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RESULTS OF MAY 2016 MONITORED NATURAL ATTENUATION GROUNDWATER SAMPLING
DELPHI HARRISON THERMAL SYSTEMS SITE
Registry Site No. 932113
GM COMPONENTS HOLDINGS, LLC
Lockport, New York

September 2016
File No. 21.0056546.20

PREPARED FOR:
New York State Department of Environmental Conservation

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September 27, 2016 VIA E-MAIL
File No: 21.0056546.20

Mr. Glenn May, CPG
New York State Department of Environmental Conservation
Division of Environmental Remediation, Region 9
270 Michigan Ave.
Buffalo, NY 14203-2915

RE: Results of May 2016 Monitored Natural Attenuation Groundwater Sampling
Delphi Harrison Thermal Systems Site (Site)
Lockport, New York
Registry Site No. 932113

Dear Glenn:

GZA GeoEnvironmental of New York (GZA) is pleased to provide the attached Results of May 2016 Monitored Natural Attenuation Groundwater Sampling at the above reference Site.

This report is based on the annual groundwater sampling event of the Delphi Harrison Thermal Systems Site. The data contained in the report is from the May 2016, sampling event.

We hope this report satisfies your present needs. If you need any additional site-specific information, please contact Jim Richert at 716-844-7048

Sincerely,

GZA GEOENVIRONMENTAL OF NEW YORK

Peter Nyznyk
Project Geologist

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1.0 INTRODUCTION AND BACKGROUND

GZA GeoEnvironmental of New York (GZA) presents this report to summarize results of the May 2016 groundwater and monitored natural attenuation (MNA) parameter sampling event at the above-referenced Site. The groundwater sampling event was conducted from May 4th through May 19th, and included eight monitoring wells (MW-4, -7, -10, -11, -12, -13, -14 and -15) that were sampled for the five compounds of concern (COCs)[1] and MNA parameters as identified in the Site Management Plan[2] (SMP). In addition to the MNA parameters identified in the SMP, carbon dioxide, hydrogen, ethene, and ethane were added to the sampling parameter list starting in 2014. These parameters are consistent with the 2011 through 2013 sampling events with the exception of the analysis of sodium (Na), calcium (Ca), and potassium (K) which were not included in the 2016 analyses as these parameters provide limited benefit in the further evaluation of MNA at this site.

2005

In March 2005, NYSDEC issued a Record of Decision (ROD) for the Site, which selected MNA as the remedial alternative to address the COCs present at the Site. Annual MNA groundwater sampling was completed voluntarily from October 2006 to May 2011.

2006 to 2010

Six monitoring wells (MW-7, MW-11, MW-12, MW-13, MW-14 and MW-15) were monitored in October 2006, November 2007, November 2008, and March 2009 (Figure 1). MW-7 is located in the vicinity of the Area of Concern (AOC) and the other five wells, MW-11 through MW-15, are down-gradient monitoring locations. Based on the results of the groundwater sampling program through March 2009, the sampling program was expanded in July 2009 to include 10 monitoring well locations: MW-4, -7, -8, -9, -10, -11, -12, -13, -14 and -15. Results of the 2010 event indicated that natural attenuation is occurring with limited evidence of reductive dechlorination near the source area (MW-7) and midpoint (MW-4 and -10) of the groundwater plume. However, there was adequate to strong evidence for anaerobic biodegradation of COCs at the leading edge of the groundwater plume (MW-11 through -15). Given these conditions, coupled with the lack of evidence of an expanding plume, it appeared that natural attenuation processes were effectively managing the COC plume migration.

2011 to 2014

In November 2011, GMCH entered into an Order on Consent and Administrative Settlement (Index #B9-0553-99-06) for the Site which requires that annual sampling be conducted as part of the SMP.

Results of the 2011 to 2014 annual sampling included eight monitoring wells (MW-4, -7, -10, -11, -12, -13, -14 and -15), as stated in the SMP and collectively resulted in the following conclusions:

- natural attenuation of COCs is occurring via reductive dechlorination,

[1] The five COCs are trichloroethylene, tetrachloroethylene, *cis*-1,2-dichloroethene, *trans*-1,2-dichloroethylene, and vinyl chloride.

[2] "Delphi Harrison Thermal Systems Site, Niagara County, New York, Site Management Plan, NYSDEC Site Number 9-32-113" dated October 2011. Prepared for GM Components Holdings, LLC by GZA.

- The COC concentrations of the parent compounds were decreasing and the concentrations of daughter compounds increasing from the source area (MW-7) down-gradient to the mid-point of the plume (MW-4 and MW-10) and on to the down-gradient portions of the Site (MW-11 through MW-15).
- The COC concentrations at the most down-gradient well (MW-13) along the property line did not exceed the NYSDEC Class GA criteria.

Also, the 2013 data indicated that ethene was detected in groundwater samples collected from all eight monitoring wells. Assuming the ethene represents the ultimate daughter product of cVOC reductive dechlorination, its detection at each monitoring well was a direct line of evidence that cVOCs have been degraded to completion at the Site.

The temporal decreasing trend in TOC concentrations continued through the 2013 monitoring event. GZA recommended a treatability study to evaluate whether the addition of an organic carbon amendment might re-stimulate natural attenuation by reductive dechlorination. The recommended study involved deployment of *in-situ* microcosms (Bio-Trap® ISMs, manufactured by Microbial Insights, Inc. of Knoxville, Tennessee) "baited" with an organic carbon additive to evaluate whether reductive dechlorination can be re-stimulated.

Conclusions of the 2014 Treatability Study:

<u>At the source area (MW-7):</u>

- *Dehalococcoides* populations were detected in both the control and carbon amendment units. However, population counts were below the concentration at which an effective rate of dechlorination generally occurs.
- Addition of the organic carbon amendment at the source location did not substantially enhance growth of dechlorinating bacteria and increase reductive dechlorination within the study period.

<u>At the mid-plume location (MW-4):</u>

- High concentrations of *Dehalococcoides* and both vinyl chloride reductase enzyme genes were detected in the MNA unit, indicating the potential for complete reductive dechlorination of TCE to ethene under existing site conditions.

The *Dehalococcoides* population in the BioStim unit, in which the organic carbon was added, was an order of magnitude higher compared to the MNA unit. Vinyl chloride reductase genes were also higher in this unit compared to MNA levels, suggesting that the carbon amendment enhanced growth of dechlorinating bacteria within the study period. Contaminant concentrations and geochemistry, however, were not substantially different from those in the MNA unit.

2.0 MAY 2016 GROUNDWATER MONITORING AND SAMPLING

The 2016 groundwater monitoring and sampling event was conducted from May 4 through May 19, 2016, in accordance with the SMP, and included eight monitoring wells (MW-4, MW-7, and MW-10 through MW-15 (Figure 1).

Methodology

The groundwater monitoring and sampling was performed using low flow sampling techniques with a peristaltic pump, disposable polyethylene tubing and a water quality meter with a flow-through cell to collect water quality field parameters. The sampling technique and analytical parameters were consistent with the SMP.

The following is the list of the analytical parameters for this sampling event:

Field Measured Parameters: temperature, specific conductance, pH, turbidity, dissolved oxygen (DO) and oxidation reduction potential (ORP).

Compounds of Concern: tetrachloroethylene (PCE), trichloroethylene (TCE), *cis*-1,2-dichloroethylene (*cis*-DCE), *trans*-1,2-dichloroethylene (*trans*-DCE) and vinyl chloride (VC).

Natural Attenuation Parameters: methane, iron, magnesium, manganese, alkalinity, TOC, chloride, nitrate, nitrite, sulfate, sulfide, carbon dioxide, hydrogen, ethene, and ethane.

Groundwater pumping rates varied from one well to another during monitoring/sampling in order to establish a stable water level. Once a stable water level (constant head) was established within the monitoring well, flow rates were maintained during the monitoring/sampling period. Samples were collected for analysis after field-measured parameters stabilized. It should be noted that a stable water level could not be established at well MW-7 (as experienced in previous sampling rounds). Therefore, this location was purged to dry-like conditions and allowed to recharge until the recharge volume was sufficient to collect the sample parameters. Also, due to the lack of a stable water level in this well, the dissolved hydrogen sample could not be collected. The Monitoring Well Observations & Groundwater Sampling Logs are included in Appendix A.

3.0 ANALYTICAL RESULTS AND DISCUSSION

Analytical results for the COCs for the current sampling event along with the data from previous sample rounds are summarized in Table 1 and shown on Figure 1. A contour map of the Total COC concentrations is presented on Figure 2 and a groundwater elevation contour map of the groundwater elevation data collected is shown on Figure 3. It should be noted that the concentrations of *cis*-DCE and *trans*-DCE have been combined for presentation purposes as total 1,2-DCE in Figure 1 and on the graphs in Appendix B, although in this 2016 sampling event all of the 1,2-DCE mass was the *cis* isomer, no *trans* isomer was detected. The analytical results for the COCs (current and historical) shown on Figure 1 have been graphically depicted and are included in Appendix B.

Analytical results for the MNA parameters are shown in Table 2, along with the data from previous sampling rounds. The Test America Laboratories, Inc. laboratory report is provided in Appendix D.

<u>Compounds of Concern</u>

Source Area Monitoring Well

MW-7: The TCE concentrations over time at MW-7 have generally been in the range of 530 to 880 mg/L from October 1996 through May 2016 with the exception of four contiguous sample rounds from April 2003 through November 2008,

where the results ranged from 1.1 to 434 mg/L. The TCE concentration graph in Appendix B indicates a downward temporal trend in concentrations from April 1996 to April of 2003, which is consistent with a higher availability of organic carbon for natural attenuation. The consistent TCE concentration range reported from October 1996 to May 2016 may be attributed to a decrease of available organic carbon.

The concentrations of the PCE, 1,2-DCE and VC appear to generally be consistent since the start of the sampling in 1996, with some minor fluctuation.

Mid Plume Monitoring Wells

MW-4: The concentrations of the TCE and PCE appear to generally be consistent since the start of the sampling in 1996, with some minor fluctuations.

Since 2003, there has been a general downward trend of 1,2-DCE and VC concentrations at MW-4, which may be reflected in the decreased available organic carbon concentration trend that would drive the microbially-mediated transformation of TCE→*cis*1,2-DCE→VC.

MW-10: There has been a slight downward trend of TCE and 1,2-DCE concentrations at MW-10 since 1996 with some minor fluctuations, which is consistent with natural attenuation. PCE concentrations have been non-detect since 2013 and the 2016 VC concentration decreased by half of the 2015 concentration.

Down-gradient Monitoring Wells

MW-11: The detected concentrations of PCE and TCE have been below method detection limits since the start of sampling in 1997, generally consistent with natural attenuation at this down-gradient location.

The concentrations of 1,2-DCE have fluctuated from below method detection limits (multiple sample rounds) to 0.013 ppm (December 1998) with the majority of the detected concentrations (14 of 18 sample rounds) being below the NYSDEC Class GA criteria (0.005 ppm), including the 2016 sampling event.

The concentrations of VC have fluctuated from below method detection limits (multiple sample rounds) to 0.008 ppm (August 2001) in a pattern generally similar to the 1,2-DCE. Results from the last several sample rounds have been at or below the NYSDEC Class GA criteria (0.002 ppm), including the 2016 sampling event, which was below the method detection limit of 0.9 PPM.

MW-12: PCE and TCE were not detected above their respective Class GA criteria (0.005 ppm) from 2009 to 2013. The concentrations of VC have fluctuated from 0.011 ppm (October 2001) to 0.190 ppm (August 1997). Concentrations of 1,2-DCE have fluctuated from 0.011 ppm (November 2007) to 0.272 ppm (April 2010). TCE and PCE were not detected above their respective method detection limits for the 2016 sampling event. 1,2-DCE (0.0051 ppm), and VC (0.0049 ppm) exceeded their respective NYSDEC Class GA criteria for the 2016 sampling event.

MW-13: PCE, TCE, 1,2-DCE and VC have been below method detection limits in all but one sample round (October 2006) since the start of sampling in 2001. The results for 2016 were below method detection limits.

MW-14: TCE has been below method detection limits in 11 of the 14 sample rounds conducted since the start of sampling in 2001. The TCE value (0.0051 ppm) in 2015 slightly exceeded NYSDEC Class GA criteria. The results for 2016

were back down to pre-2015 levels, with all parameters below method detection limits. It appears that the detection of TCE in this well in 2015 was anomalous and not the beginning of a new upward trend.

MW-15: The detected concentrations of TCE were below method detection limits in the first 7 of the 14 sample events since the start of sampling in 2001. TCE has been detected in the last seven events at concentrations above the method detection limits (0.00064 to 0.0007 ppm), but below the NYSDEC Class GA criterion.

The detected concentrations of PCE have been slightly above its NYSDEC Class GA criterion since the start of sampling in 2001, with the highest concentration of 0.02 ppm (October 2001) to the lowest concentration of 0.0054 ppm (May 2015).

Concentrations of 1,2-DCE and VC have been below their method detection limits in all 14 sampling events completed since 2001.

Natural Attenuation Performance

Findings of the May 2016 groundwater analytical and water quality data are generally consistent with the substantive conclusions and trends noted in prior reports. During 2016, GZA used Wiedemeier *et. al.'s* (1998[3]) approach to evaluate the performance data to re-assess the strength of the evidence supporting reductive dechlorination. A table summarizing the results of that evaluation is included in Appendix C, and the results are tabulated below.

WELL	STRENGTH OF NATURAL ATTENUATION EVIDENCE			
	INADEQUATE EVIDENCE	**LIMITED EVIDENCE**	**ADEQUATE EVIDENCE**	**STRONG EVIDENCE**
Source Area Well				
MW-7		X		
Mid Plume Wells				
MW-4			X	
MW-10			X	
Down-gradient Wells				
MW-11		X		
MW-12			X	
MW-13		X		
MW-14		X		
MW-15		X		

Note: "X" indicates the respective strength of the evidence for natural attenuation by reductive dechlorination for the May 2016 groundwater monitoring round in accordance with Wiedemeier *et. al.*. (1998).

[3] Wiedemeier, T.H., Swanson, M.A., Moutoux, D.E., Gordon, E.K., Wilson, J.T., Wilson, B.H., Kampbell, D.H., Haas, P.E., Miller, R.N., Hansen, J.E., and Chapelle, F.H., 1998, Technical Protocol for Evaluating Natural Attenuation of Chlorinated Solvents in Ground Water, EPA/600/R-98/128, 78 p.

4.0 GROUNDWATER MONITORING CONCLUSIONS AND RECOMMENDATIONS

Based on the results of the May 2016 sampling round within the framework of the historical results, natural attenuation of COCs is occurring via reductive dechlorination. GZA offers the following additional observations relative to the 2016 sampling round:

- The concentrations of the parent compounds are decreasing from the source area (MW-7) downgradient to the mid-point of the plume (MW-4 and MW-10), and from the mid-point on to the downgradient portions of the Site (MW-11 through MW-15).
- There is an increase in daughter compound concentrations from the source area to the mid-point of the plume, with an overall decrease in total COC concentrations.
- The COCs were not detected above laboratory method detection limits near the down-gradient property line at MW-11 and MW-13.

It should be noted that there continues a gradually decreasing trend in TOC concentrations over time across the Site. TOC, as discussed previously, represents a surrogate measurement of the "fuel" driving reductive dechlorination and should continue to be monitored.

RECOMMENDATIONS

Based on the results of the May 2016 and previous sampling events and supported by the findings of the 2014 treatability study, current conditions mid-plume show potential for complete reductive dechlorination of TCE to ethane. COCs were not detected or were detected at concentrations below groundwater standards in groundwater collected from the downgradient Site boundary, providing additional confirmation of continued natural attenuation.

GZA recommends continued annual groundwater monitoring to confirm maintenance of natural attenuation parameters and continued spatial and temporal decrease in COCs.

Recommended spring 2017 groundwater monitoring will utilize the same eight monitoring wells (MW-4, -7, -10, -11, -12, -13, -14 and -15), as stated in the SMP. The natural attenuation analytical parameter list used during the 2016 sample round should also be used in the 2017 sample round.

TABLES

Table 1
Summary of Groundwater Sample Analytical Results
Delphi Harrison Thermal Systems Site
Site No. C932113

Sample Location Sample Date	Class GA Criteria	DELPHI HARRISON GROUND WATER WELLS MW-4 5/5/2016		MW-7 5/17/2016		MW-10 5/5/2016		MW-11 5/5/2016		MW-12 5/6/2016		MW-13 5/5/2016		MW-14 5/6/2016		MW-15 5/4/2016	
VOC Compounds of Concern (ug/L)																	
cis-1,2-Dichloroethene	5	23,000		51,000		120		<0.81		5.1		<0.81		<0.81		<0.81	
Tetrachloroethene	5	<180		<3600		<0.72		<0.36		<0.36		<0.36		<0.36		5.6	
trans-1,2-dichloroethene	5	<450		<9000		<1.8		<0.90		<0.90		<0.90		<0.90		<0.90	
Trichloroethene	5	29,000		830,000		41		<0.46		<0.46		<0.46		<0.46		0.68	J
Vinyl Chloride	2	2,900		<9000		21		<0.90		4.9		<0.90		<0.90		<0.90	
Total VOCs	2	54,900		881,000		182		0		10		0		0		6.28	
Field Parameters																	
Temperature (Deg. C)	NV	11.3		15.1		12.9		10.2		10.3		11.4		9.3		11.1	
Specific Conductance (mS/cm)	NV	4.72		1.77		6.25		1.40		6.50		6.38		4.77		2.69	
Dissolved Oxygen (mg/L)	NV	0.16		2.01		0.12		1.24		0.14		0.14		0.20		0.18	
Oxygen Reduction Potential (mv)	NV	-10.2		32.9		102.6		-78.1		-49.6		-95.2		52.8		141.7	
pH (std. units)	NV	7.17		7.52		7.07		7.44		7.05		7.21		7.31		7.02	
Turbidity (NTUs)	NV	4.67		4.26		1.82		0.91		7.07		7.97		1.56		0.57	
Inorganics (mg/L)																	
Iron	0.3	0.50		0.095		<0.019		0.64		2.5	B	5.6		0.17	B	<0.019	
Magnesium	35 [Note 4]	51.9		43.2		38.5		38.2		51.0		55.8		55.4		41.5	
Manganese	NV	0.26		0.014	B	1.1		0.13		4.3		4.6		0.34		0.18	
Potassium	NV	14.1		11.0		3.6		8.5		3.4		9.8		3.2		3.5	
Sodium	20	695		186		1,120		144		974		969		760		334	
Miscellaneous Water Quality Parameters																	
Methane (ug/L)	NV	79		40		15		21		86		1.1	J	36		<1.0	
Ethane (ug/L)	NV	<7.5		23		<1.5		<1.5		<1.5		<1.5		<1.5		<1.5	
Ethene (ug/L)	NV	33	J	130		<1.5		<1.5		<1.5		<1.5		<1.5		<1.5	
Carbon Dioxide (ug/L)	NV	30,000		20,000		45,000		14,000		45,000		49,000		30,000		63,000	
Total Organic Carbon (mg/L)	NV	2.2	B	6.5		4.4	B	1.7	B	3.7	B	3.6	B	2.3	B	2.4	B
Alkalinity (mg/L)	NV	283	B	261	B	314	B	262	B	289		326	B	402		459	B
Ammonia (mg/L)	NV	1.2		0.61		<0.0090		<0.0090		1.1		0.54		0.078		<0.0090	F1
Chloride (mg/L)	NV	1,240		268		1,770		237		2,010		1,830		1,350		597	
Nitrate (mg/L)	NV	<0.020		<0.020		0.092		0.20		0.12		0.060		<0.020		0.19	
Nitrite (mg/L)	NV	<0.020		<0.020		0.028	J	<0.020		0.023	J B	0.027	J	<0.020	F1	<0.020	
Sulfate (mg/L)	NV	262		177		328		123		80.3	J	257		52.1		71.6	
Hydrogen (nm)	NV	17		NT		11		1.1		1.4		14		14		1.0	

Notes:

1. Only compounds detected in one or more of the groundwater samples are presented in this table.
2. "<" indicates compound was not detected above the method detection limit.
3. Analytical testing completed by TestAmerica in Amherst, New York.
4. Criteria is a guidance value.
5. Laboratory qualifiers: B = compound was found in the blank and sample; J = result is less than the RL but greater than or equal to the MDL and the concentration is an approximatio limits. E = Results exceeded calibration range. F1 = MS and/or MSD Recovery is outside acceptance limits. F2 = MS/MSD RPD exceeds control limits. ^ = Instrument related qua
6. mg/L = parts per million; ug/L = parts per billion
7. NYSDEC Class GA Groundwater Criteria as promulgated in 6 NYCRR 703; Table 1 in Technical and Operational Guidance Series (1.1.1): Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations, dated October 1993; revised June 1998; errata dated January 1999; addendum dated April 2000.
8. NV = no value, NT = not tested.
9. Shaded concentrations exceed Class GA criteria.

Table 2
Summary of Groundwater Field Measurements and Analytical Test Results for Natural Attenuation Parameters
May 2016 Groundwater Sampling
Delphi Thermal Systems
West Lockport Complex
Lockport, New York

		Field Parameters					Analytical Test Results - Inorganic and Miscellaneous Water Quality Parameters																									
Location	Sample Date	Temp. (Deg. C)	Specific Cond. (mS/cm)	DO (mg/L)	ORP (mv)	pH (Std Units)	Methane (mg/L)	Ethane (mg/L)	Ethene (mg/L)	Carbon Dioxide (mg/L)	Hydrogen (nm)	Organic Carbon (mg/L)	Alkalinity (mg/L)	Ammonia (mg/L)	Chloride (mg/L)	Nitrate (mg/L)	Nitrite (mg/L)	Nitrate Nitrite (mg/L)	Sulfate (mg/L)	Sulfide (mg/L)	Calcium (mg/L)	Dissolved Calcium (mg/L)	Iron (mg/L)	Dissolved Iron (mg/L)	Magnesium (mg/L)	Dissolved Magnesium (mg/L)	Manganese (mg/L)	Dissolved Manganese (mg/L)	Sodium (mg/L)	Dissolved Sodium (mg/L)	Potassium (mg/L)	Dissolved Potassium (mg/L)	Volatile Fatty Acids (mg/L)
MW-4	12/2/1998	14.2	2.730	0.23	-56	6.6	2.9					19	354	1.23	986	0.30	<0.05		120	0.2	503	443	0.58	0.51	105	106	0.40	0.32	282	293	13.3	12.8	
MW-4 DUP	12/2/1998	NA	NA	NA	NA	NA	5.5					8	368	1.57	971	0.05	<0.05		120	0.2	431	335	0.59	0.52	107	100	0.39	0.34	282	306	13.2	13.5	
MW-4	10/7/1999	13.8	3.412	0.08	-92.8	6.7	4.2					47	360	1.03	1,010			0.08	110	0.3	269	318	0.42	0.45	98	116	0.23	0.34	240	305	10.4	13.1	
MW-4	8/9/2001	12.6	3.420	0.12	-5.1	6.5	0.12					20.2	366	1.20	1,300	0.11	<0.05		190	0.2	371		1.01		107		0.54		384		12.7		
MW-4	10/31/2001	13.8	3.444	0.10	-128.0	6.6	3.3					10.8	366	1.17	1,100	<0.05	<0.05		160	1.2			0.77		102		0.46		358		12.3		
MW-4	7/20/2009	17.7	1.263	0.28	35.1	6.41	5.28					13	330	3.83	5,320	<0.6	<0.6		295	2.0				3.21		193		2.64		2,100		50.5	
MW-4	4/29/2010	15.0	9.664	0.96	-2.1	6.5	1.8					4.3	333	NA	3,510	<0.05	<0.05		272	<1.0				3.15		152		1.86		1,700		26.1	
MW-4 DUP	4/22/2011	11.85	7.391	0.73	-349.0	6.77	2					0.6	343	1.9	3,260	<0.05	<0.05		370	<0.1	493		3.1		139		1.6		1420		17.8		
MW-4	4/20/2012[9]	14.5	10.130	6.00	40.5	6.09	3.8	0.65	2.3	9.5	28	3.1	320	2.6	3,580	<0.05	<0.05		282	<0.1			2.7		138		1.5		1400		15.6		ND
MW-4	5/1/2013	14.5	13.320	0.18	-34.2	6.62	<0.22	<0.0049	<0.0052	23	0.63	2.8	329	3.4	4,300	<0.02	<0.02		268	<0.052			3.9		163		2.0		2080		20.2		ND
MW-4	5/13/2014	14.6	6.830	0.04	-21.1	6.92	1.2	0.075	0.31	14	0.52	2.9	299	1.7	1,750	0.079	<0.02		223	<0.052			0.81		63.8		0.47						
MW-4	5/8/2015	18.7	6.070	0.02	-40.9	6.91	0.53	0.032	0.23	10	1.7	2.3	304	1.6	1,660	<0.020	<0.020		228	<0.052			0.70		65.8		0.38						13
MW-4	5/5/2016	11.3	4.720	0.16	-10.2	7.17	0.079	<0.0075	0.033	30	17	2.2	283	1.2	1,240	<0.020	<0.020		262	<0.052			0.50		51.9		0.26		695		14.1		ND
MW-6	12/2/1998	19.5	3740.000	0.30	-67	6.8	0.84					9	319	0.45	897	0.22	<0.05		160	0.2	161	156	7.98	1.13	35.6	28.8	0.48	0.29	619	638	9.64	9.51	
MW-6	10/7/1999	21.9	3283.000	0.12	-145.8	7.1	0.34					30	260	0.32	476			0.09	140	0.4	86.4	108	3.62	0.55	24	30.2	0.24	0.19	300	311	7.4	8.8	
MW-7	12/3/1998	17.3	3,130	0.33	-35	7.0	0.06					36	376	1.43	944	0.29	<0.05		200	0.4	382	375	0.14	0.02	118	136	<0.01	<0.01	288	351	20.5	23.0	
MW-7[3]	10/7/1999	19.4	3,049	0.69	-52	7.1	0.02					58	420	1.10	1,180			0.11	180	0.4	286	255	0.86	0.05	138	145	0.05	0.02	292	306	21.4	24.0	
MW-7	10/25/2006	17.4	2,620	1.08	-92	7.1	0.06					28	376	1.33	600	<0.05	<0.05		470	<0.01			0.23		112		0.02		237		19.4		
MW-7	11/29/2007	15.5	2,162	0.83	-195	7.2	0.13					14	322	1.14	430	<0.05	<0.05		519	0.8			0.58		98.5		0.05		278		20.7		
MW-7	11/4/2008	16.2	3,152	0.33	-80	6.8	0.11					4.4	348	0.08	980	<0.05	<0.05		23	<0.1	327		6.06		74		2.28		277		4.39		
MW-7	2/24/2009	13.1	1,718	1.22	-68	7.3	0.04					NM	270	0.98	410	<0.05	<0.05		430	<0.1	193		0.09		86.7		0.04		213		14.2		
MW-7	7/20/2009	16.4	2,558	0.88	32	7.1	0.07					28	310	1.28	452	<0.6	<0.6		460	2.4				0.03		84.9		0.03		230		24.1	
MW-7	4/29/2010	15.0	1.540	3.14	-13.4	7.24	0.057					10.9	239	NA	280	<0.05	<0.05		479	<1.0				0.41		70.2		0.02		204		13.9		
MW-7	4/22/2011	10.4	1.241	3.75	-334	7.68	0.015					9.2	223	0.53	267	<0.05	<0.05		463	<0.1	121		0.20		60.1		0.025		3290		13.8		
MW-7	4/20/2012	15.4	1.830	0	-34	7.49	0.046	0.017	0.098	1.6		8.7	240	0.77	416	<0.05	<0.05		332	<0.1			0.06		67.1		0.024		193		13.2		Note 8.
MW-7	5/3/2013	13.2	2.530	2.05	-55.6	7.3	0.12	0.032	0.25	4.4		7.6	242	0.75	569	<0.02	<0.02		253	<0.052			0.02		76		0.190		254		14.3		Note 8.
MW-7	5/30/2014	13..2	2.230	1.78	-10.7	7.32	0.009	<0.0075	0.048	4.3	NM	5.4	258	0.43	292	<0.02	<0.02		138	<0.052			<0.019		34.7		0.009						
MW-7	5/7/2015	13.1	1.815	0.21	-47.8	7.24	0.021	0.014	0.079	3.5	NM	9.4	244	0.7	300	<0.020	<0.020		143	<0.052			0.39		41.4		0.019						5.2
MW-7 DUP	5/7/2015	NA	NA	NA	NA	NA	0.025	0.016	0.091	3.6	NM	9.5	244	0.7	298	<0.020	<0.020		142	<0.052			0.41		42		0.019						46.0
MW-7	5/17/2016	15.1	1.770	2.01	32.9	7.52	0.04	0.023	0.13	20	NM	6.5	261	0.61	268	<0.020	<0.020		177	<0.052			0.095		43.2		0.014						
MW-8	12/2/1998	16.7	3.210	0.90	-68	6.9	0.09					12	300	0.40	138	<0.05	<0.05		550	0.2	215	227	0.33	0.17	76	78	0.31	0.32	102	114	6.31	6.67	
MW-8	10/7/1999	19.7	1.640	0.08	-116.1	7.1	0.04					19	280	0.33	144			0.10	570	0.3	174	188	0.22	0.15	82.4	97.5	0.30	0.31	112	110	7.6	8.1	
MW-8	7/15/2009	16.3	2.408	0.20	-48.6	6.9	2.0					22	300	0.76	457	<0.6	<0.6		588	2				0.03		102		0.40		246		15.7		
MW-8	4/22/2011	9.39	2.327	4.56	-334	7.26	0.018					<1	244	0.30	683	<0.05	<0.05		562	<0.1	220		0.12		102		0.53		355		7.9		
MW-9	12/2/1998	16.2	7.150	1.6	120	6.9	0.04					3	309	0.23	640	0.25	<0.05		680	<0.1	330	300	0.33	<0.01	89	84.5	1.74	0.93	444	445	5.52	5.91	
MW-9	10/5/1999	18.7	4.042	0.08	103.5	6.9	0.02					24	330	0.20	963	0.46	<0.05		520	<0.1	250	283	0.20	0.02	63.8	89	1.36	0.99	476	535	4.6	26.5	
MW-9 DUP	10/5/1999	NA	NA	NA	NA	NA	0.02					27	340	0.14	833	0.63	<0.05		490	<0.1	252	284	0.20	0.02	72	86	1.46	0.94	478	560	5.0	5.6	
MW-9	7/20/2009	17.8	8.381	0.41	109.1	6.7	0.03					17	290	0.26	3,100	<0.6	0.9		379	1.2				<0.01		117		0.31		1,600		19.0	
MW-9	4/22/2011	9.49	7.263	0.24	-345	7.08	0.0069					<1	233	0.11	3,410	0.39	<0.05		362	<0.1	392		0.03		94.9		0.11		1,710		6.9		
MW-10	12/1/1998	14.5	4.100	0.40	-13.7	6.7	0.23					11	320	0.32	1,220	0.19	<0.05		270	0.2	310	305	1.95	0.76	54.6	85.5	2.30	2.07	584	645	13.4	13.2	
MW-10	10/5/1999	14.2	4.775	0.07	-2.0	6.8	0.14					24	280	0.29	1,010	0.15	0.10		240	<0.1	39.8	254	0.73	0.04	9.94	102	0.99	1.12	33.2	635	18.8	10.1	
MW-10	8/9/2001	12.2	5.033	0.17	249.1	6.6	0.018					10.0	334	0.16	1,700	0.08	<0.05		330	0.1	330		0.14		98.9	99.6	1.66		857	845	9.2		
MW-10	10/31/2001	14.4	3.990	0.15	90.9	6.7	0.20					3.6	336	0.12	2,800	0.17	<0.05		280	1.6			0.05		92.1		0.91		720		7.6		
MW-10	7/15/2009	13.2	9.579	0.76	79.6	6.6	0.36					33.0	330	0.27	4,260	<0.6	<0.6		276	0.8				0.08		103		2.63		1,950		21.1	
MW-10 (DUP)	4/28/2010	11.0	3.741	0.35	16.2	6.88	0.14					4.3	263	NA	1,460	0.053	<1.0		168	<1.0				10.5		35.0		1.31		890		4.57		
MW-10	4/19/2012[9]	12.71	7.974	5.16	129.1	6.1	0.170	0.009	0.009	5.6	1	2.3	280	0.11	3,790	<0.05	<0.05		210	<0.1			0.32		95.5		2.40		2110		7		ND
MW-10	5/1/2013	11.9	4.820	0.75	131.2	7.05	0.058	0.001	0.001	7.4	0.77	3.3	270	0.039	1,470	0.33	<0.02		153	<0.052			0.48		31.8		1.50		845		3.4		ND
MW-10	5/14/2014	13.2	8.370	0.1	105.7	6.85	0.110	<0.0015	<0.0015	15.0	0.95	3.5	272	0.01	2,580	<0.02	<0.02		370	<0.052			0.07		53.7		1.90						
MW-10	5/8/2015	14.2	6.059	0.14	146.3	6.94	0.006	<0.0015	<0.0015	7.9	1.4	3.2	260	0.021	1,720	<0.02	<0.02		346	<0.052			0.035		40.5		1.30						12.5
MW-10	5/5/2016	12.9	6.250	0.12	102.6	7.09	0.006	<0.0015	<0.0015	7.9	1.4	3.2	260	0.021	1,720	<0.02	<0.02		346	<0.052			0.035		40.5		1.30						12.5
MW-11	12/1/1998	11.9	4.360	0.22	-271	7.6	0.01					17	275	0.58	188	0.17	<0.05		110	0.2	122	97.3	1.00	0.26	39.0	36.4	0.11	0.08	116	129	8.88	10.1	
MW-11	10/5/1999	11.9	5.228	2.34	-231	7.7	0.05					20	270	0.76	192	0.05	<0.05		210	0.5	93.4	150	0.34	0.30	46.4	103	0.08	0.08	180	695	10.9	27	
MW-11	8/8/2001	10.4	3.576	0.12	-73.6	7.4	<0.002					12	285	0.46	250	<0.05	<0.05		140	0.1	111		0.14		43.2		0.12		130		8.0		
MW-11	10/30/2001	12.0	4.126	0.04	-248.8	7.5	<0.002					3.1	265	0.46	230	<0.05	<0.05		110	2.8			0.02		38.7		0.41		120		9.1		
MW-11	10/24/2006	13.1	8.000	1.61	106	7.3	0.008					1.9	341	0.12	108	0.16	<0.05		66	<0.1			0.80		30.7		0.08		85		7.6		
MW-11	11/28/2007	10.7	1.390	0.38	-309	7.2	0.008					3	233	0.38	410	0.18	<0.05		144	1.0			0.74		42.1		0.08		235		12.3		
MW-11	11/4/2008	14.4	1.377	0.56	-200	7.3	0.005					2.38	249	0.28	200	<0.05	<0.05		101	0.2	95.6		0.38		38.8		0.08		134		8.4		
MW-11	7/16/2009	13.7	1.143	0.33	-15.2	7.3	0.019					16	260	0.45	246	<0.6	<0.6		112	2.0				0.11		41.3		0.11		138		11.4		
MW-11	4/28/2010	9.2	1.145	0.46	-126.3	7.3	0.013					2.1	245	NA	325	0.109	<0.05		93.6	<1.0				2.55		44.3		0.220		152		8.94		
MW-11	4/21/2011	7.5	0.807	1.72	-325	7.56	0.0071					2.8	294	0.038	170	0.32	<0.05		53.5	<0.1	92.5		0.14		30.8		0.09		119		5.7		
MW-11	4/18/2012	10.9	1.450	0	-75	7.6	0.014	0.00099	0.0013	2.1	12	1.3	248	0.27	360	0.095	<0.05		98.9	0.053			0.20		48.5		0.14		143		8.3		ND
MW-11	5/2/2013	9.7	1.670	0.71	-101.9	7.41	0.04	0.001	0.0013	4.2	0.91	1.6	259	0.15	333	0.34	<0.02		84.6	<0.052			0.70		47.0		0.17		151		9.0		ND
MW-11	5/20/2014	9.6	1.310	0.64	-72.6	7.41	0.0067	<0.0015	<0.0015	5	60	1.2	274	0.12	200	0.29	<0.02		61.5	<0.052			0.18		34.4		0.13						
MW-11	5/6/2015	11.0	1.598	0.52	19	7.33	0.025	<0.0015	<0.0015	3.9	1.3	2.0	28	0.27	367	0.12	<0.02		121	<0.052			0.13		48.2		0.08						40.1
MW-11	5/5/2016	10.2	1.400	1.24	-78.1	7.44	0.021	<0.0015	<0.0015	14	1.1	1.7	262	<0.0090	237	0.2	<0.02		123	<0.052			0.64		38.2		0.13		144		8.5		ND

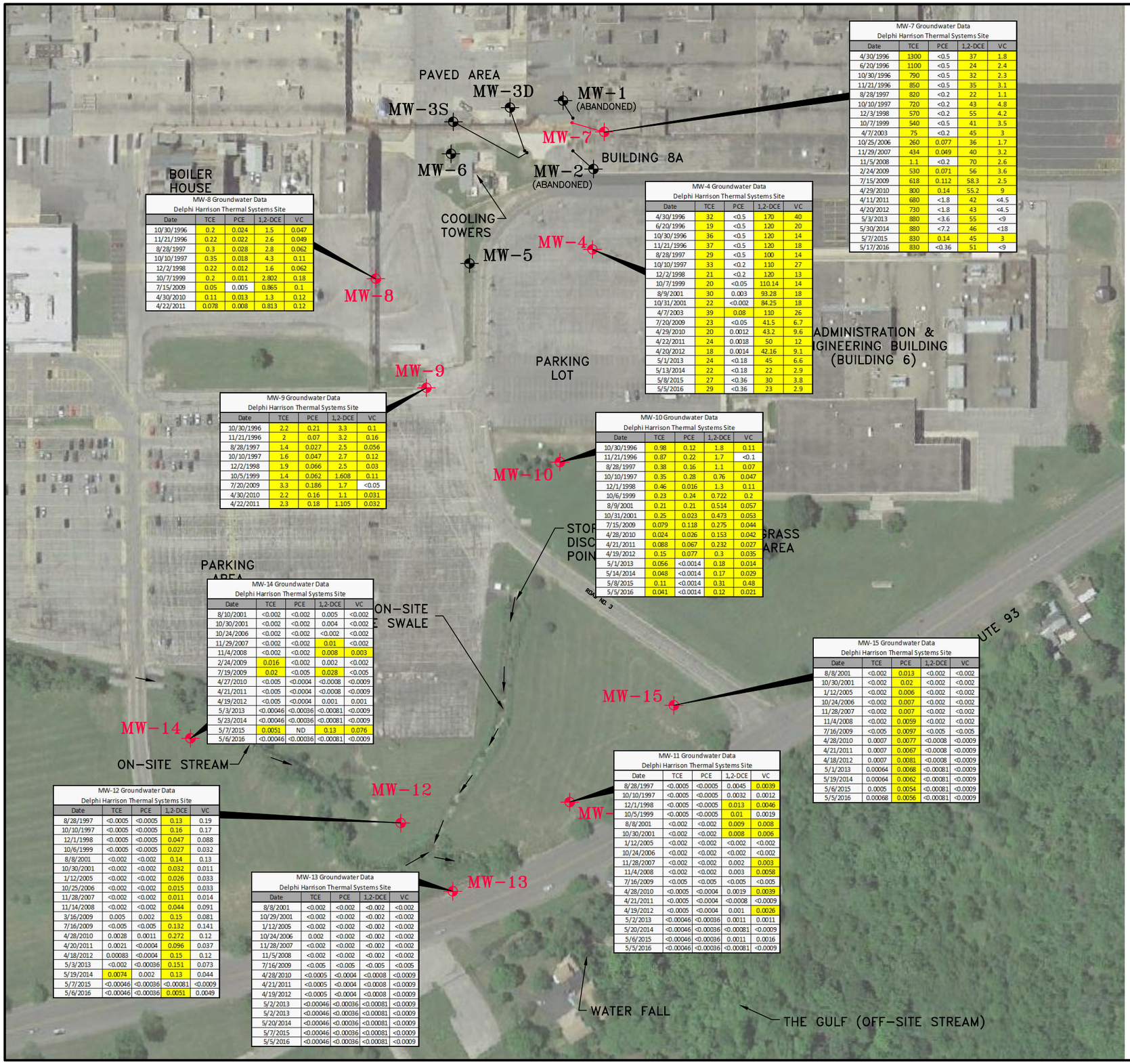
Notes:
1. In general the field parameters were stable with very little variation. However, as noted, some readings varied.
2. Readings were collected using a low flow peristalic pump and water quailty meter with flow through cell..
3. Analytical Testing completed by TestAmerica Laboratories, Inc.
4. < - Indicates compound not detected above the specified detection limit.
5. Blank = Not tested.
6. NM = not measured
7. ND = non-detect for tested volatile fatty acids: acetic acid, formic acid, lactic acid, n-Butyric acid, propionic acid, and pyruvic acid.
8. All tested volatile fatty acids = ND; except acetic acid (7.0 ppm).
9. Water quality readings were recollected on 5/4/2012 due to lack of DO readings collected with initial water quality meter.

