24 18:41	1
Methylene Chloride	5.0	U	5.0	2.6	ug/L			03/08/24 18:41	1
Styrene	1.0	U	1.0	0.45	ug/L			03/08/24 18:41	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			03/08/24 18:41	1
Toluene	1.0	U	1.0	0.44	ug/L			03/08/24 18:41	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			03/08/24 18:41	1
trans-1,3-Dichloropropene	1.0	U	1.0	0.67	ug/L			03/08/24 18:41	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			03/08/24 18:41	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			03/08/24 18:41	1
Xylenes, Total	2.0	U	2.0	0.42	ug/L			03/08/24 18:41	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	105		78 - 122		03/08/24 18:41	1
Dibromofluoromethane (Surr)	111		73 - 120		03/08/24 18:41	1
4-Bromofluorobenzene (Surr)	95		56 - 136		03/08/24 18:41	1
1,2-Dichloroethane-d4 (Surr)	120		62 - 137		03/08/24 18:41	1

Eurofins Cleveland

QC Sample Results

Client: GHD Services Inc.
Project/Site: 12616852-133032-01, Endline

Job ID: 240-200118-1

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

Lab Sample ID: LCS 240-605519/5

Matrix: Water

Analysis Batch: 605519

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1,1-Trichloroethane	25.0	28.9		ug/L		116	64 - 131
1,1,2,2-Tetrachloroethane	25.0	27.0		ug/L		108	58 - 157
1,1,2-Trichloroethane	25.0	26.0		ug/L		104	70 - 138
1,1-Dichloroethane	25.0	28.2		ug/L		113	72 - 127
1,1-Dichloroethene	25.0	28.1		ug/L		113	63 - 134
1,2-Dichloroethane	25.0	29.8		ug/L		119	66 - 128
1,2-Dichloroethene, Total	50.0	51.4		ug/L		103	77 - 122
1,2-Dichloropropane	25.0	26.9		ug/L		108	75 - 133
1,4-Dioxane	500	489		ug/L		98	39 - 145
2-Butanone (MEK)	50.0	49.3		ug/L		99	54 - 156
2-Hexanone	50.0	54.2		ug/L		108	43 - 167
4-Methyl-2-pentanone (MIBK)	50.0	50.0		ug/L		100	46 - 158
Acetone	50.0	58.6		ug/L		117	50 - 149
Benzene	25.0	27.0		ug/L		108	77 - 123
Bromoform	25.0	22.7		ug/L		91	57 - 129
Bromomethane	12.5	11.2		ug/L		90	36 - 142
Carbon disulfide	25.0	30.3		ug/L		121	43 - 140
Carbon tetrachloride	25.0	28.9		ug/L		116	55 - 137
Chlorobenzene	25.0	27.5		ug/L		110	80 - 121
Chlorodibromomethane	25.0	25.7		ug/L		103	70 - 124
Chloroethane	12.5	12.7		ug/L		101	38 - 152
Chloroform	25.0	26.8		ug/L		107	74 - 122
Chloromethane	12.5	9.73		ug/L		78	47 - 143
cis-1,2-Dichloroethene	25.0	25.2		ug/L		101	77 - 123
cis-1,3-Dichloropropene	25.0	23.0		ug/L		92	64 - 130
Dichlorobromomethane	25.0	25.7		ug/L		103	69 - 126
Ethylbenzene	25.0	27.4		ug/L		110	80 - 121
Methylene Chloride	25.0	27.2		ug/L		109	71 - 125
m-Xylene & p-Xylene	25.0	26.6		ug/L		107	80 - 120
o-Xylene	25.0	26.0		ug/L		104	80 - 123
Styrene	25.0	26.4		ug/L		105	80 - 135
Tetrachloroethene	25.0	28.4		ug/L		113	76 - 123
Toluene	25.0	27.2		ug/L		109	80 - 123
trans-1,2-Dichloroethene	25.0	26.2		ug/L		105	75 - 124
trans-1,3-Dichloropropene	25.0	25.8		ug/L		103	57 - 129
Trichloroethene	25.0	26.9		ug/L		108	70 - 122
Vinyl chloride	12.5	11.3		ug/L		90	60 - 144
Xylenes, Total	50.0	52.6		ug/L		105	80 - 121

Surrogate	LCS %Recovery	LCS Qualifier	Limits
Toluene-d8 (Surr)	106		78 - 122
Dibromofluoromethane (Surr)	107		73 - 120
4-Bromofluorobenzene (Surr)	98		56 - 136
1,2-Dichloroethane-d4 (Surr)	115		62 - 137

Eurofins Cleveland

QC Sample Results

Client: GHD Services Inc.
Project/Site: 12616852-133032-01, Endoline

Job ID: 240-200118-1

Method: RSK-175 - Dissolved Gases (GC)

Lab Sample ID: MB 240-605022/3

Matrix: Water

Analysis Batch: 605022

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Methane	1.0	U	1.0	0.17	ug/L			03/05/24 13:43	1
Ethane	1.0	U	1.0	0.29	ug/L			03/05/24 13:43	1
Surrogate	MB %Recovery	MB Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,1,1-Trifluoroethane	106		60 - 140					03/05/24 13:43	1

Lab Sample ID: LCS 240-605022/4

Matrix: Water

Analysis Batch: 605022

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Methane	284	307		ug/L		108	80 - 120
Ethane	537	558		ug/L		104	80 - 120
Surrogate	LCS %Recovery	LCS Qualifier	Limits				
1,1,1-Trifluoroethane	104		60 - 140				

Lab Sample ID: 240-200118-1 MS

Matrix: Water

Analysis Batch: 605022

Client Sample ID: WG-017390-022724-KM-001

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Ethane	380		537	858		ug/L		89	50 - 150
Surrogate	MS %Recovery	MS Qualifier	Limits						
1,1,1-Trifluoroethane	98		60 - 140						

Lab Sample ID: 240-200118-1 MSD

Matrix: Water

Analysis Batch: 605022

Client Sample ID: WG-017390-022724-KM-001

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Ethane	380		537	869		ug/L		91	50 - 150	1	30
Surrogate	MSD %Recovery	MSD Qualifier	Limits								
1,1,1-Trifluoroethane	99		60 - 140								

Lab Sample ID: MB 240-605296/3

Matrix: Water

Analysis Batch: 605296

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Methane	1.0	U	1.0	0.17	ug/L			03/07/24 11:31	1
Ethane	1.0	U	1.0	0.29	ug/L			03/07/24 11:31	1
Surrogate	MB %Recovery	MB Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,1,1-Trifluoroethane	107		60 - 140					03/07/24 11:31	1

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QC Sample Results

Client: GHD Services Inc.
Project/Site: 12616852-133032-01, Endline

Job ID: 240-200118-1

Method: RSK-175 - Dissolved Gases (GC)

Lab Sample ID: LCS 240-605296/4

Matrix: Water

Analysis Batch: 605296

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Methane	284	305		ug/L		107	80 - 120
Ethane	537	554		ug/L		103	80 - 120
LCS LCS							
Surrogate	%Recovery	Qualifier	Limits				
1,1,1-Trifluoroethane	104		60 - 140				

Lab Sample ID: 240-200118-8 MS

Matrix: Water

Analysis Batch: 605296

Client Sample ID: WG-017390-022724-JK-008

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Methane	4400		2840	7200		ug/L		98	50 - 150
Ethane	11		5370	5160		ug/L		96	50 - 150
MS MS									
Surrogate	%Recovery	Qualifier	Limits						
1,1,1-Trifluoroethane	105		60 - 140						

Lab Sample ID: 240-200118-8 MSD

Matrix: Water

Analysis Batch: 605296

Client Sample ID: WG-017390-022724-JK-008

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	Limit
Methane	4400		2840	7100		ug/L		94	50 - 150	1	30
Ethane	11		5370	5100		ug/L		95	50 - 150	1	30
MSD MSD											
Surrogate	%Recovery	Qualifier	Limits								
1,1,1-Trifluoroethane	103		60 - 140								