Table 2
Summary of Groundwater Field Measurements and Analytical Test Results for Natural Attenuation Parameters
May 2016 Groundwater Sampling
Delphi Thermal Systems
West Lockport Complex
Lockport, New York

		Field Parameters					Analytical Test Results - Inorganic and Miscellaneous Water Quality Parameters																									
Location	Sample Date	Temp. (Deg. C)	Specific Cond. (mS/cm)	DO (mg/L)	ORP (mv)	pH (Std Units)	Methane (mg/L)	Ethane (mg/L)	Ethene (mg/L)	Carbon Dioxide (mg/L)	Hydrogen (nm)	Organic Carbon (mg/L)	Alkalinity (mg/L)	Ammonia (mg/L)	Chloride (mg/L)	Nitrate (mg/L)	Nitrite (mg/L)	Nitrate Nitrite (mg/L)	Sulfate (mg/L)	Sulfide (mg/L)	Calcium (mg/L)	Dissolved Calcium (mg/L)	Iron (mg/L)	Dissolved Iron (mg/L)	Magnesium (mg/L)	Dissolved Magnesium (mg/L)	Manganese (mg/L)	Dissolved Manganese (mg/L)	Sodium (mg/L)	Dissolved Sodium (mg/L)	Potassium (mg/L)	Dissolved Potassium (mg/L)	Volatile Fatty Acids (mg/L)
MW-12	12/1/1998	13.4	2.006	0.39	-41	6.9	0.5					7	284	0.94	294	0.48	<0.05		73	0.2	119	104	7.48	4.01	26.8	25.3	4.41	4.40	183	197	4.1	3.81	3.81
MW-12	10/5/1999	15.8	1.849	0.10	-105.2	7.0	0.36					30	300	0.90	342	0.27	<0.05		66	0.2	104	126	<0.01	3.66	27.8	31.6	<0.01	4.90	166	226	4.9	5.3	5.3
MW-12	8/8/2001	13.5	3.300	0.24	-38.5	6.6	0.50					13.9	336	1.77	920	<0.05	<0.05		160	<0.1	217		16.9		57.5		8.41		427		6.3		
MW-12 DUP	8/8/2001	NA	NA	NA	NA	NA	0.74					14.9	338	1.85	930	<0.05	<0.05		160	<0.1	217		14.8		56.2		8.14		433		6.0		
MW-12	10/30/2001	14.2	2.850	0.14	-127.1	6.8	0.57					5.7	309	1.35	590	0.18	<0.05		110	3.5			4.73		37.0		4.69		342		5.0		
MW-12	10/25/2006	13.7	3.500	1.26	-127.1	6.9	0.024					6.5	333	1.55	1,300	<0.05	<0.05		110	<0.1			7.50		44.8		6.02		684		4.5		
MW-12	11/28/2007	11.2	3.307	0.18	-302	7.0	0.012					4.0	274	1.47	1,300	<0.05	<0.05		79	<0.04			6.68		46.0		4.44		666		3.9		
MW-12	11/4/2008	14.3	6.319	0.02	-88	6.7	0.12					2.74	332	2.08	2,000	<0.05	<0.05		138	<0.1	259		13.70		69.7		7.82		1110		5.6		
MW-12	3/16/2009	6.1	4.516	1.08	-48	6.6	0.87					NM	270	1.89	2,300	<0.05	<0.05		140	<0.1	269		11.50		81.7		8.60		1060		5.1		
MW-12	7/16/2009	14.5	6.493	0.64	-39.3	6.7	0.9					14	360	2.57	2,480	<0.6	<0.6		148	0.8				15.10		79.1		9.07		1,170		10.9	10.9
MW-12	4/28/2010	8.8	6.562	0.32	-46.1	6.6	0.46					5.0	315	NA	2,630	<0.05	0.039		153	<1.0				14.0		98.0		10.40		1,470		5.22	5.22
MW-12	4/20/2011	8.83	6.320	0.00	-65	6.9	0.042					3.3	272	1.1	1,880	<0.05	<0.05		108	<1.0	227		6.6		65.1		7.1		958		3.7		
MW-12	4/18/2012	10.02	7.920	0.59	-74	7.0	0.3	0.011	0.011	15	0.76	3.7	280	1.8	2,900	<0.05	<0.05		133	<1.0			12.7		84.3		9.1		1250		3.7		ND
MW-12	5/3/2013	9	7.300	0.31	-48.3	6.8	0.2	0.0031	0.0042	14	1.1	3.6	232	1.2	3,090	<0.02	<0.02		120	<0.052			8.1		76.4		7.4		1260		3.9		ND
MW-12	5/19/2014	11.1	5.400	0.11	-41.2	6.9	0.11	<0.0015	<0.0015	16	33	4	291	1.2	1,650	0.032	<0.02		96.5	<0.052			3.7		50.0		4.9						
MW-12	5/7/2015	11.2	7.819	0.07	-61.1	6.9	0.048	<0.0015	<0.0015	6.1	1.6	2.2	796	0.12	1,390	0.036	<0.020		58.9	<0.052			0.0		60.1		0.3						48
MW-12	5/6/2016	10.3	6.500	0.14	-49.6	7.1	0.086	<0.0015	<0.0015	45	1.4	3.7	289	1.1	2,010	0.12	0.023		80.3	<0.052			2.5		51.0		4.3		974		3.4		ND
MW-13	8/8/2001	15.4	5.742	0.23	-118.5	7.8	0.08					15.2	255	1.45	1,900	0.05	<0.05		160	<0.1	209		2.59		49.6		2.67		1,200		12.1		
MW-13	10/29/2001	15.5	6.625	0.20	-136	7.4	0.07					9.9	426	1.29	1,700	0.61	0.08		120	2.2			3.75		40.9		2.96		1,160		8.2		
MW-13	10/24/2006	15.2	6.090	2.67	-146	7.3	0.16					8.4	431	1.35	2,200	<0.05	<0.05		98	<0.1			9.21		53.7		6.03		1,210		9.1		
MW-13	11/28/2007	12.7	5.696	0.08	-274	7.3	0.003					7.0	420	1.74	2,200	0.05	<0.05		95	0.4			7.83		50.8		4.95		1,250		9.6		
MW-13	11/5/2008	7.08	6.782	0.12	-97	7.1	0.021					3.8	410	1.57	2,000	<0.05	<0.5		91	<0.1	196		7.60		52.3		5.40		1,430		11.0		
MW-13	7/16/2009	16.0	6.476	0.60	-113.4	7.2	6.15					15	400	2.10	2,290	<0.6	<0.6		112	<0.5				1.75		53.9		6.51		1,390		18.9	18.9
MW-13	4/28/2010	9.4	5.783	0.28	-133.5	7.2	0.17					6.1	382	NA	2,280	0.069	<0.05		102	<1.0				9.12		59.9		7.18		1,380		11.2	11.2
MW-13	4/21/2011	7.64	5.023	0.34	-336	7.4	0.058					5.8	368	0.94	2,090	0.069	<0.05		105	<0.1	210		7.4		53.2		6.30		1,320		8.3		
MW-13 DUP	4/19/2012	10.7	5.480	0.00	-120	7.4	0.093	0.0086	0.008	4.5	0.79	4	360	0.96	1,490	0.081	<0.05		71.3	<0.1			5.8		38.5		4.40		940		5.4		ND
MW-13	5/2/2013	10.5	5.410	1.27	-71.2	7.3	0.11	<0.0049	<0.0052	3.7	0.69	3.8	382	0.6	1,590	0.57	<0.02		62.7	<0.052			4.7		39.4		4.30		964		6.2		ND
MW-13	5/20/2014	11.5	5.850	0.24	-82.1	7.1	0.073	<0.0015	<0.015	16	1.8	4.5	419	0.88	1,740	0.089	<0.05		82.5	<0.052			6.4		42.3		4.40						
MW-13	5/13/2015	12	7.369	0.27	-87.1	7.0	0.029	<0.0015	<0.0015	8.8	2.1	5.5	299	1.2	2,390	0.48	0.058		264	<0.052			5.9		61.7		5.80						ND
MW-13	5/5/2016	11.4	6.380	0.14	-95.2	7.2	0.011	<0.0015	<0.0015	49	14	3.6	326	0.54	1,830	0.06	0.027		257	<0.052			5.6		55.8		4.60		969		9.8		ND
MW-14	8/9/2001	11.5	2.064	3.66	330.7	7.2	<0.002					14.1	328	0.19	680	0.08	<0.05		130	<0.1	144		0.18		64.1		0.04		394		6.4		
MW-14	10/30/2001	13.2	2.478	0.80	-39.1	7.2	0.013					4.3	334	0.31	770	<0.05	<0.05		120	2.5			0.06		64.8		0.06		466		7.3		
MW-14	10/24/2006	12.9	4.310	3.11	-60.6	7.2	0.31					3.3	336	0.25	1,700	<0.05	<0.05		88	<0.1			0.15		94.9		0.20		831		8.0		
MW-14	11/29/2007	10.3	4.402	1.27	-110	7.1	0.16					4.0	371	0.53	1,800	<0.05	<0.05		87	0.12			0.44		111		0.25		777		10.5		
MW-14	11/4/2008	14.5	6.397	0.13	11.2	6.8	0.14					2.4	340	0.39	2,100	<0.05	<0.05		80	<0.1	320		0.39		138		0.28		1010		13.5		
MW-14	2/24/2009	5.3	3.534	0.73	-34	7.2	0.15					NM	299	0.23	1,500	0.07	<0.05		68	<0.1	165		0.06		79.8		0.18		833		7.3		
MW-14	7/16/2009	11.6	5.970	1.87	72.6	6.8	0.465					51	380	0.69	2,430	<0.6	<0.6		81.4	1.2				0.11		132		0.53		931		21.1	21.1
MW-14	4/27/2010	9.8	3.726	0.32	16.8	7.1	0.055					2.7	354	NA	1,450	0.03	<0.05		65.7	<1.0				0.06		70.2		0.194		870		6.22	6.22
MW-14	4/21/2011	7.72	3.779	2.45	-335	7.5	0.016					2.8	339	0.14	1,750	0.093	<0.05		78.2	<0.1	149		0.052		68		0.19		875		5.4		
MW-14	4/19/2012	10.85	5.460	0.00	-9	7.3	0.071	0.0086	0.0083	2.9	6.7	1.5	328	0.25	1,720	<0.05	<0.05		88.2	<0.1			0.140		86.7		0.29		916		6.2		ND
MW-14	5/3/2013	10.1	4.670	0.17	-1.8	7.3	0.05	<0.00049	<0.00052	6.2	16	1.7	361	0.15	1,340	0.061	<0.02		60	<0.052			0.038		59.4		0.20		850		5.1		ND
MW-14	5/23/2014	9.4	3.400	0.07	22.7	7.3	0.0083	<0.015	<0.015	7.14	2.3	1.6	396	0.055	790	<0.02	0.036		34.7	<0.052			0.036		40.1		0.30						
MW-14	5/7/2015	14.1	4.702	0.07	153.7	7.2	0.27	<0.0015	<0.0015	17	1.7	3.4	468	1.8	2,590	<0.020	<0.020		123	<0.052			11.3		81.7		7.90						27.5
MW-14	5/6/2016	9.3	4.770	0.20	52.8	7.3	0.36	<0.0015	<0.0015	30	14	2.3	402	0.078	1,350	<0.020	<0.020		52.1	<0.052			0.2		55.4		0.34		760		3.2		ND
MW-15	10/30/2001	14.6	1656.000	0.16	83.9	6.8	<0.002					4.1	395	0.07	410	0.85	<0.05		110	1.4			0.02		47.5		0.40		196		3.8		
MW-15 DUP	11/4/2008	14.3	4.719	2.42	75	6.8	<0.002					1.77	345	0.07	1,900	0.34	<0.05		110	<0.1	327		<0.02		82.3		0.82		594		6.1		
MW-15	7/16/2009	14.6	3.349	1.49	135.7	6.8	<0.004					12	400	<0.1	1,130	1.7	<0.6		88.7	1.6				0.02		65.0		0.14		475		7.94	7.94
MW-15	4/28/2010	9.5	1.998	0.35	41.1	6.8	<0.0022					3.3	419	NA	627	1.03	<0.02		66.0	<0.7				<0.019		48.2		0.13		318		3.14	3.14
MW-15	4/21/2011	7.71	2.294	2.43	-328	6.8	<0.0022					3.5	394	<0.02	895	0.95	<0.02		86.7	<0.1	217		0.02		55.5		0.24		390		3.7		
MW-15	4/18/2012	10.95	3.537	4.77	385.1	7.1	0.00047	0.00078	0.00064	11	0.82	2	384	<0.02	962	0.73	<0.02		111	<0.1			<0.05		54.4		0.24		424		3.3		ND
MW-15	5/1/2013	11	2.950	0.19	88.3	6.9	<0.00022	<0.00049	<0.00052	15	0.75	2.1	415	<0.009	672	1.4	<0.02		74.7	<0.052			<0.019		43.7		0.21		384		3.2		ND
MW-15	5/19/2014	10	2.500	0.10	120.4	6.9	<0.001	<0.0015	<0.0015	21	0.83	2.2	439	0.033	590	0.46	<0.02		55.2	<0.052			<0.019		42.5		0.11						
MW-15	5/6/2015	9.8	2.941	0.05	162.5	6.9	0.017	<0.0015	<0.0015	16	7.7	2.5	448	<0.0090	730	0.7	<0.0050		77	<0.052			<0.019		44.8		0.13						1.5
MW-15	5/4/2016	11.1	2.690	0.18	141.7	7.0	<0.001	<0.0015	<0.0015	63	1	2.4	459	<0.0090	597	0.19	<0.02		71.6	<0.052			<0.019		41.5		0.18		334		3.5		ND
TK-2	10/6/1999	13.3	7.02	0.19	66.9	7.5							380		20.2																		
Stream (SS-1)	12/2/1998	8.0	300	10.0	50	8.0																											
Stream (SS-2)	10/7/1999	10.2	718	17.5	53.1	8.4																											
Stream (SS-3)	10/7/1999	8.5	1552	8.9	-28.9	7.7																											

Notes:
1. In general the field parameters were stable with very little variation. However, as noted, some readings varied.
2. Readings were collected using a low flow peristalic pump and water quailty meter with flow through cell..
3. Analytical Testing completed by TestAmerica Laboratories, Inc.
4. < - Indicates compound not detected above the specified detection limit.
5. Blank = Not tested.
6. NM = not measured
7. ND = non-detect for tested volatile fatty acids: acetic acid, formic acid, lactic acid, n-Butyric acid, propionic acid, and pyruvic acid.
8. All tested volatile fatty acids = ND; except acetic acid (7.0 ppm).
9. Water quality readings were recollected on 5/4/2012 due to lack of DO readings collected with initial water quality meter.

FIGURES



MW-8 Groundwater Data
Delphi Harrison Thermal Systems Site

Date	TCE	PCE	1,2-DCE	VC
10/30/1996	0.2	0.024	1.5	0.047
11/21/1996	0.22	0.022	2.6	0.049
8/28/1997	0.3	0.028	2.8	0.062
10/10/1997	0.35	0.018	4.3	0.11
12/2/1998	0.22	0.012	1.6	0.062
10/7/1999	0.2	0.011	2.802	0.18
7/15/2009	0.05	0.005	0.865	0.1
4/30/2010	0.11	0.013	1.3	0.12
4/22/2011	0.078	0.008	0.813	0.12

MW-7 Groundwater Data
Delphi Harrison Thermal Systems Site

Date	TCE	PCE	1,2-DCE	VC
4/30/1996	1300	<0.5	37	1.8
6/20/1996	1100	<0.5	24	2.4
10/30/1996	790	<0.5	32	2.3
11/21/1996	850	<0.5	35	3.1
8/28/1997	820	<0.2	22	1.1
10/10/1997	720	<0.2	43	4.8
12/3/1998	570	<0.2	55	4.2
10/7/1999	540	<0.5	41	3.5
4/7/2003	75	<0.2	45	3
10/25/2006	260	0.077	36	1.7
11/29/2007	434	0.049	40	3.2
11/5/2008	1.1	<0.2	70	2.6
2/24/2009	530	0.071	56	3.6
7/15/2009	618	0.112	58.3	2.5
4/29/2010	800	0.14	55.2	9
4/11/2011	680	<1.8	42	<4.5
4/20/2012	730	<1.8	43	<4.5
5/3/2013	880	<3.6	55	<9
5/30/2014	880	<7.2	46	<18
5/7/2015	830	0.14	45	3
5/17/2016	830	<0.36	51	<9

MW-4 Groundwater Data
Delphi Harrison Thermal Systems Site

Date	TCE	PCE	1,2-DCE	VC
4/30/1996	32	<0.5	170	40
6/20/1996	19	<0.5	120	20
10/30/1996	36	<0.5	120	14
11/21/1996	37	<0.5	120	18
8/28/1997	29	<0.5	100	14
10/10/1997	33	<0.2	110	27
12/2/1998	21	<0.2	120	13
10/7/1999	20	<0.05	110.14	14
8/9/2001	30	0.003	93.28	18
10/31/2001	22	<0.002	84.25	18
4/7/2003	39	0.08	110	26
7/20/2009	23	<0.05	41.5	6.7
4/29/2010	20	0.0012	43.2	9.6
4/22/2011	24	0.0018	50	12
4/20/2012	18	0.0014	42.16	9.1
5/1/2013	24	<0.18	45	6.6
5/13/2014	22	<0.18	22	2.9
5/8/2015	27	<0.36	30	3.8
5/5/2016	29	<0.36	23	2.9

MW-9 Groundwater Data
Delphi Harrison Thermal Systems Site

Date	TCE	PCE	1,2-DCE	VC
10/30/1996	2.2	0.21	3.3	0.1
11/21/1996	2	0.07	3.2	0.16
8/28/1997	1.4	0.027	2.5	0.056
10/10/1997	1.6	0.047	2.7	0.12
12/2/1998	1.9	0.066	2.5	0.03
10/5/1999	1.4	0.062	1.608	0.11
7/20/2009	3.3	0.186	1.7	<0.05
4/30/2010	2.2	0.16	1.1	0.031
4/22/2011	2.3	0.18	1.105	0.032

MW-10 Groundwater Data
Delphi Harrison Thermal Systems Site

Date	TCE	PCE	1,2-DCE	VC
10/30/1996	0.98	0.12	1.8	0.11
11/21/1996	0.87	0.22	1.7	<0.1
8/28/1997	0.38	0.16	1.1	0.07
10/10/1997	0.35	0.28	0.76	0.047
12/1/1998	0.46	0.016	1.3	0.11
10/6/1999	0.23	0.24	0.722	0.2
8/9/2001	0.21	0.21	0.514	0.057
10/31/2001	0.25	0.023	0.473	0.053
7/15/2009	0.079	0.118	0.275	0.044
4/28/2010	0.024	0.026	0.153	0.042
4/21/2011	0.088	0.067	0.232	0.027
4/19/2012	0.15	0.077	0.3	0.035
5/1/2013	0.056	<0.0014	0.18	0.014
5/14/2014	0.048	<0.0014	0.17	0.029
5/8/2015	0.11	<0.0014	0.31	0.48
5/5/2016	0.041	<0.0014	0.12	0.021

MW-14 Groundwater Data
Delphi Harrison Thermal Systems Site

Date	TCE	PCE	1,2-DCE	VC
8/10/2001	<0.002	<0.002	0.005	<0.002
10/30/2001	<0.002	<0.002	0.004	<0.002
10/24/2006	<0.002	<0.002	<0.002	<0.002
11/29/2007	<0.002	<0.002	0.01	<0.002
11/4/2008	<0.002	<0.002	0.008	0.003
2/24/2009	0.016	<0.002	0.002	<0.002
7/19/2009	0.02	<0.005	0.028	<0.005
4/27/2010	<0.005	<0.0004	<0.0008	<0.0009
4/21/2011	<0.005	<0.0004	<0.0008	<0.0009
4/19/2012	<0.005	<0.0004	0.001	0.001
5/3/2013	<0.00046	<0.00036	<0.00081	<0.0009
5/23/2014	<0.00046	<0.00036	<0.00081	<0.0009
5/7/2015	0.0051	ND	0.13	0.076
5/6/2016	<0.00046	<0.00036	<0.00081	<0.0009

MW-15 Groundwater Data
Delphi Harrison Thermal Systems Site

Date	TCE	PCE	1,2-DCE	VC
8/8/2001	<0.002	0.013	<0.002	<0.002
10/30/2001	<0.002	0.02	<0.002	<0.002
1/12/2005	<0.002	0.006	<0.002	<0.002
10/24/2006	<0.002	0.007	<0.002	<0.002
11/28/2007	<0.002	0.007	<0.002	<0.002
11/4/2008	<0.002	0.0059	<0.002	<0.002
7/16/2009	<0.005	0.0097	<0.005	<0.005
4/28/2010	0.0007	0.0077	<0.0008	<0.0009
4/21/2011	0.0007	0.0067	<0.0008	<0.0009
4/18/2012	0.0007	0.0081	<0.0008	<0.0009
5/1/2013	0.00064	0.0068	<0.00081	<0.0009
5/19/2014	0.00064	0.0062	<0.00081	<0.0009
5/6/2015	0.0005	0.0054	<0.00081	<0.0009
5/5/2016	0.00068	0.0056	<0.00081	<0.0009

MW-12 Groundwater Data
Delphi Harrison Thermal Systems Site

Date	TCE	PCE	1,2-DCE	VC
8/28/1997	<0.0005	<0.0005	0.13	0.19
10/10/1997	<0.0005	<0.0005	0.16	0.17
12/1/1998	<0.0005	<0.0005	0.047	0.088
10/6/1999	<0.0005	<0.0005	0.027	0.032
8/8/2001	<0.002	<0.002	0.14	0.13
10/30/2001	<0.002	<0.002	0.032	0.011
1/12/2005	<0.002	<0.002	0.026	0.033
10/25/2006	<0.002	<0.002	0.015	0.033
11/28/2007	<0.002	<0.002	0.011	0.014
11/14/2008	<0.002	<0.002	0.044	0.091
3/16/2009	0.005	0.002	0.15	0.081
7/16/2009	<0.005	<0.005	0.132	0.141
4/28/2010	0.0028	0.0011	0.272	0.12
4/20/2011	0.0021	<0.0004	0.096	0.037
4/18/2012	0.00083	<0.0004	0.15	0.12
5/3/2013	<0.002	<0.00036	0.151	0.073
5/19/2014	0.0074	0.002	0.13	0.044
5/7/2015	<0.00046	<0.00036	<0.00081	<0.0009
5/6/2016	<0.00046	<0.00036	0.0051	0.0049

MW-11 Groundwater Data
Delphi Harrison Thermal Systems Site

Date	TCE	PCE	1,2-DCE	VC
8/28/1997	<0.0005	<0.0005	0.0045	0.0039
10/10/1997	<0.0005	<0.0005	0.0032	0.0012
12/1/1998	<0.0005	<0.0005	0.013	0.0046
10/5/1999	<0.0005	<0.0005	0.01	0.0019
8/8/2001	<0.002	<0.002	0.009	0.008
10/30/2001	<0.002	<0.002	0.008	0.006
1/12/2005	<0.002	<0.002	<0.002	<0.002
10/24/2006	<0.002	<0.002	<0.002	<0.002
11/28/2007	<0.002	<0.002	0.002	0.003
11/4/2008	<0.002	<0.002	0.003	0.0058
7/16/2009	<0.005	<0.005	<0.005	<0.005
4/28/2010	<0.0005	<0.0004	0.0019	0.0039
4/21/2011	<0.0005	<0.0004	<0.0008	<0.0009
4/19/2012	<0.0005	<0.0004	0.001	0.0026
5/2/2013	<0.00046	<0.00036	0.0011	0.0011
5/20/2014	<0.00046	<0.00036	<0.00081	<0.0009
5/6/2015	<0.00046	<0.00036	0.0011	0.0016
5/5/2016	<0.00046	<0.00036	<0.00081	<0.0009

MW-13 Groundwater Data
Delphi Harrison Thermal Systems Site

Date	TCE	PCE	1,2-DCE	VC
8/8/2001	<0.002	<0.002	<0.002	<0.002
10/29/2001	<0.002	<0.002	<0.002	<0.002
1/12/2005	<0.002	<0.002	<0.002	<0.002
10/24/2006	0.002	<0.002	<0.002	<0.002
11/28/2007	<0.002	<0.002	<0.002	<0.002
11/5/2008	<0.002	<0.002	<0.002	<0.002
7/16/2009	<0.005	<0.005	<0.005	<0.005
4/28/2010	<0.0005	<0.0004	<0.0008	<0.0009
4/21/2011	<0.0005	<0.0004	<0.0008	<0.0009
4/19/2012	<0.0005	<0.0004	<0.0008	<0.0009
5/2/2013	<0.00046	<0.00036	<0.00081	<0.0009
5/2/2013	<0.00046	<0.00036	<0.00081	<0.0009
5/20/2014	<0.00046	<0.00036	<0.00081	<0.0009
5/7/2015	<0.00046	<0.00036	<0.00081	<0.0009
5/5/2016	<0.00046	<0.00036	<0.00081	<0.0009

NOTES:

1. BASE MAP ADAPTED FROM A 2015 AERIAL PHOTOGRAPH DOWNLOADED FROM GOOGLE EARTH PRO AND SITE OBSERVATIONS.

2. ANALYTICAL TESTING WAS COMPLETED BY TEST AMERICA LABORATORIES.

3. UNITS ARE LISTED IN MILLIGRAMS PER LITER (mg/l). (< - INDICATES COMPOUND NOT DETECTED ABOVE THE SPECIFIED DETECTION LIMIT)

4. THE SIZE AND LOCATION OF EXISTING SITE FEATURES SHOULD BE CONSIDERED APPROXIMATE.

LEGEND:

MW-8 = APPROXIMATE LOCATION AND DESIGNATION OF MONITORING WELL INSTALLED BY GZA

TCE = TRICHLOROETHENE

PCE = TETRACHLOROETHENE

1,2-DCE = TRANS & CIS 1,2-DICHLOROETHENE

VC = VINYL CHLORIDE

0.006 = HIGHLIGHTED VALUES INDICATE EXCEEDANCE OF NYS CLASS GA GROUNDWATER CRITERIA

DRAWN BY: TAK

DATE: SEPTEMBER 2016

GZA GeoEnvironmental of New York

APPROXIMATE SCALE IN FEET

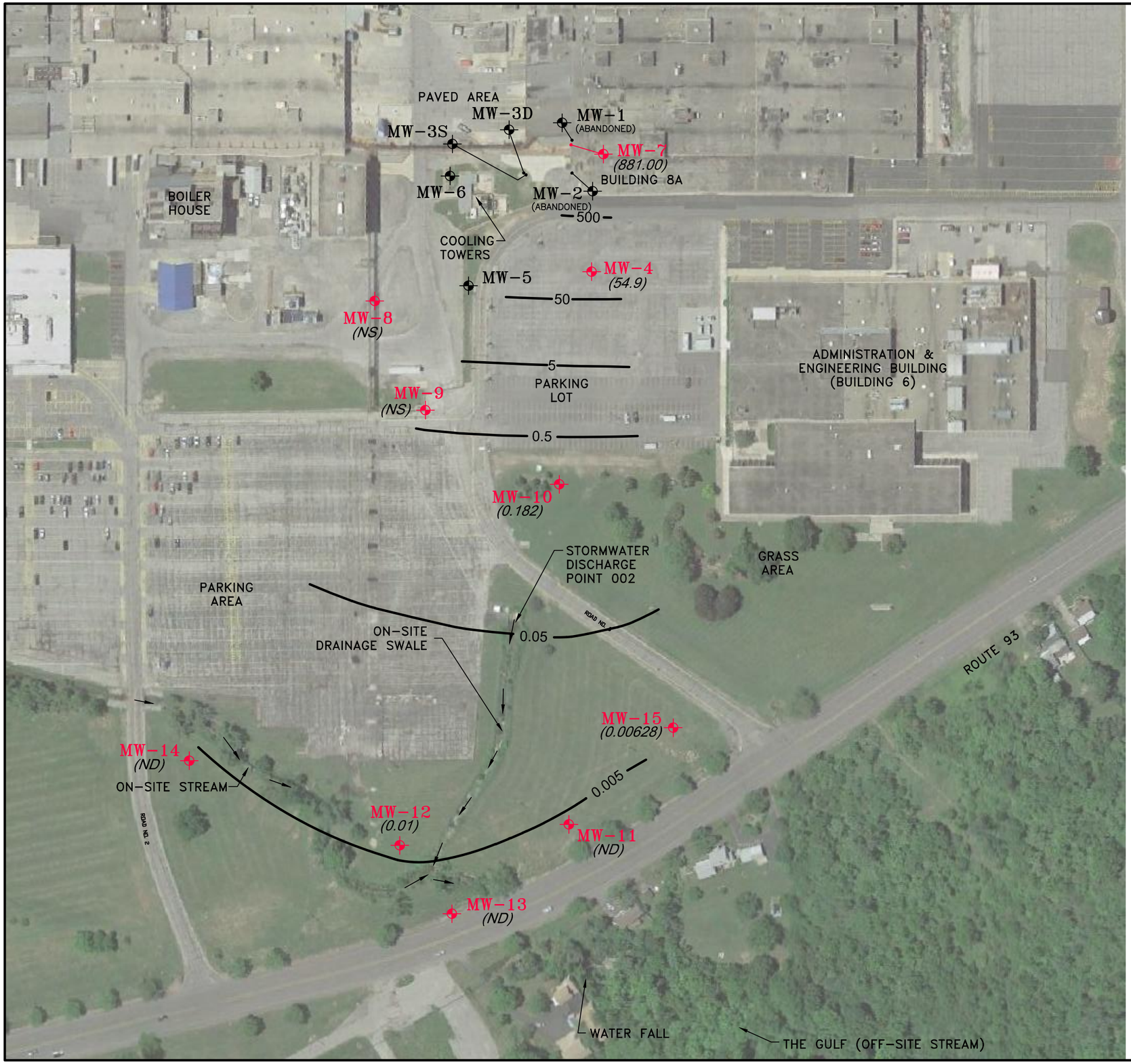
0 90 180 360

GM COMPONENTS HOLDINGS, LLC
DELPHI HARRISON THERMAL SYSTEMS SITE
200 UPPER MOUNTAIN ROAD
LOCKPORT, NEW YORK
MAY 2016 GROUNDWATER SAMPLING

GROUNDWATER ANALYTICAL RESULTS

PROJECT No.
21.0056546.00

FIGURE No.
1



NORTH

NOTES:

1. BASE MAP ADAPTED FROM A 2005 AERIAL PHOTOGRAPH DOWNLOADED FROM http://www.nysgis.state.ny.us/gateway/mg/interactive_main.html AND SITE OBSERVATIONS.

2. ANALYTICAL TESTING WAS COMPLETED BY TEST AMERICA LABORATORIES.

3. UNITS ARE LISTED IN MILLIGRAMS PER LITER (mg/l). (< - INDICATES COMPOUND NOT DETECTED ABOVE THE SPECIFIED DETECTION LIMIT)

4. THE SIZE AND LOCATION OF EXISTING SITE FEATURES SHOULD BE CONSIDERED APPROXIMATE.

LEGEND:

50 — APPROXIMATE LOCATION AND CONCENTRATION OF TOTAL VOC CONTOUR

MW-4 (60.9) — APPROXIMATE LOCATION AND DESIGNATION OF MONITORING WELL INSTALLED BY GZA SHOWN WITH TOTAL VOC CONCENTRATION

NS = NOT SAMPLED

ND = NON-DETECT

DRAWN BY: TAK

DATE: SEPTEMBER 2016

GZA GeoEnvironmental of New York

APPROXIMATE SCALE IN FEET

0 90 180 360

GM COMPONENTS HOLDINGS, LLC

DELPHI HARRISON THERMAL SYSTEMS SITE

200 UPPER MOUNTAIN ROAD

LOCKPORT, NEW YORK

MAY 2016 GROUNDWATER SAMPLING

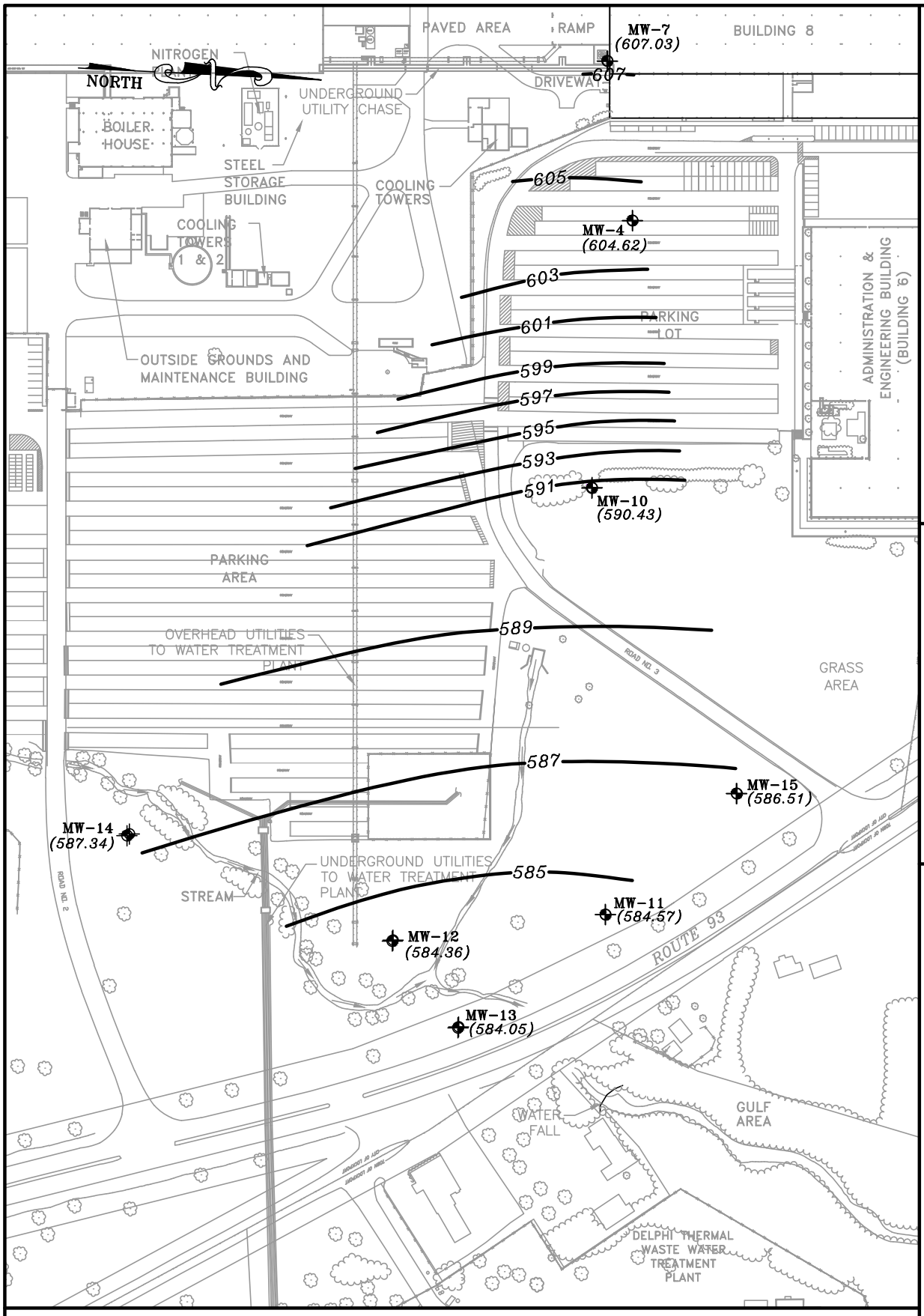
TOTAL COC CONTOUR MAP

PROJECT No.

21.0056546.00

FIGURE No.

2



LEGEND:

MW-4 (604.04) — APPROXIMATE LOCATION AND DESIGNATION OF EXISTING MONITORING WELL INSTALLED BY GZA

APPROXIMATE GROUNDWATER ELEVATION MEASURED ON DATE SHOWN IN TITLE BLOCK

NOTES:

1. BASE MAP ADAPTED FROM AN AUTOCAD FILE PROVIDED BY DELPHI HARRISON THERMAL SYSTEMS.

DRAWN BY: TAK

DATE: SEPTEMBER 2016

GZA GeoEnvironmental of New York

SCALE IN FEET

0 100 200 400

GM COMPONENTS HOLDINGS, LLC

DELPHI HARRISON THERMAL SYSTEMS SITE

200 UPPER MOUNTAIN ROAD

LOCKPORT, NEW YORK

MAY 2016 GROUNDWATER SAMPLING

GROUNDWATER ISOPOTENTIAL MAP

(MAY 2016)

PROJECT No.

21.0056546.00

FIGURE No.

3

GZA-K:\PROJECTS\56500s\56546 GM Component LLC\TCE Release Area MNA Sampling\2016 Figures\FIGURE 3 GW CONTOURS.dwg [FIGURE 3] September 06, 2016 - 11:18am theodore.kle

APPENDIX A

MONITORING WELL OBSERVATIONS AND GROUNDWATER SAMPLING LOGS

SAMPLE COLLECTION DATA SHEET - GROUNDWATER SAMPLING PROGRAM

PROJECT NAME Delphi Harrison Thermal Systems Site PROJECT NO. 56546

SAMPLING CREW MEMBERS P. Nyznyk SUPERVISOR T. Bohlen

DATE OF SAMPLE COLLECTION 5/4/16 - 5/7/16

[Note: For 2" dia. well, 1 ft. = 0.14 gal (imp) or 0.16 gal (us)]

Sample I.D. Number	Well No.	Measuring Point Elev. (ft. AMSL)	Bottom Depth (ft. btoc)	Water Depth (ft. btoc)	Water Elevation (ft. AMSL)	Well Volume (gallons)	Bailer Volume No. Bails	Volume Purged (gallons)	Field pH	Field Temp.	Field Cond.	Time	Sample Description & Analysis
MW-15 050416	MW-15	594.04	16.95	7.53	586.51	1.5	/	0.6	7.02	11.1	2.69	1719	VOC MNA H_2
MW-4 050516	MW-4	613.07	34.77	8.45	604.62	4.32	/	1.1	7.17	11.3	4.72	0930	VOC, MNA H_2
MW-10 050516	MW-10	604.70	23.82	14.27	590.43	1.55	/	0.7	7.07	12.9	6.25	1150	VOC, MNA H_2
MW-11 050516	MW-11	590.16	25.21	5.59	584.57	3.2	/	1.1	7.44	10.2	1.40	1426	VOC, MNA H_2
MW-13 050516	MW-13	589.02	14.16	4.97	584.05	1.5	/	0.6	7.21	11.4	6.38	1610	VOC, MNA H_2
MW-14 050616	MW-14	592.77	21.40	5.43	587.34	2.60	/	0.8	7.31	9.3	4.77	0845	VOC, MNA H_2
MW-12 050616	MW-12	590.71	16.45	6.35	584.36	1.65	/	1.1	7.05	10.3	6.50	1115	VOC, MNA H_2
MW-7 050716	MW-7	613.86	27.39	6.83	607.03	3.35	/	4.6	7.44	14.5	1.68	1300	VOC, MNA

Additional Comments:

Copies to:

FMG MODIFICATIONS MUST BE ACCOMPANIED BY A REVISION REQUEST FORM APPROVED BY THE PROJECT MANAGER

12360 (2) PART C FMG-06-4-07
Revision 3 October 29, 2002

OVM 33.2 ppm # - Flow rate using calc. @ H_2 Micro Seep start @ 1008 - End @ 1038

MONITORING WELL RECORD FOR LOW-FLOW PURGING

Project Data:

Project Name: GMCH Delphi Harrison
Ref. No.: 56546

Date: 5/5/16
Personnel: D. Nyznyk

Monitoring Well Data:

Well No.: MW-4
Measurement Point: TOR
Constructed Well Depth (ft): 32.5
Measured Well Depth (ft): 34.97
Depth of Sediment (ft):

Screen Length (ft): 17.5 - 32.5 = 17'
Depth to Pump Intake (ft)[1]: 20'
Well Diameter, D (in): 2"
Well Screen Volume, V_s (mL)[2]: 4.32 gal
Initial Depth to Water (ft): 8.95

Time	Pumping Rate (mL/min)	Depth to Water (ft)	Drawdown from Initial Water Level[3] (ft)	pH	Temperature °C	Conductivity (mS/cm)	ORP (mV)	DO (mg/L)	Turbidity (NTU)	Volume Purged, Vp (mL)	No. of Well Screen Volumes Purged[4]
0825	# 68	8.81		6.72	11.6	4.70	217.9	0.94	17.5	0	
0890		9.08		7.15	11.5	4.71	137.2	0.33	20.9	0.2	
0845		9.11		7.17	11.5	4.77	116.3	0.32	4.17	0.3	
0850		9.15		7.17	11.4	4.76	102.5	0.19	5.89	0.4	
0855		9.15		7.17	11.5	4.76	91.5	0.22	5.26	0.5	
0900		9.15		7.17	11.4	4.76	66.3	0.16	5.37	0.6	
0905		9.15		7.17	11.4	4.75	59.1	0.14	5.13	0.7	
0910		9.15		7.17	11.5	4.75	22.6	0.14	5.18	0.8	
0915		9.15		7.17	11.4	4.73	19.7	0.14	5.07	0.9	
0920		9.15		7.17	11.3	4.71	-7.0	0.16	4.92	1.0	
0925		9.15		7.17	11.3	4.72	-9.1	0.17	4.76	1.1	
0930		9.15		7.17	11.3	4.72	-10.2	0.16	4.67	1.2	

Notes:

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

(2) The well screen volume will be based on a 5-foot screen length. $V_s = p*(D/2)^2*(5*12)*(2.54)^3$

(3) The drawdown from the initial water level should not exceed 0.3 ft.

(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 stablization criteria and appear to be stablizing). No. of Well Screen Volumes Purged= Vp/Vs.

WELL PURGING FIELD INFORMATION FORM

JOB# 5 6 5 4 6 -

SITE/PROJECT NAME: ____________________

WELL# MW-4

WELL PURGING INFORMATION

05 05 16	05 05 16	14.3	
PURGE DATE (MM DD YY)	SAMPLE DATE (MM DD YY)	WATER VOL. IN CASING (LITERS/GALLONS)	ACTUAL VOLUME PURGED (LITERS/GALLONS)

PURGING AND SAMPLING EQUIPMENT

PURGING EQUIPMENT DEDICATED Y N (CIRCLE ONE)

SAMPLING EQUIPMENT DEDICATED Y N (CIRCLE ONE)

PURGING DEVICE	B	A- SUBMERSIBLE PUMP / C- PERISTALTIC PUMP	D- GAS LIFT PUMP / F- PURGE PUMP	G- BAILER / H- WATERRA®	X- ______ PURGING OTHER (SPECIFY)
SAMPLING DEVICE	B	B- BLADDER PUMP	E- DIPPER BOTTLE		X- ______ SAMPLING OTHER (SPECIFY)
PURGING DEVICE	E	A- TEFLON / B- STAINLESS STEEL / C- POLYPROPYLENE	D- PVC / E- POLYETHYLENE		X- ______ PURGING OTHER (SPECIFY)
SAMPLING DEVICE	E				X- ______ SAMPLING OTHER (SPECIFY)
PURGING DEVICE	E	A- TEFLON / B- TYGON / C- ROPE	D- POLYPROPYLENE / E- POLYETHYLENE / X- ______ (SPECIFY)	F- SILICONE / G- COMBINATION TEFLON/POLYPROPYLENE	X- ______ PURGING OTHER (SPECIFY)
SAMPLING DEVICE	E				X- ______ SAMPLING OTHER (SPECIFY)

FILTERING DEVICES 0.45 [ ] A- IN-LINE DISPOSABLE B- PRESSURE C- VACUUM

FIELD MEASUREMENTS

WELL ELEVATION	613.07	(msl-ft)	GROUNDWATER ELEVATION	604.62	(msl-ft)
DEPTH TO WATER	8.45	(bgl-ft)	WELL DEPTH	34.97	(bgl-ft)

pH (std)	TURBIDITY (ntu)	CONDUCTIVITY (umhos/cm AT 25°C)	ORP (mV)	DO (mg/L)	SAMPLE TEMPERATURE (°C)

FIELD COMMENTS

SAMPLE APPEARANCE: Clear ODOR: Clear COLOR: Clear TURBIDITY: Clear

WEATHER CONDITIONS: WIND SPEED: 0-15 DIRECTION: NE PRECIPITATION/OUTLOOK: Cloudy

SPECIFIC COMMENTS

I CERTIFY THAT SAMPLING PROCEDURES WERE IN ACCORDANCE WITH APPLICABLE PROTOCOLS

5/5/16 Pete Nyznyk [signature]

DATE PRINT SIGNATURE

ANY MODIFICATIONS MUST BE ACCOMPANIED BY A REVISION REQUEST FORM APPROVED BY THE PROJECT MANAGER

OVM - 385.2 ppm

MONITORING WELL RECORD FOR LOW-FLOW PURGING

Project Data:

Project Name: GMCH Delphi Harrison
Ref. No.: 56546.00

Date: 5/16/16
Personnel: P. Nyzhyk

Monitoring Well Data:

Well No.: MW-7
Measurement Point: TOR
Constructed Well Depth (ft): 27.20
Measured Well Depth (ft): 27.39
Depth of Sediment (ft):

Screen Length (ft): 12.2 - 27.2 = 15
Depth to Pump Intake (ft)[1]: 22
Well Diameter, D (in): 2
Well Screen Volume, V_s (mL)[2]: 3.35
Initial Depth to Water (ft): 6.83

Time	Pumping Rate (mL/min)	Depth to Water (ft)	Drawdown from Initial Water Level[3] (ft)	pH	Temperature °C	Conductivity (mS/cm)	ORP (mV)	DO (mg/L)	Turbidity (NTU)	Volume Purged, Vp (mL)	No. of Well Screen Volumes Purged[4]
0946		7.33		7.44	14.9	1.78	72.2	1.46	6.29	0	
0953		8.22		7.38	14.4	1.79	-42.8	0.51	4.13	0.2	
1008		9.79		7.38	14.3	1.79	-66.0	0.47	3.97	1.0	
1018		11.11		7.37	14.4	1.76	-71.9	0.43	4.01	1.7	
1028		12.64		7.37	14.3	1.71	-75.5	0.33	3.67	2.0	
1038		14.81		7.40	14.3	1.69	-77.9	0.59	3.61	2.9	
1048		17.31		7.43	14.4	1.59	-75.9	1.07	3.69	3.7	
1058		19.55		7.41	14.5	1.73	-62.9	12.0	3.51	4.7	
1103	Org	22.47		7.44	14.5	1.68	-55.8	51.0	3.58	4.6	
1300	Sampled	7.22		7.52	15.1	1.77	32.9	2.01	4.26		

5/16/16
5/16

Notes:

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

(2) The well screen volume will be based on a 5-foot screen length. $V_s = p*(D/2)^2*(5*12)*(2.54)^3$

(3) The drawdown from the initial water level should not exceed 0.3 ft.

(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 stablization criteria and appear to be stablizing). No. of Well Screen Volumes Purged = Vp/Vs.

WELL PURGING FIELD INFORMATION FORM

JOB# 56546-00

SITE/PROJECT NAME: ____________________

WELL# MW-7

WELL PURGING INFORMATION

Purge Date (MM DD YY)	Sample Date (MM DD YY)	Water Vol. in Casing (Liters/Gallons)	Actual Vol. Purged
05/16/16	05/17/16	3.3	4.6

PURGING AND SAMPLING EQUIPMENT

PURGING EQUIPMENT (CIRCLE ONE) — SAMPLING EQUIPMENT DEDICATED Y N (CIRCLE ONE)

PURGING DEVICE	B	
SAMPLING DEVICE	B	BLADDER PUMP
PURGING DEVICE	E	POLYETHYLENE
SAMPLING DEVICE	E	
PURGING DEVICE	E	TEFLON, SILICONE, COMBINATION TEFLON/POLYPROPYLENE
SAMPLING DEVICE	E	

FILTERING DEVICES 0.45 [ ] A. IN-LINE DISPOSABLE B. PRESSURE C. VACUUM

FIELD MEASUREMENTS

WELL ELEVATION	613.86 (msl ft)	GROUNDWATER ELEVATION	607.03 (msl ft)
DEPTH TO WATER	6.83 (ft)	WELL DEPTH	27.89 (ft)

pH	TURBIDITY	CONDUCTIVITY	ORP	DO	SAMPLE TEMPERATURE

FIELD COMMENTS

SAMPLE APPEARANCE:

WEATHER CONDITIONS:

SPECIFIC COMMENTS:

5/16/16 — Pete Mazany/[illegible] — [signature]

DATE — PRINT — SIGNATURE

OVM - 0.0ppm *Flow-RATE calc #2 Microsed Start @ 1227 - END @ 1257

MONITORING WELL RECORD FOR LOW-FLOW PURGING

Project Data:

Project Name: GMCA Delphi Harrison
Ref. No.: 56546

Date: 5/5/16
Personnel: P. NYZNYK

Monitoring Well Data:

Well No.: MW-10
Measurement Point: TOR
Constructed Well Depth (ft): 21.3
Measured Well Depth (ft): 23.82
Depth of Sediment (ft):

Screen Length (ft): 8.8'
Depth to Pump Intake (ft)[1]: 19'
Well Diameter, D (in): 2"
Well Screen Volume, V_s (mL)[2]: 1.55 gal
Initial Depth to Water (ft): 14.27

Time	Pumping Rate (mL/min)	Depth to Water (ft)	Drawdown from Initial Water Level[3] (ft)	pH	Temperature °C	Conductivity (mS/cm)	ORP (mV)	DO (mg/L)	Turbidity (NTU)	Volume Purged, V_p (mL)	No. of Well Screen Volumes Purged[4]
1103	≈76	14.63		7.11	13.1	3.88	134.3	0.56	1.94	0	
1130		14.70		7.10	13.1	5.86	110.6	0.17	1.86	0.3	
1135		14.70		7.07	13.3	5.99	106.8	0.15	1.91	0.4	
1140		14.70		7.07	12.8	6.04	104.8	0.13	1.95	0.5	
1145		14.70		7.07	13.0	6.10	103.9	0.12	1.89	0.6	
1150		14.70		7.09	12.9	6.25	102.6	0.12	1.82	0.7	

Notes:

(1) The pump intake will be placed at the well screen mid-point or at a minimum of 3 ft above any sediment accumulated at the well bottom.

(2) The well screen volume will be based on a 5-foot screen length, $V_s = p^*(D/2)^{2*}(5*12)*(2.54)^3$

(3) The drawdown from the initial water level should not exceed 0.3 ft.

(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 stablizing). No. of Well Screen Volumes Purged= Vp/Vs.

FMG MODIFICATIONS MUST BE ACCOMPANIED BY A REVISION REQUEST FORM APPROVED BY THE PROJECT MANAGER

WELL PURGING FIELD INFORMATION FORM

JOB# 56546-00

SITE/PROJECT NAME: ______________________

WELL# MW-10

WELL PURGING INFORMATION

050516	050516	1.5	0.7
PURGE DATE (MM DD YY)	SAMPLE DATE (MM DD YY)	WATER VOL IN CASING (LITERS/GALLONS)	ACTUAL VOL PURGED (LITERS/GALLONS)

PURGING AND SAMPLING EQUIPMENT

PURGING EQUIPMENT DEDICATED Y N (CIRCLE ONE) SAMPLING EQUIPMENT DEDICATED Y N (CIRCLE ONE)

PURGING DEVICE	B	A - SUBMERSIBLE PUMP	D - GAS LIFT PUMP	G - BAILER	X- ____ PURGING OTHER (SPECIFY)
		B - PERISTALTIC PUMP	E - PURGE PUMP	H - WATERRA	
SAMPLING DEVICE	B	C - BLADDER PUMP	F - DIPPER/BOTTLE		X- ____ SAMPLING OTHER (SPECIFY)
PURGING DEVICE	E	A - TEFLON	D - PVC		X- ____ PURGING OTHER (SPECIFY)
		B - STAINLESS STEEL	E - POLYETHYLENE		
SAMPLING DEVICE	E	C - POLYPROPYLENE			X- ____ SAMPLING OTHER (SPECIFY)
PURGING DEVICE	E	A - TEFLON	D - POLYPROPYLENE	F - SILICONE	X- ____ PURGING OTHER (SPECIFY)
		B - TYGON	E - POLYETHYLENE	G - COMBINATION TEFLON/POLYPROPYLENE	
SAMPLING DEVICE	E	C - ROPE	X- ____ (SPECIFY)		X- ____ SAMPLING OTHER (SPECIFY)

FILTERING DEVICES 0.45 [ ] A - IN-LINE DISPOSABLE B - PRESSURE C - VACUUM

FIELD MEASUREMENTS

WELL ELEVATION	604.70 (m/ft)	GROUNDWATER ELEVATION	590.43 (m/ft)
DEPTH TO WATER	14.27 (m/ft)	WELL DEPTH	23.82 (m/ft)

pH (std)	TURBIDITY (ntu)	CONDUCTIVITY (µmhos/cm AT 25°C)	ORP (mV)	DO	SAMPLE TEMPERATURE (°C)

FIELD COMMENTS

SAMPLE APPEARANCE: Good ODOR: None COLOR: Clear TURBIDITY: Clear

WEATHER CONDITIONS: WIND SPEED 0-15 DIRECTION NE PRECIPITATION Y/N OUTLOOK Partly Cloudy

SPECIFIC COMMENTS ______________________

I CERTIFY THAT SAMPLING PROCEDURES WERE IN ACCORDANCE WITH APPLICABLE EPA PROTOCOLS

5/5/16	Peter Nyznyk	[signature]
DATE	PRINT	SIGNATURE

FIELD MODIFICATIONS MUST BE ACCOMPANIED BY A REVISION REQUEST FORM APPROVED BY THE PROJECT MANAGER

OVM 0 ppm ✱ Flow rate calc H2 MicroSEEP Start @ 1446 - END @ 1516

MONITORING WELL RECORD FOR LOW-FLOW PURGING

Project Data:

Project Name: GMCH Delphi Harrison
Ref. No.: 56546.00

Date: 5/5/16
Personnel: P. Nyznyk

Monitoring Well Data:

Well No.: MW-11
Measurement Point: TOR
Constructed Well Depth (ft): 29.10
Measured Well Depth (ft): 25.21
Depth of Sediment (ft):

Screen Length (ft): 9-21.4' (15.1')
Depth to Pump Intake (ft)[1]: 15'
Well Diameter, D (in): 2"
Well Screen Volume, V_s (mL)[2]: 3.20 gal
Initial Depth to Water (ft): 5.59

Time	Pumping Rate (mL/min)	Depth to Water (ft)	Drawdown from Initial Water Level[3] (ft)	pH	Temperature °C	Conductivity (mS/cm)	ORP (mV)	DO (mg/L)	Turbidity (NTU)	Volume Purged, Vp (mL)	No. of Well Screen Volumes Purged[4]
1325	~80	5.67		7.75	10.7	1.59	134.2	1.88	3.47	0	
1345		6.39		7.56	10.3	1.42	118.0	1.54	0.26	0.2	
1350		6.30		7.52	10.4	1.41	79.9	1.39	1.11	0.3	
1400		6.30		7.51	10.3	1.40	-59.0	1.29	1.02	0.6	
1410		6.30		7.43	10.3	1.40	-76.2	1.22	0.76	0.9	
1415		6.30		7.46	10.2	1.40	-77.9	1.23	0.77	1.0	
1420		6.30		7.44	10.2	1.40	-78.1	1.24	0.91	1.1	

Notes:

(1) The pump intake will be placed at the well screen mid-point or at a minimum of 3 ft above any sediment accumulated at the well bottom.

(2) The well screen volume will be based on a 5-foot screen length. $V_s = p*(D/2)^2*(5*12)*(2.54)^3$

(3) The drawdown from the initial water level should not exceed 0.3 ft.

(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 stablizing). No. of Well Screen Volumes Purged= Vp/Vs.

WELL PURGING FIELD INFORMATION FORM

JOB# 5 6 5 4 6 -

SITE/PROJECT NAME: GMCH Delphi Harrison

WELL# MW-11

WELL PURGING INFORMATION

0 5 0 5 1 6	0 5 0 5 1 6	3.2	11
PURGE DATE (MM DD YY)	SAMPLE DATE (MM DD YY)	WATER VOL. IN CASING (GALLONS)	ACTUAL VOL. PURGED (GALLONS)

PURGING AND SAMPLING EQUIPMENT

PURGING EQUIPMENT DEDICATED Y N (CIRCLE ONE)

SAMPLING EQUIPMENT DEDICATED Y N (CIRCLE ONE)

PURGING DEVICE: B — A - SUBMERSIBLE PUMP; B - BLADDER PUMP; C - PERISTALTIC PUMP; D - GAS LIFT PUMP; E - PURGE PUMP; F - DIPPER/BOTTLE; G - BAILER; H - WATERRA®; X - PURGING OTHER (SPECIFY)

SAMPLING DEVICE: B — X - SAMPLING OTHER (SPECIFY)

PURGING DEVICE: E — A - TEFLON; B - STAINLESS STEEL; C - POLYPROPYLENE; D - PVC; E - POLYETHYLENE; X - PURGING OTHER (SPECIFY)

SAMPLING DEVICE: E — X - SAMPLING OTHER (SPECIFY)

PURGING DEVICE: E — A - TEFLON; B - TYGON; C - ROPE; D - POLYPROPYLENE; E - POLYETHYLENE; F - SILICONE; G - COMBINATION TEFLON/POLYPROPYLENE; X - (SPECIFY); X - PURGING OTHER (SPECIFY)

SAMPLING DEVICE: E — X - SAMPLING OTHER (SPECIFY)

FILTERING DEVICES 0.45: [ ] A - IN-LINE DISPOSABLE; B - PRESSURE; C - VACUUM

FIELD MEASUREMENTS

WELL ELEVATION	590.10	(m/ft)	GROUNDWATER ELEVATION	589.57 (m/ft)
DEPTH TO WATER	5.59	(m/ft)	WELL DEPTH	25.21 (m/ft)

pH	TURBIDITY	CONDUCTIVITY	ORP	DO	SAMPLE TEMPERATURE
(std)	(ntu)	(umhos/cm AT 25°C)	(mV)		(°C)
(std)	(ntu)	(umhos/cm AT 25°C)	(mV)		(°C)
(std)	(ntu)	(umhos/cm AT 25°C)	(mV)		(°C)
(std)	(ntu)	(umhos/cm AT 25°C)	(mV)		(°C)
(std)	(ntu)	(umhos/cm AT 25°C)	(mV)		(°C)

FIELD COMMENTS

SAMPLE APPEARANCE: Good ODOR: None COLOR: Clear TURBIDITY: Clear

WEATHER CONDITIONS: WIND SPEED: 0-15 DIRECTION: NE PRECIPITATION / OUTLOOK: Partly Cloudy

SPECIFIC COMMENTS:

I CERTIFY THAT SAMPLING PROCEDURES WERE IN ACCORDANCE WITH APPLICABLE [illegible] PROTOCOLS

5/5/16 — Peter Myznyk — [signature]

DATE — PRINT — SIGNATURE

FAILURE [illegible] ACCOMPANIED BY A REVISION REQUEST FORM APPROVED BY THE PROJECT MANAGER

OVM 0 ppm ★ Flow rate calc - w/ 1L bottle H_2 Microscop Start @ 1141 END @ 1211

MONITORING WELL RECORD FOR LOW-FLOW PURGING

Project Data:

Project Name: GMCH Delphi Harrison
Ref. No.: 56546.00

Date: 5/6/16
Personnel: D. Nyznyk

Monitoring Well Data:

Well No.: MW-12
Measurement Point: TOR
Constructed Well Depth (ft): 15.10
Measured Well Depth (ft): 16.49
Depth of Sediment (ft):

Screen Length (ft): 7.1
Depth to Pump Intake (ft)[1]: 14
Well Diameter, D (in): 2
Well Screen Volume, V_s (mL)[2]: 1,165
Initial Depth to Water (ft): 6.35

Time	Pumping Rate (mL/min)	Depth to Water (ft)	Drawdown from Initial Water Level[3] (ft)	pH	Temperature °C	Conductivity (mS/cm)	ORP (mV)	DO (mg/L)	Turbidity (NTU)	Volume Purged, Vp (mL)	No. of Well Screen Volumes Purged[4]
1015	★95	7.76		7.20	11.5	7.40	196.2	2.33	7.52	0	
1035		7.81		7.11	10.4	7.03	117.3	0.18	7.19	0.3	
1090		7.83		7.10	10.4	6.94	111.9	0.16	7.13	0.9	
1045		7.83		7.10	10.3	6.84	76.1	0.15	7.06	0.5	
1100		7.83		7.04	10.3	6.162	-32.0	0.14	6.97	0.8	
1105		7.83		7.05	10.3	6.151	-43.9	0.13	7.01	0.9	
1110		7.83		7.05	10.4	6.150	-47.8	0.13	7.11	1.0	
1115		7.83		7.05	10.3	6.50	-49.6	0.14	7.07	1.1	

Notes:

(1) The pump intake will be placed at the well screen mid-point or at a minimum of 3 ft above any sediment accumulated at the well bottom.

(2) The well screen volume will be based on a 5-foot screen length. $V_s=p*(D/2)^2*(5*12)*(2.54)^3$

(3) The drawdown from the initial water level should not exceed 0.3 ft.

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

WELL PURGING FIELD INFORMATION FORM

JOB# 56546 .

SITE/PROJECT NAME: ______

WELL# MW-12

WELL PURGING INFORMATION

05/06/16	05/06/16	1.6	[illegible]
PURGE DATE (MM DD YY)	SAMPLE DATE (MM DD YY)	WATER VOL. IN CASING (GALLONS)	[illegible] (GALLONS)

PURGING AND SAMPLING EQUIPMENT

PURGING EQUIPMENT DEDICATED Y N (CIRCLE ONE) SAMPLING EQUIPMENT DEDICATED Y N (CIRCLE ONE)

PURGING DEVICE: B

SAMPLING DEVICE: B

PURGING DEVICE: E

SAMPLING DEVICE: E

PURGING DEVICE: E

SAMPLING DEVICE: E

FILTERING DEVICES 0.45 ______ A - IN-LINE DISPOSABLE B - PRESSURE C - VACUUM

FIELD MEASUREMENTS

WELL ELEVATION	590.71 (m/ft)	GROUNDWATER ELEVATION	584.36 (m/ft)
DEPTH TO WATER	6.35 (m/ft)	WELL DEPTH	16.49 (m/ft)

pH	TURBIDITY	CONDUCTIVITY	ORP	DO	SAMPLE TEMPERATURE
(std)	(ntu)	(µmhos/cm AT 25°C)	(mV)		(°C)
(std)	(ntu)	(µmhos/cm AT 25°C)	(mV)		(°C)
(std)	(ntu)	(µmhos/cm AT 25°C)	(mV)		(°C)
(std)	(ntu)	(µmhos/cm AT 25°C)	(mV)		(°C)
(std)	(ntu)	(µmhos/cm AT 25°C)	(mV)		(°C)

FIELD COMMENTS

SAMPLE APPEARANCE: Good ODOR: None COLOR: Clear TURBIDITY: Clear

WEATHER CONDITIONS: WIND SPEED: 0-5 mph DIRECTION: N PRECIPITATION/OUTLOOK: Sunny

SPECIFIC COMMENTS:

I CERTIFY THAT SAMPLING PROCEDURES WERE IN ACCORDANCE WITH APPLICABLE [illegible] PROTOCOLS

5/6/16 Pete Nyznyk [signature]

DATE PRINT SIGNATURE

[illegible] BY A REVISION REQUEST FORM APPROVED BY THE PROJECT MANAGER

OVM 0 ppm *Flow Rate Calc. Hz MicroSeep Start @1636 END @ 1706

MONITORING WELL RECORD FOR LOW-FLOW PURGING

Project Data:

Project Name: GMC-H Delphi Harrison
Ref. No.: 56596.00

Date: 5/5/16
Personnel: P. NYZNYK

Monitoring Well Data:

Well No.: MW-13
Measurement Point: TOR
Constructed Well Depth (ft): 15'
Measured Well Depth (ft): 14.16
Depth of Sediment (ft):

Screen Length (ft): 7'
Depth to Pump Intake (ft)[1]: 12'
Well Diameter, D (in): 2"
Well Screen Volume, V_s (mL)[2]: 1.50 gal
Initial Depth to Water (ft): 4.97

Time	Pumping Rate (mL/min)	Depth to Water (ft)	Drawdown from Initial Water Level[3] (ft)	pH	Temperature °C	Conductivity (mS/cm)	ORP (mV)	DO (mg/L)	Turbidity (NTU)	Volume Purged, Vp (mL)	No. of Well Screen Volumes Purged[4]
1537	*96	5.27		7.25	11.6	5.87	123.3	4.41	41.6	0	
1555		5.34		7.18	11.4	6.22	-71.7	0.17	8.27	0.3	
1600		5.34		7.19	11.3	6.32	-84.5	0.15	8.20	0.4	
1605		5.34		7.20	11.4	6.35	-91.9	0.14	8.16	0.5	
1610		5.34		7.21	11.4	6.38	-95.2	0.14	7.97	0.6	

Notes:

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

(2) The well screen volume will be based on a 5-foot screen length, $V_s = p*(D/2)^2*(5*12)*(2.54)^3$

(3) The drawdown from the initial water level should not exceed 0.3 ft.

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

WELL PURGING FIELD INFORMATION FORM

JOB# 56546 -

SITE/PROJECT NAME: GMCH Delphi Harrison

WELL# MW-13

WELL PURGING INFORMATION

PURGE DATE (MM DD YY)	SAMPLE DATE (MM DD YY)	WATER VOL. IN CASING (GALLONS)	ACTUAL VOL. PURGED (GALLONS)
050516	050516	1.5	0.6

PURGING AND SAMPLING EQUIPMENT

PURGING EQUIPMENT DEDICATED Y N (CIRCLE ONE)

SAMPLING EQUIPMENT DEDICATED Y N (CIRCLE ONE)

	Code	Options	Other
PURGING DEVICE	B	A - SUBMERSIBLE PUMP, B - BLADDER PUMP, C - PERISTALTIC PUMP, D - GAS LIFT PUMP, E - PURGE PUMP, F - DIPPER BOTTLE, G - BAILER, H - WATERRA®	X- PURGING OTHER (SPECIFY)
SAMPLING DEVICE	B		X- SAMPLING OTHER (SPECIFY)
PURGING DEVICE	E	A - TEFLON, B - STAINLESS STEEL, C - POLYPROPYLENE, D - PVC, E - POLYETHYLENE	X- PURGING OTHER (SPECIFY)
SAMPLING DEVICE	E		X- SAMPLING OTHER (SPECIFY)
PURGING DEVICE	E	A - TEFLON, B - TYGON, C - ROPE, D - POLYPROPYLENE, E - POLYETHYLENE, F - SILICONE, G - COMBINATION TEFLON/POLYPROPYLENE, X - (SPECIFY)	X- PURGING OTHER (SPECIFY)
SAMPLING DEVICE	E		X- SAMPLING OTHER (SPECIFY)

FILTERING DEVICES 0.45 [ ] A - IN-LINE DISPOSABLE B - PRESSURE C - VACUUM

FIELD MEASUREMENTS

WELL ELEVATION	589.02 (msl/ft)	GROUNDWATER ELEVATION	584.05 (msl/ft)
DEPTH TO WATER	4.97 (in/ft)	WELL DEPTH	14.16 (in/ft)

pH (std)	TURBIDITY (ntu)	CONDUCTIVITY (umhos/cm at 25°C)	ORP (mV)	DO	SAMPLE TEMPERATURE

FIELD COMMENTS

SAMPLE APPEARANCE: Good ODOR: None COLOR: Clear TURBIDITY: Clear

WEATHER CONDITIONS: WIND SPEED 0-15 DIRECTION NE PRECIPITATION Y/N OUTLOOK Partly Cloudy

SPECIFIC COMMENTS

I CERTIFY THAT SAMPLING PROCEDURES WERE IN ACCORDANCE WITH APPLICABLE PROTOCOLS

DATE: 5/5/16 PRINT: Pete Nyzhyk SIGNATURE: [signature]

ANY MODIFICATIONS MUST BE ACCOMPANIED BY A REVISION REQUEST FORM APPROVED BY THE PROJECT MANAGER

OVM-0.0ppm ✱ Flow Rate Calc H2 MicroSeep start @ 0915 END @ 0945

MONITORING WELL RECORD FOR LOW-FLOW PURGING

Project Data:

Project Name: GMCH Delphi Harrison

Ref. No.: 56546.00

Date: 5/6/16

Personnel: P. Nyznyk

Monitoring Well Data:

Well No.: MW-14

Measurement Point: TOR

Constructed Well Depth (ft): 19.1

Measured Well Depth (ft): 21.40

Depth of Sediment (ft):

Screen Length (ft): 9.1 - 19.1 = 10'

Depth to Pump Intake (ft)[1]: 17'

Well Diameter, D (in): 2

Well Screen Volume, V_s (mL)[2]: 2.60

Initial Depth to Water (ft): 5.43

Time	Pumping Rate (mL/min)	Depth to Water (ft)	Drawdown from Initial Water Level[3] (ft)	pH	Temperature °C	Conductivity (mS/cm)	ORP (mV)	DO (mg/L)	Turbidity (NTU)	Volume Purged, V_p (mL)	No. of Well Screen Volumes Purged[4]
0800	✱ 70	5.95		7.22	9.4	4.75	163.6	0.85	1.67	0	
0820		6.86		7.29	9.2	4.74	85.4	0.28	1.54	0.3	
0830		6.97		7.30	9.5	4.77	64.5	0.23	1.50	0.5	
0835		7.02		7.30	9.4	4.77	62.6	0.22	1.56	0.6	
0840		7.02		7.30	9.5	4.77	59.7	0.21	1.61	0.7	
0845		7.02		7.31	9.3	4.77	52.8	0.20	1.56	0.8	

Notes:

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

(2) The well screen volume will be based on a 5-foot screen length. $V_s = p^*(D/2)^2*(5*12)*(2.54)^3$

(3) The drawdown from the initial water level should not exceed 0.3 ft.

(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 stablizing). No. of Well Screen Volumes Purged= Vp/Vs.

WELL PURGING FIELD INFORMATION FORM

JOB# 56546 -

SITE/PROJECT NAME: ______________________

WELL# MW-14

WELL PURGING INFORMATION

05/06/16	05/06/16	2.6	0.8
PURGE DATE (MM DD YY)	SAMPLE DATE (MM DD YY)	WATER VOL. IN CASING (LITERS/GALLONS)	[illegible] (LITERS/GALLONS)

PURGING AND SAMPLING EQUIPMENT

PURGING EQUIPMENT DEDICATED Y N (CIRCLE ONE) — SAMPLING EQUIPMENT DEDICATED Y N (CIRCLE ONE)

PURGING DEVICE	B	A - SUBMERSIBLE PUMP B - PERISTALTIC PUMP C - BLADDER PUMP	D - GAS LIFT PUMP E - PURGE PUMP F - DIP/BUCKET [illegible]	G - BAILER H - WATERRA®	X - ______ PURGING OTHER (SPECIFY)
SAMPLING DEVICE	B				X - ______ SAMPLING OTHER (SPECIFY)
PURGING DEVICE	E	A - TEFLON B - STAINLESS STEEL C - POLYPROPYLENE	D - PVC E - POLYETHYLENE		X - ______ PURGING OTHER (SPECIFY)
SAMPLING DEVICE	E				X - ______ SAMPLING OTHER (SPECIFY)
PURGING DEVICE	E	A - TEFLON B - TYGON C - ROPE	D - POLYPROPYLENE E - POLYETHYLENE X - ______ (SPECIFY)	F - SILICONE G - COMBINATION TEFLON/POLYPROPYLENE	X - ______ PURGING OTHER (SPECIFY)
SAMPLING DEVICE	E				X - ______ SAMPLING OTHER (SPECIFY)

FILTERING DEVICES 0.45 [ ] A - INLINE DISPOSABLE B - PRESSURE C - VACUUM

FIELD MEASUREMENTS

WELL ELEVATION	592.77	(msl/ft)	GROUNDWATER ELEVATION	587.34 (msl/ft)
DEPTH TO WATER	6.43	(std/ft)	WELL DEPTH	21.40 (std/ft)

pH (std)	TURBIDITY (ntu)	CONDUCTIVITY (umhos/cm AT 25°C)	ORP (mV)	DO	SAMPLE TEMPERATURE (°C)

FIELD COMMENTS

SAMPLE APPEARANCE	Clear	ODOR	None	COLOR	Clear	[illegible]	Clear
WEATHER CONDITIONS	WIND SPEED	0-6 mph	DIRECTION	N	PERCENT [illegible]		Sunny

SPECIFIC COMMENTS

____

I CERTIFY THAT SAMPLING PROCEDURES WERE IN ACCORDANCE WITH APPLICABLE [illegible] PROTOCOLS

5/6/16	Peter Nyznyk	[signature]
DATE	PRINT	SIGNATURE

[illegible] MODIFICATIONS MUST BE ACCOMPANIED BY A REVISION REQUEST FORM APPROVED BY THE PROJECT MANAGER

-OVM reading 0.0 ppm - Microseep sample start @ 1757 end 1827

MONITORING WELL RECORD FOR LOW-FLOW PURGING

Project Data:

Project Name: GMCH Delphi Harrison
Ref. No.: 56596.00

Date: 5/4/16
Personnel: D. Nyznyk

Monitoring Well Data:

Well No.: MW-15
Measurement Point: TOR
Constructed Well Depth (ft): 17.90
Measured Well Depth (ft): 16.95
Depth of Sediment (ft):

Screen Length (ft): 7'
Depth to Pump Intake (ft)[1]: 13'
Well Diameter, D (in): 2'
Well Screen Volume, V_s (mL)[2]: 1.53 gal
Initial Depth to Water (ft): 7.53

Time	Pumping Rate (mL/min)	Depth to Water (ft)	Drawdown from Initial Water Level[3] (ft)	pH	Temperature °C	Conductivity (mS/cm)	ORP (mV)	DO (mg/L)	Turbidity (NTU)	Volume Purged, V_p (mL)	No. of Well Screen Volumes Purged[4]
1640	70*	7.77		6.93	11.6	2.70	192.0	1.15	0.61	0	
1645		7.77		6.96	11.5	2.69	180.5	0.40	0.57	0.1	
1703		7.77		6.99	11.0	2.69	149.4	0.21	0.55	0.3	
1709		7.77		7.02	11.0	2.69	145.6	0.17	0.60	0.4	
1714		7.77		7.01	11.0	2.69	143.5	0.20	0.56	0.5	
1719	↓	7.77		7.02	11.1	2.69	141.7	0.18	0.57	0.6	

Notes:

(1) The pump intake will be placed at the well screen mid-point or at a minimum of 3 ft above any sediment accumulated at the well bottom.

(2) The well screen volume will be based on a 5-foot screen length, $V_s = p^*(D/2)^2*(5*12)*(2.54)^3$

(3) The drawdown from the initial water level should not exceed 0.3 ft.

(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 stablizing). No. of Well Screen Volumes Purged = Vp/Vs.

* - calc using 1L bottle + stop watch

WELL PURGING FIELD INFORMATION FORM

JOB# 5 6 5 4 6 .