Lab Sample ID: MB 240-605650/3

Matrix: Water

Analysis Batch: 605650

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Methane	1.0	U	1.0	0.17	ug/L			03/11/24 14:17	1
Ethane	1.0	U	1.0	0.29	ug/L			03/11/24 14:17	1
MB MB									
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,1,1-Trifluoroethane	101		60 - 140					03/11/24 14:17	1

Lab Sample ID: LCS 240-605650/4

Matrix: Water

Analysis Batch: 605650

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Methane	284	294		ug/L		103	80 - 120
Ethane	537	541		ug/L		101	80 - 120

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QC Sample Results

Client: GHD Services Inc.
Project/Site: 12616852-133032-01, Endoline

Job ID: 240-200118-1

Method: RSK-175 - Dissolved Gases (GC) (Continued)

Lab Sample ID: LCS 240-605650/4

Matrix: Water

Analysis Batch: 605650

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

	LCS	LCS	
Surrogate	%Recovery	Qualifier	Limits
1,1,1-Trifluoroethane	100		60 - 140

Lab Sample ID: 240-200118-1 MS

Matrix: Water

Analysis Batch: 605650

Client Sample ID: WG-017390-022724-KM-001

Prep Type: Total/NA

	Sample	Sample	Spike	MS	MS				%Rec	
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	
Methane	8900		2840	12300		ug/L		118	50 - 150	
Surrogate	%Recovery	Qualifier	Limits							
1,1,1-Trifluoroethane	100		60 - 140							

Lab Sample ID: 240-200118-1 MSD

Matrix: Water

Analysis Batch: 605650

Client Sample ID: WG-017390-022724-KM-001

Prep Type: Total/NA

	Sample	Sample	Spike	MSD	MSD				%Rec		RPD	
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit	
Methane	8900		2840	12600		ug/L		129	50 - 150	3	30	
Surrogate	%Recovery	Qualifier	Limits									
1,1,1-Trifluoroethane	101		60 - 140									

Method: 2320B-1997 - Alkalinity, Total

Lab Sample ID: MB 240-605737/109

Matrix: Water

Analysis Batch: 605737

Client Sample ID: Method Blank

Prep Type: Total/NA

	MB	MB								
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac	
Total Alkalinity as CaCO3	5.0	U	5.0	2.6	mg/L			03/12/24 01:05	1	

Lab Sample ID: MB 240-605737/135

Matrix: Water

Analysis Batch: 605737

Client Sample ID: Method Blank

Prep Type: Total/NA

	MB	MB								
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac	
Total Alkalinity as CaCO3	5.0	U	5.0	2.6	mg/L			03/12/24 03:16	1	

Lab Sample ID: LCS 240-605737/133

Matrix: Water

Analysis Batch: 605737

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

	Spike	LCS	LCS						%Rec	
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits			
Total Alkalinity as CaCO3	80.6	82.4		mg/L		102	86 - 123			

Eurofins Cleveland

QC Sample Results

Client: GHD Services Inc.
Project/Site: 12616852-133032-01, Endoline

Job ID: 240-200118-1

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 240-604624/3

Matrix: Water

Analysis Batch: 604624

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	1.0	U	1.0	0.35	mg/L			02/29/24 18:20	1

Lab Sample ID: LCS 240-604624/4

Matrix: Water

Analysis Batch: 604624

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Sulfate	50.0	52.3		mg/L		105	90 - 110

Lab Sample ID: MB 240-605686/3

Matrix: Water

Analysis Batch: 605686

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	1.0	U	1.0	0.35	mg/L			03/11/24 15:31	1

Lab Sample ID: LCS 240-605686/4

Matrix: Water

Analysis Batch: 605686

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Sulfate	50.0	51.7		mg/L		103	90 - 110

Lab Sample ID: 240-200118-1 MS

Matrix: Water

Analysis Batch: 605686

Client Sample ID: WG-017390-022724-KM-001

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Sulfate	17		50.0	65.4		mg/L		96	80 - 120

Lab Sample ID: 240-200118-1 MSD

Matrix: Water

Analysis Batch: 605686

Client Sample ID: WG-017390-022724-KM-001

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Sulfate	17		50.0	65.1		mg/L		95	80 - 120	0	15

Lab Sample ID: MB 480-702174/4

Matrix: Water

Analysis Batch: 702174

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate as N	0.050	U	0.050	0.025	mg/L			02/28/24 15:34	1
Nitrite as N	0.050	U	0.050	0.025	mg/L			02/28/24 15:34	1

Eurofins Cleveland

QC Sample Results

Client: GHD Services Inc.
Project/Site: 12616852-133032-01, Endoline

Job ID: 240-200118-1

Method: 300.0 - Anions, Ion Chromatography (Continued)

Lab Sample ID: LCS 480-702174/5

Matrix: Water

Analysis Batch: 702174

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Nitrate as N	5.01	5.07		mg/L		101	90 - 110

Method: 4500 NH3 H-2011 - Ammonia

Lab Sample ID: MB 240-604959/14

Matrix: Water

Analysis Batch: 604959

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ammonia	0.20	U	0.20	0.076	mg/L			03/04/24 16:39	1

Lab Sample ID: LCS 240-604959/15

Matrix: Water

Analysis Batch: 604959

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Ammonia	3.83	3.52		mg/L		92	90 - 110

Lab Sample ID: 240-200118-1 MS

Matrix: Water

Analysis Batch: 604959

Client Sample ID: WG-017390-022724-KM-001

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Ammonia	1.6	F1	2.50	4.42	F1	mg/L		112	90 - 110

Lab Sample ID: 240-200118-1 MSD

Matrix: Water

Analysis Batch: 604959

Client Sample ID: WG-017390-022724-KM-001

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Ammonia	1.6	F1	2.50	4.24		mg/L		105	90 - 110	4	20

Method: 4500 S2 F-2000 - Sulfide, Total

Lab Sample ID: MB 240-604894/1

Matrix: Water

Analysis Batch: 604894

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfide	1.0	U	1.0	0.27	mg/L			03/04/24 12:57	1

Lab Sample ID: LCS 240-604894/2

Matrix: Water

Analysis Batch: 604894

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Sulfide	21.1	21.2		mg/L		101	80 - 120

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QC Sample Results

Client: GHD Services Inc.
Project/Site: 12616852-133032-01, Endoline

Job ID: 240-200118-1

Method: 4500 S2 F-2000 - Sulfide, Total (Continued)

Lab Sample ID: 240-200118-1 MS

Matrix: Water

Analysis Batch: 604894

Client Sample ID: WG-017390-022724-KM-001

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Sulfide	1.0	U	21.1	19.6		mg/L		93	67 - 126

Method: 5220D-1997 - Chemical Oxygen Demand

Lab Sample ID: MB 240-605787/9

Matrix: Water

Analysis Batch: 605787

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chemical Oxygen Demand	10	U	10	1.8	mg/L			03/12/24 10:02	1

Lab Sample ID: LCS 240-605787/10

Matrix: Water

Analysis Batch: 605787

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Chemical Oxygen Demand	41.2	43.2		mg/L		105	90 - 110

Lab Sample ID: 240-200118-1 MS

Matrix: Water

Analysis Batch: 605787

Client Sample ID: WG-017390-022724-KM-001

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Chemical Oxygen Demand	95		50.0	143		mg/L		96	90 - 110

Lab Sample ID: 240-200118-1 MSD

Matrix: Water

Analysis Batch: 605787

Client Sample ID: WG-017390-022724-KM-001

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Chemical Oxygen Demand	95		50.0	145		mg/L		100	90 - 110	1	20

Method: 5310C-2000 - Total Organic Carbon/Persulfate - Ultrav

Lab Sample ID: MB 240-605338/5

Matrix: Water

Analysis Batch: 605338

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon	1.0	U	1.0	0.44	mg/L			03/06/24 12:43	1

Lab Sample ID: LCS 240-605338/6

Matrix: Water

Analysis Batch: 605338

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Total Organic Carbon	16.3	17.4		mg/L		107	85 - 115

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QC Sample Results

Client: GHD Services Inc.
Project/Site: 12616852-133032-01, Endoline

Job ID: 240-200118-1

Method: SM 5210B - BOD, 5-Day

Lab Sample ID: USB 480-702190/1
Matrix: Water
Analysis Batch: 702190

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

Analyte	USB Result	USB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Biochemical Oxygen Demand	2.0	U	2.0	2.0	mg/L			02/28/24 13:05	1