SITE/PROJECT NAME:

WELL# MW-15

WELL PURGING INFORMATION

PURGE DATE (MM DD YY)	SAMPLE DATE (MM DD YY)	WATER VOL. IN CASING (GALLONS)	ACTUAL VOL. PURGED (GALLONS)
05 04 16	05 04 16	1.5	0.6

PURGING AND SAMPLING EQUIPMENT

PURGING EQUIPMENT DEDICATED Y N (CIRCLE ONE)   SAMPLING EQUIPMENT DEDICATED Y N (CIRCLE ONE)

	Code	Options
PURGING DEVICE	B	A- SUBMERSIBLE PUMP, B- PERISTALTIC PUMP, C- BAILER, D- GAS LIFT PUMP, E- PURGE PUMP, H- WATERRA, X- PURGING OTHER (SPECIFY)
SAMPLING DEVICE	B	BLADDER PUMP, F- DIPPER BOTTLE, X- SAMPLING OTHER (SPECIFY)
PURGING DEVICE	E	A- TEFLON, B- STAINLESS STEEL, C- POLYPROPYLENE, D- PVC, E- POLYETHYLENE, X- PURGING OTHER (SPECIFY)
SAMPLING DEVICE	E	X- SAMPLING OTHER (SPECIFY)
PURGING DEVICE	E	A- TEFLON, B- TYGON, C- ROPE, D- POLYPROPYLENE, E- POLYETHYLENE, F- SILICONE, G- COMBINATION TEFLON/POLYPROPYLENE, X- PURGING OTHER (SPECIFY)
SAMPLING DEVICE	E	X- SAMPLING OTHER (SPECIFY)

FILTERING DEVICES 0.45 [ ] A- IN-LINE DISPOSABLE B- PRESSURE C- VACUUM

FIELD MEASUREMENTS

WELL ELEVATION	594.04 (m/ft)	GROUNDWATER ELEVATION	586.51 (m/ft)
DEPTH TO WATER	7.53 (m/ft)	WELL DEPTH	16.95 (m/ft)

pH (std)	TURBIDITY (ntu)	CONDUCTIVITY (umhos/cm at 25°C)	ORP (mV)	DO	SAMPLE TEMPERATURE (°C)

FIELD COMMENTS

SAMPLE APPEARANCE: Good ODOR: NONE COLOR: NONE TURBIDITY: Clear

WEATHER CONDITIONS: WIND SPEED 15 mph DIRECTION NE PRECIPITATION Y/N (OUTLOOK) 0

SPECIFIC COMMENTS

I CERTIFY THAT SAMPLING PROCEDURES WERE IN ACCORDANCE WITH APPLICABLE EPA PROTOCOLS

DATE	PRINT	SIGNATURE
5/4/16	Pete Nyzhyn	[signature]

ANY MODIFICATIONS MUST BE ACCOMPANIED BY A REVISION REQUEST FORM APPROVED BY THE PROJECT MANAGER

APPENDIX B

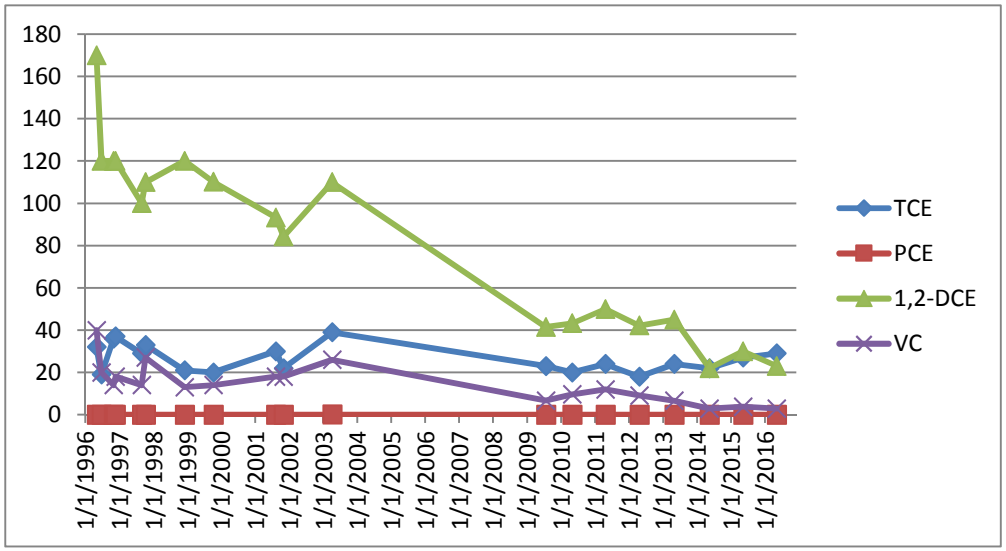
COC DATA GRAPHS

MW-4 Groundwater Data
Delphi Harrison Thermal Systems Site
GM Components Holdings, LLC
Lockport, New York

Date	TCE	PCE	1,2-DCE	VC
4/30/1996	32	<0.5	170	40
6/20/1996	19	<0.5	120	20
10/30/1996	36	<0.5	120	14
11/21/1996	37	<0.5	120	18
8/28/1997	29	<0.5	100	14
10/10/1997	33	<0.2	110	27
12/2/1998	21	<0.2	120	13
10/7/1999	20	<0.05	110.14	14
8/9/2001	30	0.003	93.28	18
10/31/2001	22	<0.002	84.25	18
4/7/2003	39	0.08	110	26
7/20/2009	23	<0.05	41.5	6.7
4/29/2010	20	0.0012	43.2	9.6
4/22/2011	24	0.0018	50	12
4/20/2012	18	0.0014	42.16	9.1
5/1/2013	24	<0.18	45	6.6
5/13/2014	22	<0.18	22	2.9
5/8/2015	27	<0.36	30	3.8
5/5/2016	29	<0.36	23	2.9

Notes:
Results are provided in parts per million (ppm)
1,2 DCE value includes total cis-1,2 DCE and trans 1,2 DCE. If "<" value, the listed value is the higher of the two method detection limits.

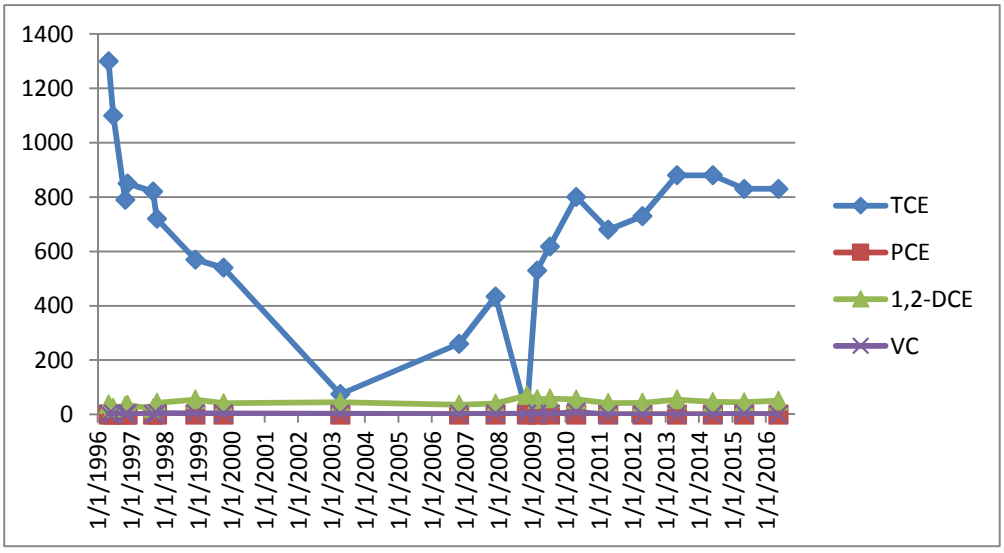
Duplicate samples were collected from this location on 6/20/96, 10/30/96 and 12/2/98. The higher of the two concentrations were recorded in this graph.



MW-7 Groundwater Data
Delphi Harrison Thermal Systems Site
GM Components Holdings, LLC
Lockport, New York

Date	TCE	PCE	1,2-DCE	VC
4/30/1996	1300	<0.5	37	1.8
6/20/1996	1100	<0.5	24	2.4
10/30/1996	790	<0.5	32	2.3
11/21/1996	850	<0.5	35	3.1
8/28/1997	820	<0.2	22	1.1
10/10/1997	720	<0.2	43	4.8
12/3/1998	570	<0.2	55	4.2
10/7/1999	540	<0.5	41	3.5
4/7/2003	75	<0.2	45	3
10/25/2006	260	0.077	36	1.7
11/29/2007	434	0.049	40	3.2
11/5/2008	1.1	<0.2	70	2.6
2/24/2009	530	0.071	56	3.6
7/15/2009	618	0.112	58.3	2.5
4/29/2010	800	0.14	55.2	9
4/11/2011	680	<1.8	42	<4.5
4/20/2012	730	<1.8	43	<4.5
5/3/2013	880	<3.6	55	<9
5/30/2014	880	<7.2	46	<18
5/7/2015	830	0.14	45	3
5/17/2016	830	<3.6	51	<9

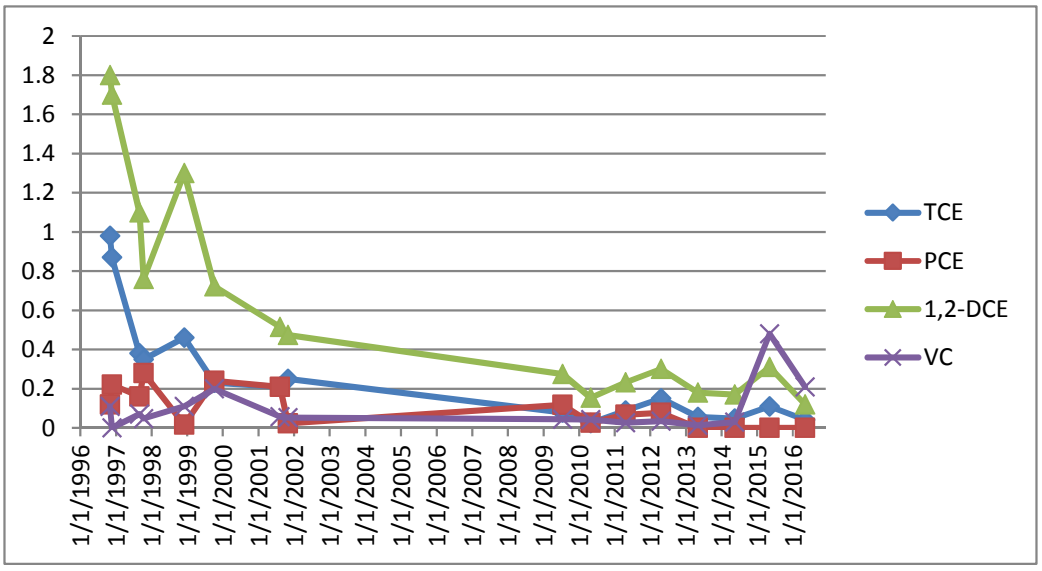
Notes:
Results are provided in parts per million (ppm)
1,2 DCE value includes total cis-1,2 DCE and trans 1,2 DCE. If "<" value, the listed value is the higher of the two method detection limits.



MW-10 Groundwater Data
Delphi Harrison Thermal Systems Site
GM Components Holdings, LLC
Lockport, New York

Date	TCE	PCE	1,2-DCE	VC
10/30/1996	0.98	0.12	1.8	0.11
11/21/1996	0.87	0.22	1.7	<0.1
8/28/1997	0.38	0.16	1.1	0.07
10/10/1997	0.35	0.28	0.76	0.047
12/1/1998	0.46	0.016	1.3	0.11
10/6/1999	0.23	0.24	0.722	0.2
8/9/2001	0.21	0.21	0.514	0.057
10/31/2001	0.25	0.023	0.473	0.053
7/15/2009	0.079	0.118	0.275	0.044
4/28/2010	0.024	0.026	0.153	0.042
4/21/2011	0.088	0.067	0.232	0.027
4/19/2012	0.15	0.077	0.3	0.035
5/1/2013	0.056	<0.0014	0.18	0.014
5/14/2014	0.048	<0.0014	0.17	0.029
5/8/2015	0.11	<0.0014	0.31	0.48
5/5/2016	0.041	<0.0014	0.12	0.21

Notes:
Results are provided in parts per million (ppm)
1,2 DCE value includes total cis-1,2 DCE and trans 1,2 DCE. If "<" value, the listed value is the higher of the two method detection limits.

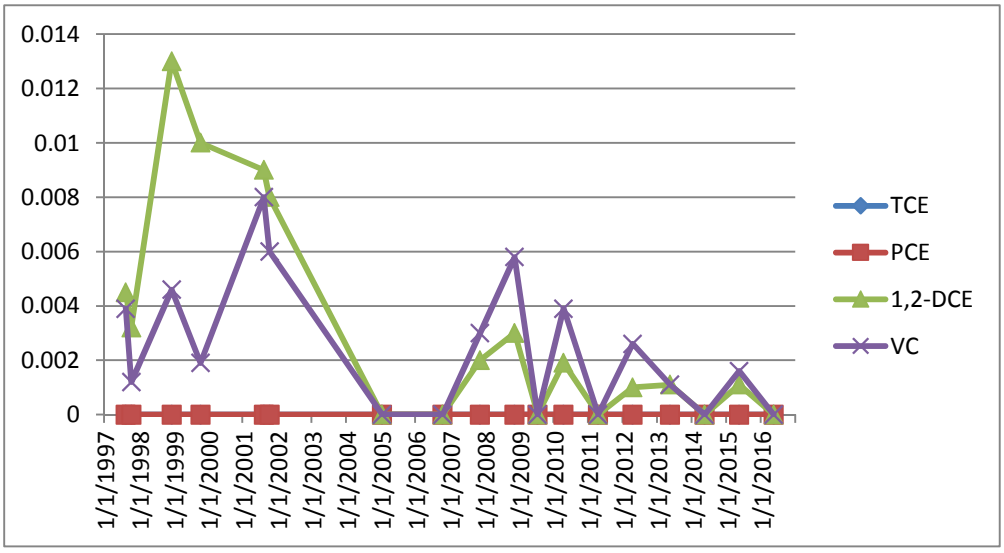


MW-11 Groundwater Data
Delphi Harrison Thermal Systems Site
GM Components Holdings, LLC
Lockport, New York

Date	TCE	PCE	1,2-DCE	VC
8/28/1997	<0.0005	<0.0005	0.0045	0.0039
10/10/1997	<0.0005	<0.0005	0.0032	0.0012
12/1/1998	<0.0005	<0.0005	0.013	0.0046
10/5/1999	<0.0005	<0.0005	0.01	0.0019
8/8/2001	<0.002	<0.002	0.009	0.008
10/30/2001	<0.002	<0.002	0.008	0.006
1/12/2005	<0.002	<0.002	<0.002	<0.002
10/24/2006	<0.002	<0.002	<0.002	<0.002
11/28/2007	<0.002	<0.002	0.002	0.003
11/4/2008	<0.002	<0.002	0.003	0.0058
7/16/2009	<0.005	<0.005	<0.005	<0.005
4/28/2010	<0.0005	<0.0004	0.0019	0.0039
4/21/2011	<0.0005	<0.0004	<0.0008	<0.0009
4/19/2012	<0.0005	<0.0004	0.001	0.0026
5/2/2013	<0.00046	<0.00036	0.0011	0.0011
5/20/2014	<0.00046	<0.00036	<0.00081	<0.0009
5/6/2015	<0.00046	<0.00036	0.0011	0.0016
5/5/2016	<0.00046	<0.00036	<0.00090	<0.0009

Notes:
Results are provided in parts per million (ppm)
1,2 DCE value includes total cis-1,2 DCE and trans 1,2 DCE. If "<" value, the listed value is the higher of the two method detection limits.

Duplicate samples were collected from this location on 10/10/97. The higher of the two concentrations were recorded in this graph.

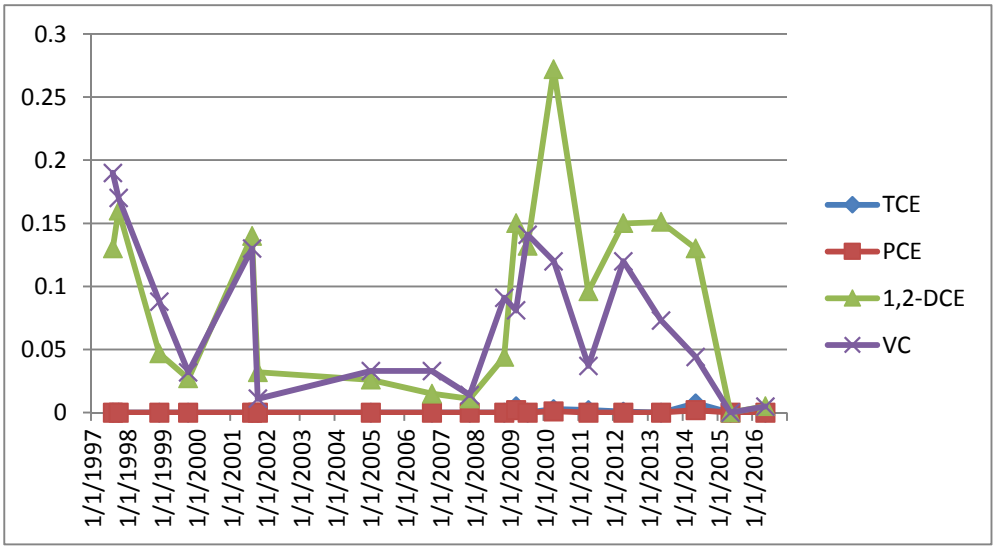


MW-12 Groundwater Data
Delphi Harrison Thermal Systems Site
GM Components Holdings, LLC
Lockport, New York

Date	TCE	PCE	1,2-DCE	VC
8/28/1997	<0.0005	<0.0005	0.13	0.19
10/10/1997	<0.0005	<0.0005	0.16	0.17
12/1/1998	<0.0005	<0.0005	0.047	0.088
10/6/1999	<0.0005	<0.0005	0.027	0.032
8/8/2001	<0.002	<0.002	0.14	0.13
10/30/2001	<0.002	<0.002	0.032	0.011
1/12/2005	<0.002	<0.002	0.026	0.033
10/25/2006	<0.002	<0.002	0.015	0.033
11/28/2007	<0.002	<0.002	0.011	0.014
11/14/2008	<0.002	<0.002	0.044	0.091
3/16/2009	0.005	0.002	0.15	0.081
7/16/2009	<0.005	<0.005	0.132	0.141
4/28/2010	0.0028	0.0011	0.272	0.12
4/20/2011	0.0021	<0.0004	0.096	0.037
4/18/2012	0.00083	<0.0004	0.15	0.12
5/3/2013	<0.002	<0.00036	0.151	0.073
5/19/2014	0.0074	0.002	0.13	0.044
5/7/2015	<0.00046	<0.00036	<0.00081	<0.0009
5/6/2016	<0.00046	<0.00036	0.0051	0.0049

Notes:
Results are provided in parts per million (ppm)
1,2 DCE value includes total cis-1,2 DCE and trans 1,2 DCE. If "<" value, the listed value is the higher of the two method detection limits.

Duplicate samples were collected from this location on 8/28/97 and 8/8/01. The higher of the two concentrations were recorded in this graph.

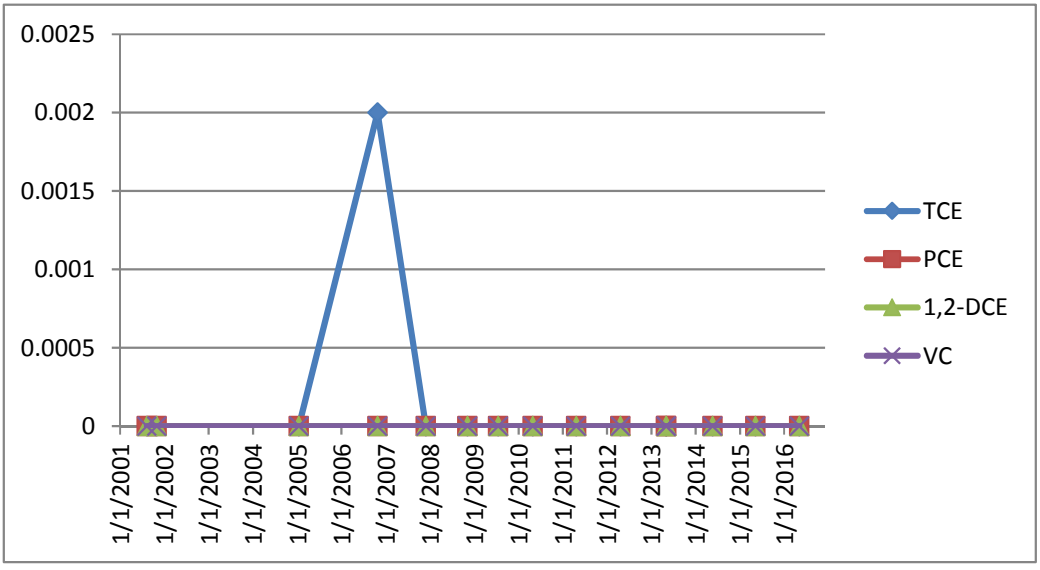


MW-13 Groundwater Data
Delphi Harrison Thermal Systems Site
GM Components Holdings, LLC
Lockport, New York

Date	TCE	PCE	1,2-DCE	VC
8/8/2001	<0.002	<0.002	<0.002	<0.002
10/29/2001	<0.002	<0.002	<0.002	<0.002
1/12/2005	<0.002	<0.002	<0.002	<0.002
10/24/2006	0.002	<0.002	<0.002	<0.002
11/28/2007	<0.002	<0.002	<0.002	<0.002
11/5/2008	<0.002	<0.002	<0.002	<0.002
7/16/2009	<0.005	<0.005	<0.005	<0.005
4/28/2010	<0.0005	<0.0004	<0.0008	<0.0009
4/21/2011	<0.0005	<0.0004	<0.0008	<0.0009
4/19/2012	<0.0005	<0.0004	<0.0008	<0.0009
5/2/2013	<0.00046	<0.00036	<0.00081	<0.0009
5/2/2013	<0.00046	<0.00036	<0.00081	<0.0009
5/20/2014	<0.00046	<0.00036	<0.00081	<0.0009
5/7/2015	<0.00046	<0.00036	<0.00081	<0.0009
5/5/2016	<0.00046	<0.00036	<0.00090	<0.0009

Notes:
Results are provided in parts per million (ppm)
1,2 DCE value includes total cis-1,2 DCE and trans 1,2 DCE. If "<" value, the listed value is the higher of the two method detection limits.

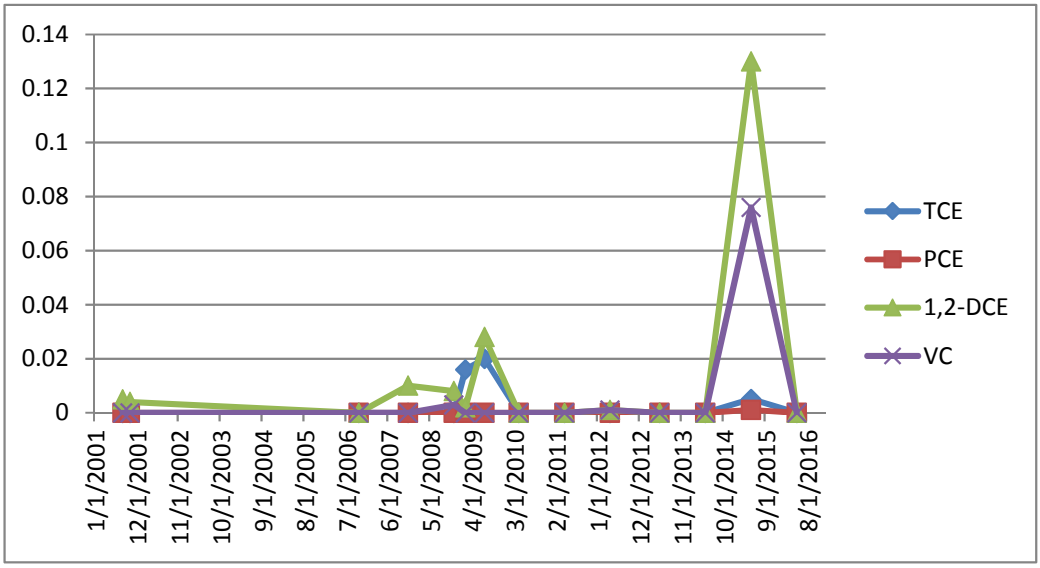
A duplicate sample was collected from this location on 4/19/2012.
The higher of the two concentrations were recorded in this graph.



MW-14 Groundwater Data
Delphi Harrison Thermal Systems Site
GM Components Holdings, LLC
Lockport, New York

Date	TCE	PCE	1,2-DCE	VC
8/10/2001	<0.002	<0.002	0.005	<0.002
10/30/2001	<0.002	<0.002	0.004	<0.002
10/24/2006	<0.002	<0.002	<0.002	<0.002
11/29/2007	<0.002	<0.002	0.01	<0.002
11/4/2008	<0.002	<0.002	0.008	0.003
2/24/2009	0.016	<0.002	0.002	<0.002
7/19/2009	0.02	<0.005	0.028	<0.005
4/27/2010	<0.005	<0.0004	<0.0008	<0.0009
4/21/2011	<0.005	<0.0004	<0.0008	<0.0009
4/19/2012	<0.005	<0.0004	0.001	0.001
5/3/2013	<0.00046	<0.00036	<0.00081	<0.0009
5/23/2014	<0.00046	<0.00036	<0.00081	<0.0009
5/7/2015	0.0051	0.0011	0.13	0.076
5/6/2016	<0.00046	<0.00036	<0.00090	<0.0009

Notes:
Results are provided in parts per million (ppm)
1,2 DCE value includes total cis-1,2 DCE and trans 1,2 DCE. If "<" value, the listed value is the higher of the two method detection limits.

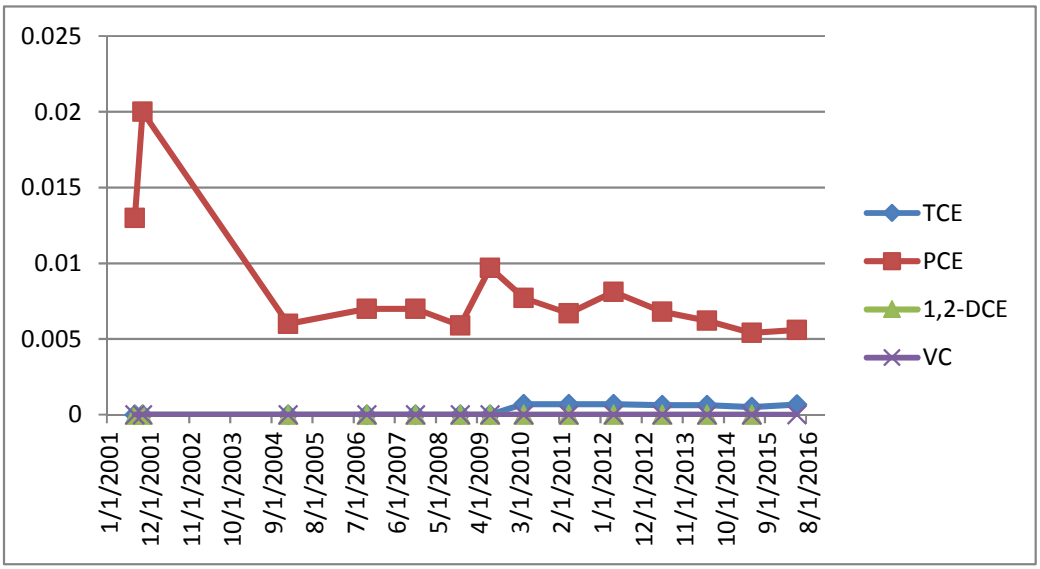


MW-15 Groundwater Data
Delphi Harrison Thermal Systems Site
GM Components Holdings, LLC
Lockport, New York

Date	TCE	PCE	1,2-DCE	VC
8/8/2001	<0.002	0.013	<0.002	<0.002
10/30/2001	<0.002	0.02	<0.002	<0.002
1/12/2005	<0.002	0.006	<0.002	<0.002
10/24/2006	<0.002	0.007	<0.002	<0.002
11/28/2007	<0.002	0.007	<0.002	<0.002
11/4/2008	<0.002	0.0059	<0.002	<0.002
7/16/2009	<0.005	0.0097	<0.005	<0.005
4/28/2010	0.0007	0.0077	<0.0008	<0.0009
4/21/2011	0.0007	0.0067	<0.0008	<0.0009
4/18/2012	0.0007	0.0081	<0.0008	<0.0009
5/1/2013	0.00064	0.0068	<0.00081	<0.0009
5/19/2014	0.00064	0.0062	<0.00081	<0.0009
5/6/2015	0.0005	0.0054	<0.00081	<0.0009
5/5/2016	0.00068	0.0056	<0.0009	<0.0009

Notes:
Results are provided in parts per million (ppm)
1,2 DCE value includes total cis-1,2 DCE and trans 1,2 DCE. If "<" value, the listed value is the higher of the two method detection limits.

Duplicate samples were collected from this location on 10/30/01. The higher of the two concentrations were recorded in this graph.



APPENDIX C

RESULTS EPA CVOC MONITORED NATURAL ATTENUATION RANKING SYSTEM

EPA cVOC MONITORED NATURAL ATTENUATION RANKING SYSTEM

Strength of Evidence Scorecard
Delphi Harrison Thermal Systems Site
GM Component Holdings, LLC
Lockport, New York

Analysis	Concentration in Most Contaminated Zone	Value	EXAMPLE Lab or Field Analysis Value (mg/L)	EXAMPLE Score	MW-4	MW-7	MW-10	MW-11	MW-12	MW-13	MW-14	MW-15
DO	<0.5 mg/L	3	3.5		3	0	3	0	3	3	3	3
DO	>5 mg/l	-3										
Nitrate	<1 mg/L	2	ND	2	2	2	2	2	2	2	2	2
Iron II	>1 mg/l	2	0.2		0	0	0	0	0	0	0	0
Sulfate	<20 mg/L	2	243		0	0	0	0	0	0	0	0
Sulfide	>1 mg/L	3	0.6		0	0	0	0	0	0	0	0
Methane	<0.5 mg/L	0	0.26	0	0	0	0	0	0	0	0	0
Methane	>0.5 mg/L	3										
ORP	<50 mV	1	-98.5	1	1	0	0	1	1	1	0	0
ORP	<-100 mV	2										
pH	5< pH <9	0	6.8	0	0	0	0	0	0	0	0	0
pH	5> pH >10	-2										
TOC	>20 mg/L	2	1.5		0	0	0	0	0	0	0	0
Temp	> 20°C	1	20.4	1	0	0	0	0	0	0	0	0
Carbon Dioxide	>2 times background (4.2)	1	6.8		1	1	0	0	1	1	1	1
Alkalinity	>2 times background (200)	1	372		0	0	0	0	1	0	1	1
Chloride	>2 times background (1440)	2	338		0	0	0	0	0	0	0	0
Hydrogen	>1 nM	3	NT		3	NT	3	0	3	3	3	3
Hydrogen	<1nM	0	NT									
Volatile Fatty Acids	>0.1 mg/L	2	ND		0	0	2	0	0	0	0	0
BTEX	>0.1 mg/L	2	ND		NT	NT	NT	NT	NT	NT	NT	NT
PCE		0	ND									
TCE	If Daughter Product	2	190		2	2	2	0	0	0	0	0
DCE	If Daughter Product	2	10,034	2	2	2	2	0	2	0	0	0
VC	If Daughter Product	2	380.00	2	2	2	2	0	2	0	0	0
1,1,1-TCA		0	ND									
DCA	If Daughter Product	2	ND									
Carbon Tetrachloride		0	ND									
Chloroethane	If Daughter Product	2	ND									
Ethene/Ethane	>0.01 mg/L or	2	0.0097		2	3	0	0	0	0	0	0
	>0.1 mg/L	3										
Chloroform	If Daughter Product	2	ND									
Dichloromethane	If Daughter Product	2	ND									
				8	**18**	**12**	**16**	**3**	**15**	**10**	**10**	**10**

Scoring Interpretation	
0 to 5	Inadequate evidence for anaerobic biodegradation* of chlorinated organics
6 to 14	Limited evidence for anaerobic biodegradation* of chlorinated organics
15 to 20	Adequate evidence for anaerobic biodegradation* of chlorinated organics
>20	Strong evidence for anaerobic biodegradation* of chlorinated organics
*reductive dechlorination	

Values Taken from EPA Document **EPA/600/R-98/128,** *Technical Protocol for Evaluating Natural Attenuation of Chlorinated Solvents in Ground Water* , 1998, Table 2.3 and Table 2.4

Notes:
1. ND=not detected
2. NT=not tested

APPENDIX D

ANALYTICAL LABORATORY REPORTS

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Buffalo
10 Hazelwood Drive
Amherst, NY 14228-2298
Tel: (716)691-2600

TestAmerica Job ID: 480-99684-1
Client Project/Site: 058507, GM-Lockport Groundwater Sampling

For:
GHD Services Inc.
2055 Niagara Falls Blvd., Suite 3
Niagara Falls, New York 14304

Attn: Kathleen Willy

Authorized for release by:
5/23/2016 2:30:52 PM
Rebecca Jones, Project Management Assistant I
rebecca.jones@testamericainc.com

Designee for

Melissa Deyo, Project Manager I
(716)504-9874
melissa.deyo@testamericainc.com

Table of Contents

Definitions/Glossary

Client: GHD Services Inc.
Project/Site: 058507, GM-Lockport Groundwater Sampling

TestAmerica Job ID: 480-99684-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

GC VOA

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Metals

Qualifier	Qualifier Description
4	MS, MSD: The analyte present in the original sample is greater than 4 times the matrix spike concentration; therefore, control limits are not applicable.

General Chemistry

Qualifier	Qualifier Description
F1	MS and/or MSD Recovery is outside acceptance limits.
B	Compound was found in the blank and sample.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
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)

Case Narrative

Client: GHD Services Inc.
Project/Site: 058507, GM-Lockport Groundwater Sampling

TestAmerica Job ID: 480-99684-1

Job ID: 480-99684-1

Laboratory: TestAmerica Buffalo

Narrative

Job Narrative
480-99684-1

Receipt
The samples were received on 5/5/2016 6:00 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 2 coolers at receipt time were 2.7º C and 3.0º C.

GC/MS VOA
Method(s) 8260C: The following sample was diluted to bring the concentration of target analytes within the calibration range: MW-4-050516 (480-99684-2). Elevated reporting limits (RLs) are provided.

Method(s) 8260C: The following sample was diluted to bring the concentration of target analytes within the calibration range: MW-10-050516 (480-99684-3). Elevated reporting limits (RLs) are provided.

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

HPLC/IC
Method(s) 300.0: The following samples were diluted to bring the concentration of target analytes within the calibration range: MW-15-050416 (480-99684-1), MW-4-050516 (480-99684-2), MW-10-050516 (480-99684-3), MW-11-050516 (480-99684-4) and MW-13-050516 (480-99684-5). Elevated reporting limits (RLs) are provided.

Method(s) VFA-IC: The following samples were diluted due to the nature of the sample matrix: MW-10-050516 (480-99684-3) and MW-13-050516 (480-99684-5). 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
Method(s) RSK-175: The following samples were diluted to bring the concentration of target analytes within the calibration range: MW-4-050516 (480-99684-2), (480-99574-G-2 MS) and (480-99574-G-2 MSD). 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.

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

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

Detection Summary

Client: GHD Services Inc.
Project/Site: 058507, GM-Lockport Groundwater Sampling

TestAmerica Job ID: 480-99684-1

Client Sample ID: MW-15-050416 — Lab Sample ID: 480-99684-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Tetrachloroethene	5.6		1.0	0.36	ug/L	1		8260C	Total/NA
Trichloroethene	0.68	J	1.0	0.46	ug/L	1		8260C	Total/NA
Hydrogen	1.0		0.60		nm	1		AM20GAX	Total/NA
Carbon Dioxide (TCD)	63000		2000	1000	ug/L	1		RSK-175	Total/NA
Magnesium	41.5		0.20	0.043	mg/L	1		6010C	Total/NA
Manganese	0.18		0.0030	0.00040	mg/L	1		6010C	Total/NA
Potassium	3.5		0.50	0.10	mg/L	1		6010C	Total/NA
Sodium	334		1.0	0.32	mg/L	1		6010C	Total/NA
Chloride	597		10.0	5.6	mg/L	20		300.0	Total/NA
Sulfate	71.6		40.0	7.0	mg/L	20		300.0	Total/NA
Nitrate	0.19		0.050	0.020	mg/L	1		353.2	Total/NA
Total Organic Carbon	2.4	B	1.0	0.43	mg/L	1		9060A	Total/NA
Total Alkalinity	459	B	5.0	0.79	mg/L	1		SM 2320B	Total/NA

Client Sample ID: MW-4-050516 — Lab Sample ID: 480-99684-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	23000		500	410	ug/L	500		8260C	Total/NA
Trichloroethene	29000		500	230	ug/L	500		8260C	Total/NA
Vinyl chloride	2900		500	450	ug/L	500		8260C	Total/NA
Hydrogen	17		0.60		nm	1		AM20GAX	Total/NA
Carbon Dioxide (TCD)	30000		4000	2000	ug/L	2		RSK-175	Total/NA
Ethene	33	J	35	7.5	ug/L	5		RSK-175	Total/NA
Methane	79		20	5.0	ug/L	5		RSK-175	Total/NA
Iron	0.50		0.050	0.019	mg/L	1		6010C	Total/NA
Magnesium	51.9		0.20	0.043	mg/L	1		6010C	Total/NA
Manganese	0.26		0.0030	0.00040	mg/L	1		6010C	Total/NA
Potassium	14.1		0.50	0.10	mg/L	1		6010C	Total/NA
Sodium	695		1.0	0.32	mg/L	1		6010C	Total/NA
Chloride	1240		10.0	5.6	mg/L	20		300.0	Total/NA
Sulfate	262		40.0	7.0	mg/L	20		300.0	Total/NA
Ammonia	1.2		0.020	0.0090	mg/L	1		350.1	Total/NA
Total Organic Carbon	2.2	B	1.0	0.43	mg/L	1		9060A	Total/NA
Total Alkalinity	283	B	5.0	0.79	mg/L	1		SM 2320B	Total/NA

Client Sample ID: MW-10-050516 — Lab Sample ID: 480-99684-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	120		2.0	1.6	ug/L	2		8260C	Total/NA
Trichloroethene	41		2.0	0.92	ug/L	2		8260C	Total/NA
Vinyl chloride	21		2.0	1.8	ug/L	2		8260C	Total/NA
Hydrogen	11		0.60		nm	1		AM20GAX	Total/NA
Carbon Dioxide (TCD)	45000		4000	2000	ug/L	2		RSK-175	Total/NA
Methane	15		4.0	1.0	ug/L	1		RSK-175	Total/NA
Magnesium	38.5		0.20	0.043	mg/L	1		6010C	Total/NA
Manganese	1.1		0.0030	0.00040	mg/L	1		6010C	Total/NA
Potassium	3.6		0.50	0.10	mg/L	1		6010C	Total/NA
Sodium	1120		1.0	0.32	mg/L	1		6010C	Total/NA
Chloride	1770		25.0	14.1	mg/L	50		300.0	Total/NA
Sulfate	328		100	17.5	mg/L	50		300.0	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample ID: MW-10-050516 (Continued) — Lab Sample ID: 480-99684-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Nitrate	0.092		0.050	0.020	mg/L	1		353.2	Total/NA
Nitrite	0.028	J	0.050	0.020	mg/L	1		353.2	Total/NA
Total Organic Carbon	4.4	B	1.0	0.43	mg/L	1		9060A	Total/NA
Total Alkalinity	314	B	5.0	0.79	mg/L	1		SM 2320B	Total/NA

Client Sample ID: MW-11-050516 — Lab Sample ID: 480-99684-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Hydrogen	1.1		0.60		nm	1		AM20GAX	Total/NA
Carbon Dioxide (TCD)	14000		4000	2000	ug/L	2		RSK-175	Total/NA
Methane	21		4.0	1.0	ug/L	1		RSK-175	Total/NA
Iron	0.64		0.050	0.019	mg/L	1		6010C	Total/NA
Magnesium	38.2		0.20	0.043	mg/L	1		6010C	Total/NA
Manganese	0.13		0.0030	0.00040	mg/L	1		6010C	Total/NA
Potassium	8.5		0.50	0.10	mg/L	1		6010C	Total/NA
Sodium	144		1.0	0.32	mg/L	1		6010C	Total/NA
Chloride	237		5.0	2.8	mg/L	10		300.0	Total/NA
Sulfate	123		20.0	3.5	mg/L	10		300.0	Total/NA
Nitrate	0.20		0.050	0.020	mg/L	1		353.2	Total/NA
Total Organic Carbon	1.7	B	1.0	0.43	mg/L	1		9060A	Total/NA
Total Alkalinity	262	B	5.0	0.79	mg/L	1		SM 2320B	Total/NA

Client Sample ID: MW-13-050516 — Lab Sample ID: 480-99684-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Hydrogen	14		0.60		nm	1		AM20GAX	Total/NA
Carbon Dioxide (TCD)	49000		6000	3000	ug/L	3		RSK-175	Total/NA
Methane	1.1	J	4.0	1.0	ug/L	1		RSK-175	Total/NA
Iron	5.6		0.050	0.019	mg/L	1		6010C	Total/NA
Magnesium	55.8		0.20	0.043	mg/L	1		6010C	Total/NA
Manganese	4.6		0.0030	0.00040	mg/L	1		6010C	Total/NA
Potassium	9.8		0.50	0.10	mg/L	1		6010C	Total/NA
Sodium	969		1.0	0.32	mg/L	1		6010C	Total/NA
Chloride	1830		25.0	14.1	mg/L	50		300.0	Total/NA
Sulfate	257		100	17.5	mg/L	50		300.0	Total/NA
Ammonia	0.54		0.020	0.0090	mg/L	1		350.1	Total/NA
Nitrate	0.060		0.050	0.020	mg/L	1		353.2	Total/NA
Nitrite	0.027	J	0.050	0.020	mg/L	1		353.2	Total/NA
Total Organic Carbon	3.6	B	1.0	0.43	mg/L	1		9060A	Total/NA
Total Alkalinity	326	B	5.0	0.79	mg/L	1		SM 2320B	Total/NA

Client Sample ID: TRIP BLANK — Lab Sample ID: 480-99684-6

No Detections.