Lab Sample ID: LCS 480-702190/2
Matrix: Water
Analysis Batch: 702190

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Biochemical Oxygen Demand	197	190		mg/L		96	85 - 115

Method: SM4500 P E-1999 - Phosphorus

Lab Sample ID: MB 240-605865/10
Matrix: Water
Analysis Batch: 605865

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Phosphorus as P	0.10	U	0.10	0.076	mg/L			03/12/24 16:04	1

Lab Sample ID: LCS 240-605865/11
Matrix: Water
Analysis Batch: 605865

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Total Phosphorus as P	0.358	0.309		mg/L		86	77 - 120

Lab Sample ID: 240-200118-1 MS
Matrix: Water
Analysis Batch: 605865

Client Sample ID: WG-017390-022724-KM-001
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Total Phosphorus as P	0.10	U	0.500	0.489		mg/L		98	38 - 156

Lab Sample ID: 240-200118-1 MSD
Matrix: Water
Analysis Batch: 605865

Client Sample ID: WG-017390-022724-KM-001
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Total Phosphorus as P	0.10	U	0.500	0.546		mg/L		109	38 - 156	11	29

QC Association Summary

Client: GHD Services Inc.
Project/Site: 12616852-133032-01, Endoline

Job ID: 240-200118-1

GC/MS VOA

Analysis Batch: 605327

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-200118-1	WG-017390-022724-KM-001	Total/NA	Water	8260D	
240-200118-2	WG-017390-022724-JK-002	Total/NA	Water	8260D	
240-200118-3	WG-017390-022724-KM-003	Total/NA	Water	8260D	
240-200118-4	WG-017390-022724-JK-004	Total/NA	Water	8260D	
240-200118-5	WG-017390-022724-KM-005	Total/NA	Water	8260D	
240-200118-6	WG-017390-022724-JK-006	Total/NA	Water	8260D	
240-200118-7	WG-017390-022724-KM-007	Total/NA	Water	8260D	
240-200118-8	WG-017390-022724-JK-008	Total/NA	Water	8260D	
240-200118-9	TB-017390-022724-KM	Total/NA	Water	8260D	
MB 240-605327/9	Method Blank	Total/NA	Water	8260D	
LCS 240-605327/5	Lab Control Sample	Total/NA	Water	8260D	
240-200118-1 MS	WG-017390-022724-KM-001	Total/NA	Water	8260D	
240-200118-1 MSD	WG-017390-022724-KM-001	Total/NA	Water	8260D	

Analysis Batch: 605519

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-200118-6	WG-017390-022724-JK-006	Total/NA	Water	8260D	
MB 240-605519/8	Method Blank	Total/NA	Water	8260D	
LCS 240-605519/5	Lab Control Sample	Total/NA	Water	8260D	

GC VOA

Analysis Batch: 605022

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-200118-1	WG-017390-022724-KM-001	Total/NA	Water	RSK-175	
240-200118-6	WG-017390-022724-JK-006	Total/NA	Water	RSK-175	
240-200118-8	WG-017390-022724-JK-008	Total/NA	Water	RSK-175	
MB 240-605022/3	Method Blank	Total/NA	Water	RSK-175	
LCS 240-605022/4	Lab Control Sample	Total/NA	Water	RSK-175	
240-200118-1 MS	WG-017390-022724-KM-001	Total/NA	Water	RSK-175	
240-200118-1 MSD	WG-017390-022724-KM-001	Total/NA	Water	RSK-175	

Analysis Batch: 605296

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-200118-8	WG-017390-022724-JK-008	Total/NA	Water	RSK-175	
MB 240-605296/3	Method Blank	Total/NA	Water	RSK-175	
LCS 240-605296/4	Lab Control Sample	Total/NA	Water	RSK-175	
240-200118-8 MS	WG-017390-022724-JK-008	Total/NA	Water	RSK-175	
240-200118-8 MSD	WG-017390-022724-JK-008	Total/NA	Water	RSK-175	

Analysis Batch: 605650

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-200118-1	WG-017390-022724-KM-001	Total/NA	Water	RSK-175	
MB 240-605650/3	Method Blank	Total/NA	Water	RSK-175	
LCS 240-605650/4	Lab Control Sample	Total/NA	Water	RSK-175	
240-200118-1 MS	WG-017390-022724-KM-001	Total/NA	Water	RSK-175	
240-200118-1 MSD	WG-017390-022724-KM-001	Total/NA	Water	RSK-175	

Eurofins Cleveland

QC Association Summary

Client: GHD Services Inc.
Project/Site: 12616852-133032-01, Endoline

Job ID: 240-200118-1

General Chemistry

Analysis Batch: 604624

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-200118-6	WG-017390-022724-JK-006	Total/NA	Water	300.0	
240-200118-8	WG-017390-022724-JK-008	Total/NA	Water	300.0	
MB 240-604624/3	Method Blank	Total/NA	Water	300.0	
LCS 240-604624/4	Lab Control Sample	Total/NA	Water	300.0	

Analysis Batch: 604894

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-200118-1	WG-017390-022724-KM-001	Total/NA	Water	4500 S2 F-2000	
240-200118-6	WG-017390-022724-JK-006	Total/NA	Water	4500 S2 F-2000	
240-200118-8	WG-017390-022724-JK-008	Total/NA	Water	4500 S2 F-2000	
MB 240-604894/1	Method Blank	Total/NA	Water	4500 S2 F-2000	
LCS 240-604894/2	Lab Control Sample	Total/NA	Water	4500 S2 F-2000	
240-200118-1 MS	WG-017390-022724-KM-001	Total/NA	Water	4500 S2 F-2000	

Analysis Batch: 604959

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-200118-1	WG-017390-022724-KM-001	Total/NA	Water	4500 NH3 H-2011	
240-200118-6	WG-017390-022724-JK-006	Total/NA	Water	4500 NH3 H-2011	
240-200118-8	WG-017390-022724-JK-008	Total/NA	Water	4500 NH3 H-2011	
MB 240-604959/14	Method Blank	Total/NA	Water	4500 NH3 H-2011	
LCS 240-604959/15	Lab Control Sample	Total/NA	Water	4500 NH3 H-2011	
240-200118-1 MS	WG-017390-022724-KM-001	Total/NA	Water	4500 NH3 H-2011	
240-200118-1 MSD	WG-017390-022724-KM-001	Total/NA	Water	4500 NH3 H-2011	

Analysis Batch: 605338

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-200118-1	WG-017390-022724-KM-001	Total/NA	Water	5310C-2000	
240-200118-6	WG-017390-022724-JK-006	Total/NA	Water	5310C-2000	
240-200118-8	WG-017390-022724-JK-008	Total/NA	Water	5310C-2000	
MB 240-605338/5	Method Blank	Total/NA	Water	5310C-2000	
LCS 240-605338/6	Lab Control Sample	Total/NA	Water	5310C-2000	

Analysis Batch: 605686

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-200118-1	WG-017390-022724-KM-001	Total/NA	Water	300.0	
MB 240-605686/3	Method Blank	Total/NA	Water	300.0	
LCS 240-605686/4	Lab Control Sample	Total/NA	Water	300.0	
240-200118-1 MS	WG-017390-022724-KM-001	Total/NA	Water	300.0	
240-200118-1 MSD	WG-017390-022724-KM-001	Total/NA	Water	300.0	

Analysis Batch: 605737

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-200118-1	WG-017390-022724-KM-001	Total/NA	Water	2320B-1997	
240-200118-6	WG-017390-022724-JK-006	Total/NA	Water	2320B-1997	
240-200118-8	WG-017390-022724-JK-008	Total/NA	Water	2320B-1997	
MB 240-605737/109	Method Blank	Total/NA	Water	2320B-1997	

Eurofins Cleveland

QC Association Summary

Client: GHD Services Inc.
Project/Site: 12616852-133032-01, Endoline

Job ID: 240-200118-1

General Chemistry (Continued)

Analysis Batch: 605737 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 240-605737/135	Method Blank	Total/NA	Water	2320B-1997	
LCS 240-605737/133	Lab Control Sample	Total/NA	Water	2320B-1997	

Analysis Batch: 605787

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-200118-1	WG-017390-022724-KM-001	Total/NA	Water	5220D-1997	
240-200118-6	WG-017390-022724-JK-006	Total/NA	Water	5220D-1997	
240-200118-8	WG-017390-022724-JK-008	Total/NA	Water	5220D-1997	
MB 240-605787/9	Method Blank	Total/NA	Water	5220D-1997	
LCS 240-605787/10	Lab Control Sample	Total/NA	Water	5220D-1997	
240-200118-1 MS	WG-017390-022724-KM-001	Total/NA	Water	5220D-1997	
240-200118-1 MSD	WG-017390-022724-KM-001	Total/NA	Water	5220D-1997	

Analysis Batch: 605865

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-200118-1	WG-017390-022724-KM-001	Total/NA	Water	SM4500 P E-1999	
240-200118-6	WG-017390-022724-JK-006	Total/NA	Water	SM4500 P E-1999	
240-200118-8	WG-017390-022724-JK-008	Total/NA	Water	SM4500 P E-1999	
MB 240-605865/10	Method Blank	Total/NA	Water	SM4500 P E-1999	
LCS 240-605865/11	Lab Control Sample	Total/NA	Water	SM4500 P E-1999	
240-200118-1 MS	WG-017390-022724-KM-001	Total/NA	Water	SM4500 P E-1999	
240-200118-1 MSD	WG-017390-022724-KM-001	Total/NA	Water	SM4500 P E-1999	

Analysis Batch: 702174

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-200118-1	WG-017390-022724-KM-001	Total/NA	Water	300.0	
240-200118-6	WG-017390-022724-JK-006	Total/NA	Water	300.0	
240-200118-8	WG-017390-022724-JK-008	Total/NA	Water	300.0	
MB 480-702174/4	Method Blank	Total/NA	Water	300.0	
LCS 480-702174/5	Lab Control Sample	Total/NA	Water	300.0	

Analysis Batch: 702190

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-200118-1	WG-017390-022724-KM-001	Total/NA	Water	SM 5210B	
240-200118-6	WG-017390-022724-JK-006	Total/NA	Water	SM 5210B	
240-200118-8	WG-017390-022724-JK-008	Total/NA	Water	SM 5210B	
USB 480-702190/1	Method Blank	Total/NA	Water	SM 5210B	
LCS 480-702190/2	Lab Control Sample	Total/NA	Water	SM 5210B	

Lab Chronicle

Client: GHD Services Inc.
Project/Site: 12616852-133032-01, Endoline

Job ID: 240-200118-1

Client Sample ID: WG-017390-022724-KM-001

Lab Sample ID: 240-200118-1

Date Collected: 02/27/24 11:20

Matrix: Water

Date Received: 02/27/24 16:17

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1000	605327	AJS	EET CLE	03/08/24 02:00
Total/NA	Analysis	RSK-175		1	605022	JBN	EET CLE	03/05/24 18:50
Total/NA	Analysis	RSK-175		10	605650	JBN	EET CLE	03/11/24 15:25
Total/NA	Analysis	2320B-1997		1	605737	JMR	EET CLE	03/12/24 03:38
Total/NA	Analysis	300.0		5	702174	AF	EET BUF	02/28/24 16:10
Total/NA	Analysis	300.0		1	605686	JWW	EET CLE	03/11/24 16:12
Total/NA	Analysis	4500 NH3 H-2011		1	604959	MS	EET CLE	03/04/24 17:27
Total/NA	Analysis	4500 S2 F-2000		1	604894	BLW	EET CLE	03/04/24 12:57
Total/NA	Analysis	5220D-1997		1	605787	MS	EET CLE	03/12/24 10:08
Total/NA	Analysis	5310C-2000		1	605338	QUY8	EET CLE	03/06/24 17:06
Total/NA	Analysis	SM 5210B		1	702190	CG	EET BUF	02/28/24 13:05
Total/NA	Analysis	SM4500 P E-1999		1	605865	JWW	EET CLE	03/12/24 16:04

Client Sample ID: WG-017390-022724-JK-002

Lab Sample ID: 240-200118-2

Date Collected: 02/27/24 12:15

Matrix: Water

Date Received: 02/27/24 16:17

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	605327	AJS	EET CLE	03/08/24 03:10

Client Sample ID: WG-017390-022724-KM-003

Lab Sample ID: 240-200118-3

Date Collected: 02/27/24 13:15

Matrix: Water

Date Received: 02/27/24 16:17

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	605327	AJS	EET CLE	03/08/24 03:33

Client Sample ID: WG-017390-022724-JK-004

Lab Sample ID: 240-200118-4

Date Collected: 02/27/24 12:15

Matrix: Water

Date Received: 02/27/24 16:17

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	605327	AJS	EET CLE	03/08/24 03:56

Client Sample ID: WG-017390-022724-KM-005

Lab Sample ID: 240-200118-5

Date Collected: 02/27/24 14:30

Matrix: Water

Date Received: 02/27/24 16:17

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	605327	AJS	EET CLE	03/08/24 04:19

Eurofins Cleveland

Lab Chronicle

Client: GHD Services Inc.
Project/Site: 12616852-133032-01, Endoline

Job ID: 240-200118-1

Client Sample ID: WG-017390-022724-JK-006

Lab Sample ID: 240-200118-6

Date Collected: 02/27/24 13:40

Matrix: Water

Date Received: 02/27/24 16:17

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	605327	AJS	EET CLE	03/08/24 04:43
Total/NA	Analysis	8260D		1	605519	CDG	EET CLE	03/08/24 20:16
Total/NA	Analysis	RSK-175		1	605022	JBN	EET CLE	03/05/24 19:41
Total/NA	Analysis	2320B-1997		1	605737	JMR	EET CLE	03/12/24 03:44
Total/NA	Analysis	300.0		20	702174	AF	EET BUF	02/28/24 16:28
Total/NA	Analysis	300.0		5	604624	JWW	EET CLE	03/01/24 11:22
Total/NA	Analysis	4500 NH3 H-2011		1	604959	MS	EET CLE	03/04/24 17:57
Total/NA	Analysis	4500 S2 F-2000		1	604894	BLW	EET CLE	03/04/24 12:57
Total/NA	Analysis	5220D-1997		1	605787	MS	EET CLE	03/12/24 10:04
Total/NA	Analysis	5310C-2000		1	605338	QUY8	EET CLE	03/06/24 17:31
Total/NA	Analysis	SM 5210B		1	702190	CG	EET BUF	02/28/24 13:05
Total/NA	Analysis	SM4500 P E-1999		1	605865	JWW	EET CLE	03/12/24 16:04

Client Sample ID: WG-017390-022724-KM-007

Lab Sample ID: 240-200118-7

Date Collected: 02/27/24 15:30

Matrix: Water

Date Received: 02/27/24 16:17

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	605327	AJS	EET CLE	03/08/24 05:06

Client Sample ID: WG-017390-022724-JK-008

Lab Sample ID: 240-200118-8

Date Collected: 02/27/24 14:20

Matrix: Water

Date Received: 02/27/24 16:17

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		100	605327	AJS	EET CLE	03/08/24 05:29
Total/NA	Analysis	RSK-175		1	605022	JBN	EET CLE	03/05/24 19:58
Total/NA	Analysis	RSK-175		10	605296	JBN	EET CLE	03/07/24 12:05
Total/NA	Analysis	2320B-1997		1	605737	JMR	EET CLE	03/12/24 03:51
Total/NA	Analysis	300.0		50	702174	AF	EET BUF	02/28/24 16:46
Total/NA	Analysis	300.0		10	604624	JWW	EET CLE	03/01/24 12:02
Total/NA	Analysis	4500 NH3 H-2011		1	604959	MS	EET CLE	03/04/24 18:00
Total/NA	Analysis	4500 S2 F-2000		1	604894	BLW	EET CLE	03/04/24 12:57
Total/NA	Analysis	5220D-1997		1	605787	MS	EET CLE	03/12/24 10:05
Total/NA	Analysis	5310C-2000		1	605338	QUY8	EET CLE	03/06/24 17:55
Total/NA	Analysis	SM 5210B		1	702190	CG	EET BUF	02/28/24 13:05
Total/NA	Analysis	SM4500 P E-1999		1	605865	JWW	EET CLE	03/12/24 16:04