This Detection Summary does not include radiochemical test results.

Client: GHD Services Inc.
Project/Site: 058507, GM-Lockport Groundwater Sampling

TestAmerica Job ID: 480-99684-1

Client Sample ID: MW-15-050416
Date Collected: 05/04/16 17:19
Date Received: 05/05/16 18:00

Lab Sample ID: 480-99684-1
Matrix: Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	ND		1.0	0.81	ug/L			05/15/16 02:12	1
Tetrachloroethene	**5.6**		1.0	0.36	ug/L			05/15/16 02:12	1
trans-1,2-Dichloroethene	ND		1.0	0.90	ug/L			05/15/16 02:12	1
Trichloroethene	**0.68**	**J**	1.0	0.46	ug/L			05/15/16 02:12	1
Vinyl chloride	ND		1.0	0.90	ug/L			05/15/16 02:12	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*99*		*66 - 137*		*05/15/16 02:12*	*1*
4-Bromofluorobenzene (Surr)	*104*		*73 - 120*		*05/15/16 02:12*	*1*
Toluene-d8 (Surr)	*93*		*71 - 126*		*05/15/16 02:12*	*1*
Dibromofluoromethane (Surr)	*91*		*60 - 140*		*05/15/16 02:12*	*1*

Method: AM20GAX - Dissolved Gases (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Hydrogen	**1.0**		0.60		nm			05/17/16 13:04	1

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbon Dioxide (TCD)	**63000**		2000	1000	ug/L			05/13/16 15:53	1
Ethane	ND		7.5	1.5	ug/L			05/10/16 14:12	1
Ethene	ND		7.0	1.5	ug/L			05/10/16 14:12	1
Methane	ND		4.0	1.0	ug/L			05/10/16 14:12	1

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	ND		0.050	0.019	mg/L		05/06/16 10:35	05/07/16 17:36	1
Magnesium	**41.5**		0.20	0.043	mg/L		05/06/16 10:35	05/07/16 17:36	1
Manganese	**0.18**		0.0030	0.00040	mg/L		05/06/16 10:35	05/07/16 17:36	1
Potassium	**3.5**		0.50	0.10	mg/L		05/06/16 10:35	05/07/16 17:36	1
Sodium	**334**		1.0	0.32	mg/L		05/06/16 10:35	05/07/16 17:36	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**597**		10.0	5.6	mg/L			05/06/16 22:16	20
Sulfate	**71.6**		40.0	7.0	mg/L			05/06/16 22:16	20
Ammonia	ND	F1	0.020	0.0090	mg/L			05/06/16 16:51	1
Nitrate	**0.19**		0.050	0.020	mg/L			05/06/16 10:43	1
Nitrite	ND		0.050	0.020	mg/L			05/06/16 10:43	1
Total Organic Carbon	**2.4**	**B**	1.0	0.43	mg/L			05/08/16 16:36	1
Total Alkalinity	**459**	**B**	5.0	0.79	mg/L			05/06/16 11:26	1
Sulfide	ND		0.10	0.052	mg/L			05/08/16 08:30	1
Acetic acid	ND		1.0	0.15	mg/L			05/06/16 13:02	1
Formic-acid	ND		1.0	0.11	mg/L			05/06/16 13:02	1
Lactic acid	ND		1.0	0.14	mg/L			05/06/16 13:02	1
n-Butyric Acid	ND		1.0	0.16	mg/L			05/06/16 13:02	1
Propionic acid	ND		1.0	0.17	mg/L			05/06/16 13:02	1
Pyruvic Acid	ND		1.0	0.080	mg/L			05/06/16 13:02	1

Client: GHD Services Inc.
Project/Site: 058507, GM-Lockport Groundwater Sampling

TestAmerica Job ID: 480-99684-1

Client Sample ID: MW-4-050516
Date Collected: 05/05/16 09:30
Date Received: 05/05/16 18:00

Lab Sample ID: 480-99684-2
Matrix: Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	**23000**		500	410	ug/L			05/15/16 14:05	500
Tetrachloroethene	ND		500	180	ug/L			05/15/16 14:05	500
trans-1,2-Dichloroethene	ND		500	450	ug/L			05/15/16 14:05	500
Trichloroethene	**29000**		500	230	ug/L			05/15/16 14:05	500
Vinyl chloride	**2900**		500	450	ug/L			05/15/16 14:05	500

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*103*		*66 - 137*		*05/15/16 14:05*	*500*
4-Bromofluorobenzene (Surr)	*89*		*73 - 120*		*05/15/16 14:05*	*500*
Toluene-d8 (Surr)	*96*		*71 - 126*		*05/15/16 14:05*	*500*
Dibromofluoromethane (Surr)	*108*		*60 - 140*		*05/15/16 14:05*	*500*

Method: AM20GAX - Dissolved Gases (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Hydrogen	**17**		0.60		nm			05/18/16 17:07	1

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbon Dioxide (TCD)	**30000**		4000	2000	ug/L			05/18/16 13:21	2
Ethane	ND		38	7.5	ug/L			05/10/16 18:35	5
Ethene	**33**	**J**	35	7.5	ug/L			05/10/16 18:35	5
Methane	**79**		20	5.0	ug/L			05/10/16 18:35	5

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	**0.50**		0.050	0.019	mg/L		05/06/16 10:35	05/07/16 17:39	1
Magnesium	**51.9**		0.20	0.043	mg/L		05/06/16 10:35	05/07/16 17:39	1
Manganese	**0.26**		0.0030	0.00040	mg/L		05/06/16 10:35	05/07/16 17:39	1
Potassium	**14.1**		0.50	0.10	mg/L		05/06/16 10:35	05/07/16 17:39	1
Sodium	**695**		1.0	0.32	mg/L		05/06/16 10:35	05/07/16 17:39	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**1240**		10.0	5.6	mg/L			05/06/16 22:24	20
Sulfate	**262**		40.0	7.0	mg/L			05/06/16 22:24	20
Ammonia	**1.2**		0.020	0.0090	mg/L			05/06/16 16:57	1
Nitrate	ND		0.050	0.020	mg/L			05/06/16 09:39	1
Nitrite	ND		0.050	0.020	mg/L			05/06/16 09:39	1
Total Organic Carbon	**2.2**	**B**	1.0	0.43	mg/L			05/08/16 17:04	1
Total Alkalinity	**283**	**B**	5.0	0.79	mg/L			05/06/16 11:32	1
Sulfide	ND		0.10	0.052	mg/L			05/08/16 08:30	1
Acetic acid	ND		1.0	0.15	mg/L			05/06/16 13:31	1
Formic-acid	ND		1.0	0.11	mg/L			05/06/16 13:31	1
Lactic acid	ND	F1	1.0	0.14	mg/L			05/06/16 13:31	1
n-Butyric Acid	ND	F1	1.0	0.16	mg/L			05/06/16 13:31	1
Propionic acid	ND	F1	1.0	0.17	mg/L			05/06/16 13:31	1
Pyruvic Acid	ND	F1	1.0	0.080	mg/L			05/06/16 13:31	1

Client: GHD Services Inc.
Project/Site: 058507, GM-Lockport Groundwater Sampling

TestAmerica Job ID: 480-99684-1

Client Sample ID: MW-10-050516
Date Collected: 05/05/16 11:50
Date Received: 05/05/16 18:00

Lab Sample ID: 480-99684-3
Matrix: Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	120		2.0	1.6	ug/L			05/15/16 23:52	2
Tetrachloroethene	ND		2.0	0.72	ug/L			05/15/16 23:52	2
trans-1,2-Dichloroethene	ND		2.0	1.8	ug/L			05/15/16 23:52	2
Trichloroethene	41		2.0	0.92	ug/L			05/15/16 23:52	2
Vinyl chloride	21		2.0	1.8	ug/L			05/15/16 23:52	2

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*106*		*66 - 137*		*05/15/16 23:52*	*2*
4-Bromofluorobenzene (Surr)	*91*		*73 - 120*		*05/15/16 23:52*	*2*
Toluene-d8 (Surr)	*97*		*71 - 126*		*05/15/16 23:52*	*2*
Dibromofluoromethane (Surr)	*110*		*60 - 140*		*05/15/16 23:52*	*2*

Method: AM20GAX - Dissolved Gases (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Hydrogen	11		0.60		nm			05/18/16 17:24	1

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbon Dioxide (TCD)	45000		4000	2000	ug/L			05/18/16 13:34	2
Ethane	ND		7.5	1.5	ug/L			05/10/16 14:47	1
Ethene	ND		7.0	1.5	ug/L			05/10/16 14:47	1
Methane	15		4.0	1.0	ug/L			05/10/16 14:47	1

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	ND		0.050	0.019	mg/L		05/06/16 10:35	05/07/16 17:42	1
Magnesium	38.5		0.20	0.043	mg/L		05/06/16 10:35	05/07/16 17:42	1
Manganese	1.1		0.0030	0.00040	mg/L		05/06/16 10:35	05/07/16 17:42	1
Potassium	3.6		0.50	0.10	mg/L		05/06/16 10:35	05/07/16 17:42	1
Sodium	1120		1.0	0.32	mg/L		05/06/16 10:35	05/07/16 17:42	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	1770		25.0	14.1	mg/L			05/06/16 22:32	50
Sulfate	328		100	17.5	mg/L			05/06/16 22:32	50
Ammonia	ND		0.020	0.0090	mg/L			05/06/16 16:58	1
Nitrate	0.092		0.050	0.020	mg/L			05/06/16 10:44	1
Nitrite	0.028	J	0.050	0.020	mg/L			05/06/16 10:44	1
Total Organic Carbon	4.4	B	1.0	0.43	mg/L			05/08/16 17:31	1
Total Alkalinity	314	B	5.0	0.79	mg/L			05/06/16 11:39	1
Sulfide	ND		0.10	0.052	mg/L			05/08/16 08:30	1
Acetic acid	ND		1.0	0.15	mg/L			05/06/16 16:26	1
Formic-acid	ND		1.0	0.11	mg/L			05/06/16 16:26	1
Lactic acid	ND		1.0	0.14	mg/L			05/06/16 16:26	1
n-Butyric Acid	ND		1.0	0.16	mg/L			05/06/16 16:26	1
Propionic acid	ND		1.0	0.17	mg/L			05/06/16 16:26	1
Pyruvic Acid	ND		10.0	0.80	mg/L			05/09/16 12:14	10

Client: GHD Services Inc.
Project/Site: 058507, GM-Lockport Groundwater Sampling

TestAmerica Job ID: 480-99684-1

Client Sample ID: MW-11-050516
Date Collected: 05/05/16 14:20
Date Received: 05/05/16 18:00

Lab Sample ID: 480-99684-4
Matrix: Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	ND		1.0	0.81	ug/L			05/15/16 14:55	1
Tetrachloroethene	ND		1.0	0.36	ug/L			05/15/16 14:55	1
trans-1,2-Dichloroethene	ND		1.0	0.90	ug/L			05/15/16 14:55	1
Trichloroethene	ND		1.0	0.46	ug/L			05/15/16 14:55	1
Vinyl chloride	ND		1.0	0.90	ug/L			05/15/16 14:55	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*104*		*66 - 137*		*05/15/16 14:55*	*1*
4-Bromofluorobenzene (Surr)	*91*		*73 - 120*		*05/15/16 14:55*	*1*
Toluene-d8 (Surr)	*97*		*71 - 126*		*05/15/16 14:55*	*1*
Dibromofluoromethane (Surr)	*109*		*60 - 140*		*05/15/16 14:55*	*1*

Method: AM20GAX - Dissolved Gases (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Hydrogen	**1.1**		0.60		nm			05/18/16 17:37	1

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbon Dioxide (TCD)	**14000**		4000	2000	ug/L			05/18/16 13:49	2
Ethane	ND		7.5	1.5	ug/L			05/10/16 15:05	1
Ethene	ND		7.0	1.5	ug/L			05/10/16 15:05	1
Methane	**21**		4.0	1.0	ug/L			05/10/16 15:05	1

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	**0.64**		0.050	0.019	mg/L		05/06/16 10:35	05/07/16 17:46	1
Magnesium	**38.2**		0.20	0.043	mg/L		05/06/16 10:35	05/07/16 17:46	1
Manganese	**0.13**		0.0030	0.00040	mg/L		05/06/16 10:35	05/07/16 17:46	1
Potassium	**8.5**		0.50	0.10	mg/L		05/06/16 10:35	05/07/16 17:46	1
Sodium	**144**		1.0	0.32	mg/L		05/06/16 10:35	05/07/16 17:46	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**237**		5.0	2.8	mg/L			05/06/16 22:41	10
Sulfate	**123**		20.0	3.5	mg/L			05/06/16 22:41	10
Ammonia	ND		0.020	0.0090	mg/L			05/06/16 16:59	1
Nitrate	**0.20**		0.050	0.020	mg/L			05/06/16 10:45	1
Nitrite	ND		0.050	0.020	mg/L			05/06/16 10:45	1
Total Organic Carbon	**1.7**	**B**	1.0	0.43	mg/L			05/08/16 17:58	1
Total Alkalinity	**262**	**B**	5.0	0.79	mg/L			05/06/16 11:46	1
Sulfide	ND		0.10	0.052	mg/L			05/08/16 08:30	1
Acetic acid	ND		1.0	0.15	mg/L			05/06/16 16:55	1
Formic-acid	ND		1.0	0.11	mg/L			05/06/16 16:55	1
Lactic acid	ND		1.0	0.14	mg/L			05/06/16 16:55	1
n-Butyric Acid	ND		1.0	0.16	mg/L			05/06/16 16:55	1
Propionic acid	ND		1.0	0.17	mg/L			05/06/16 16:55	1
Pyruvic Acid	ND		1.0	0.080	mg/L			05/06/16 16:55	1

Client: GHD Services Inc.
Project/Site: 058507, GM-Lockport Groundwater Sampling

TestAmerica Job ID: 480-99684-1

Client Sample ID: MW-13-050516
Date Collected: 05/05/16 16:10
Date Received: 05/05/16 18:00

Lab Sample ID: 480-99684-5
Matrix: Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	ND		1.0	0.81	ug/L			05/15/16 15:20	1
Tetrachloroethene	ND		1.0	0.36	ug/L			05/15/16 15:20	1
trans-1,2-Dichloroethene	ND		1.0	0.90	ug/L			05/15/16 15:20	1
Trichloroethene	ND		1.0	0.46	ug/L			05/15/16 15:20	1
Vinyl chloride	ND		1.0	0.90	ug/L			05/15/16 15:20	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*107*		*66 - 137*		*05/15/16 15:20*	*1*
4-Bromofluorobenzene (Surr)	*91*		*73 - 120*		*05/15/16 15:20*	*1*
Toluene-d8 (Surr)	*97*		*71 - 126*		*05/15/16 15:20*	*1*
Dibromofluoromethane (Surr)	*110*		*60 - 140*		*05/15/16 15:20*	*1*

Method: AM20GAX - Dissolved Gases (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Hydrogen	**14**		0.60		nm			05/19/16 08:56	1

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbon Dioxide (TCD)	**49000**		6000	3000	ug/L			05/18/16 14:02	3
Ethane	ND		7.5	1.5	ug/L			05/10/16 15:22	1
Ethene	ND		7.0	1.5	ug/L			05/10/16 15:22	1
Methane	**1.1**	**J**	4.0	1.0	ug/L			05/10/16 15:22	1

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	**5.6**		0.050	0.019	mg/L		05/06/16 10:35	05/07/16 17:59	1
Magnesium	**55.8**		0.20	0.043	mg/L		05/06/16 10:35	05/07/16 17:59	1
Manganese	**4.6**		0.0030	0.00040	mg/L		05/06/16 10:35	05/07/16 17:59	1
Potassium	**9.8**		0.50	0.10	mg/L		05/06/16 10:35	05/07/16 17:59	1
Sodium	**969**		1.0	0.32	mg/L		05/06/16 10:35	05/07/16 17:59	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**1830**		25.0	14.1	mg/L			05/06/16 22:49	50
Sulfate	**257**		100	17.5	mg/L			05/06/16 22:49	50
Ammonia	**0.54**		0.020	0.0090	mg/L			05/06/16 17:00	1
Nitrate	**0.060**		0.050	0.020	mg/L			05/06/16 10:46	1
Nitrite	**0.027**	**J**	0.050	0.020	mg/L			05/06/16 10:46	1
Total Organic Carbon	**3.6**	**B**	1.0	0.43	mg/L			05/08/16 22:01	1
Total Alkalinity	**326**	**B**	5.0	0.79	mg/L			05/06/16 11:52	1
Sulfide	ND		0.10	0.052	mg/L			05/08/16 08:30	1
Acetic acid	ND		1.0	0.15	mg/L			05/06/16 17:25	1
Formic-acid	ND		1.0	0.11	mg/L			05/06/16 17:25	1
Lactic acid	ND		1.0	0.14	mg/L			05/06/16 17:25	1
n-Butyric Acid	ND		1.0	0.16	mg/L			05/06/16 17:25	1
Propionic acid	ND		1.0	0.17	mg/L			05/06/16 17:25	1
Pyruvic Acid	ND		10.0	0.80	mg/L			05/09/16 12:43	10

Client: GHD Services Inc.
Project/Site: 058507, GM-Lockport Groundwater Sampling

TestAmerica Job ID: 480-99684-1

Client Sample ID: TRIP BLANK
Date Collected: 05/04/16 09:00
Date Received: 05/05/16 18:00

Lab Sample ID: 480-99684-6
Matrix: Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	ND		1.0	0.81	ug/L			05/15/16 02:36	1
Tetrachloroethene	ND		1.0	0.36	ug/L			05/15/16 02:36	1
trans-1,2-Dichloroethene	ND		1.0	0.90	ug/L			05/15/16 02:36	1
Trichloroethene	ND		1.0	0.46	ug/L			05/15/16 02:36	1
Vinyl chloride	ND		1.0	0.90	ug/L			05/15/16 02:36	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*66 - 137*		*05/15/16 02:36*	*1*
4-Bromofluorobenzene (Surr)	*102*		*73 - 120*		*05/15/16 02:36*	*1*
Toluene-d8 (Surr)	*92*		*71 - 126*		*05/15/16 02:36*	*1*
Dibromofluoromethane (Surr)	*90*		*60 - 140*		*05/15/16 02:36*	*1*

Surrogate Summary

Client: GHD Services Inc.
Project/Site: 058507, GM-Lockport Groundwater Sampling

TestAmerica Job ID: 480-99684-1

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

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		12DCE	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(66-137)	(73-120)	(71-126)	(60-140)
480-99684-1	MW-15-050416	99	104	93	91
480-99684-2	MW-4-050516	103	89	96	108
480-99684-3	MW-10-050516	106	91	97	110
480-99684-4	MW-11-050516	104	91	97	109
480-99684-5	MW-13-050516	107	91	97	110
480-99684-6	TRIP BLANK	97	102	92	90
LCS 480-301813/4	Lab Control Sample	92	105	96	89
LCS 480-301830/4	Lab Control Sample	101	96	101	103
LCS 480-301854/4	Lab Control Sample	105	98	99	103
MB 480-301813/6	Method Blank	96	102	96	89
MB 480-301830/6	Method Blank	104	90	96	106
MB 480-301854/6	Method Blank	105	90	96	109

Surrogate Legend

12DCE = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

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

Lab Sample ID: MB 480-301813/6
Matrix: Water
Analysis Batch: 301813

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	ND		1.0	0.81	ug/L			05/14/16 21:35	1
Tetrachloroethene	ND		1.0	0.36	ug/L			05/14/16 21:35	1
trans-1,2-Dichloroethene	ND		1.0	0.90	ug/L			05/14/16 21:35	1
Trichloroethene	ND		1.0	0.46	ug/L			05/14/16 21:35	1
Vinyl chloride	ND		1.0	0.90	ug/L			05/14/16 21:35	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*96*		*66 - 137*		*05/14/16 21:35*	*1*
4-Bromofluorobenzene (Surr)	*102*		*73 - 120*		*05/14/16 21:35*	*1*
Toluene-d8 (Surr)	*96*		*71 - 126*		*05/14/16 21:35*	*1*
Dibromofluoromethane (Surr)	*89*		*60 - 140*		*05/14/16 21:35*	*1*

Lab Sample ID: LCS 480-301813/4
Matrix: Water
Analysis Batch: 301813

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
cis-1,2-Dichloroethene	25.0	23.6		ug/L		95	74 - 124
Tetrachloroethene	25.0	23.5		ug/L		94	74 - 122
trans-1,2-Dichloroethene	25.0	23.6		ug/L		94	73 - 127
Trichloroethene	25.0	24.7		ug/L		99	74 - 123
Vinyl chloride	25.0	22.5		ug/L		90	65 - 133

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*92*		*66 - 137*
4-Bromofluorobenzene (Surr)	*105*		*73 - 120*
Toluene-d8 (Surr)	*96*		*71 - 126*
Dibromofluoromethane (Surr)	*89*		*60 - 140*

Lab Sample ID: MB 480-301830/6
Matrix: Water
Analysis Batch: 301830

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	ND		1.0	0.81	ug/L			05/15/16 11:49	1
Tetrachloroethene	ND		1.0	0.36	ug/L			05/15/16 11:49	1
trans-1,2-Dichloroethene	ND		1.0	0.90	ug/L			05/15/16 11:49	1
Trichloroethene	ND		1.0	0.46	ug/L			05/15/16 11:49	1
Vinyl chloride	ND		1.0	0.90	ug/L			05/15/16 11:49	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*104*		*66 - 137*		*05/15/16 11:49*	*1*
4-Bromofluorobenzene (Surr)	*90*		*73 - 120*		*05/15/16 11:49*	*1*
Toluene-d8 (Surr)	*96*		*71 - 126*		*05/15/16 11:49*	*1*
Dibromofluoromethane (Surr)	*106*		*60 - 140*		*05/15/16 11:49*	*1*

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

Lab Sample ID: LCS 480-301830/4
Matrix: Water
Analysis Batch: 301830

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
cis-1,2-Dichloroethene	25.0	24.0		ug/L		96	74 - 124
Tetrachloroethene	25.0	22.2		ug/L		89	74 - 122
trans-1,2-Dichloroethene	25.0	22.9		ug/L		92	73 - 127
Trichloroethene	25.0	23.0		ug/L		92	74 - 123
Vinyl chloride	25.0	25.2		ug/L		101	65 - 133

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*101*		*66 - 137*
4-Bromofluorobenzene (Surr)	*96*		*73 - 120*
Toluene-d8 (Surr)	*101*		*71 - 126*
Dibromofluoromethane (Surr)	*103*		*60 - 140*

Lab Sample ID: MB 480-301854/6
Matrix: Water
Analysis Batch: 301854

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	ND		1.0	0.81	ug/L			05/15/16 23:09	1
Tetrachloroethene	ND		1.0	0.36	ug/L			05/15/16 23:09	1
trans-1,2-Dichloroethene	ND		1.0	0.90	ug/L			05/15/16 23:09	1
Trichloroethene	ND		1.0	0.46	ug/L			05/15/16 23:09	1
Vinyl chloride	ND		1.0	0.90	ug/L			05/15/16 23:09	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*105*		*66 - 137*		*05/15/16 23:09*	*1*
4-Bromofluorobenzene (Surr)	*90*		*73 - 120*		*05/15/16 23:09*	*1*
Toluene-d8 (Surr)	*96*		*71 - 126*		*05/15/16 23:09*	*1*
Dibromofluoromethane (Surr)	*109*		*60 - 140*		*05/15/16 23:09*	*1*

Lab Sample ID: LCS 480-301854/4
Matrix: Water
Analysis Batch: 301854

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
cis-1,2-Dichloroethene	25.0	26.4		ug/L		105	74 - 124
Tetrachloroethene	25.0	23.5		ug/L		94	74 - 122
trans-1,2-Dichloroethene	25.0	25.4		ug/L		101	73 - 127
Trichloroethene	25.0	25.3		ug/L		101	74 - 123
Vinyl chloride	25.0	26.0		ug/L		104	65 - 133

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*105*		*66 - 137*
4-Bromofluorobenzene (Surr)	*98*		*73 - 120*
Toluene-d8 (Surr)	*99*		*71 - 126*
Dibromofluoromethane (Surr)	*103*		*60 - 140*

Method: RSK-175 - Dissolved Gases (GC)

Lab Sample ID: MB 480-300925/19
Matrix: Water
Analysis Batch: 300925

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ethane	ND		7.5	1.5	ug/L			05/10/16 16:50	1
Ethene	ND		7.0	1.5	ug/L			05/10/16 16:50	1
Methane	ND		4.0	1.0	ug/L			05/10/16 16:50	1

Lab Sample ID: MB 480-300925/3
Matrix: Water
Analysis Batch: 300925

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ethane	ND		7.5	1.5	ug/L			05/10/16 11:42	1
Ethene	ND		7.0	1.5	ug/L			05/10/16 11:42	1
Methane	ND		4.0	1.0	ug/L			05/10/16 11:42	1

Lab Sample ID: LCS 480-300925/20
Matrix: Water
Analysis Batch: 300925

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Ethane	14.6	16.4		ug/L		113	79 - 120
Ethene	13.6	15.1		ug/L		111	78 - 115
Methane	7.77	8.75		ug/L		113	71 - 118

Lab Sample ID: LCS 480-300925/4
Matrix: Water
Analysis Batch: 300925

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Ethane	14.6	15.4		ug/L		105	79 - 120
Ethene	13.6	14.0		ug/L		103	78 - 115
Methane	7.77	8.11		ug/L		104	71 - 118

Lab Sample ID: LCSD 480-300925/21
Matrix: Water
Analysis Batch: 300925

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

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Ethane	14.6	15.7		ug/L		108	79 - 120	5	50
Ethene	13.6	14.3		ug/L		105	78 - 115	5	50
Methane	7.77	8.44		ug/L		109	71 - 118	4	50

Lab Sample ID: LCSD 480-300925/5
Matrix: Water
Analysis Batch: 300925

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

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Ethane	14.6	14.8		ug/L		101	79 - 120	4	50
Ethene	13.6	13.5		ug/L		100	78 - 115	3	50
Methane	7.77	7.88		ug/L		101	71 - 118	3	50

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

Lab Sample ID: MB 440-330199/6
Matrix: Water
Analysis Batch: 330199

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbon Dioxide (TCD)	ND		2000	1000	ug/L			05/13/16 13:13	1

Lab Sample ID: LCS 440-330199/4
Matrix: Water
Analysis Batch: 330199

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Carbon Dioxide (TCD)	11500	11300		ug/L		98	80 - 120

Lab Sample ID: LCSD 440-330199/5
Matrix: Water
Analysis Batch: 330199

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

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Carbon Dioxide (TCD)	11500	11600		ug/L		101	80 - 120	3	20

Lab Sample ID: MB 440-331113/5
Matrix: Water
Analysis Batch: 331113

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbon Dioxide (TCD)	ND		2000	1000	ug/L			05/18/16 12:04	1

Lab Sample ID: LCS 440-331113/3
Matrix: Water
Analysis Batch: 331113

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Carbon Dioxide (TCD)	11500	10600		ug/L		92	80 - 120

Lab Sample ID: LCSD 440-331113/4
Matrix: Water
Analysis Batch: 331113

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

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Carbon Dioxide (TCD)	11500	10900		ug/L		95	80 - 120	3	20

Method: 6010C - Metals (ICP)

Lab Sample ID: MB 480-300322/1-A
Matrix: Water
Analysis Batch: 300623

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 300322

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	ND		0.050	0.019	mg/L		05/06/16 10:35	05/07/16 16:23	1
Magnesium	ND		0.20	0.043	mg/L		05/06/16 10:35	05/07/16 16:23	1
Manganese	ND		0.0030	0.00040	mg/L		05/06/16 10:35	05/07/16 16:23	1
Potassium	ND		0.50	0.10	mg/L		05/06/16 10:35	05/07/16 16:23	1
Sodium	ND		1.0	0.32	mg/L		05/06/16 10:35	05/07/16 16:23	1

Method: 6010C - Metals (ICP) (Continued)

Lab Sample ID: LCS 480-300322/2-A
Matrix: Water
Analysis Batch: 300623

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 300322

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Iron	10.0	10.02		mg/L		100	80 - 120
Magnesium	10.0	10.29		mg/L		103	80 - 120
Manganese	0.200	0.197		mg/L		98	80 - 120
Potassium	10.0	10.09		mg/L		101	80 - 120
Sodium	10.0	9.89		mg/L		99	80 - 120

Lab Sample ID: 480-99684-5 MS
Matrix: Water
Analysis Batch: 300623

Client Sample ID: MW-13-050516
Prep Type: Total/NA
Prep Batch: 300322

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Iron	5.6		10.0	15.13		mg/L		95	75 - 125
Magnesium	55.8		10.0	65.44	4	mg/L		96	75 - 125
Manganese	4.6		0.200	4.79	4	mg/L		97	75 - 125
Potassium	9.8		10.0	19.64		mg/L		99	75 - 125
Sodium	969		10.0	993.3	4	mg/L		239	75 - 125

Lab Sample ID: 480-99684-5 MSD
Matrix: Water
Analysis Batch: 300623

Client Sample ID: MW-13-050516
Prep Type: Total/NA
Prep Batch: 300322

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Iron	5.6		10.0	15.57		mg/L		99	75 - 125	3	20
Magnesium	55.8		10.0	66.20	4	mg/L		104	75 - 125	1	20
Manganese	4.6		0.200	4.86	4	mg/L		129	75 - 125	1	20
Potassium	9.8		10.0	20.35		mg/L		106	75 - 125	4	20
Sodium	969		10.0	1023	4	mg/L		533	75 - 125	3	20

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 480-300353/56
Matrix: Water
Analysis Batch: 300353

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		0.50	0.28	mg/L			05/06/16 20:30	1
Sulfate	ND		2.0	0.35	mg/L			05/06/16 20:30	1

Lab Sample ID: LCS 480-300353/55
Matrix: Water
Analysis Batch: 300353

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	50.0	52.05		mg/L		104	90 - 110
Sulfate	50.0	53.13		mg/L		106	90 - 110

Method: 350.1 - Nitrogen, Ammonia

Lab Sample ID: MB 480-300457/27
Matrix: Water
Analysis Batch: 300457

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ammonia	ND		0.020	0.0090	mg/L			05/06/16 16:35	1

Lab Sample ID: MB 480-300457/3
Matrix: Water
Analysis Batch: 300457

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ammonia	ND		0.020	0.0090	mg/L			05/06/16 16:14	1

Lab Sample ID: MB 480-300457/51
Matrix: Water
Analysis Batch: 300457

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ammonia	ND		0.020	0.0090	mg/L			05/06/16 16:56	1

Lab Sample ID: LCS 480-300457/28
Matrix: Water
Analysis Batch: 300457

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Ammonia	1.00	1.04		mg/L		104	90 - 110

Lab Sample ID: LCS 480-300457/4
Matrix: Water
Analysis Batch: 300457

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Ammonia	1.00	1.03		mg/L		103	90 - 110

Lab Sample ID: LCS 480-300457/52
Matrix: Water
Analysis Batch: 300457

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Ammonia	1.00	1.03		mg/L		103	90 - 110

Lab Sample ID: 480-99684-1 MS
Matrix: Water
Analysis Batch: 300457

Client Sample ID: MW-15-050416
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Ammonia	ND	F1	0.200	0.130	F1	mg/L		65	90 - 110

Lab Sample ID: 480-99684-1 DU
Matrix: Water
Analysis Batch: 300457

Client Sample ID: MW-15-050416
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Ammonia	ND	F1	ND		mg/L		NC	20

Method: 353.2 - Nitrogen, Nitrite

Lab Sample ID: MB 480-300375/3
Matrix: Water
Analysis Batch: 300375

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrite	ND		0.050	0.020	mg/L			05/06/16 10:39	1

Lab Sample ID: LCS 480-300375/4
Matrix: Water
Analysis Batch: 300375

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Nitrite	1.50	1.54		mg/L		103	90 - 110

Method: 9060A - Organic Carbon, Total (TOC)

Lab Sample ID: MB 480-300670/4
Matrix: Water
Analysis Batch: 300670

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	0.533	J	1.0	0.43	mg/L			05/08/16 13:55	1

Lab Sample ID: LCS 480-300670/5
Matrix: Water
Analysis Batch: 300670

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	60.0	61.54		mg/L		103	90 - 110

Lab Sample ID: MB 480-300687/10
Matrix: Water
Analysis Batch: 300687

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	0.579	J	1.0	0.43	mg/L			05/09/16 00:43	1

Lab Sample ID: LCS 480-300687/11
Matrix: Water
Analysis Batch: 300687

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	60.0	61.17		mg/L		102	90 - 110

Method: SM 2320B - Alkalinity

Lab Sample ID: MB 480-300676/7
Matrix: Water
Analysis Batch: 300676

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Alkalinity	1.14	J	5.0	0.79	mg/L			05/06/16 10:59	1

Method: SM 2320B - Alkalinity (Continued)

Lab Sample ID: LCS 480-300676/8
Matrix: Water
Analysis Batch: 300676

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Alkalinity	100	96.58		mg/L		97	90 - 110

Method: SM 4500 S2 D - Sulfide, Total

Lab Sample ID: MB 480-300572/27
Matrix: Water
Analysis Batch: 300572

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfide	ND		0.10	0.052	mg/L			05/08/16 08:30	1

Lab Sample ID: MB 480-300572/3
Matrix: Water
Analysis Batch: 300572

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfide	ND		0.10	0.052	mg/L			05/08/16 08:30	1

Lab Sample ID: LCS 480-300572/28
Matrix: Water
Analysis Batch: 300572

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Sulfide	0.750	0.684		mg/L		91	90 - 110

Lab Sample ID: LCS 480-300572/4
Matrix: Water
Analysis Batch: 300572

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Sulfide	0.750	0.702		mg/L		94	90 - 110

Method: VFA-IC - Volatile Fatty Acids, Ion Chromatography

Lab Sample ID: MB 480-300272/4
Matrix: Water
Analysis Batch: 300272

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetic acid	ND		1.0	0.15	mg/L			05/06/16 10:37	1
Formic-acid	ND		1.0	0.11	mg/L			05/06/16 10:37	1
Lactic acid	ND		1.0	0.14	mg/L			05/06/16 10:37	1
n-Butyric Acid	ND		1.0	0.16	mg/L			05/06/16 10:37	1
Propionic acid	ND		1.0	0.17	mg/L			05/06/16 10:37	1
Pyruvic Acid	ND		1.0	0.080	mg/L			05/06/16 10:37	1

Method: VFA-IC - Volatile Fatty Acids, Ion Chromatography (Continued)

Lab Sample ID: LCS 480-300272/3
Matrix: Water
Analysis Batch: 300272

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Acetic acid	10.0	8.58		mg/L		86	80 - 120
Formic-acid	10.0	8.83		mg/L		88	80 - 120
Lactic acid	10.0	9.69		mg/L		97	80 - 120
n-Butyric Acid	10.0	8.81		mg/L		88	80 - 120
Propionic acid	10.0	8.40		mg/L		84	80 - 120
Pyruvic Acid	10.0	9.49		mg/L		95	80 - 120

Lab Sample ID: 480-99684-2 MS
Matrix: Water
Analysis Batch: 300272

Client Sample ID: MW-4-050516
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Acetic acid	ND		10.0	8.82		mg/L		88	80 - 120
Formic-acid	ND		10.0	8.15		mg/L		81	80 - 120
Lactic acid	ND	F1	10.0	7.43	F1	mg/L		74	80 - 120
n-Butyric Acid	ND	F1	10.0	6.93	F1	mg/L		69	80 - 120
Propionic acid	ND	F1	10.0	5.82	F1	mg/L		58	80 - 120
Pyruvic Acid	ND	F1	10.0	17.96	F1	mg/L		180	80 - 120

Lab Sample ID: 480-99684-2 MSD
Matrix: Water
Analysis Batch: 300272

Client Sample ID: MW-4-050516
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Acetic acid	ND		10.0	8.69		mg/L		87	80 - 120	1	20
Formic-acid	ND		10.0	8.09		mg/L		81	80 - 120	1	20
Lactic acid	ND	F1	10.0	7.37	F1	mg/L		74	80 - 120	1	20
n-Butyric Acid	ND	F1	10.0	6.80	F1	mg/L		68	80 - 120	2	20
Propionic acid	ND	F1	10.0	4.90	F1	mg/L		49	80 - 120	17	20
Pyruvic Acid	ND	F1	10.0	19.24	F1	mg/L		192	80 - 120	7	20