Eurofins Cleveland

Lab Chronicle

Client: GHD Services Inc.
Project/Site: 12616852-133032-01, Endoline

Job ID: 240-200118-1

Client Sample ID: TB-017390-022724-KM
Date Collected: 02/27/24 00:00
Date Received: 02/27/24 16:17

Lab Sample ID: 240-200118-9
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	605327	AJS	EET CLE	03/07/24 23:40

Laboratory References:
EET BUF = Eurofins Buffalo, 10 Hazelwood Drive, Amherst, NY 14228-2298, TEL (716)691-2600
EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: GHD Services Inc.
Project/Site: 12616852-133032-01, Endoline

Job ID: 240-200118-1

Laboratory: Eurofins Cleveland

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	Identification Number	Expiration Date
New York	NELAP	10975	04-01-24
The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.			
Analysis Method	Prep Method	Matrix	Analyte
2320B-1997		Water	Total Alkalinity as CaCO3
300.0		Water	Sulfate
5310C-2000		Water	Total Organic Carbon
8260D		Water	1,2-Dichloroethene, Total
RSK-175		Water	Ethane
RSK-175		Water	Methane

Laboratory: Eurofins Buffalo

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Arkansas DEQ	State	88-0686	07-06-23 *
Connecticut	State	PH-0568	03-31-24
Florida	NELAP	E87672	06-30-23 *
Georgia	State	10026 (NY)	03-31-24
Georgia	State Program	N/A	03-31-09 *
Illinois	NELAP	200003	09-30-24
Iowa	State	374	03-01-25
Iowa	State Program	374	03-01-09 *
Kansas	NELAP	E-10187	02-01-25
Kentucky (UST)	State	108092	04-01-24
Kentucky (VW)	State	KY90029	12-31-23 *
Louisiana	NELAP	02031	06-30-23 *
Louisiana (All)	NELAP	02031	06-30-23 *
Maine	State	NY00044	12-04-24
Maryland	State	294	06-30-24
Massachusetts	State	M-NY044	07-01-24
Michigan	State	9937	04-01-24
Michigan	State Program	9937	04-01-09 *
New Hampshire	NELAP	2973	09-11-19 *
New Hampshire	NELAP	2337	11-17-24
New Jersey	NELAP	NY455	06-30-24
New York	NELAP	10026	03-31-24
Pennsylvania	NELAP	68-00281	08-31-24
Rhode Island	State	LAO00378	12-30-24
Texas	NELAP	T104704412-18-10	07-31-23 *
USDA	US Federal Programs	P330-18-00039	03-25-24
Virginia	NELAP	460185	09-14-24
Washington	State	C784	02-10-25
Wisconsin	State	998310390	08-31-24

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Eurofins Cleveland

CHAIN OF CUSTODY RECORD

Address: 2055 Niagara Falls Blvd. Niagara Falls, NY
Phone: (716) 297-6650

COC NO.: 61211

PAGE 1 OF 1

Fax:

Project No/ Phase/Task Code: 017390						Laboratory Name: <i>Eurofins Buffalo</i>								Lab Location: 10 Hazelwood						SSOW ID:	
Project Name: <i>GM Endline GW Sampling</i>						Lab Contacts: <i>Denise Heckler</i>														Cooler No:	
Project Location: <i>2995 River Rd.</i>						SAMPLE TYPE			ANALYSIS REQUESTED (See Back of COC for Definitions)										Carrier: <i>Hand Delivered</i>		
GHD Chemistry Contact:						Matrix Code (see back of COC)	Grab (G) or Comp (C)	Filtered (Y/N)	VOCs	Ethene/methane	TOC	BOD	COD	Phos. Ammon	Nitrate Nitrite Sulfate	Alkalinity	Total Sulfide	Total Containers/sample	MS/MSD Request		
Sampler(s): <i>D. Burr, K. Miller, J. Kawecki</i>																			Airbill No:	Total # of Containers:	
Item						COMMENTS/ SPECIAL INSTRUCTIONS:															
SAMPLE IDENTIFICATION (Containers for each sample may be combined on one line)						PRESERVATION - (SEE BACK OF COC FOR ABBREVIATIONS)															
DATE TIME																					
(mm/dd/yy) (hh:mm)																					
WG-017390-022724-KM-001						02/27/24 11:20 WG G N X X X X X X X X X X										20 ✓					
WG-017390-022724-JK-002						02/27/24 12:15 WG G N X										3					
WG-017390-022724-KM-003						02/27/24 13:15 WG G N X										3					
WG-017390-022724-JK-004						02/27/24 12:15 WG G N X										3					
WG-017390-022724-KM-005						02/27/24 14:30 WG G N X										3					
WG-017390-022724-JK-006						02/27/24 13:40 WG G N X X X X X X X X										14					
WG-017390-022724-KM-007						02/27/24 15:30 WG G N X										3					
WG-017390-022724-JK-008						02/27/24 14:20 WG G N X X X X X X X X										14					
TB-017390-022724-KM						02/27/24 TB G N X										3					

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

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

Notes/ Special Requirements:

Temp 400# (ICE)

RELINQUISHED BY		COMPANY	DATE	TIME	RECEIVED BY		COMPANY	DATE	TIME
1.	Daniel Bump	GHS	02/27/24	16:17	1.	Matthew Cusick	TA	02/28/24	9:44
2.	Matthew Cusick	TA	02/28/24	16:00	2.	Russell Cusick	EBTNC	2/29/24	9:05
3.					3.				

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

Distribution: WHITE – Fully Executed Copy (CRA)

YELLOW – Receiving Laboratory Copy 43 of 46 PINK – Shipper

GOLDENROD – Sampling Crew

CRA Form: COC-1083/13/2024

Eurofins - Cleveland Sample Receipt Form/Narrative				Login # : _____	
Barberton Facility					
Client <u>GHD</u>		Site Name _____		Cooler unpacked by <u>Rachelle Haide</u>	
Cooler Received on <u>2-29-24</u>		Opened on <u>2-29-24</u>			
FedEx 1 st Grd <u>Exp</u>		UPS FAS Waypoint		Client Drop Off Eurofins Courier Other	
Receipt After-hours Drop-off Date/Time _____			Storage Location _____		
Eurofins Cooler # <u>EC</u>		Foam Box		Client Cooler Box Other _____	
Packing material used <u>Bubble Wrap</u>		Foam <u>Plastic Bag</u>		None Other _____	
COOLANT <u>Wet Ice</u>		Blue Ice		Dry Ice Water None	
1 Cooler temperature upon receipt ☐ See Multiple Cooler Form					
IR GUN # <u>17</u> (CF <u>0 0</u> °C) Observed Cooler Temp <u>35</u> °C Corrected Cooler Temp <u>3.5</u> °C					
2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity <u>1</u> ☒ Yes ☐ No					
-Were the seals on the outside of the cooler(s) signed & dated? ☒ Yes ☐ No NA					
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? ☒ Yes ☐ No NA					
-Were tamper/custody seals intact and uncompromised? ☒ Yes ☐ No NA					
3 Shippers' packing slip attached to the cooler(s)? ☒ Yes ☐ No					
4 Did custody papers accompany the sample(s)? ☒ Yes ☐ No					
5 Were the custody papers relinquished & signed in the appropriate place? ☒ Yes ☐ No					
6 Was/were the person(s) who collected the samples clearly identified on the COC? ☒ Yes ☐ No					
7 Did all bottles arrive in good condition (Unbroken)? ☒ Yes ☐ No					
8 Could all bottle labels (ID/Date/Time) be reconciled with the COC? ☒ Yes ☐ No					
9 For each sample, does the COC specify preservatives ☒ (Y/N), # of containers ☒ (Y/N), and sample type of grab/comp ☒ (Y/N)?					
10 Were correct bottle(s) used for the test(s) indicated? ☒ Yes ☐ No					
11 Sufficient quantity received to perform indicated analyses? ☒ Yes ☐ No					
12 Are these work share samples and all listed on the COC? ☒ Yes ☐ No					
If yes, Questions 13-17 have been checked at the originating laboratory					
13 Were all preserved sample(s) at the correct pH upon receipt? ☒ Yes ☐ No NA pH Strip Lot# HC316719					
14 Were VOAs on the COC? ☒ Yes ☐ No					
15 Were air bubbles >6 mm in any VOA vials? ☒ Yes ☐ No NA					
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # <u>covered</u> ☒ Yes ☐ No					
17 Was a LL Hg or Me Hg trip blank present? ☒ Yes ☐ No					
Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other					
Concerning _____					