Lab Sample ID: MB 480-300608/4
Matrix: Water
Analysis Batch: 300608

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetic acid	ND		1.0	0.15	mg/L			05/09/16 11:45	1
Formic-acid	ND		1.0	0.11	mg/L			05/09/16 11:45	1
Lactic acid	ND		1.0	0.14	mg/L			05/09/16 11:45	1
n-Butyric Acid	ND		1.0	0.16	mg/L			05/09/16 11:45	1
Propionic acid	ND		1.0	0.17	mg/L			05/09/16 11:45	1
Pyruvic Acid	ND		1.0	0.080	mg/L			05/09/16 11:45	1

Lab Sample ID: LCS 480-300608/3
Matrix: Water
Analysis Batch: 300608

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Acetic acid	10.0	8.72		mg/L		87	80 - 120

Client: GHD Services Inc.
Project/Site: 058507, GM-Lockport Groundwater Sampling

TestAmerica Job ID: 480-99684-1

Method: VFA-IC - Volatile Fatty Acids, Ion Chromatography (Continued)

Lab Sample ID: LCS 480-300608/3
Matrix: Water
Analysis Batch: 300608

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Formic-acid	10.0	8.77		mg/L		88	80 - 120
Lactic acid	10.0	9.63		mg/L		96	80 - 120
n-Butyric Acid	10.0	8.58		mg/L		86	80 - 120
Propionic acid	10.0	8.66		mg/L		87	80 - 120
Pyruvic Acid	10.0	9.61		mg/L		96	80 - 120

GC/MS VOA

Analysis Batch: 301813

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-99684-1	MW-15-050416	Total/NA	Water	8260C	
480-99684-6	TRIP BLANK	Total/NA	Water	8260C	
LCS 480-301813/4	Lab Control Sample	Total/NA	Water	8260C	
MB 480-301813/6	Method Blank	Total/NA	Water	8260C	

Analysis Batch: 301830

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-99684-2	MW-4-050516	Total/NA	Water	8260C	
480-99684-4	MW-11-050516	Total/NA	Water	8260C	
480-99684-5	MW-13-050516	Total/NA	Water	8260C	
LCS 480-301830/4	Lab Control Sample	Total/NA	Water	8260C	
MB 480-301830/6	Method Blank	Total/NA	Water	8260C	

Analysis Batch: 301854

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-99684-3	MW-10-050516	Total/NA	Water	8260C	
LCS 480-301854/4	Lab Control Sample	Total/NA	Water	8260C	
MB 480-301854/6	Method Blank	Total/NA	Water	8260C	

GC VOA

Analysis Batch: 300925

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-99684-1	MW-15-050416	Total/NA	Water	RSK-175	
480-99684-2	MW-4-050516	Total/NA	Water	RSK-175	
480-99684-3	MW-10-050516	Total/NA	Water	RSK-175	
480-99684-4	MW-11-050516	Total/NA	Water	RSK-175	
480-99684-5	MW-13-050516	Total/NA	Water	RSK-175	
LCS 480-300925/20	Lab Control Sample	Total/NA	Water	RSK-175	
LCS 480-300925/4	Lab Control Sample	Total/NA	Water	RSK-175	
LCSD 480-300925/21	Lab Control Sample Dup	Total/NA	Water	RSK-175	
LCSD 480-300925/5	Lab Control Sample Dup	Total/NA	Water	RSK-175	
MB 480-300925/19	Method Blank	Total/NA	Water	RSK-175	
MB 480-300925/3	Method Blank	Total/NA	Water	RSK-175	

Analysis Batch: 303171

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-99684-1	MW-15-050416	Total/NA	Water	AM20GAX	
480-99684-2	MW-4-050516	Total/NA	Water	AM20GAX	
480-99684-3	MW-10-050516	Total/NA	Water	AM20GAX	
480-99684-4	MW-11-050516	Total/NA	Water	AM20GAX	
480-99684-5	MW-13-050516	Total/NA	Water	AM20GAX	

Analysis Batch: 330199

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-99684-1	MW-15-050416	Total/NA	Water	RSK-175	
LCS 440-330199/4	Lab Control Sample	Total/NA	Water	RSK-175	
LCSD 440-330199/5	Lab Control Sample Dup	Total/NA	Water	RSK-175	
MB 440-330199/6	Method Blank	Total/NA	Water	RSK-175	

GC VOA (Continued)

Analysis Batch: 331113

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-99684-2	MW-4-050516	Total/NA	Water	RSK-175	
480-99684-3	MW-10-050516	Total/NA	Water	RSK-175	
480-99684-4	MW-11-050516	Total/NA	Water	RSK-175	
480-99684-5	MW-13-050516	Total/NA	Water	RSK-175	
LCS 440-331113/3	Lab Control Sample	Total/NA	Water	RSK-175	
LCSD 440-331113/4	Lab Control Sample Dup	Total/NA	Water	RSK-175	
MB 440-331113/5	Method Blank	Total/NA	Water	RSK-175	

Metals

Prep Batch: 300322

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-99684-1	MW-15-050416	Total/NA	Water	3005A	
480-99684-2	MW-4-050516	Total/NA	Water	3005A	
480-99684-3	MW-10-050516	Total/NA	Water	3005A	
480-99684-4	MW-11-050516	Total/NA	Water	3005A	
480-99684-5	MW-13-050516	Total/NA	Water	3005A	
480-99684-5 MS	MW-13-050516	Total/NA	Water	3005A	
480-99684-5 MSD	MW-13-050516	Total/NA	Water	3005A	
LCS 480-300322/2-A	Lab Control Sample	Total/NA	Water	3005A	
MB 480-300322/1-A	Method Blank	Total/NA	Water	3005A	

Analysis Batch: 300623

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-99684-1	MW-15-050416	Total/NA	Water	6010C	300322
480-99684-2	MW-4-050516	Total/NA	Water	6010C	300322
480-99684-3	MW-10-050516	Total/NA	Water	6010C	300322
480-99684-4	MW-11-050516	Total/NA	Water	6010C	300322
480-99684-5	MW-13-050516	Total/NA	Water	6010C	300322
480-99684-5 MS	MW-13-050516	Total/NA	Water	6010C	300322
480-99684-5 MSD	MW-13-050516	Total/NA	Water	6010C	300322
LCS 480-300322/2-A	Lab Control Sample	Total/NA	Water	6010C	300322
MB 480-300322/1-A	Method Blank	Total/NA	Water	6010C	300322

General Chemistry

Analysis Batch: 300272

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-99684-1	MW-15-050416	Total/NA	Water	VFA-IC	
480-99684-2	MW-4-050516	Total/NA	Water	VFA-IC	
480-99684-2 MS	MW-4-050516	Total/NA	Water	VFA-IC	
480-99684-2 MSD	MW-4-050516	Total/NA	Water	VFA-IC	
480-99684-3	MW-10-050516	Total/NA	Water	VFA-IC	
480-99684-4	MW-11-050516	Total/NA	Water	VFA-IC	
480-99684-5	MW-13-050516	Total/NA	Water	VFA-IC	
LCS 480-300272/3	Lab Control Sample	Total/NA	Water	VFA-IC	
MB 480-300272/4	Method Blank	Total/NA	Water	VFA-IC	

General Chemistry (Continued)

Analysis Batch: 300353

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-99684-1	MW-15-050416	Total/NA	Water	300.0	
480-99684-2	MW-4-050516	Total/NA	Water	300.0	
480-99684-3	MW-10-050516	Total/NA	Water	300.0	
480-99684-4	MW-11-050516	Total/NA	Water	300.0	
480-99684-5	MW-13-050516	Total/NA	Water	300.0	
LCS 480-300353/55	Lab Control Sample	Total/NA	Water	300.0	
MB 480-300353/56	Method Blank	Total/NA	Water	300.0	

Analysis Batch: 300375

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-99684-1	MW-15-050416	Total/NA	Water	353.2	
480-99684-3	MW-10-050516	Total/NA	Water	353.2	
480-99684-4	MW-11-050516	Total/NA	Water	353.2	
480-99684-5	MW-13-050516	Total/NA	Water	353.2	
LCS 480-300375/4	Lab Control Sample	Total/NA	Water	353.2	
MB 480-300375/3	Method Blank	Total/NA	Water	353.2	

Analysis Batch: 300383

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-99684-1	MW-15-050416	Total/NA	Water	353.2	
480-99684-2	MW-4-050516	Total/NA	Water	353.2	
480-99684-3	MW-10-050516	Total/NA	Water	353.2	
480-99684-4	MW-11-050516	Total/NA	Water	353.2	
480-99684-5	MW-13-050516	Total/NA	Water	353.2	

Analysis Batch: 300384

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-99684-2	MW-4-050516	Total/NA	Water	353.2	

Analysis Batch: 300457

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-99684-1	MW-15-050416	Total/NA	Water	350.1	
480-99684-1 DU	MW-15-050416	Total/NA	Water	350.1	
480-99684-1 MS	MW-15-050416	Total/NA	Water	350.1	
480-99684-2	MW-4-050516	Total/NA	Water	350.1	
480-99684-3	MW-10-050516	Total/NA	Water	350.1	
480-99684-4	MW-11-050516	Total/NA	Water	350.1	
480-99684-5	MW-13-050516	Total/NA	Water	350.1	
LCS 480-300457/28	Lab Control Sample	Total/NA	Water	350.1	
LCS 480-300457/4	Lab Control Sample	Total/NA	Water	350.1	
LCS 480-300457/52	Lab Control Sample	Total/NA	Water	350.1	
MB 480-300457/27	Method Blank	Total/NA	Water	350.1	
MB 480-300457/3	Method Blank	Total/NA	Water	350.1	
MB 480-300457/51	Method Blank	Total/NA	Water	350.1	

Analysis Batch: 300572

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-99684-1	MW-15-050416	Total/NA	Water	SM 4500 S2 D	
480-99684-2	MW-4-050516	Total/NA	Water	SM 4500 S2 D	
480-99684-3	MW-10-050516	Total/NA	Water	SM 4500 S2 D	
480-99684-4	MW-11-050516	Total/NA	Water	SM 4500 S2 D	

General Chemistry (Continued)

Analysis Batch: 300572 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-99684-5	MW-13-050516	Total/NA	Water	SM 4500 S2 D	
LCS 480-300572/28	Lab Control Sample	Total/NA	Water	SM 4500 S2 D	
LCS 480-300572/4	Lab Control Sample	Total/NA	Water	SM 4500 S2 D	
MB 480-300572/27	Method Blank	Total/NA	Water	SM 4500 S2 D	
MB 480-300572/3	Method Blank	Total/NA	Water	SM 4500 S2 D	

Analysis Batch: 300608

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-99684-3	MW-10-050516	Total/NA	Water	VFA-IC	
480-99684-5	MW-13-050516	Total/NA	Water	VFA-IC	
LCS 480-300608/3	Lab Control Sample	Total/NA	Water	VFA-IC	
MB 480-300608/4	Method Blank	Total/NA	Water	VFA-IC	

Analysis Batch: 300670

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-99684-1	MW-15-050416	Total/NA	Water	9060A	
480-99684-2	MW-4-050516	Total/NA	Water	9060A	
480-99684-3	MW-10-050516	Total/NA	Water	9060A	
480-99684-4	MW-11-050516	Total/NA	Water	9060A	
LCS 480-300670/5	Lab Control Sample	Total/NA	Water	9060A	
MB 480-300670/4	Method Blank	Total/NA	Water	9060A	

Analysis Batch: 300676

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-99684-1	MW-15-050416	Total/NA	Water	SM 2320B	
480-99684-2	MW-4-050516	Total/NA	Water	SM 2320B	
480-99684-3	MW-10-050516	Total/NA	Water	SM 2320B	
480-99684-4	MW-11-050516	Total/NA	Water	SM 2320B	
480-99684-5	MW-13-050516	Total/NA	Water	SM 2320B	
LCS 480-300676/8	Lab Control Sample	Total/NA	Water	SM 2320B	
MB 480-300676/7	Method Blank	Total/NA	Water	SM 2320B	

Analysis Batch: 300687

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-99684-5	MW-13-050516	Total/NA	Water	9060A	
LCS 480-300687/11	Lab Control Sample	Total/NA	Water	9060A	
MB 480-300687/10	Method Blank	Total/NA	Water	9060A	

Client Sample ID: MW-15-050416

Lab Sample ID: 480-99684-1

Date Collected: 05/04/16 17:19

Matrix: Water

Date Received: 05/05/16 18:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	301813	05/15/16 02:12	GVF	TAL BUF
Total/NA	Analysis	AM20GAX		1	303171	05/17/16 13:04	CTB	SC0015
Total/NA	Analysis	RSK-175		1	330199	05/13/16 15:53	EI	TAL IRV
Total/NA	Analysis	RSK-175		1	300925	05/10/16 14:12	TRG	TAL BUF
Total/NA	Prep	3005A			300322	05/06/16 10:35	KJ1	TAL BUF
Total/NA	Analysis	6010C		1	300623	05/07/16 17:36	AMH	TAL BUF
Total/NA	Analysis	300.0		20	300353	05/06/16 22:16	CAV	TAL BUF
Total/NA	Analysis	350.1		1	300457	05/06/16 16:51	CEA	TAL BUF
Total/NA	Analysis	353.2		1	300383	05/06/16 10:43	KMF	TAL BUF
Total/NA	Analysis	353.2		1	300375	05/06/16 10:43	KMF	TAL BUF
Total/NA	Analysis	9060A		1	300670	05/08/16 16:36	DLG	TAL BUF
Total/NA	Analysis	SM 2320B		1	300676	05/06/16 11:26	KMF	TAL BUF
Total/NA	Analysis	SM 4500 S2 D		1	300572	05/08/16 08:30	MDL	TAL BUF
Total/NA	Analysis	VFA-IC		1	300272	05/06/16 13:02	CAV	TAL BUF

Client Sample ID: MW-4-050516

Lab Sample ID: 480-99684-2

Date Collected: 05/05/16 09:30

Matrix: Water

Date Received: 05/05/16 18:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		500	301830	05/15/16 14:05	JWG	TAL BUF
Total/NA	Analysis	AM20GAX		1	303171	05/18/16 17:07	CTB	SC0015
Total/NA	Analysis	RSK-175		2	331113	05/18/16 13:21	EI	TAL IRV
Total/NA	Analysis	RSK-175		5	300925	05/10/16 18:35	TRG	TAL BUF
Total/NA	Prep	3005A			300322	05/06/16 10:35	KJ1	TAL BUF
Total/NA	Analysis	6010C		1	300623	05/07/16 17:39	AMH	TAL BUF
Total/NA	Analysis	300.0		20	300353	05/06/16 22:24	CAV	TAL BUF
Total/NA	Analysis	350.1		1	300457	05/06/16 16:57	CEA	TAL BUF
Total/NA	Analysis	353.2		1	300383	05/06/16 09:39	KMF	TAL BUF
Total/NA	Analysis	353.2		1	300384	05/06/16 09:39	KMF	TAL BUF
Total/NA	Analysis	9060A		1	300670	05/08/16 17:04	DLG	TAL BUF
Total/NA	Analysis	SM 2320B		1	300676	05/06/16 11:32	KMF	TAL BUF
Total/NA	Analysis	SM 4500 S2 D		1	300572	05/08/16 08:30	MDL	TAL BUF
Total/NA	Analysis	VFA-IC		1	300272	05/06/16 13:31	CAV	TAL BUF

Lab Chronicle

Client: GHD Services Inc.
Project/Site: 058507, GM-Lockport Groundwater Sampling

TestAmerica Job ID: 480-99684-1

Client Sample ID: MW-10-050516

Lab Sample ID: 480-99684-3

Date Collected: 05/05/16 11:50

Matrix: Water

Date Received: 05/05/16 18:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		2	301854	05/15/16 23:52	GTG	TAL BUF
Total/NA	Analysis	AM20GAX		1	303171	05/18/16 17:24	CTB	SC0015
Total/NA	Analysis	RSK-175		2	331113	05/18/16 13:34	EI	TAL IRV
Total/NA	Analysis	RSK-175		1	300925	05/10/16 14:47	TRG	TAL BUF
Total/NA	Prep	3005A			300322	05/06/16 10:35	KJ1	TAL BUF
Total/NA	Analysis	6010C		1	300623	05/07/16 17:42	AMH	TAL BUF
Total/NA	Analysis	300.0		50	300353	05/06/16 22:32	CAV	TAL BUF
Total/NA	Analysis	350.1		1	300457	05/06/16 16:58	CEA	TAL BUF
Total/NA	Analysis	353.2		1	300383	05/06/16 10:44	KMF	TAL BUF
Total/NA	Analysis	353.2		1	300375	05/06/16 10:44	KMF	TAL BUF
Total/NA	Analysis	9060A		1	300670	05/08/16 17:31	DLG	TAL BUF
Total/NA	Analysis	SM 2320B		1	300676	05/06/16 11:39	KMF	TAL BUF
Total/NA	Analysis	SM 4500 S2 D		1	300572	05/08/16 08:30	MDL	TAL BUF
Total/NA	Analysis	VFA-IC		1	300272	05/06/16 16:26	CAV	TAL BUF
Total/NA	Analysis	VFA-IC		10	300608	05/09/16 12:14	CAV	TAL BUF

Client Sample ID: MW-11-050516

Lab Sample ID: 480-99684-4

Date Collected: 05/05/16 14:20

Matrix: Water

Date Received: 05/05/16 18:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	301830	05/15/16 14:55	JWG	TAL BUF
Total/NA	Analysis	AM20GAX		1	303171	05/18/16 17:37	CTB	SC0015
Total/NA	Analysis	RSK-175		2	331113	05/18/16 13:49	EI	TAL IRV
Total/NA	Analysis	RSK-175		1	300925	05/10/16 15:05	TRG	TAL BUF
Total/NA	Prep	3005A			300322	05/06/16 10:35	KJ1	TAL BUF
Total/NA	Analysis	6010C		1	300623	05/07/16 17:46	AMH	TAL BUF
Total/NA	Analysis	300.0		10	300353	05/06/16 22:41	CAV	TAL BUF
Total/NA	Analysis	350.1		1	300457	05/06/16 16:59	CEA	TAL BUF
Total/NA	Analysis	353.2		1	300383	05/06/16 10:45	KMF	TAL BUF
Total/NA	Analysis	353.2		1	300375	05/06/16 10:45	KMF	TAL BUF
Total/NA	Analysis	9060A		1	300670	05/08/16 17:58	DLG	TAL BUF
Total/NA	Analysis	SM 2320B		1	300676	05/06/16 11:46	KMF	TAL BUF
Total/NA	Analysis	SM 4500 S2 D		1	300572	05/08/16 08:30	MDL	TAL BUF
Total/NA	Analysis	VFA-IC		1	300272	05/06/16 16:55	CAV	TAL BUF

Lab Chronicle

Client: GHD Services Inc.
Project/Site: 058507, GM-Lockport Groundwater Sampling

TestAmerica Job ID: 480-99684-1

Client Sample ID: MW-13-050516

Lab Sample ID: 480-99684-5

Date Collected: 05/05/16 16:10
Matrix: Water
Date Received: 05/05/16 18:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	301830	05/15/16 15:20	JWG	TAL BUF
Total/NA	Analysis	AM20GAX		1	303171	05/19/16 08:56	CTB	SC0015
Total/NA	Analysis	RSK-175		3	331113	05/18/16 14:02	EI	TAL IRV
Total/NA	Analysis	RSK-175		1	300925	05/10/16 15:22	TRG	TAL BUF
Total/NA	Prep	3005A			300322	05/06/16 10:35	KJ1	TAL BUF
Total/NA	Analysis	6010C		1	300623	05/07/16 17:59	AMH	TAL BUF
Total/NA	Analysis	300.0		50	300353	05/06/16 22:49	CAV	TAL BUF
Total/NA	Analysis	350.1		1	300457	05/06/16 17:00	CEA	TAL BUF
Total/NA	Analysis	353.2		1	300383	05/06/16 10:46	KMF	TAL BUF
Total/NA	Analysis	353.2		1	300375	05/06/16 10:46	KMF	TAL BUF
Total/NA	Analysis	9060A		1	300687	05/08/16 22:01	DLG	TAL BUF
Total/NA	Analysis	SM 2320B		1	300676	05/06/16 11:52	KMF	TAL BUF
Total/NA	Analysis	SM 4500 S2 D		1	300572	05/08/16 08:30	MDL	TAL BUF
Total/NA	Analysis	VFA-IC		1	300272	05/06/16 17:25	CAV	TAL BUF
Total/NA	Analysis	VFA-IC		10	300608	05/09/16 12:43	CAV	TAL BUF

Client Sample ID: TRIP BLANK

Lab Sample ID: 480-99684-6

Date Collected: 05/04/16 09:00
Matrix: Water
Date Received: 05/05/16 18:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	301813	05/15/16 02:36	GVF	TAL BUF

Laboratory References:

SC0015 = Pittsburgh, PA (formerly Microseeps), 220 William Pitt Way, Pittsburgh, PA 15238, TEL (412)826-5245

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

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

Certification Summary

Client: GHD Services Inc.
Project/Site: 058507, GM-Lockport Groundwater Sampling

TestAmerica Job ID: 480-99684-1

Laboratory: TestAmerica Buffalo

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

Authority	Program	EPA Region	Certification ID	Expiration Date
New York	NELAP	2	10026	03-31-17

The following analytes are included in this report, but certification is not offered by the governing authority:

Analysis Method	Prep Method	Matrix	Analyte
VFA-IC		Water	Acetic acid
VFA-IC		Water	Formic-acid
VFA-IC		Water	Lactic acid
VFA-IC		Water	n-Butyric Acid
VFA-IC		Water	Propionic acid
VFA-IC		Water	Pyruvic Acid

Laboratory: TestAmerica Irvine

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

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska	State Program	10	CA01531	06-30-16
Arizona	State Program	9	AZ0671	10-13-16
California	LA Cty Sanitation Districts	9	10256	01-31-17 *
California	State Program	9	CA ELAP 2706	06-30-16
Guam	State Program	9	Cert. No. 12.002r	01-23-17
Hawaii	State Program	9	N/A	01-29-17
Kansas	NELAP Secondary AB	7	E-10420	07-31-16
Nevada	State Program	9	CA015312016-2	07-31-16
New Mexico	State Program	6	N/A	01-29-17
Northern Mariana Islands	State Program	9	MP0002	01-29-17
Oregon	NELAP	10	4028	01-29-17
USDA	Federal		P330-09-00080	07-08-18
Washington	State Program	10	C900	09-03-16

* Certification renewal pending - certification considered valid.

Method Summary

Client: GHD Services Inc.
Project/Site: 058507, GM-Lockport Groundwater Sampling

TestAmerica Job ID: 480-99684-1

Method	Method Description	Protocol	Laboratory
8260C	Volatile Organic Compounds by GC/MS	SW846	TAL BUF
AM20GAX	Dissolved Gases (GC)	NONE	SC0015
RSK-175	Dissolved Gases (GC)	RSK	TAL IRV
RSK-175	Dissolved Gases (GC)	RSK	TAL BUF
6010C	Metals (ICP)	SW846	TAL BUF
300.0	Anions, Ion Chromatography	MCAWW	TAL BUF
350.1	Nitrogen, Ammonia	MCAWW	TAL BUF
353.2	Nitrogen, Nitrite	MCAWW	TAL BUF
353.2	Nitrate	EPA	TAL BUF
9060A	Organic Carbon, Total (TOC)	SW846	TAL BUF
SM 2320B	Alkalinity	SM	TAL BUF
SM 4500 S2 D	Sulfide, Total	SM	TAL BUF
VFA-IC	Volatile Fatty Acids, Ion Chromatography	TestAmerica SOP	TAL BUF

Protocol References:

EPA = US Environmental Protection Agency

MCAWW = "Methods For Chemical Analysis Of Water And Wastes", EPA-600/4-79-020, March 1983 And Subsequent Revisions.

NONE = NONE

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.

TestAmerica SOP = TestAmerica, Inc., Standard Operating Procedure

Laboratory References:

SC0015 = Pittsburgh, PA (formerly Microseeps), 220 William Pitt Way, Pittsburgh, PA 15238, TEL (412)826-5245

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

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

Sample Summary

Client: GHD Services Inc.
Project/Site: 058507, GM-Lockport Groundwater Sampling

TestAmerica Job ID: 480-99684-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
480-99684-1	MW-15-050416	Water	05/04/16 17:19	05/05/16 18:00
480-99684-2	MW-4-050516	Water	05/05/16 09:30	05/05/16 18:00
480-99684-3	MW-10-050516	Water	05/05/16 11:50	05/05/16 18:00
480-99684-4	MW-11-050516	Water	05/05/16 14:20	05/05/16 18:00
480-99684-5	MW-13-050516	Water	05/05/16 16:10	05/05/16 18:00
480-99684-6	TRIP BLANK	Water	05/04/16 09:00	05/05/16 18:00

Pace Analytical Energy Services LLC
220 William Pitt Way
Pittsburgh, PA 15238
Phone: (412) 826-5245
Fax: (412) 826-3433

May 20, 2016

Melissa Deyo
Test America
10 Hazelwood Drive
Buffalo, NY 14228

RE: **480-99684-1**

Pace Workorder: 19081

Dear Melissa Deyo:

Enclosed are the analytical results for sample(s) received by the laboratory on Wednesday, May 11, 2016. Results reported herein conform to the most current NELAC standards, where applicable, unless otherwise narrated in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Ruth Welsh 05/20/2016
Ruth.Welsh@pacelabs.com

Customer Service Representative

Enclosures

As a valued client we would appreciate your comments on our service.
Please email info@microseeps.com.

Total Number of Pages ____

CERTIFICATE OF ANALYSIS

Pace Analytical Energy Services LLC
220 William Pitt Way
Pittsburgh, PA 15238
Phone: (412) 826-5245
Fax: (412) 826-3433

LABORATORY ACCREDITATIONS & CERTIFICATIONS

Accreditor:	Pennsylvania Department of Environmental Protection, Bureau of Laboratories
Accreditation ID:	02-00538
Scope:	NELAP Non-Potable Water and Solid & Hazardous Waste
Accreditor:	South Carolina Department of Health and Environmental Control, Office of Environmental Laboratory Certification
Accreditation ID:	89009003
Scope:	Clean Water Act (CWA); Resource Conservation and Recovery Act (RCRA)
Accreditor:	NELAP: New Jersey, Department of Environmental Protection
Accreditation ID:	PA026
Scope:	Non-Potable Water; Solid and Chemical Materials
Accreditor:	NELAP: New York, Department of Health Wadsworth Center
Accreditation ID:	11815
Scope:	Non-Potable Water; Solid and Hazardous Waste
Accreditor:	State of Connecticut, Department of Public Health, Division of Environmental Health
Accreditation ID:	PH-0263
Scope:	Clean Water Act (CWA) Resource Conservation and Recovery Act (RCRA)
Accreditor:	NELAP: Texas, Commission on Environmental Quality
Accreditation ID:	T104704453-09-TX
Scope:	Non-Potable Water
Accreditor:	State of New Hampshire
Accreditation ID:	299409
Scope:	Non-potable water
Accreditor:	State of Georgia
Accreditation ID:	Chapter 391-3-26
Scope:	As per the Georgia EPD Rules and Regulations for Commercial Laboratories, PAES is accredited by the Pennsylvania Department of Environmental Protection Bureau of Laboratories under the National Environmental Laboratory Approval Program (NELAC).

Pace Analytical Energy Services LLC
220 William Pitt Way
Pittsburgh, PA 15238
Phone: (412) 826-5245
Fax: (412) 826-3433

SAMPLE SUMMARY

Workorder: 19081 480-99684-1

Lab ID	Sample ID	Matrix	Date Collected	Date Received
190810001	MW-15-050416 (480-99684-1)	Bubble Strip	5/4/2016 17:19	5/11/2016 11:15
190810002	MW-4-050416 (480-99684-2)	Bubble Strip	5/5/2016 09:30	5/11/2016 11:15
190810003	MW-10-050416 (480-99684-3)	Bubble Strip	5/5/2016 11:50	5/11/2016 11:15
190810004	MW-11-050416 (480-99684-4)	Bubble Strip	5/5/2016 14:20	5/11/2016 11:15
190810005	MW-13-050416 (480-99684-5)	Bubble Strip	5/5/2016 16:10	5/11/2016 11:15

Pace Analytical Energy Services LLC
220 William Pitt Way
Pittsburgh, PA 15238
Phone: (412) 826-5245
Fax: (412) 826-3433

ANALYTICAL RESULTS

Workorder: 19081 480-99684-1

Lab ID: **190810001** Date Received: 5/11/2016 11:15 Matrix: Bubble Strip

Sample ID: **MW-15-050416 (480-99684-1)** Date Collected: 5/4/2016 17:19

Parameters	Results	Units	PQL	MDL	DF	Analyzed	By	Qualifiers
RISK - MICR								
Analysis Desc: AM20GAX			Analytical Method: AM20GAX					
Hydrogen	**1.0**	nM	0.60	0.088	1	5/17/2016 13:04	TD	B,n

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Pittsburgh, PA 15238
Phone: (412) 826-5245
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ANALYTICAL RESULTS

Workorder: 19081 480-99684-1

Lab ID: **190810002** Date Received: 5/11/2016 11:15 Matrix: Bubble Strip

Sample ID: **MW-4-050416 (480-99684-2)** Date Collected: 5/5/2016 09:30

Parameters	Results	Units	PQL	MDL	DF	Analyzed	By	Qualifiers
RISK - MICR								
Analysis Desc: AM20GAX			Analytical Method: AM20GAX					
Hydrogen	17	nM	0.60	0.088	1	5/18/2016 17:07	GT	B,n

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Phone: (412) 826-5245
Fax: (412) 826-3433

ANALYTICAL RESULTS

Workorder: 19081 480-99684-1

Lab ID: **190810003** Date Received: 5/11/2016 11:15 Matrix: Bubble Strip

Sample ID: **MW-10-050416 (480-99684-3)** Date Collected: 5/5/2016 11:50

Parameters	Results	Units	PQL	MDL	DF	Analyzed	By	Qualifiers
RISK - MICR								
Analysis Desc: AM20GAX			Analytical Method: AM20GAX					
Hydrogen	11	nM	0.60	0.088	1	5/18/2016 17:24	GT	B,n

Pace Analytical Energy Services LLC
220 William Pitt Way
Pittsburgh, PA 15238
Phone: (412) 826-5245
Fax: (412) 826-3433

ANALYTICAL RESULTS

Workorder: 19081 480-99684-1

Lab ID: **190810004** Date Received: 5/11/2016 11:15 Matrix: Bubble Strip

Sample ID: **MW-11-050416 (480-99684-4)** Date Collected: 5/5/2016 14:20

Parameters	Results	Units	PQL	MDL	DF	Analyzed	By	Qualifiers
RISK - MICR								
Analysis Desc: AM20GAX			Analytical Method: AM20GAX					
Hydrogen	1.1	nM	0.60	0.088	1	5/18/2016 17:37	GT	B,n

Pace Analytical Energy Services LLC
220 William Pitt Way
Pittsburgh, PA 15238
Phone: (412) 826-5245
Fax: (412) 826-3433

ANALYTICAL RESULTS

Workorder: 19081 480-99684-1

Lab ID: **190810005** Date Received: 5/11/2016 11:15 Matrix: Bubble Strip

Sample ID: **MW-13-050416 (480-99684-5)** Date Collected: 5/5/2016 16:10

Parameters	Results	Units	PQL	MDL	DF	Analyzed	By	Qualifiers
RISK - MICR								
Analysis Desc: AM20GAX			Analytical Method: AM20GAX					
Hydrogen	**14**	nM	0.60	0.088	1	5/19/2016 08:56	GT	B,n

Report ID: 19081 - 797981

Pace Analytical Energy Services LLC
220 William Pitt Way
Pittsburgh, PA 15238
Phone: (412) 826-5245
Fax: (412) 826-3433

ANALYTICAL RESULTS QUALIFIERS

Workorder: 19081 480-99684-1

DEFINITIONS/QUALIFIERS

Disclaimer : The Pennsylvania Department of Environmental Protection (PADEP) has decided to no longer recognize analyses that do not produce data for primary compliance, for NELAP accreditation. The methods affected by this decision are AM20GAx, AM21G, SW846 7199 and AM4.02. The laboratory shall continue to administer the NELAP/TNI standard requirements in the performance of these methods.

MDL	Method Detection Limit. Can be used synonymously with LOD; Limit Of Detection.
PQL	Practical Quanitation Limit. Can be used synonymously with LOQ; Limit Of Quantitation.
ND	Not detected at or above reporting limit.
DF	Dilution Factor.
S	Surrogate.
RPD	Relative Percent Difference.
% Rec	Percent Recovery.
U	Indicates the compound was analyzed for, but not detected at or above the noted concentration.
J	Estimated concentration greater than the set method detection limit (MDL) and less than the set reporting limit (PQL).
n	The laboratory does not hold NELAP/TNI accreditation for this method or analyte.
B	The analyte was detected in the associated blank.

Pace Analytical Energy Services LLC
220 William Pitt Way
Pittsburgh, PA 15238
Phone: (412) 826-5245
Fax: (412) 826-3433

QUALITY CONTROL DATA

Workorder: 19081 480-99684-1

QC Batch: DISG/5378 Analysis Method: AM20GAX

QC Batch Method: AM20GAX

Associated Lab Samples: 190810001

METHOD BLANK: 42004

Parameter	Units	Blank Result	Reporting Limit	Qualifiers
RISK				
Hydrogen	nM	0.21J	0.60	B,n

LABORATORY CONTROL SAMPLE & LCSD: 42005 42006

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limit	RPD	Max RPD	Qualifiers
RISK										
Hydrogen	nM	24	26	26	105	106	80-120	0.95	20	B,n

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Pittsburgh, PA 15238
Phone: (412) 826-5245
Fax: (412) 826-3433

QUALITY CONTROL DATA

Workorder: 19081 480-99684-1

QC Batch: DISG/5382 Analysis Method: AM20GAX

QC Batch Method: AM20GAX

Associated Lab Samples: 190810002, 190810003, 190810004

METHOD BLANK: 42027

Parameter	Units	Blank Result	Reporting Limit	Qualifiers
RISK				
Hydrogen	nM	0.14J	0.60	B,n

LABORATORY CONTROL SAMPLE & LCSD: 42028 42029

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limit	RPD	Max RPD	Qualifiers
RISK										
Hydrogen	nM	24	26	26	105	105	80-120	0	20	B,n

Pace Analytical Energy Services LLC
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Pittsburgh, PA 15238
Phone: (412) 826-5245
Fax: (412) 826-3433

QUALITY CONTROL DATA

Workorder: 19081 480-99684-1

QC Batch: DISG/5385 Analysis Method: AM20GAX

QC Batch Method: AM20GAX

Associated Lab Samples: 190810005

METHOD BLANK: 42044

Parameter	Units	Blank Result	Reporting Limit	Qualifiers
RISK				
Hydrogen	nM	0.10J	0.60	B,n

LABORATORY CONTROL SAMPLE & LCSD: 42045 42046

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limit	RPD	Max RPD	Qualifiers
RISK										
Hydrogen	nM	24	24	24	98	97	80-120	1	20	B,n

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Pittsburgh, PA 15238
Phone: (412) 826-5245
Fax: (412) 826-3433

QUALITY CONTROL DATA QUALIFIERS

Workorder: 19081 480-99684-1

QUALITY CONTROL PARAMETER QUALIFIERS

B	The analyte was detected in the associated blank.
n	The laboratory does not hold NELAP/TNI accreditation for this method or analyte.

Pace Analytical Energy Services LLC
220 William Pitt Way
Pittsburgh, PA 15238
Phone: (412) 826-5245
Fax: (412) 826-3433

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Workorder: 19081 480-99684-1

Lab ID	Sample ID	Prep Method	Prep Batch	Analysis Method	Analysis Batch
190810001	MW-15-050416 (480-99684-1)			AM20GAX	DISG/5378
190810002	MW-4-050416 (480-99684-2)			AM20GAX	DISG/5382
190810003	MW-10-050416 (480-99684-3)			AM20GAX	DISG/5382
190810004	MW-11-050416 (480-99684-4)			AM20GAX	DISG/5382
190810005	MW-13-050416 (480-99684-5)			AM20GAX	DISG/5385

TestAmerica Buffalo
10 Hazelwood Drive
Amherst, NY 14228-2298
Phone (716) 691-2600 Fax (716) 691-7991

19081

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

5/23/2016

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Deyo, Melissa L	Carrier Tracking No(s):	COC No: 480-29215.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: melissa.deyo@testamericainc.com		Page: Page 1 of 1
Company: Pace Analytical Services, Inc.		Analysis Requested		Job #: 480-99684-1
Address: 220 William Pitt Way,	Due Date Requested: 5/17/2016			Preservation Codes:
City: Pittsburgh	TAT Requested (days):			A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - ph 4-5, Z - other (specify)
State, Zip: PA, 15238	PO #:			
Phone: 412-826-5245(Tel)	WO #:			Other:
Email:				
Project Name: 058507, GM-Lockport Groundwater Sampling	Project #: 48004014			
Site:	SSOW#:			

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	AM20GAX/ Hydrogen	Total Number of containers	Special Instructions/Note:
			Preservation Code:						
MW-15-050416 (480-99684-1)	5/4/16	17:19 Eastern		Water			X	1	
MW-4-050516 (480-99684-2)	5/5/16	09:30 Eastern		Water			X	1	
MW-10-050516 (480-99684-3)	5/5/16	11:50 Eastern		Water			X	1	
MW-11-050516 (480-99684-4)	5/5/16	14:20 Eastern		Water			X	1	
MW-13-050516 (480-99684-5)	5/5/16	16:10 Eastern		Water			X	1	

Possible Hazard Identification
Unconfirmed
Deliverable Requested: I, II, III, IV, Other (specify)

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For* _____ *Months*
Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
[signature]	5/9/16 1500	TAB	[signature]	5/10/16 905	TAB
Relinquished by: [signature]	Date/Time: 5/10/16 Mon	Company	Received by: [signature]	Date/Time: 5 11 16 1115	Company PAS
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks:

TestAmerica Buffalo
10 Hazelwood Drive
Amherst, NY 14228-2298
Phone (716) 691-2600 Fax (716) 691-7991

Chain of Custody Record

480-99684 Chain of Custody

Client Information	Sampler: P. Nyznyk	Lab PM: Deyo, Melissa L	Carrier Tracking No(s):
Client Contact: Mr. Tom Bohlen	Phone: 517-5708	E-Mail: melissa.deyo@testamericainc.com	

Company: GZA GeoEnvironmental, Inc.

Address: 535 Washington Street 11th Floor
City: Buffalo
State, Zip: NY, 14203
Phone:
Email: thomas.bohlen@gza.com
Project Name: 058507, GM-Lockport Groundwater Sampling
Site:

Due Date Requested:
TAT Requested (days):
PO #: 4065906
WO #: 256028
Project #: 48004014
SSOW#:

Job #:

Analysis Requested

Preservation Codes:

A - HCL	M - Hexane
B - NaOH	N - None
C - Zn Acetate	O - AsNaO2
D - Nitric Acid	P - Na2O4S
E - NaHSO4	Q - Na2SO3
F - MeOH	R - Na2S2O3
G - Amchlor	S - H2SO4
H - Ascorbic Acid	T - TSP Dodecahydrate
I - Ice	U - Acetone
J - DI Water	V - MCAA
K - EDTA	W - ph 4-5
L - EDA	Z - other (specify)

Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	8260C - PCE, TCE, DCE (trans and cis), Vinyl Chl	RSK_175_CO2 - Carbon dioxide	VFA_IC - Standard VFA Compounds	300.0_28D - Anions (Chloride & Sulfate)	350.1 - Ammonia	6010C - Metals - Fe, Mn, Mg, K & Na	RSK_175 - Methane, Ethane & Ethene	9060A - Total Organic Carbon	SM4500_S2_D - Sulfide	353.2, 353.2_Nitrite, Nitrate_Calc	2320B - Total Alkalinity	AM 20GAX	Total Number of containers	Special Instructions/Note:
			Preservation Code:				A	N	N	N	S	D	A	A	CB	N	N			
MW-15-050416	05/04/16	1719	G	Water	N	N	X	X	X	X	X	X	X	X	X	X	X	X		* Dissolved H_2 for
MW-4-050516	05/05/16	0930	G	Water	N	N	X	X	X	X	X	X	X	X	X	X	X	X		sub contracted lab
MW-10-050516	05/05/16	1150	G	Water	N	N	X	X	X	X	X	X	X	X	X	X	X	X		(Air sample)
MW-11-050516	05/05/16	1420	G	Water	N	N	X	X	X	X	X	X	X	X	X	X	X	X		
MW-13-050516	05/05/16	1610	G	Water	N	N	X	X	X	X	X	X	X	X	X	X	X	X		
TRIP BLANK	05/04/16	0900	G	Water			X													
				Water																
				Water																
				Water																
				Water																
				Water																

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
[signature]	5/5/16 1800	GZA	[signature]	5/5/16 1800	TA Buffalo
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: ☐ Yes ☐ No
Custody Seal No.:
Cooler Temperature(s) °C and Other Remarks: #1 2.1, 3.0

5/23/2016

TestAmerica Buffalo
10 Hazelwood Drive
Amherst, NY 14228-2298
Phone (716) 691-2600 Fax (716) 691-7991

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Deyo, Melissa L	Carrier Tracking No(s):	COC No: 480-29204.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: melissa.deyo@testamericainc.com		Page: Page 1 of 1
Company: TestAmerica Laboratories, Inc.				Job #: 480-99684-1
Address: 30 Community Drive, Suite 11,	Due Date Requested: 5/17/2016			
City: South Burlington	TAT Requested (days):			
State, Zip: VT, 05403				
Phone: 802-660-1990(Tel) 802-660-1919(Fax)	PO #:			
Email:	WO #:			
Project Name: 058507, GM-Lockport Groundwater Sampling	Project #: 48004014			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL	M - Hexane
B - NaOH	N - None
C - Zn Acetate	O - AsNaO2
D - Nitric Acid	P - Na2O4S
E - NaHSO4	Q - Na2SO3
F - MeOH	R - Na2S2O3
G - Amchlor	S - H2SO4
H - Ascorbic Acid	T - TSP Dodecahydrate
I - Ice	U - Acetone
J - DI Water	V - MCAA
K - EDTA	W - ph 4-5
L - EDA	Z - other (specify)

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	RSK_175_CO2/ Carbon dioxide	Total Number of containers	Special Instructions/Note:
			Preservation Code:						
MW-15-050416 (480-99684-1)	5/4/16	17:19 Eastern		Water			X	3	
MW-4-050516 (480-99684-2)	5/5/16	09:30 Eastern		Water			X	3	
MW-10-050516 (480-99684-3)	5/5/16	11:50 Eastern		Water			X	3	
MW-11-050516 (480-99684-4)	5/5/16	14:20 Eastern		Water			X	3	
MW-13-050516 (480-99684-5)	5/5/16	16:10 Eastern		Water			X	3	

480-99684 Chain of Custody

Possible Hazard Identification
Unconfirmed

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For* _____ *Months*

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:		
Relinquished by:	Date/Time: 5/16/16 1600	Company TAB	Received by:	Date/Time: 5/17/16 0945	Company TA
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks:

5/23/2016


ORIGIN ID:DKKA (716) 691-2600
CHAR BRONSON
TEST AMERICA
10 HAZELWOOD
AMHERST , NY 14228
UNITED STATES US
SHIP DATE: 06MAY16
ACTWGT: 18.7 LB
CAD: 846654/CAFE2912
DIMS: 22x14x11 IN
BILL RECIPIENT
TO SAMPLE MGT.
TA BURLINGTON
30 COMMUNITY DRIVE
SUITE 11
SOUTH BURLINGTON VT 05403
REF: BURLINGTON
(802) 660-1990
DEPT: SAMPLE CONTROL
FedEx
Expres
SATURDAY 12:00P
PRIORITY OVERNIGHT
TRK# 0201 5657 0120 1292
XO BTVA
05403
VT-US BTV
Part # 156148V-434 RIT2 12/15

TestAmerica Burlington
30 Community Drive Suite 11
South Burlington, VT 05403
Phone (802) 660-1990 Fax (802) 660-1919

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Deyo, Melissa L	Carrier Tracking No(s):	COC No: 200-25451.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: melissa.deyo@testamericainc.com		Page: Page 1 of 1
Company: TestAmerica Laboratories, Inc		**Analysis Requested**		Job #: 480-99684-1
Address: 17461 Derian Ave, Suite 100,	Due Date Requested: 5/17/2016			**Preservation Codes:**
City: Irvine	TAT Requested (days):			A - HCL M - Hexane B - NaOH N - None C - Zn Acetate O - AsNaO2 D - Nitric Acid P - Na2O4S E - NaHSO4 Q - Na2SO3 F - MeOH R - Na2S2O3 G - Amchlor S - H2SO4 H - Ascorbic Acid T - TSP Dodecahydrate I - Ice U - Acetone J - DI Water V - MCAA K - EDTA W - ph 4-5 L - EDA Z - other (specify) **Other:**
State, Zip: CA, 92614-5817				
Phone: 949-261-1022(Tel) 949-260-3297(Fax)	PO #:			
Email:	WO #:			
Project Name: 058507, GM-Lockport Groundwater Sampling	Project #: 48004014			
Site:	SSOW#:			

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	RSK_175_CO2/ Carbon dioxide	Total Number of containers	Special Instructions/Note:
			Preservation Code:						
MW-15-050416 (480-99684-1)	5/4/16	17:19 Eastern		Water			X	3	
MW-4-050516 (480-99684-2)	5/5/16	09:30 Eastern		Water			X	3	
MW-10-050516 (480-99684-3)	5/5/16	11:50 Eastern		Water			X	3	
MW-11-050516 (480-99684-4)	5/5/16	14:20 Eastern		Water			X	3	
MW-13-050516 (480-99684-5)	5/5/16	16:10 Eastern		Water			X	3	

Possible Hazard Identification
Unconfirmed

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For _____ Months*

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
	5/12/16 1630	TAL SC			
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time: 5/13-16 10:00	Company TAL

Custody Seals Intact: Δ Yes Δ No
Custody Seal No.: #6740-5524-0574
Cooler Temperature(s) °C and Other Remarks: 2.3/2.0 IR77

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5/23/2016

Login Sample Receipt Checklist

Client: GHD Services Inc.

Job Number: 480-99684-1

Login Number: 99684

List Source: TestAmerica Buffalo

List Number: 1

Creator: Wallace, Cameron

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

Login Sample Receipt Checklist

Client: GHD Services Inc.

Job Number: 480-99684-1

Login Number: 99684
List Number: 3
Creator: Salas, Margarita

List Source: TestAmerica Irvine
List Creation: 05/13/16 12:55 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	N/A	Received project as a subcontract.
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	False	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	False	

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Buffalo
10 Hazelwood Drive
Amherst, NY 14228-2298
Tel: (716)691-2600

TestAmerica Job ID: 480-99770-1
Client Project/Site: 058507, GM-Lockport Groundwater Sampling

For:
GHD Services Inc.
2055 Niagara Falls Blvd., Suite 3
Niagara Falls, New York 14304

Attn: Kathleen Willy

Authorized for release by:
5/20/2016 2:54:19 PM
Rebecca Jones, Project Management Assistant I
rebecca.jones@testamericainc.com

Designee for

Melissa Deyo, Project Manager I
(716)504-9874
melissa.deyo@testamericainc.com

Table of Contents

Definitions/Glossary

Client: GHD Services Inc.
Project/Site: 058507, GM-Lockport Groundwater Sampling

TestAmerica Job ID: 480-99770-1

Qualifiers

Metals

Qualifier	Qualifier Description
B	Compound was found in the blank and sample.
4	MS, MSD: The analyte present in the original sample is greater than 4 times the matrix spike concentration; therefore, control limits are not applicable.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

General Chemistry

Qualifier	Qualifier Description
F1	MS and/or MSD Recovery is outside acceptance limits.
B	Compound was found in the blank and sample.
4	MS, MSD: The analyte present in the original sample is greater than 4 times the matrix spike concentration; therefore, control limits are not applicable.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
E	Result exceeded calibration range.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
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)

Case Narrative

Client: GHD Services Inc.
Project/Site: 058507, GM-Lockport Groundwater Sampling

TestAmerica Job ID: 480-99770-1

Job ID: 480-99770-1

Laboratory: TestAmerica Buffalo

Narrative

Job Narrative
480-99770-1

Comments
No additional comments.

Receipt
The samples were received on 5/6/2016 2:00 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 3.6º C.

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

HPLC/IC
Method(s) 300.0: The following samples were diluted to bring the concentration of target analytes within the calibration range: MW-14-050616 (480-99770-1) and MW-12-050616 (480-99770-2). Elevated reporting limits (RLs) are provided.

Method(s) VFA-IC: The matrix spike / matrix spike duplicate (MS/MSD) recoveries for analytical batch 480-301121 were outside control limits. Sample matrix interference is suspected because the associated laboratory control sample (LCS) recovery was within acceptance limits.

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.

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

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

Detection Summary

Client: GHD Services Inc.
Project/Site: 058507, GM-Lockport Groundwater Sampling

TestAmerica Job ID: 480-99770-1

Client Sample ID: MW-14-050616 — Lab Sample ID: 480-99770-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Hydrogen	14		0.60		nm	1		AM20GAX	Total/NA
Carbon Dioxide (TCD)	30000		2000	1000	ug/L	1		RSK-175	Total/NA
Methane	36		4.0	1.0	ug/L	1		RSK-175	Total/NA
Iron	0.17	B	0.050	0.019	mg/L	1		6010C	Total/NA
Magnesium	55.4		0.20	0.043	mg/L	1		6010C	Total/NA
Manganese	0.34		0.0030	0.00040	mg/L	1		6010C	Total/NA
Potassium	3.2		0.50	0.10	mg/L	1		6010C	Total/NA
Sodium	760		1.0	0.32	mg/L	1		6010C	Total/NA
Chloride	1350		10.0	5.6	mg/L	20		300.0	Total/NA
Sulfate	52.1		40.0	7.0	mg/L	20		300.0	Total/NA
Ammonia	0.078		0.020	0.0090	mg/L	1		350.1	Total/NA
Total Organic Carbon	2.3	B	1.0	0.43	mg/L	1		9060A	Total/NA
Total Alkalinity	402		5.0	0.79	mg/L	1		SM 2320B	Total/NA

Client Sample ID: MW-12-050616 — Lab Sample ID: 480-99770-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	5.1		1.0	0.81	ug/L	1		8260C	Total/NA
Vinyl chloride	4.9		1.0	0.90	ug/L	1		8260C	Total/NA
Hydrogen	1.4		0.60		nm	1		AM20GAX	Total/NA
Carbon Dioxide (TCD)	45000		4000	2000	ug/L	2		RSK-175	Total/NA
Methane	86		4.0	1.0	ug/L	1		RSK-175	Total/NA
Iron	2.5	B	0.050	0.019	mg/L	1		6010C	Total/NA
Magnesium	51.0		0.20	0.043	mg/L	1		6010C	Total/NA
Manganese	4.3		0.0030	0.00040	mg/L	1		6010C	Total/NA
Potassium	3.4		0.50	0.10	mg/L	1		6010C	Total/NA
Sodium	974		1.0	0.32	mg/L	1		6010C	Total/NA
Chloride	2010		25.0	14.1	mg/L	50		300.0	Total/NA
Sulfate	80.3	J	100	17.5	mg/L	50		300.0	Total/NA
Ammonia	1.1		0.020	0.0090	mg/L	1		350.1	Total/NA
Nitrate	0.12		0.050	0.020	mg/L	1		353.2	Total/NA
Nitrite	0.023	J B	0.050	0.020	mg/L	1		353.2	Total/NA
Total Organic Carbon	3.7	B	1.0	0.43	mg/L	1		9060A	Total/NA
Total Alkalinity	289		5.0	0.79	mg/L	1		SM 2320B	Total/NA

Client Sample ID: TRIP BLANK — Lab Sample ID: 480-99770-3

No Detections.

This Detection Summary does not include radiochemical test results.

Client: GHD Services Inc.
Project/Site: 058507, GM-Lockport Groundwater Sampling

TestAmerica Job ID: 480-99770-1

Client Sample ID: MW-14-050616
Date Collected: 05/06/16 08:45
Date Received: 05/06/16 14:00

Lab Sample ID: 480-99770-1
Matrix: Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	ND		1.0	0.81	ug/L			05/17/16 12:44	1
Tetrachloroethene	ND		1.0	0.36	ug/L			05/17/16 12:44	1
trans-1,2-Dichloroethene	ND		1.0	0.90	ug/L			05/17/16 12:44	1
Trichloroethene	ND		1.0	0.46	ug/L			05/17/16 12:44	1
Vinyl chloride	ND		1.0	0.90	ug/L			05/17/16 12:44	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*116*		*66 - 137*		*05/17/16 12:44*	*1*
4-Bromofluorobenzene (Surr)	*98*		*73 - 120*		*05/17/16 12:44*	*1*
Toluene-d8 (Surr)	*96*		*71 - 126*		*05/17/16 12:44*	*1*
Dibromofluoromethane (Surr)	*116*		*60 - 140*		*05/17/16 12:44*	*1*

Method: AM20GAX - Dissolved Gases (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Hydrogen	**14**		0.60		nm			05/18/16 16:27	1

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbon Dioxide (TCD)	**30000**		2000	1000	ug/L			05/19/16 13:25	1
Ethane	ND		7.5	1.5	ug/L			05/11/16 11:07	1
Ethene	ND		7.0	1.5	ug/L			05/11/16 11:07	1
Methane	**36**		4.0	1.0	ug/L			05/11/16 11:07	1

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	**0.17**	**B**	0.050	0.019	mg/L		05/09/16 11:15	05/10/16 18:16	1
Magnesium	**55.4**		0.20	0.043	mg/L		05/09/16 11:15	05/10/16 18:16	1
Manganese	**0.34**		0.0030	0.00040	mg/L		05/09/16 11:15	05/10/16 18:16	1
Potassium	**3.2**		0.50	0.10	mg/L		05/09/16 11:15	05/10/16 18:16	1
Sodium	**760**		1.0	0.32	mg/L		05/09/16 11:15	05/10/16 18:16	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**1350**		10.0	5.6	mg/L			05/11/16 09:40	20
Sulfate	**52.1**		40.0	7.0	mg/L			05/11/16 09:40	20
Ammonia	**0.078**		0.020	0.0090	mg/L			05/10/16 11:41	1
Nitrate	ND		0.050	0.020	mg/L			05/07/16 10:37	1
Nitrite	ND	F1	0.050	0.020	mg/L			05/07/16 10:37	1
Total Organic Carbon	**2.3**	**B**	1.0	0.43	mg/L			05/11/16 13:31	1
Total Alkalinity	**402**		5.0	0.79	mg/L			05/09/16 14:27	1
Sulfide	ND		0.10	0.052	mg/L			05/08/16 08:30	1
Acetic acid	ND		1.0	0.15	mg/L			05/11/16 13:13	1
Formic-acid	ND		1.0	0.11	mg/L			05/11/16 13:13	1
Lactic acid	ND		1.0	0.14	mg/L			05/11/16 13:13	1
n-Butyric Acid	ND		1.0	0.16	mg/L			05/11/16 13:13	1
Propionic acid	ND		1.0	0.17	mg/L			05/11/16 13:13	1
Pyruvic Acid	ND		1.0	0.080	mg/L			05/11/16 13:13	1

Client Sample Results

Client: GHD Services Inc.
Project/Site: 058507, GM-Lockport Groundwater Sampling

TestAmerica Job ID: 480-99770-1

Client Sample ID: MW-12-050616
Date Collected: 05/06/16 11:15
Date Received: 05/06/16 14:00

Lab Sample ID: 480-99770-2
Matrix: Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	5.1		1.0	0.81	ug/L			05/17/16 13:11	1
Tetrachloroethene	ND		1.0	0.36	ug/L			05/17/16 13:11	1
trans-1,2-Dichloroethene	ND		1.0	0.90	ug/L			05/17/16 13:11	1
Trichloroethene	ND		1.0	0.46	ug/L			05/17/16 13:11	1
Vinyl chloride	4.9		1.0	0.90	ug/L			05/17/16 13:11	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*119*		*66 - 137*		*05/17/16 13:11*	*1*
4-Bromofluorobenzene (Surr)	*98*		*73 - 120*		*05/17/16 13:11*	*1*
Toluene-d8 (Surr)	*95*		*71 - 126*		*05/17/16 13:11*	*1*
Dibromofluoromethane (Surr)	*115*		*60 - 140*		*05/17/16 13:11*	*1*

Method: AM20GAX - Dissolved Gases (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Hydrogen	1.4		0.60		nm			05/18/16 16:27	1

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbon Dioxide (TCD)	45000		4000	2000	ug/L			05/19/16 13:42	2
Ethane	ND		7.5	1.5	ug/L			05/11/16 11:24	1
Ethene	ND		7.0	1.5	ug/L			05/11/16 11:24	1
Methane	86		4.0	1.0	ug/L			05/11/16 11:24	1

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	2.5	B	0.050	0.019	mg/L		05/09/16 11:15	05/10/16 18:42	1
Magnesium	51.0		0.20	0.043	mg/L		05/09/16 11:15	05/10/16 18:42	1
Manganese	4.3		0.0030	0.00040	mg/L		05/09/16 11:15	05/10/16 18:42	1
Potassium	3.4		0.50	0.10	mg/L		05/09/16 11:15	05/10/16 18:42	1
Sodium	974		1.0	0.32	mg/L		05/09/16 11:15	05/10/16 18:42	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	2010		25.0	14.1	mg/L			05/11/16 09:48	50
Sulfate	80.3	J	100	17.5	mg/L			05/11/16 09:48	50
Ammonia	1.1		0.020	0.0090	mg/L			05/10/16 11:42	1
Nitrate	0.12		0.050	0.020	mg/L			05/07/16 10:36	1
Nitrite	0.023	J B	0.050	0.020	mg/L			05/07/16 10:36	1
Total Organic Carbon	3.7	B	1.0	0.43	mg/L			05/11/16 13:58	1
Total Alkalinity	289		5.0	0.79	mg/L			05/09/16 14:41	1
Sulfide	ND		0.10	0.052	mg/L			05/08/16 08:30	1
Acetic acid	ND	F1	1.0	0.15	mg/L			05/11/16 13:42	1
Formic-acid	ND	F1	1.0	0.11	mg/L			05/11/16 13:42	1
Lactic acid	ND	F1	1.0	0.14	mg/L			05/11/16 13:42	1
n-Butyric Acid	ND	F1	1.0	0.16	mg/L			05/11/16 13:42	1
Propionic acid	ND	F1	1.0	0.17	mg/L			05/11/16 13:42	1
Pyruvic Acid	ND	F1	1.0	0.080	mg/L			05/11/16 13:42	1

Client: GHD Services Inc.
Project/Site: 058507, GM-Lockport Groundwater Sampling

TestAmerica Job ID: 480-99770-1

Client Sample ID: TRIP BLANK
Date Collected: 05/06/16 07:00
Date Received: 05/06/16 14:00

Lab Sample ID: 480-99770-3
Matrix: Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	ND		1.0	0.81	ug/L			05/17/16 04:56	1
Tetrachloroethene	ND		1.0	0.36	ug/L			05/17/16 04:56	1
trans-1,2-Dichloroethene	ND		1.0	0.90	ug/L			05/17/16 04:56	1
Trichloroethene	ND		1.0	0.46	ug/L			05/17/16 04:56	1
Vinyl chloride	ND		1.0	0.90	ug/L			05/17/16 04:56	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*117*		*66 - 137*		*05/17/16 04:56*	*1*
4-Bromofluorobenzene (Surr)	*99*		*73 - 120*		*05/17/16 04:56*	*1*
Toluene-d8 (Surr)	*96*		*71 - 126*		*05/17/16 04:56*	*1*
Dibromofluoromethane (Surr)	*114*		*60 - 140*		*05/17/16 04:56*	*1*

Surrogate Summary

Client: GHD Services Inc.
Project/Site: 058507, GM-Lockport Groundwater Sampling

TestAmerica Job ID: 480-99770-1

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

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		12DCE	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(66-137)	(73-120)	(71-126)	(60-140)
480-99770-1	MW-14-050616	116	98	96	116
480-99770-2	MW-12-050616	119	98	95	115
480-99770-3	TRIP BLANK	117	99	96	114
LCS 480-302069/4	Lab Control Sample	110	101	99	110
LCS 480-302146/4	Lab Control Sample	113	104	99	113
MB 480-302069/7	Method Blank	115	101	97	111
MB 480-302146/6	Method Blank	116	98	96	112

Surrogate Legend

12DCE = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

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

Lab Sample ID: MB 480-302069/7
Matrix: Water
Analysis Batch: 302069

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	ND		1.0	0.81	ug/L			05/16/16 23:44	1
Tetrachloroethene	ND		1.0	0.36	ug/L			05/16/16 23:44	1
trans-1,2-Dichloroethene	ND		1.0	0.90	ug/L			05/16/16 23:44	1
Trichloroethene	ND		1.0	0.46	ug/L			05/16/16 23:44	1
Vinyl chloride	ND		1.0	0.90	ug/L			05/16/16 23:44	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*115*		*66 - 137*		*05/16/16 23:44*	*1*
4-Bromofluorobenzene (Surr)	*101*		*73 - 120*		*05/16/16 23:44*	*1*
Toluene-d8 (Surr)	*97*		*71 - 126*		*05/16/16 23:44*	*1*
Dibromofluoromethane (Surr)	*111*		*60 - 140*		*05/16/16 23:44*	*1*

Lab Sample ID: LCS 480-302069/4
Matrix: Water
Analysis Batch: 302069

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
cis-1,2-Dichloroethene	25.0	25.1		ug/L		100	74 - 124
Tetrachloroethene	25.0	25.5		ug/L		102	74 - 122
trans-1,2-Dichloroethene	25.0	25.2		ug/L		101	73 - 127
Trichloroethene	25.0	26.1		ug/L		104	74 - 123
Vinyl chloride	25.0	25.3		ug/L		101	65 - 133

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*110*		*66 - 137*
4-Bromofluorobenzene (Surr)	*101*		*73 - 120*
Toluene-d8 (Surr)	*99*		*71 - 126*
Dibromofluoromethane (Surr)	*110*		*60 - 140*

Lab Sample ID: MB 480-302146/6
Matrix: Water
Analysis Batch: 302146

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	ND		1.0	0.81	ug/L			05/17/16 11:36	1
Tetrachloroethene	ND		1.0	0.36	ug/L			05/17/16 11:36	1
trans-1,2-Dichloroethene	ND		1.0	0.90	ug/L			05/17/16 11:36	1
Trichloroethene	ND		1.0	0.46	ug/L			05/17/16 11:36	1
Vinyl chloride	ND		1.0	0.90	ug/L			05/17/16 11:36	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*116*		*66 - 137*		*05/17/16 11:36*	*1*
4-Bromofluorobenzene (Surr)	*98*		*73 - 120*		*05/17/16 11:36*	*1*
Toluene-d8 (Surr)	*96*		*71 - 126*		*05/17/16 11:36*	*1*
Dibromofluoromethane (Surr)	*112*		*60 - 140*		*05/17/16 11:36*	*1*

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

Lab Sample ID: LCS 480-302146/4
Matrix: Water
Analysis Batch: 302146

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
cis-1,2-Dichloroethene	25.0	25.1		ug/L		100	74 - 124
Tetrachloroethene	25.0	25.7		ug/L		103	74 - 122
trans-1,2-Dichloroethene	25.0	25.7		ug/L		103	73 - 127
Trichloroethene	25.0	26.5		ug/L		106	74 - 123
Vinyl chloride	25.0	25.0		ug/L		100	65 - 133

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*113*		*66 - 137*
4-Bromofluorobenzene (Surr)	*104*		*73 - 120*
Toluene-d8 (Surr)	*99*		*71 - 126*
Dibromofluoromethane (Surr)	*113*		*60 - 140*

Method: RSK-175 - Dissolved Gases (GC)

Lab Sample ID: MB 480-301110/3
Matrix: Water
Analysis Batch: 301110

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ethane	ND		7.5	1.5	ug/L			05/11/16 08:22	1
Ethene	ND		7.0	1.5	ug/L			05/11/16 08:22	1
Methane	ND		4.0	1.0	ug/L			05/11/16 08:22	1

Lab Sample ID: LCS 480-301110/4
Matrix: Water
Analysis Batch: 301110

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Ethane	14.6	15.8		ug/L		108	79 - 120
Ethene	13.6	15.3		ug/L		113	78 - 115
Methane	7.77	7.95		ug/L		102	71 - 118

Lab Sample ID: LCSD 480-301110/5
Matrix: Water
Analysis Batch: 301110

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

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Ethane	14.6	14.0		ug/L		96	79 - 120	12	50
Ethene	13.6	13.7		ug/L		100	78 - 115	11	50
Methane	7.77	7.22		ug/L		93	71 - 118	10	50

Lab Sample ID: MB 440-331454/8
Matrix: Water
Analysis Batch: 331454

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbon Dioxide (TCD)	ND		2000	1000	ug/L			05/19/16 12:58	1

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

Lab Sample ID: LCS 440-331454/4
Matrix: Water
Analysis Batch: 331454

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Carbon Dioxide (TCD)	11500	10800		ug/L		93	80 - 120

Lab Sample ID: LCSD 440-331454/5
Matrix: Water
Analysis Batch: 331454

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

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Carbon Dioxide (TCD)	11500	10700		ug/L		93	80 - 120	1	20

Method: 6010C - Metals (ICP)

Lab Sample ID: MB 480-300688/1-A
Matrix: Water
Analysis Batch: 301090

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 300688

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	0.0360	J	0.050	0.019	mg/L		05/09/16 11:15	05/10/16 16:59	1
Magnesium	ND		0.20	0.043	mg/L		05/09/16 11:15	05/10/16 16:59	1
Manganese	ND		0.0030	0.00040	mg/L		05/09/16 11:15	05/10/16 16:59	1
Potassium	ND		0.50	0.10	mg/L		05/09/16 11:15	05/10/16 16:59	1
Sodium	ND		1.0	0.32	mg/L		05/09/16 11:15	05/10/16 16:59	1

Lab Sample ID: LCS 480-300688/2-A
Matrix: Water
Analysis Batch: 301090

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 300688

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Iron	10.0	10.36		mg/L		104	80 - 120
Magnesium	10.0	10.42		mg/L		104	80 - 120
Manganese	0.200	0.203		mg/L		101	80 - 120
Potassium	10.0	9.99		mg/L		100	80 - 120
Sodium	10.0	10.13		mg/L		101	80 - 120

Lab Sample ID: 480-99770-1 MS
Matrix: Water
Analysis Batch: 301090

Client Sample ID: MW-14-050616
Prep Type: Total/NA
Prep Batch: 300688

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Iron	0.17	B	10.0	9.43		mg/L		93	75 - 125
Magnesium	55.4		10.0	67.01	4	mg/L		116	75 - 125
Manganese	0.34		0.200	0.533		mg/L		95	75 - 125
Potassium	3.2		10.0	12.66		mg/L		95	75 - 125
Sodium	760		10.0	768.2	4	mg/L		81	75 - 125

Method: 6010C - Metals (ICP) (Continued)

Lab Sample ID: 480-99770-1 MSD — **Client Sample ID: MW-14-050616**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 301090 — **Prep Batch: 300688**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Iron	0.17	B	10.0	9.11		mg/L		89	75 - 125	3	20
Magnesium	55.4		10.0	62.34	4	mg/L		70	75 - 125	7	20
Manganese	0.34		0.200	0.499		mg/L		78	75 - 125	7	20
Potassium	3.2		10.0	12.06		mg/L		89	75 - 125	5	20
Sodium	760		10.0	727.5	4	mg/L		-325	75 - 125	5	20

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 480-301064/4 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 301064

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		0.50	0.28	mg/L			05/11/16 07:38	1
Sulfate	ND		2.0	0.35	mg/L			05/11/16 07:38	1

Lab Sample ID: LCS 480-301064/3 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 301064

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	50.0	51.82		mg/L		104	90 - 110
Sulfate	50.0	50.88		mg/L		102	90 - 110

Method: 350.1 - Nitrogen, Ammonia

Lab Sample ID: MB 480-300950/3 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 300950

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ammonia	ND		0.020	0.0090	mg/L			05/10/16 11:30	1

Lab Sample ID: MB 480-300950/51 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 300950

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ammonia	ND		0.020	0.0090	mg/L			05/10/16 12:12	1

Lab Sample ID: LCS 480-300950/4 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 300950

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Ammonia	1.00	1.03		mg/L		103	90 - 110

Method: 350.1 - Nitrogen, Ammonia (Continued)

Lab Sample ID: LCS 480-300950/52
Matrix: Water
Analysis Batch: 300950

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Ammonia	1.00	1.03		mg/L		103	90 - 110

Method: 353.2 - Nitrogen, Nitrite

Lab Sample ID: MB 480-300535/13
Matrix: Water
Analysis Batch: 300535

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrite	0.0350	J	0.050	0.020	mg/L			05/07/16 10:34	1

Lab Sample ID: LCS 480-300535/14
Matrix: Water
Analysis Batch: 300535

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Nitrite	1.50	1.54		mg/L		103	90 - 110

Lab Sample ID: 480-99770-1 MS
Matrix: Water
Analysis Batch: 300535

Client Sample ID: MW-14-050616
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Nitrite	ND	F1	1.00	0.775	F1	mg/L		78	90 - 110

Lab Sample ID: 480-99770-1 DU
Matrix: Water
Analysis Batch: 300535

Client Sample ID: MW-14-050616
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Nitrite	ND	F1	ND		mg/L		NC	20

Method: 9060A - Organic Carbon, Total (TOC)

Lab Sample ID: MB 480-301327/28
Matrix: Water
Analysis Batch: 301327

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	0.477	J	1.0	0.43	mg/L			05/11/16 05:04	1

Lab Sample ID: LCS 480-301327/29
Matrix: Water
Analysis Batch: 301327

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	60.0	61.36		mg/L		102	90 - 110

Method: SM 2320B - Alkalinity

Lab Sample ID: MB 480-300758/30
Matrix: Water
Analysis Batch: 300758

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Alkalinity	ND		5.0	0.79	mg/L			05/09/16 13:59	1

Lab Sample ID: LCS 480-300758/31
Matrix: Water
Analysis Batch: 300758

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Alkalinity	100	105.1		mg/L		105	90 - 110

Lab Sample ID: 480-99770-1 MS
Matrix: Water
Analysis Batch: 300758

Client Sample ID: MW-14-050616
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Alkalinity	402		100	421.8	4	mg/L		20	60 - 140

Method: SM 4500 S2 D - Sulfide, Total

Lab Sample ID: MB 480-300572/51
Matrix: Water
Analysis Batch: 300572

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfide	ND		0.10	0.052	mg/L			05/08/16 08:30	1

Lab Sample ID: LCS 480-300572/52
Matrix: Water
Analysis Batch: 300572

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Sulfide	0.750	0.681		mg/L		91	90 - 110

Method: VFA-IC - Volatile Fatty Acids, Ion Chromatography

Lab Sample ID: MB 480-301121/4
Matrix: Water
Analysis Batch: 301121

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetic acid	ND		1.0	0.15	mg/L			05/11/16 12:14	1
Formic-acid	ND		1.0	0.11	mg/L			05/11/16 12:14	1
Lactic acid	ND		1.0	0.14	mg/L			05/11/16 12:14	1
n-Butyric Acid	ND		1.0	0.16	mg/L			05/11/16 12:14	1
Propionic acid	ND		1.0	0.17	mg/L			05/11/16 12:14	1
Pyruvic Acid	ND		1.0	0.080	mg/L			05/11/16 12:14	1

Method: VFA-IC - Volatile Fatty Acids, Ion Chromatography (Continued)

Lab Sample ID: LCS 480-301121/3
Matrix: Water
Analysis Batch: 301121

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Acetic acid	10.0	8.86		mg/L		89	80 - 120
Formic-acid	10.0	9.09		mg/L		91	80 - 120
Lactic acid	10.0	10.33		mg/L		103	80 - 120
n-Butyric Acid	10.0	9.03		mg/L		90	80 - 120
Propionic acid	10.0	8.61		mg/L		86	80 - 120
Pyruvic Acid	10.0	9.43		mg/L		94	80 - 120

Lab Sample ID: 480-99770-2 MS
Matrix: Water
Analysis Batch: 301121

Client Sample ID: MW-12-050616
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Acetic acid	ND	F1	10.0	8.40		mg/L		84	80 - 120
Formic-acid	ND	F1	10.0	7.78	F1	mg/L		78	80 - 120
Lactic acid	ND	F1	10.0	7.29	F1	mg/L		73	80 - 120
n-Butyric Acid	ND	F1	10.0	6.78	F1	mg/L		68	80 - 120
Propionic acid	ND	F1	10.0	101.5	E F1	mg/L		1015	80 - 120
Pyruvic Acid	ND	F1	10.0	32.00	F1	mg/L		320	80 - 120

Lab Sample ID: 480-99770-2 MSD
Matrix: Water
Analysis Batch: 301121

Client Sample ID: MW-12-050616
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Acetic acid	ND	F1	10.0	7.94	F1	mg/L		79	80 - 120	6	20
Formic-acid	ND	F1	10.0	8.03		mg/L		80	80 - 120	3	20
Lactic acid	ND	F1	10.0	7.28	F1	mg/L		73	80 - 120	0	20
n-Butyric Acid	ND	F1	10.0	6.72	F1	mg/L		67	80 - 120	1	20
Propionic acid	ND	F1	10.0	105.4	E F1	mg/L		1054	80 - 120	4	20
Pyruvic Acid	ND	F1	10.0	29.70	F1	mg/L		297	80 - 120	7	20

QC Association Summary

Client: GHD Services Inc.
Project/Site: 058507, GM-Lockport Groundwater Sampling

TestAmerica Job ID: 480-99770-1

GC/MS VOA

Analysis Batch: 302069

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-99770-3	TRIP BLANK	Total/NA	Water	8260C	
LCS 480-302069/4	Lab Control Sample	Total/NA	Water	8260C	
MB 480-302069/7	Method Blank	Total/NA	Water	8260C	

Analysis Batch: 302146

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-99770-1	MW-14-050616	Total/NA	Water	8260C	
480-99770-2	MW-12-050616	Total/NA	Water	8260C	
LCS 480-302146/4	Lab Control Sample	Total/NA	Water	8260C	
MB 480-302146/6	Method Blank	Total/NA	Water	8260C	

GC VOA

Analysis Batch: 301110

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-99770-1	MW-14-050616	Total/NA	Water	RSK-175	
480-99770-2	MW-12-050616	Total/NA	Water	RSK-175	
LCS 480-301110/4	Lab Control Sample	Total/NA	Water	RSK-175	
LCSD 480-301110/5	Lab Control Sample Dup	Total/NA	Water	RSK-175	
MB 480-301110/3	Method Blank	Total/NA	Water	RSK-175	

Analysis Batch: 302874

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-99770-1	MW-14-050616	Total/NA	Water	AM20GAX	
480-99770-2	MW-12-050616	Total/NA	Water	AM20GAX	

Analysis Batch: 331454

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-99770-1	MW-14-050616	Total/NA	Water	RSK-175	
480-99770-2	MW-12-050616	Total/NA	Water	RSK-175	
LCS 440-331454/4	Lab Control Sample	Total/NA	Water	RSK-175	
LCSD 440-331454/5	Lab Control Sample Dup	Total/NA	Water	RSK-175	
MB 440-331454/8	Method Blank	Total/NA	Water	RSK-175	

Metals

Prep Batch: 300688

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-99770-1	MW-14-050616	Total/NA	Water	3005A	
480-99770-1 MS	MW-14-050616	Total/NA	Water	3005A	
480-99770-1 MSD	MW-14-050616	Total/NA	Water	3005A	
480-99770-2	MW-12-050616	Total/NA	Water	3005A	
LCS 480-300688/2-A	Lab Control Sample	Total/NA	Water	3005A	
MB 480-300688/1-A	Method Blank	Total/NA	Water	3005A	

Analysis Batch: 301090

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-99770-1	MW-14-050616	Total/NA	Water	6010C	300688
480-99770-1 MS	MW-14-050616	Total/NA	Water	6010C	300688
480-99770-1 MSD	MW-14-050616	Total/NA	Water	6010C	300688

Metals (Continued)

Analysis Batch: 301090 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-99770-2	MW-12-050616	Total/NA	Water	6010C	300688
LCS 480-300688/2-A	Lab Control Sample	Total/NA	Water	6010C	300688
MB 480-300688/1-A	Method Blank	Total/NA	Water	6010C	300688

General Chemistry

Analysis Batch: 300535

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-99770-1	MW-14-050616	Total/NA	Water	353.2	
480-99770-1 DU	MW-14-050616	Total/NA	Water	353.2	
480-99770-1 MS	MW-14-050616	Total/NA	Water	353.2	
480-99770-2	MW-12-050616	Total/NA	Water	353.2	
LCS 480-300535/14	Lab Control Sample	Total/NA	Water	353.2	
MB 480-300535/13	Method Blank	Total/NA	Water	353.2	

Analysis Batch: 300541

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-99770-1	MW-14-050616	Total/NA	Water	353.2	
480-99770-2	MW-12-050616	Total/NA	Water	353.2	

Analysis Batch: 300572

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-99770-1	MW-14-050616	Total/NA	Water	SM 4500 S2 D	
480-99770-2	MW-12-050616	Total/NA	Water	SM 4500 S2 D	
LCS 480-300572/52	Lab Control Sample	Total/NA	Water	SM 4500 S2 D	
MB 480-300572/51	Method Blank	Total/NA	Water	SM 4500 S2 D	

Analysis Batch: 300758

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-99770-1	MW-14-050616	Total/NA	Water	SM 2320B	
480-99770-1 MS	MW-14-050616	Total/NA	Water	SM 2320B	
480-99770-2	MW-12-050616	Total/NA	Water	SM 2320B	
LCS 480-300758/31	Lab Control Sample	Total/NA	Water	SM 2320B	
MB 480-300758/30	Method Blank	Total/NA	Water	SM 2320B	