18 CHAIN OF CUSTODY & SAMPLE DISCREPANCIES

☐ additional next page

Samples processed by: _____

19 SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired
Sample(s) _____ were received in a broken container
Sample(s) _____ were received with bubble >6 mm in diameter (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory
Time preserved _____ Preservative(s) added/Lot number(s) _____

VOA Sample Preservation - Date/Time VOAs Frozen _____

Temperature readings _____

Client Sample ID	Lab ID	Container Type	Container		Preservation	Preservation
			pH	Temp	Added	Lot Number
WG-017390-022724-KM-001	240-200118-A-1	Plastic 1 liter - unpreserved				
WG-017390-022724-KM-001	240-200118-A 1 MS	Voa Vial 40mL Amber - Hydrochloric Acid				
WG-017390-022724-KM-001	240-200118-A-1 MSD	Voa Vial 40mL Amber - Hydrochloric Acid				
WG-017390-022724-KM-001	240-200118-B-1	Voa Vial 40mL Amber - Hydrochloric Acid				
WG-017390-022724-KM-001	240-200118-B-1 MS	Voa Vial 40mL Amber - Hydrochloric Acid				
WG-017390-022724-KM-001	240-200118-B-1 MSD	Voa Vial 40mL Amber - Hydrochloric Acid				
WG-017390-022724-KM-001	240-200118-C-1	Voa Vial 40mL Amber - Hydrochloric Acid				
WG-017390-022724 KM-001	240-200118-C-1 MS	Voa Vial 40mL Amber - Hydrochloric Acid				
WG-017390-022724-KM-001	240-200118-C-1 MSD	Voa Vial 40mL Amber - Hydrochloric Acid				
WG-017390-022724-KM-001	240-200118-D-1	Voa Vial 40mL Amber - Hydrochloric Acid				
WG-017390-022724-KM-001	240-200118-E-1	Voa Vial 40mL Amber - Hydrochloric Acid				
WG-017390-022724 KM-001	240-200118-F-1	Voa Vial 40mL Amber - Hydrochloric Acid				
WG-017390-022724-KM-001	240-200118-G-1	Voa Vial 40mL Amber - Hydrochloric Acid				
WG-017390-022724-KM-001	240-200118-H-1	Voa Vial 40ml - with Sulfuric Acid				
WG-017390-022724-KM-001	240-200118-I-1	Voa Vial 40ml - with Sulfuric Acid				
WG-017390-022724-KM-001	240-200118-J-1	Plastic 60 mL - unpreserved				
WG-017390-022724-KM-001	240-200118-T-1	Plastic 60 mL - unpreserved				
WG-017390-022724-KM-001	240-200118-U-1	Plastic 250ml - with Sulfuric Acid	<2			
WG-017390-022724-KM-001	240-200118-V-1	Plastic 500ml - with Zn Acetate and NaOH	>9			
WG-017390-022724-JK-002	240-200118-A-2	Voa Vial 40mL Amber - Hydrochloric Acid				
WG-017390-022724-JK-002	240-200118-B-2	Voa Vial 40mL Amber - Hydrochloric Acid				
WG-017390-022724-JK-002	240-200118-C-2	Voa Vial 40mL Amber - Hydrochloric Acid				
WG-017390-022724-KM-003	240-200118-A-3	Voa Vial 40mL Amber - Hydrochloric Acid				
WG-017390-022724-KM-003	240-200118-B-3	Voa Vial 40mL Amber - Hydrochloric Acid				
WG-017390-022724-KM-003	240-200118-C-3	Voa Vial 40mL Amber - Hydrochloric Acid				
WG-017390-022724-JK-004	240-200118-A-4	Voa Vial 40mL Amber - Hydrochloric Acid				
WG-017390-022724-JK-004	240-200118-B-4	Voa Vial 40mL Amber - Hydrochloric Acid				
WG-017390-022724-JK-004	240-200118-C-4	Voa Vial 40mL Amber - Hydrochloric Acid				
WG-017390-022724-KM-005	240-200118-A-5	Voa Vial 40mL Amber - Hydrochloric Acid				
WG-017390-022724-KM-005	240-200118-B-5	Voa Vial 40mL Amber - Hydrochloric Acid				
WG-017390-022724-KM-005	240-200118-C-5	Voa Vial 40mL Amber - Hydrochloric Acid				
WG-017390-022724-JK-006	240-200118-A-6	Plastic 1 liter - unpreserved				
WG-017390-022724-JK-006	240-200118-B-6	Voa Vial 40mL Amber - Hydrochloric Acid				

Client Sample ID	Lab ID	Container Type	Container	Preservation	Preservation	
			pH	Temp	Added	
						Lot Number
WG-017390-022724-JK-006	240-200118-C-6	Voa Vial 40mL Amber - Hydrochloric Acid				
WG-017390-022724-JK-006	240-200118-D-6	Voa Vial 40mL Amber - Hydrochloric Acid				
WG-017390-022724-JK-006	240-200118-E-6	Voa Vial 40mL Amber - Hydrochloric Acid				
WG-017390-022724-JK-006	240-200118-F-6	Voa Vial 40mL Amber - Hydrochloric Acid				
WG-017390-022724-JK-006	240-200118-G-6	Voa Vial 40mL Amber - Hydrochloric Acid				
WG-017390-022724-JK-006	240-200118-H-6	Voa Vial 40ml - with Sulfuric Acid				
WG-017390-022724-JK-006	240-200118-I-6	Voa Vial 40ml - with Sulfuric Acid				
WG-017390-022724-JK-006	240-200118-J-6	Plastic 60 mL - unpreserved				
WG-017390-022724-JK-006	240-200118-K-6	Plastic 60 mL - unpreserved				
WG-017390-022724-JK-006	240-200118-L-6	Plastic 250ml - with Sulfuric Acid	<2			
WG-017390-022724-JK-006	240-200118-M-6	Plastic 500ml - with Zn Acetate and NaOH	>9			
WG-017390-022724 KM-007	240-200118-A-7	Voa Vial 40mL Amber - Hydrochloric Acid				
WG-017390-022724-KM-007	240-200118-B-7	Voa Vial 40mL Amber - Hydrochloric Acid				
WG-017390-022724-KM-007	240-200118-C-7	Voa Vial 40mL Amber - Hydrochloric Acid				
WG-017390-022724-JK-008	240-200118 A-8	Plastic 1 liter - unpreserved				
WG-017390-022724-JK-008	240 200118-B-8	Voa Vial 40mL Amber - Hydrochloric Acid				
WG-017390-022724-JK-008	240-200118-C-8	Voa Vial 40mL Amber - Hydrochloric Acid				
WG-017390-022724-JK-008	240-200118-D-8	Voa Vial 40mL Amber - Hydrochloric Acid				
WG-017390-022724-JK-008	240-200118-E-8	Voa Vial 40mL Amber - Hydrochloric Acid				
WG-017390-022724-JK-008	240-200118-F-8	Voa Vial 40mL Amber - Hydrochloric Acid				
WG-017390-022724-JK-008	240-200118-G-8	Voa Vial 40mL Amber - Hydrochloric Acid				
WG-017390-022724-JK-008	240-200118-H-8	Voa Vial 40ml - with Sulfuric Acid				
WG-017390-022724-JK-008	240-200118-I-8	Voa Vial 40ml - with Sulfuric Acid				
WG-017390-022724-JK-008	240-200118-J-8	Plastic 60 mL - unpreserved				
WG-017390-022724-JK-008	240-200118-K-8	Plastic 60 mL - unpreserved				
WG-017390-022724-JK-008	240-200118-L-8	Plastic 250ml - with Sulfuric Acid	<2			
WG-017390-022724-JK-008	240-200118-M-8	Plastic 500ml - with Zn Acetate and NaOH	>9			
TB-017390-022724-KM	240-200118-A-9	Voa Vial 40ml - Hydrochloric Acid				
TB-017390-022724-KM	240-200118-B-9	Voa Vial 40ml - Hydrochloric Acid				
TB-017390-022724-KM	240-200118-C-9	Voa Vial 40ml - Hydrochloric Acid				
TB-017390-022724-KM	240-200118-D-9	Voa Vial 40ml - Hydrochloric Acid				

Appendix C

Data Validation Report

Data Verification Report

March 18, 2024

To	Kathy Galanti, GHD	Project No.	12616852
Copy To	MaryKate Mooney	Email	ruth.mickle@ghd.com
From	Ruth Mickle/lg/18	Contact No.	612-524-6872
Project Name	GM Tonawanda		
Subject	Analytical Results and Data Verification Groundwater Plume Monitoring Endoline Area Remediation/GM Tonawanda Tonawanda, New York February 2024		

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

1. Introduction

The following document details a reduced validation of analytical results for groundwater samples collected in support of the Groundwater Plume Monitoring at the GM Tonawanda site during February 2024. Nitrate, nitrite and biochemical oxygen demand (BOD) samples were delivered to Eurofins Environment Testing (EET) in Buffalo, New York for analysis. The remaining samples were submitted to EET in Barberton, Ohio. A sample collection and analysis summary is presented in Table 1. The validated analytical results are summarized in Table 2. A summary of the analytical methodology is presented in Table 3.

Standard GHD report deliverables were submitted by the laboratory. The final results and supporting quality assurance/quality control (QA/QC) data were assessed. Evaluation of the data was based on information obtained from the chain of custody forms, finished report forms, method blank data, duplicate data, recovery data from surrogate spikes, laboratory control samples (LCS), matrix spikes (MS) and field QA/QC samples.

The QA/QC criteria by which these data have been assessed are outlined in the analytical methods referenced in Table 3 and applicable documents entitled:

1. "National Functional Guidelines for Inorganic Superfund Methods Data Review", EPA-542-R-20-006, November 2020.
2. "National Functional Guidelines for Organic Superfund Methods Data Review", EPA-540-R-20-005, November 2020.

Items 1. and 2. will subsequently be referred to as the "Guidelines" in this Memorandum.

2. Sample Holding Time and Preservation

The sample holding time requirements for the analyses are summarized in Table 3. The sample chain of custody document and analytical report were used to determine sample holding times. The samples were prepared and analyzed within the required holding times. The samples were properly preserved and delivered on ice and stored by the laboratory at the required temperature (0-6°C).

3. Laboratory Method Blank Analyses

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

For this study, laboratory method blanks were analyzed at a minimum frequency of one per 20 investigative samples and/or one per analytical batch.

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

4. Surrogate Spike Recoveries - Organic Analyses

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

All samples submitted for dissolved gases and volatile organic compound (VOC) determinations were spiked with the appropriate number of surrogate compounds prior to sample analysis.

Surrogate recoveries were assessed against laboratory control limits. The surrogate recoveries met the above criteria for investigative samples.

5. Laboratory Control Sample Analyses

LCS are prepared and analyzed as samples to assess the analytical efficiencies of the methods employed, independent of sample matrix effects.

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

Organic Analyses

The LCS contained all compounds of interest. With one exception, the percent recoveries were within the laboratory control limits criteria. A 1,4-dioxane LCS recovery was reported above the upper control limit. Table 4 presents the associated detection that was qualified estimated, with a potential high bias.

Inorganic Analyses

The LCS contained all analytes of interest. LCS recoveries were assessed per the "Guidelines". The LCS recoveries were within the control limits.

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

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

If the original sample concentration is significantly greater than the spike concentration, the recovery is not assessed. MS/MSD analyses were performed as specified in Table 1.

Organic Analyses

The matrix spike samples were spiked with target compounds of interest. Acetone and 1,4-dioxane in sample WG-017390-022724-KM-005 yielded high biased spike recoveries. Since the associated sample results were non-detect, no data qualification was required. The remaining spike recoveries and RPD values were within the laboratory control limits.

Inorganic Analyses

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

7. Field QA/QC Samples

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

Trip Blank Sample Analysis

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

Field Duplicate Sample Analysis

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

The field duplicate results, all non-detect, were within acceptable agreement.

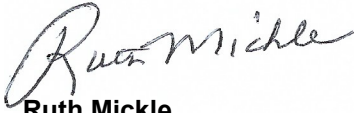
8. Analyte Reporting

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

9. Conclusion

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

Regards,

A handwritten signature in black ink, appearing to read "Ruth Mickle". The signature is written in a cursive style with a large initial "R".

Ruth Mickle
Digital Intelligence - Data Management – Team Lead

Encl.

Table 1

**Sample Collection and Analysis Summary
Groundwater Plume Monitoring
Endoline Area Remediation/GM Tonawanda
Tonawanda, New York
February 2024**

					Analysis/Parameters											Comments
Sample Identification	Location	Matrix	Collection Date (mm/dd/yyyy)	Collection Time (hr:min)	VOCs	Methane, Ethane	Sulfate	Nitrate/Nitrite	Alkalinity	Ammonia	Phosphorous	Sulfide	BOD	COD	TOC	
Eurofins Report #: 240-138499-1																
WG-017390-022724-KM-001	MW-2	Water	02/27/2024	11:20	X	X	X	X	X	X	X	X	X	X	X	MS/MSD
WG-017390-022724-JK-002	MW-101	Water	02/27/2024	12:15	X											
WG-017390-022724-KM-003	MW-102	Water	02/27/2024	13:15	X											
WG-017390-022724-JK-004	MW-101	Water	02/27/2024	12:15	X											
WG-017390-022724-KM-005	MW-1	Water	02/27/2024	14:30	X											
WG-017390-022724-JK-006	MW-12	Water	02/27/2024	13:40	X	X	X	X	X	X	X	X	X	X	X	FD (WG-017390-022724-JK-002)
WG-017390-022724-KM-007	MW-9	Water	02/27/2024	15:30	X											
WG-017390-022724-JK-008	MW-11	Water	02/27/2024	14:20	X	X	X	X	X	X	X	X	X	X		
TB-017390-022724-KM	Trip Blank	Water	02/27/2024	--	X											Trip Blank

Notes:

BOD - Biochemical Oxygen Demand

COD - Chemical Oxygen Demand

FD - Field Duplicate of sample in parentheses

MS/MSD- Matrix Spike/Matrix Spike Duplicate

TOC - Total Organic Carbon

VOCs - Volatile Organic Compounds

-- - Not applicable

Table 2
Validated Analytical Results Summary
Groundwater Plume Monitoring
Endoline Area Remediation/GM Tonawanda
Tonawanda, New York
February 2024

Location ID: Sample Name: Sample Date:		MW-1 WG-017390-022724-KM-005 02/27/2024	MW-2 WG-017390-022724-KM-001 02/27/2024	MW-9 WG-017390-022724-KM-007 02/27/2024	MW-101 WG-017390-022724-JK-002 02/27/2024	MW-101 WG-017390-022724-JK-004 02/27/2024 Duplicate	MW-102 WG-017390-022724-KM-003 02/27/2024	MW-11 WG-017390-022724-JK-008 02/27/2024	MW-12 WG-017390-022724-JK-006 02/27/2024
Parameters	Unit								
Volatile Organic Compounds									
1,1,1-Trichloroethane	µg/L	1.0 U	1000 U	1.0 U	1.0 U	1.0 U	1.0 U	240	1.0 U
1,1,2,2-Tetrachloroethane	µg/L	1.0 U	1000 U	1.0 U	1.0 U	1.0 U	1.0 U	100 U	1.0 U
1,1,2-Trichloroethane	µg/L	1.0 U	1000 U	1.0 U	1.0 U	1.0 U	1.0 U	100 U	1.0 U
1,1-Dichloroethane	µg/L	1.0 U	1800	1.2	1.0 U	1.0 U	1.5	3500	40
1,1-Dichloroethene	µg/L	1.0 U	1000 U	1.0 U	1.0 U	1.0 U	1.0 U	1800	1.0 U
1,2-Dichloroethane	µg/L	1.0 U	1000 U	1.0 U	1.0 U	1.0 U	1.0 U	100 U	1.0 U
1,2-Dichloroethene (total)	µg/L	1.0 U	1000 U	1.0 U	1.0 U	1.0 U	1.0 U	91 J	1.0 U
1,2-Dichloropropane	µg/L	1.0 U	1000 U	1.0 U	1.0 U	1.0 U	1.0 U	100 U	1.0 U
1,4-Dioxane	µg/L	28 J+	50000 U	50 U	50 U	50 U	50 U	5000 U	54
2-Butanone (Methyl ethyl ketone) (MEK)	µg/L	10 U	10000 U	10 U	10 U	10 U	10 U	1000 U	10 U
2-Hexanone	µg/L	10 U	10000 U	10 U	10 U	10 U	10 U	1000 U	10 U
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	µg/L	10 U	10000 U	10 U	10 U	10 U	10 U	1000 U	10 U
Acetone	µg/L	10 U	10000 U	10 U	10 U	10 U	10 U	1000 U	20
Benzene	µg/L	1.0 U	1000 U	1.0 U	1.0 U	1.0 U	1.0 U	100 U	1.0 U
Bromodichloromethane	µg/L	1.0 U	1000 U	1.0 U	1.0 U	1.0 U	1.0 U	100 U	1.0 U
Bromoform	µg/L	1.0 U	1000 U	1.0 U	1.0 U	1.0 U	1.0 U	100 U	1.0 U
Bromomethane (Methyl bromide)	µg/L	1.0 U	1000 U	1.0 U	1.0 U	1.0 U	1.0 U	100 U	1.0 U
Carbon disulfide	µg/L	1.0 U	1000 U	1.0 U	1.0 U	1.0 U	1.0 U	100 U	1.0 U
Carbon tetrachloride	µg/L	1.0 U	1000 U	1.0 U	1.0 U	1.0 U	1.0 U	100 U	1.0 U
Chlorobenzene	µg/L	1.0 U	1000 U	1.0 U	1.0 U	1.0 U	1.0 U	100 U	1.0 U
Chloroethane	µg/L	1.0 U	28000	1.0 U	1.0 U	1.0 U	1.0 U	100 U	1.0 U
Chloroform (Trichloromethane)	µg/L	1.0 U	1000 U	1.0 U	1.0 U	1.0 U	1.0 U	100 U	1.0 U
Chloromethane (Methyl chloride)	µg/L	1.0 U	1000 U	1.0 U	1.0 U	1.0 U	1.0 U	100 U	1.0 U
cis-1,2-Dichloroethene	µg/L	1.0 U	1000 U	1.0 U	1.0 U	1.0 U	1.0 U	91 J	1.0 U
cis-1,3-Dichloropropene	µg/L	1.0 U	1000 U	1.0 U	1.0 U	1.0 U	1.0 U	100 U	1.0 U
Dibromochloromethane	µg/L	1.0 U	1000 U	1.0 U	1.0 U	1.0 U	1.0 U	100 U	1.0 U
Ethylbenzene	µg/L	1.0 U	1000 U	1.0 U	1.0 U	1.0 U	1.0 U	100 U	1.0 U
Methylene chloride	µg/L	5.0 U	5000 U	5.0 U	5.0 U	5.0 U	5.0 U	500 U	5.0 U
Styrene	µg/L	1.0 U	1000 U	1.0 U	1.0 U	1.0 U	1.0 U	100 U	1.0 U
Tetrachloroethene	µg/L	1.0 U	1000 U	1.0 U	1.0 U	1.0 U	1.0 U	100 U	1.0 U
Toluene	µg/L	1.0 U	1000 U	1.0 U	1.0 U	1.0 U	1.0 U	100 U	1.0 U
trans-1,2-Dichloroethene	µg/L	1.0 U	1000 U	1.0 U	1.0 U	1.0 U	1.0 U	100 U	1.0 U
trans-1,3-Dichloropropene	µg/L	1.0 U	1000 U	1.0 U	1.0 U	1.0 U	1.0 U	100 U	1.0 U
Trichloroethene	µg/L	1.0 U	1000 U	1.0 U	1.0 U	1.0 U	1.0 U	100 U	1.0 U
Vinyl chloride	µg/L	1.0 U	1000 U	1.0 U	1.0 U	1.0 U	1.0 U	320	0.49 J
Xylenes (total)	µg/L	2.0 U	2000 U	2.0 U	2.0 U	2.0 U	2.0 U	200 U	2.0 U
Dissolved Gases									
Ethane	µg/L	--	380	--	--	--	--	11	2.5
Methane	µg/L	--	8900	--	--	--	--	4400	1900
General Chemistry									
Alkalinity, total (as CaCO3)	mg/L	--	400	--	--	--	--	490	600
Ammonia-N	mg/L	--	1.6	--	--	--	--	0.31	0.13 J
Biochemical oxygen demand (BOD)	mg/L	--	12	--	--	--	--	5.8	2.7
Chemical oxygen demand (COD)	mg/L	--	95	--	--	--	--	56	50
Nitrate (as N)	mg/L	--	0.25 U	--	--	--	--	2.5 U	1.0 U
Nitrite (as N)	mg/L	--	0.25 U	--	--	--	--	2.5 U	1.0 U
Phosphorus	mg/L	--	0.10 U	--	--	--	--	0.10 U	0.10 U
Sulfate	mg/L	--	17	--	--	--	--	1700	600
Sulfide	mg/L	--	1.0 U	--	--	--	--	1.0 U	1.0 U
Total organic carbon (TOC)	mg/L	--	19	--	--	--	--	4.8	6.0

Notes:
U - Not detected at the associated reporting limit
J - Estimated concentration
J+ - Estimated concentration; result may be biased high

Table 3

**Analytical Methods
Groundwater Plume Monitoring
Endoline Area Remediation/GM Tonawanda
Tonawanda, New York
February 2024**

Parameter	Method	Matrix	Holding Time	
			Collection to Extraction (Days)	Collection or Extraction to Analysis (Days)
Volatile Organic Compounds (VOCs)	SW-846 8260D	Water	-	14
Alkalinity	SM 2320 B	Water	-	14
Ammonia	SM 4500 NH3 D	Water	-	28
Nitrate/Nitrite	EPA 300.0	Water	-	48 hours
Sulfate	EPA 300.0	Water	-	28
Sulfide	SM 4500 S2 F	Water	-	7
Phosphorus	SM 4500 P E	Water	-	28
Chemical Oxygen Demand (COD)	SM 5220	Water	-	28
Biochemical Oxygen Demand (BOD)	SM 5210 B	Water	-	48 hours
Total Organic Carbon (TOC)	SM 5310 C	Water	-	28
Methane, Ethane	RSK-175	Water	-	14

Note:

- - Not applicable

Method References:

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

EPA - "Methods for Chemical Analysis of Water and Wastes", USEPA 600/4-79-202, March 1983 (with all subsequent revisions)

SM - "Standard Methods for the Examination of Water and Wastewater", 18th Edition, 1992, with subsequent revisions

RSK - Sample Prep and Calculations for Dissolved Gas Analysis in Water Samples Using a GC Headspace Equilibration Technique, RSKSOP-175, Rev. 0, 8/11/94, USEPA Research Lab

Table 4

Qualified Sample Results Due to Outlying Laboratory Control Sample Results
Groundwater Plume Monitoring
Endoline Area Remediation/GM Tonawanda
Tonawanda, New York
February 2024

Parameter	Analyte	LCS Date (mm/dd/yyyy)	LCS % Recovery	<u>Control Limits</u> % Recovery	Associated Sample ID	Qualified Results	Units
VOCs	1,4-Dioxane	03/07/2024	156	39-145	WG-017390-022724-KM-005	28 J+	µg/L

Notes:

LCS - Laboratory Control Sample

VOCs - Volatile Organic Compounds

J+ - Estimated concentration; result may be biased high