Analysis Batch: 300950

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-99770-1	MW-14-050616	Total/NA	Water	350.1	
480-99770-2	MW-12-050616	Total/NA	Water	350.1	
LCS 480-300950/4	Lab Control Sample	Total/NA	Water	350.1	
LCS 480-300950/52	Lab Control Sample	Total/NA	Water	350.1	
MB 480-300950/3	Method Blank	Total/NA	Water	350.1	
MB 480-300950/51	Method Blank	Total/NA	Water	350.1	

Analysis Batch: 301064

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-99770-1	MW-14-050616	Total/NA	Water	300.0	
480-99770-2	MW-12-050616	Total/NA	Water	300.0	
LCS 480-301064/3	Lab Control Sample	Total/NA	Water	300.0	
MB 480-301064/4	Method Blank	Total/NA	Water	300.0	

General Chemistry (Continued)

Analysis Batch: 301121

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-99770-1	MW-14-050616	Total/NA	Water	VFA-IC	
480-99770-2	MW-12-050616	Total/NA	Water	VFA-IC	
480-99770-2 MS	MW-12-050616	Total/NA	Water	VFA-IC	
480-99770-2 MSD	MW-12-050616	Total/NA	Water	VFA-IC	
LCS 480-301121/3	Lab Control Sample	Total/NA	Water	VFA-IC	
MB 480-301121/4	Method Blank	Total/NA	Water	VFA-IC	

Analysis Batch: 301327

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-99770-1	MW-14-050616	Total/NA	Water	9060A	
480-99770-2	MW-12-050616	Total/NA	Water	9060A	
LCS 480-301327/29	Lab Control Sample	Total/NA	Water	9060A	
MB 480-301327/28	Method Blank	Total/NA	Water	9060A	

Lab Chronicle

Client: GHD Services Inc.
Project/Site: 058507, GM-Lockport Groundwater Sampling

TestAmerica Job ID: 480-99770-1

Client Sample ID: MW-14-050616

Lab Sample ID: 480-99770-1

Date Collected: 05/06/16 08:45

Matrix: Water

Date Received: 05/06/16 14:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	302146	05/17/16 12:44	SMY	TAL BUF
Total/NA	Analysis	AM20GAX		1	302874	05/18/16 16:27	CTB	SC0015
Total/NA	Analysis	RSK-175		1	331454	05/19/16 13:25	EI	TAL IRV
Total/NA	Analysis	RSK-175		1	301110	05/11/16 11:07	TRG	TAL BUF
Total/NA	Prep	3005A			300688	05/09/16 11:15	BAE	TAL BUF
Total/NA	Analysis	6010C		1	301090	05/10/16 18:16	LMH	TAL BUF
Total/NA	Analysis	300.0		20	301064	05/11/16 09:40	CAV	TAL BUF
Total/NA	Analysis	350.1		1	300950	05/10/16 11:41	ZRJ	TAL BUF
Total/NA	Analysis	353.2		1	300535	05/07/16 10:37	LED	TAL BUF
Total/NA	Analysis	353.2		1	300541	05/07/16 10:37	LED	TAL BUF
Total/NA	Analysis	9060A		1	301327	05/11/16 13:31	DLG	TAL BUF
Total/NA	Analysis	SM 2320B		1	300758	05/09/16 14:27	KMF	TAL BUF
Total/NA	Analysis	SM 4500 S2 D		1	300572	05/08/16 08:30	MDL	TAL BUF
Total/NA	Analysis	VFA-IC		1	301121	05/11/16 13:13	CAV	TAL BUF

Client Sample ID: MW-12-050616

Lab Sample ID: 480-99770-2

Date Collected: 05/06/16 11:15

Matrix: Water

Date Received: 05/06/16 14:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	302146	05/17/16 13:11	SMY	TAL BUF
Total/NA	Analysis	AM20GAX		1	302874	05/18/16 16:27	CTB	SC0015
Total/NA	Analysis	RSK-175		2	331454	05/19/16 13:42	EI	TAL IRV
Total/NA	Analysis	RSK-175		1	301110	05/11/16 11:24	TRG	TAL BUF
Total/NA	Prep	3005A			300688	05/09/16 11:15	BAE	TAL BUF
Total/NA	Analysis	6010C		1	301090	05/10/16 18:42	LMH	TAL BUF
Total/NA	Analysis	300.0		50	301064	05/11/16 09:48	CAV	TAL BUF
Total/NA	Analysis	350.1		1	300950	05/10/16 11:42	ZRJ	TAL BUF
Total/NA	Analysis	353.2		1	300535	05/07/16 10:36	LED	TAL BUF
Total/NA	Analysis	353.2		1	300541	05/07/16 10:36	LED	TAL BUF
Total/NA	Analysis	9060A		1	301327	05/11/16 13:58	DLG	TAL BUF
Total/NA	Analysis	SM 2320B		1	300758	05/09/16 14:41	KMF	TAL BUF
Total/NA	Analysis	SM 4500 S2 D		1	300572	05/08/16 08:30	MDL	TAL BUF
Total/NA	Analysis	VFA-IC		1	301121	05/11/16 13:42	CAV	TAL BUF

Client Sample ID: TRIP BLANK
Lab Sample ID: 480-99770-3
Date Collected: 05/06/16 07:00
Matrix: Water
Date Received: 05/06/16 14:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	302069	05/17/16 04:56	CDC	TAL BUF

Laboratory References:

SC0015 = Pittsburgh, PA (formerly Microseeps), 220 William Pitt Way, Pittsburgh, PA 15238, TEL (412)826-5245

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

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

Certification Summary

Client: GHD Services Inc.
Project/Site: 058507, GM-Lockport Groundwater Sampling

TestAmerica Job ID: 480-99770-1

Laboratory: TestAmerica Buffalo

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

Authority	Program	EPA Region	Certification ID	Expiration Date
New York	NELAP	2	10026	03-31-17

The following analytes are included in this report, but certification is not offered by the governing authority:

Analysis Method	Prep Method	Matrix	Analyte
VFA-IC		Water	Acetic acid
VFA-IC		Water	Formic-acid
VFA-IC		Water	Lactic acid
VFA-IC		Water	n-Butyric Acid
VFA-IC		Water	Propionic acid
VFA-IC		Water	Pyruvic Acid

Laboratory: TestAmerica Irvine

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

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska	State Program	10	CA01531	06-30-16
Arizona	State Program	9	AZ0671	10-13-16
California	LA Cty Sanitation Districts	9	10256	01-31-17 *
California	State Program	9	CA ELAP 2706	06-30-16
Guam	State Program	9	Cert. No. 12.002r	01-23-17
Hawaii	State Program	9	N/A	01-29-17
Kansas	NELAP Secondary AB	7	E-10420	07-31-16
Nevada	State Program	9	CA015312016-2	07-31-16
New Mexico	State Program	6	N/A	01-29-17
Northern Mariana Islands	State Program	9	MP0002	01-29-16 *
Oregon	NELAP	10	4028	01-29-17
USDA	Federal		P330-09-00080	07-08-18
Washington	State Program	10	C900	09-03-16

* Certification renewal pending - certification considered valid.

Method Summary

Client: GHD Services Inc.
Project/Site: 058507, GM-Lockport Groundwater Sampling

TestAmerica Job ID: 480-99770-1

Method	Method Description	Protocol	Laboratory
8260C	Volatile Organic Compounds by GC/MS	SW846	TAL BUF
AM20GAX	Dissolved Gases (GC)	NONE	SC0015
RSK-175	Dissolved Gases (GC)	RSK	TAL IRV
RSK-175	Dissolved Gases (GC)	RSK	TAL BUF
6010C	Metals (ICP)	SW846	TAL BUF
300.0	Anions, Ion Chromatography	MCAWW	TAL BUF
350.1	Nitrogen, Ammonia	MCAWW	TAL BUF
353.2	Nitrogen, Nitrite	MCAWW	TAL BUF
353.2	Nitrate	EPA	TAL BUF
9060A	Organic Carbon, Total (TOC)	SW846	TAL BUF
SM 2320B	Alkalinity	SM	TAL BUF
SM 4500 S2 D	Sulfide, Total	SM	TAL BUF
VFA-IC	Volatile Fatty Acids, Ion Chromatography	TestAmerica SOP	TAL BUF

Protocol References:

EPA = US Environmental Protection Agency

MCAWW = "Methods For Chemical Analysis Of Water And Wastes", EPA-600/4-79-020, March 1983 And Subsequent Revisions.

NONE = NONE

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.

TestAmerica SOP = TestAmerica, Inc., Standard Operating Procedure

Laboratory References:

SC0015 = Pittsburgh, PA (formerly Microseeps), 220 William Pitt Way, Pittsburgh, PA 15238, TEL (412)826-5245

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

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

Sample Summary

Client: GHD Services Inc.
Project/Site: 058507, GM-Lockport Groundwater Sampling

TestAmerica Job ID: 480-99770-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
480-99770-1	MW-14-050616	Water	05/06/16 08:45	05/06/16 14:00
480-99770-2	MW-12-050616	Water	05/06/16 11:15	05/06/16 14:00
480-99770-3	TRIP BLANK	Water	05/06/16 07:00	05/06/16 14:00

Pace Analytical Energy Services LLC
220 William Pitt Way
Pittsburgh, PA 15238
Phone: (412) 826-5245
Fax: (412) 826-3433

May 19, 2016

Melissa Deyo
Test America
10 Hazelwood Drive
Buffalo, NY 14228

RE: **480-99770-1**

Pace Workorder: 19080

Dear Melissa Deyo:

Enclosed are the analytical results for sample(s) received by the laboratory on Wednesday, May 11, 2016. Results reported herein conform to the most current NELAC standards, where applicable, unless otherwise narrated in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Ruth Welsh 05/19/2016
Ruth.Welsh@pacelabs.com

Customer Service Representative

Enclosures

As a valued client we would appreciate your comments on our service.
Please email info@microseeps.com. Total Number of Pages ____

CERTIFICATE OF ANALYSIS

Pace Analytical Energy Services LLC
220 William Pitt Way
Pittsburgh, PA 15238
Phone: (412) 826-5245
Fax: (412) 826-3433

LABORATORY ACCREDITATIONS & CERTIFICATIONS

Accreditor:	Pennsylvania Department of Environmental Protection, Bureau of Laboratories
Accreditation ID:	02-00538
Scope:	NELAP Non-Potable Water and Solid & Hazardous Waste
Accreditor:	South Carolina Department of Health and Environmental Control, Office of Environmental Laboratory Certification
Accreditation ID:	89009003
Scope:	Clean Water Act (CWA); Resource Conservation and Recovery Act (RCRA)
Accreditor:	NELAP: New Jersey, Department of Environmental Protection
Accreditation ID:	PA026
Scope:	Non-Potable Water; Solid and Chemical Materials
Accreditor:	NELAP: New York, Department of Health Wadsworth Center
Accreditation ID:	11815
Scope:	Non-Potable Water; Solid and Hazardous Waste
Accreditor:	State of Connecticut, Department of Public Health, Division of Environmental Health
Accreditation ID:	PH-0263
Scope:	Clean Water Act (CWA) Resource Conservation and Recovery Act (RCRA)
Accreditor:	NELAP: Texas, Commission on Environmental Quality
Accreditation ID:	T104704453-09-TX
Scope:	Non-Potable Water
Accreditor:	State of New Hampshire
Accreditation ID:	299409
Scope:	Non-potable water
Accreditor:	State of Georgia
Accreditation ID:	Chapter 391-3-26
Scope:	As per the Georgia EPD Rules and Regulations for Commercial Laboratories, PAES is accredited by the Pennsylvania Department of Environmental Protection Bureau of Laboratories under the National Environmental Laboratory Approval Program (NELAC).

Pace Analytical Energy Services LLC
220 William Pitt Way
Pittsburgh, PA 15238
Phone: (412) 826-5245
Fax: (412) 826-3433

SAMPLE SUMMARY

Workorder: 19080 480-99770-1

Lab ID	Sample ID	Matrix	Date Collected	Date Received
190800001	MW-14-050616 (480-99770-1)	Bubble Strip	5/6/2016 08:45	5/11/2016 11:15
190800002	MW-12-050616 (480-99770-2)	Bubble Strip	5/6/2016 11:15	5/11/2016 11:15

Pace Analytical Energy Services LLC
220 William Pitt Way
Pittsburgh, PA 15238
Phone: (412) 826-5245
Fax: (412) 826-3433

ANALYTICAL RESULTS

Workorder: 19080 480-99770-1

Lab ID: **190800001** Date Received: 5/11/2016 11:15 Matrix: Bubble Strip

Sample ID: **MW-14-050616 (480-99770-1)** Date Collected: 5/6/2016 08:45

Parameters	Results	Units	PQL	MDL	DF	Analyzed	By	Qualifiers
RISK - MICR								
Analysis Desc: AM20GAX			Analytical Method: AM20GAX					
Hydrogen	**14**	nM	0.60	0.088	1	5/18/2016 16:27	GT	B,n

Pace Analytical Energy Services LLC
220 William Pitt Way
Pittsburgh, PA 15238
Phone: (412) 826-5245
Fax: (412) 826-3433

ANALYTICAL RESULTS

Workorder: 19080 480-99770-1

Lab ID: **190800002** Date Received: 5/11/2016 11:15 Matrix: Bubble Strip

Sample ID: **MW-12-050616 (480-99770-2)** Date Collected: 5/6/2016 11:15

Parameters	Results	Units	PQL	MDL	DF	Analyzed	By	Qualifiers
RISK - MICR								
Analysis Desc: AM20GAX			Analytical Method: AM20GAX					
Hydrogen	**1.4**	nM	0.60	0.088	1	5/18/2016 16:50	GT	B,n

CERTIFICATE OF ANALYSIS

Pace Analytical Energy Services LLC
220 William Pitt Way
Pittsburgh, PA 15238
Phone: (412) 826-5245
Fax: (412) 826-3433

ANALYTICAL RESULTS QUALIFIERS

Workorder: 19080 480-99770-1

DEFINITIONS/QUALIFIERS

Disclaimer : The Pennsylvania Department of Environmental Protection (PADEP) has decided to no longer recognize analyses that do not produce data for primary compliance, for NELAP accreditation. The methods affected by this decision are AM20GAx, AM21G, SW846 7199 and AM4.02. The laboratory shall continue to administer the NELAP/TNI standard requirements in the performance of these methods.

MDL	Method Detection Limit. Can be used synonymously with LOD; Limit Of Detection.
PQL	Practical Quanitation Limit. Can be used synonymously with LOQ; Limit Of Quantitation.
ND	Not detected at or above reporting limit.
DF	Dilution Factor.
S	Surrogate.
RPD	Relative Percent Difference.
% Rec	Percent Recovery.
U	Indicates the compound was analyzed for, but not detected at or above the noted concentration.
J	Estimated concentration greater than the set method detection limit (MDL) and less than the set reporting limit (PQL).
n	The laboratory does not hold NELAP/TNI accreditation for this method or analyte.
B	The analyte was detected in the associated blank.

Pace Analytical Energy Services LLC
220 William Pitt Way
Pittsburgh, PA 15238
Phone: (412) 826-5245
Fax: (412) 826-3433

QUALITY CONTROL DATA

Workorder: 19080 480-99770-1

QC Batch: DISG/5382 Analysis Method: AM20GAX

QC Batch Method: AM20GAX

Associated Lab Samples: 190800001, 190800002

METHOD BLANK: 42027

Parameter	Units	Blank Result	Reporting Limit	Qualifiers
RISK				
Hydrogen	nM	0.14J	0.60	B,n

LABORATORY CONTROL SAMPLE & LCSD: 42028 42029

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limit	RPD	Max RPD	Qualifiers
RISK										
Hydrogen	nM	24	26	26	105	105	80-120	0	20	B,n

Pace Analytical Energy Services LLC
220 William Pitt Way
Pittsburgh, PA 15238
Phone: (412) 826-5245
Fax: (412) 826-3433

QUALITY CONTROL DATA QUALIFIERS

Workorder: 19080 480-99770-1

QUALITY CONTROL PARAMETER QUALIFIERS

B	The analyte was detected in the associated blank.
n	The laboratory does not hold NELAP/TNI accreditation for this method or analyte.

Pace Analytical Energy Services LLC
220 William Pitt Way
Pittsburgh, PA 15238
Phone: (412) 826-5245
Fax: (412) 826-3433

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Workorder: 19080 480-99770-1

Lab ID	Sample ID	Prep Method	Prep Batch	Analysis Method	Analysis Batch
190800001	MW-14-050616 (480-99770-1)			AM20GAX	DISG/5382
190800002	MW-12-050616 (480-99770-2)			AM20GAX	DISG/5382

TestAmerica Buffalo
10 Hazelwood Drive
Amherst, NY 14228-2298
Phone (716) 691-2600 Fax (716) 691-7991

19080

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

5/20/2016

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Deyo, Melissa L	Carrier Tracking No(s):	COC No: 480-29220.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: melissa.deyo@testamericainc.com		Page: Page 1 of 1
Company: Pace Analytical Services, Inc.		Analysis Requested		Job #: 480-99770-1
Address: 220 William Pitt Way, ,	Due Date Requested: 5/18/2016			Preservation Codes:
City: Pittsburgh	TAT Requested (days):			A - HCL M - Hexane B - NaOH N - None C - Zn Acetate O - AsNaO2 D - Nitric Acid P - Na2O4S E - NaHSO4 Q - Na2SO3 F - MeOH R - Na2S2O3 G - Amchlor S - H2SO4 H - Ascorbic Acid T - TSP Dodecahydrate I - Ice U - Acetone J - DI Water V - MCAA K - EDTA W - ph 4-5 L - EDA Z - other (specify) Other:
State, Zip: PA, 15238				
Phone: 412-826-5245(Tel)	PO #:			
Email:	WO #:			
Project Name: 058507, GM-Lockport Groundwater Sampling	Project #: 48004014			
Site:	SSOW#:			

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	AM20GAX/ Hydrogen	Total Number of containers	Special Instructions/Note:
			Preservation Code:						
MW-14-050616 (480-99770-1)	5/6/16	08:45 Eastern		Water			X	1	
MW-12-050616 (480-99770-2)	5/6/16	11:15 Eastern		Water			X	1	

Possible Hazard Identification	Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
Unconfirmed	☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months
Deliverable Requested: I, II, III, IV, Other (specify)	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
1	[signature]	5/9/16 1500	PAS	[signature]	5/10/16 0908	TAP
2	[signature]	5/10/16 1200		[signature]	5.11.16 1115	PACE
3	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks:

TestAmerica Buffalo
10 Hazelwood Drive
Amherst, NY 14228-2298
Phone (716) 691-2600 Fax (716) 691-7991

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information	Sampler: Dale Nyznyk	Lab PM: Deyo, Melissa L	Carrier Tracking No(s):	COC No: 480-82597-20280.2
Client Contact: Mr. Tom Bohlen	Phone: 716-517-5708	E-Mail: melissa.deyo@testamericainc.com		Page: Page 2 of 8
Company: GZA GeoEnvironmental, Inc.				Job #:

Address: 535 Washington Street 11th Floor	Due Date Requested:	Analysis Requested
City: Buffalo	TAT Requested (days):	
State, Zip: NY, 14203		
Phone:	PO #: 4065906	
Email: thomas.bohlen@gza.com	WO #: 256028	
Project Name: 058507, GM-Lockport Groundwater Sampling	Project #: 48004014	
Site:	SSOW#:	

Preservation Codes:

A - HCL	M - Hexane
B - NaOH	N - None
C - Zn Acetate	O - AsNaO2
D - Nitric Acid	P - Na2O4S
E - NaHSO4	Q - Na2SO3
F - MeOH	R - Na2S2O3
G - Amchlor	S - H2SO4
H - Ascorbic Acid	T - TSP Dodecahydrate
I - Ice	U - Acetone
J - DI Water	V - MCAA
K - EDTA	W - ph 4-5
L - EDA	Z - other (specify)

Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	8260C - PCE, TCE, DCE (trans and cis), Vinyl Chl	RSK_175_CO2 - Carbon dioxide	VFA_IC - Standard VFA Compounds	300.0_28D - Anions (Chloride & Sulfate)	350.1 - Ammonia	6010C - Metals - Fe, Mn, Mg, K & Na	RSK_175 - Methane, Ethane & Ethene	9060A - Total Organic Carbon	SM4500_S2_D - Sulfide	353.2, 353.2_Nitrite, Nitrate_Calc	2320B - Total Alkalinity	AM 20GAX	Total Number of containers	Special Instructions/Note:
Preservation Code:							A	N	N	N	S	D	A	A	CB	N	N			
MW-14-050616 (DW 5/6/16)	5/6/16	0845	G	Water	N	N	X	X	X	X	X	X	X	X	X	X	X	X		X Dissolved H2 for subcontracted lab
MW-12-050616	5/6/16	1115	G	Water	N	N	X	X	X	X	X	X	X	X	X	X	X	X		
TRIP BLANK	5/6/16	0700	G	Water			X													
				Water																
				Water																
				Water																
				Water																
				Water																
				Water																
				Water																
				Water																
				Water																

480-99770 Chain of Custody

Possible Hazard Identification	Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological	☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months
Deliverable Requested: I, II, III, IV, Other (specify)	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
	5/6/16 1400	GZA		5/6/16 1400	
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks: 3.6 #1

TestAmerica Buffalo
10 Hazelwood Drive
Amherst, NY 14228-2298
Phone (716) 691-2600 Fax (716) 691-7991

Chain of Custody Record

480-99770 Chain of Custody

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Deyo, Melissa L	Carrier Tracking No(s): 9221.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: melissa.deyo@testamericainc.com	Page 1 of 1
Company: TestAmerica Laboratories, Inc.			Job #: 480-99770-1
Address: 30 Community Drive, Suite 11,	Due Date Requested: 5/18/2016		
City: South Burlington	TAT Requested (days):		
State, Zip: VT, 05403			
Phone: 802-660-1990(Tel) 802-660-1919(Fax)	PO #:		
Email:	WO #:		
Project Name: 058507, GM-Lockport Groundwater Sampling	Project #: 48004014		
Site:	SSOW#:		

Analysis Requested

Preservation Codes:

A - HCL	M - Hexane
B - NaOH	N - None
C - Zn Acetate	O - AsNaO2
D - Nitric Acid	P - Na2O4S
E - NaHSO4	Q - Na2SO3
F - MeOH	R - Na2S2O3
G - Amchlor	S - H2SO4
H - Ascorbic Acid	T - TSP Dodecahydrate
I - Ice	U - Acetone
J - DI Water	V - MCAA
K - EDTA	W - ph 4-5
L - EDA	Z - other (specify)

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	RSK_175_CO2/ Carbon dioxide	Total Number of containers	Special Instructions/Note:
			Preservation Code:						
MW-14-050616 (480-99770-1)	5/6/16	08:45 Eastern		Water			X	3	
MW-12-050616 (480-99770-2)	5/6/16	11:15 Eastern		Water			X	3	

Possible Hazard Identification
Unconfirmed

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For _____ Months*

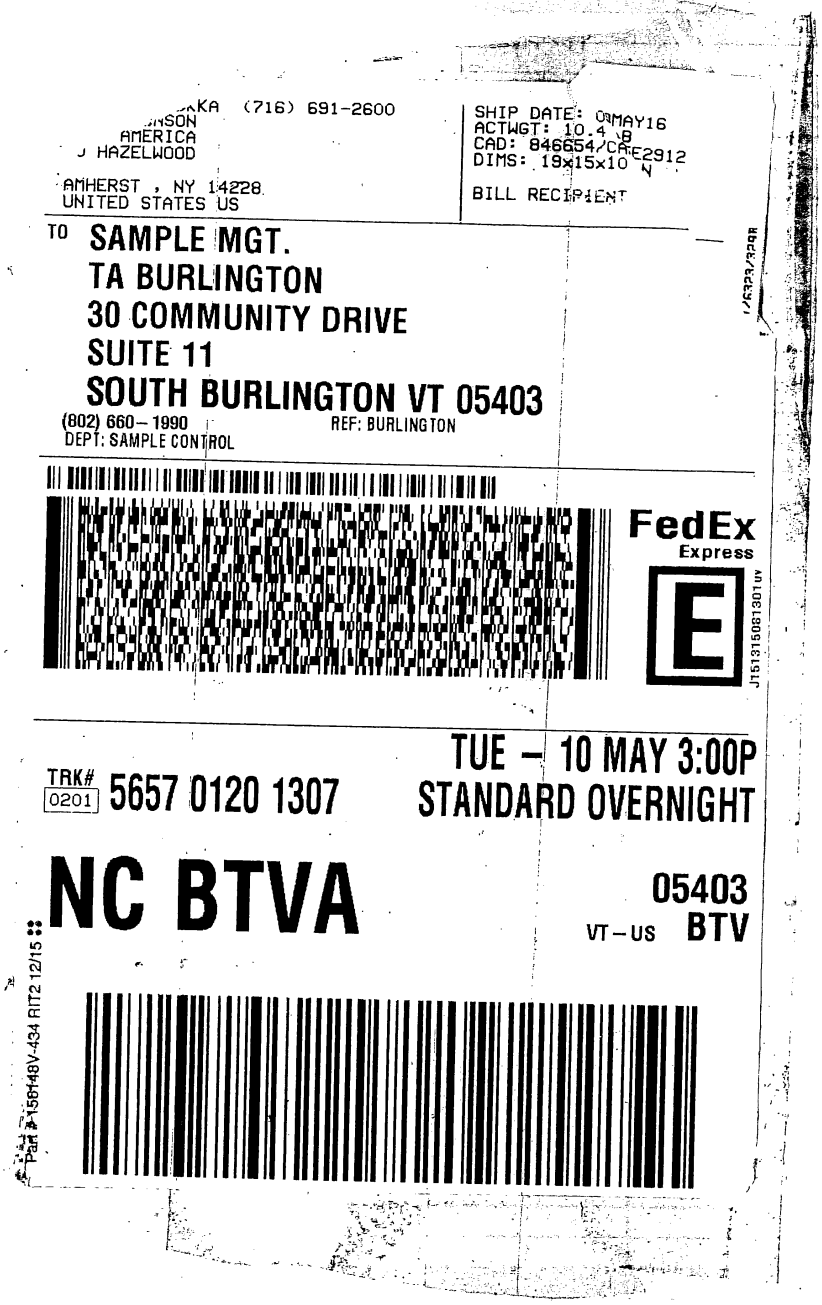
Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:		
Relinquished by:	Date/Time: 5/4/16 1500	Company FAB	Received by:	Date/Time: 5/10/16 1030	Company DAB
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks:

5/20/2016



KA (716) 691-2600
SON
AMERICA
HAZELWOOD

AMHERST , NY 14228
UNITED STATES US

SHIP DATE: 09MAY16
ACTWGT: 10.4 LB
CAD: 846654/CAFE2912
DIMS: 19x15x10 IN

BILL RECIPIENT

TO SAMPLE MGT.
TA BURLINGTON
30 COMMUNITY DRIVE
SUITE 11
SOUTH BURLINGTON VT 05403

(802) 660-1990 REF: BURLINGTON
DEPT: SAMPLE CONTROL

FedEx Express

TRK# 0201 5657 0120 1307

TUE - 10 MAY 3:00P
STANDARD OVERNIGHT

NC BTVA

05403
VT-US BTV

Part # 156148V-434 RIT2 12/15

TestAmerica Burlington
30 Community Drive Suite 11
South Burlington, VT 05403
Phone (802) 660-1990 Fax (802) 660-1919

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Deyo, Melissa L	Carrier Tracking No(s):	COC No: 200-25451.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: melissa.deyo@testamericainc.com		Page: Page 1 of 1
Company: TestAmerica Laboratories, Inc		**Analysis Requested**		Job #: 480-99770-1
Address: 17461 Derian Ave, Suite 100,	Due Date Requested: 5/18/2016			**Preservation Codes:**
City: Irvine	TAT Requested (days):			A - HCL M - Hexane B - NaOH N - None C - Zn Acetate O - AsNaO2 D - Nitric Acid P - Na2O4S E - NaHSO4 Q - Na2SO3 F - MeOH R - Na2S2O3 G - Amchlor S - H2SO4 H - Ascorbic Acid T - TSP Dodecahydrate I - Ice U - Acetone J - DI Water V - MCAA K - EDTA W - ph 4-5 L - EDA Z - other (specify)
State, Zip: CA, 92614-5817				
Phone: 949-261-1022(Tel) 949-260-3297(Fax)	PO #:			**Other:**
Email:	WO #:			
Project Name: 058507, GM-Lockport Groundwater Sampling	Project #: 48004014			
Site:	SSOW#:			

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	RSK_175_CO2/ Carbon dioxide	Total Number of containers	Special Instructions/Note:
			Preservation Code:						
MW-14-050616 (480-99770-1)	5/6/16	08:45 Eastern		Water			X	3	
MW-12-050616 (480-99770-2)	5/6/16	11:15 Eastern		Water			X	3	

Possible Hazard Identification
Unconfirmed

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For _____ Months*

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
	5/12/16 1630	~~TAL~~			
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by: Marjorie Sabo	Date/Time: 5-13-16 10:00	Company TAL

Custody Seals Intact: Δ Yes Δ No | Custody Seal No.: 6740-5524-0574 | Cooler Temperature(s) °C and Other Remarks: 2.3/2.0 IR77

5/20/2016

TestAmerica Burlington
30 Community Drive Suite 11
South Burlington, VT 05403
Phone (802) 660-1990 Fax (802) 660-1919

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Deyo, Melissa L	Carrier Tracking No(s):	COC No: 200-25451.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: melissa.deyo@testamericainc.com		Page: Page 1 of 1
Company: TestAmerica Laboratories, Inc		**Analysis Requested**		Job #: 480-99770-1
Address: 17461 Derian Ave, Suite 100,	Due Date Requested: 5/18/2016			**Preservation Codes:**
City: Irvine	TAT Requested (days):			A - HCL M - Hexane B - NaOH N - None C - Zn Acetate O - AsNaO2 D - Nitric Acid P - Na2O4S E - NaHSO4 Q - Na2SO3 F - MeOH R - Na2S2O3 G - Amchlor S - H2SO4 H - Ascorbic Acid T - TSP Dodecahydrate I - Ice U - Acetone J - DI Water V - MCAA K - EDTA W - ph 4-5 L - EDA Z - other (specify)
State, Zip: CA, 92614-5817				
Phone: 949-261-1022(Tel) 949-260-3297(Fax)	PO #:			**Other:**
Email:	WO #:			
Project Name: 058507, GM-Lockport Groundwater Sampling	Project #: 48004014			
Site:	SSOW#:			

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	RSK_175_CO2/ Carbon dioxide	Total Number of containers	Special Instructions/Note:
			Preservation Code:						
MW-14-050616 (480-99770-1)	5/6/16	08:45 Eastern		Water			X	3	
MW-12-050616 (480-99770-2)	5/6/16	11:15 Eastern		Water			X	3	

Possible Hazard Identification
Unconfirmed

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For _____ Months*

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
	5/12/16 1630	TAL-BTL			
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by: Marjorie Sabo	Date/Time: 5-13-16 10:00	Company TAI

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.: 6740-5524-0574	Cooler Temperature(s) °C and Other Remarks: 2.3/2.0 IR77

Login Sample Receipt Checklist

Client: GHD Services Inc.

Job Number: 480-99770-1

Login Number: 99770

List Source: TestAmerica Buffalo

List Number: 1

Creator: Kolb, Chris M

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

Login Sample Receipt Checklist

Client: GHD Services Inc.

Job Number: 480-99770-1

Login Number: 99770
List Number: 3
Creator: Salas, Margarita

List Source: TestAmerica Irvine
List Creation: 05/13/16 12:55 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	N/A	Received project as a subcontract.
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Buffalo
10 Hazelwood Drive
Amherst, NY 14228-2298
Tel: (716)691-2600

TestAmerica Job ID: 480-100253-1
Client Project/Site: 058507, GM-Lockport Groundwater Sampling
Revision: 1

For:
GHD Services Inc.
2055 Niagara Falls Blvd., Suite 3
Niagara Falls, New York 14304

Attn: Kathleen Willy

Melissa Deyo

Authorized for release by:
6/6/2016 10:17:19 AM

Melissa Deyo, Project Manager I
(716)504-9874
melissa.deyo@testamericainc.com

Table of Contents

Definitions/Glossary

Client: GHD Services Inc.
Project/Site: 058507, GM-Lockport Groundwater Sampling

TestAmerica Job ID: 480-100253-1

Qualifiers

Metals

Qualifier	Qualifier Description
B	Compound was found in the blank and sample.

General Chemistry

Qualifier	Qualifier Description
B	Compound was found in the blank and sample.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
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)

Case Narrative

Client: GHD Services Inc.
Project/Site: 058507, GM-Lockport Groundwater Sampling

TestAmerica Job ID: 480-100253-1

Job ID: 480-100253-1

Laboratory: TestAmerica Buffalo

Narrative

Job Narrative
480-100253-1

Revision I
This report was revised to reported sample MW-7 051716 in a separate report.

Receipt
The samples were received on 5/17/2016 3:15 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 3.9º C.

GC/MS VOA
Method(s) 8260C: The following sample was diluted to bring the concentration of target analytes within the calibration range: MW-7 051716 (480-100253-3). Elevated reporting limits (RLs) are provided.

Method(s) 8260C: The continuing calibration verification (CCV) analyzed in batch 480-303038 was outside the method criteria for the following analyte(s): Vinyl chloride. A CCV standard at or below the reporting limit (RL) was analyzed with the affected samples and found to be acceptable. As indicated in the reference method, sample analysis may proceed; however, any detection for the affected analyte(s) is considered estimated.

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

HPLC/IC
Method(s) 300.0: The following sample was reported with elevated reporting limits for all analytes: MW-7 051716 (480-100253-3). The samples were analyzed at a dilution based on conductivity screening results.

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.

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

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

Detection Summary

Client: GHD Services Inc.
Project/Site: 058507, GM-Lockport Groundwater Sampling

TestAmerica Job ID: 480-100253-1

Client Sample ID: MW-7 051716

Lab Sample ID: 480-100253-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	51000		10000	8100	ug/L	10000		8260C	Total/NA
Trichloroethene	830000		10000	4600	ug/L	10000		8260C	Total/NA
Carbon Dioxide (TCD)	20000		2000	1000	ug/L	1		RSK-175	Total/NA
Ethane	23		7.5	1.5	ug/L	1		RSK-175	Total/NA
Ethene	130		7.0	1.5	ug/L	1		RSK-175	Total/NA
Methane	40		4.0	1.0	ug/L	1		RSK-175	Total/NA
Iron	0.095		0.050	0.019	mg/L	1		6010C	Total/NA
Magnesium	43.2		0.20	0.043	mg/L	1		6010C	Total/NA
Manganese	0.014	B	0.0030	0.00040	mg/L	1		6010C	Total/NA
Potassium	11.0		0.50	0.10	mg/L	1		6010C	Total/NA
Sodium	186		1.0	0.32	mg/L	1		6010C	Total/NA
Chloride	268		5.0	2.8	mg/L	10		300.0	Total/NA
Sulfate	177		20.0	3.5	mg/L	10		300.0	Total/NA
Ammonia	0.61		0.020	0.0090	mg/L	1		350.1	Total/NA
Total Organic Carbon	6.5		1.0	0.43	mg/L	1		9060A	Total/NA
Total Alkalinity	261	B	5.0	0.79	mg/L	1		SM 2320B	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample ID: MW-7 051716

Date Collected: 05/17/16 13:00
Date Received: 05/17/16 15:15

Lab Sample ID: 480-100253-3

Matrix: Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	**51000**		10000	8100	ug/L			05/23/16 23:32	10000
Tetrachloroethene	ND		10000	3600	ug/L			05/23/16 23:32	10000
trans-1,2-Dichloroethene	ND		10000	9000	ug/L			05/23/16 23:32	10000
Trichloroethene	**830000**		10000	4600	ug/L			05/23/16 23:32	10000
Vinyl chloride	ND		10000	9000	ug/L			05/23/16 23:32	10000

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*85*		*66 - 137*		*05/23/16 23:32*	*10000*
4-Bromofluorobenzene (Surr)	*90*		*73 - 120*		*05/23/16 23:32*	*10000*
Toluene-d8 (Surr)	*95*		*71 - 126*		*05/23/16 23:32*	*10000*
Dibromofluoromethane (Surr)	*88*		*60 - 140*		*05/23/16 23:32*	*10000*

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbon Dioxide (TCD)	**20000**		2000	1000	ug/L			05/25/16 18:40	1
Ethane	**23**		7.5	1.5	ug/L			05/18/16 10:31	1
Ethene	**130**		7.0	1.5	ug/L			05/18/16 10:31	1
Methane	**40**		4.0	1.0	ug/L			05/18/16 10:31	1

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	**0.095**		0.050	0.019	mg/L		05/21/16 09:05	05/23/16 22:55	1
Magnesium	**43.2**		0.20	0.043	mg/L		05/18/16 09:13	05/20/16 04:20	1
Manganese	**0.014**	**B**	0.0030	0.00040	mg/L		05/18/16 09:13	05/20/16 04:20	1
Potassium	**11.0**		0.50	0.10	mg/L		05/18/16 09:13	05/20/16 04:20	1
Sodium	**186**		1.0	0.32	mg/L		05/18/16 09:13	05/20/16 04:20	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**268**		5.0	2.8	mg/L			05/18/16 20:10	10
Sulfate	**177**		20.0	3.5	mg/L			05/18/16 20:10	10
Ammonia	**0.61**		0.020	0.0090	mg/L			05/18/16 15:43	1
Nitrate	ND		0.050	0.020	mg/L			05/17/16 21:29	1
Nitrite	ND		0.050	0.020	mg/L			05/17/16 21:29	1
Total Organic Carbon	**6.5**		1.0	0.43	mg/L			05/19/16 13:25	1
Total Alkalinity	**261**	**B**	5.0	0.79	mg/L			05/18/16 16:13	1
Sulfide	ND		0.10	0.052	mg/L			05/19/16 11:57	1

Surrogate Summary

Client: GHD Services Inc.
Project/Site: 058507, GM-Lockport Groundwater Sampling

TestAmerica Job ID: 480-100253-1

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

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)							
		12DCE	BFB	TOL	DBFM				
Lab Sample ID	Client Sample ID	(66-137)	(73-120)	(71-126)	(60-140)				
480-100253-3	MW-7 051716	85	90	95	88				

Surrogate Legend

12DCE = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

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

Lab Sample ID: MB 480-303038/7
Matrix: Water
Analysis Batch: 303038

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	ND		1.0	0.81	ug/L			05/22/16 12:23	1
Tetrachloroethene	ND		1.0	0.36	ug/L			05/22/16 12:23	1
trans-1,2-Dichloroethene	ND		1.0	0.90	ug/L			05/22/16 12:23	1
Trichloroethene	ND		1.0	0.46	ug/L			05/22/16 12:23	1
Vinyl chloride	ND		1.0	0.90	ug/L			05/22/16 12:23	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*116*		*66 - 137*		*05/22/16 12:23*	*1*
4-Bromofluorobenzene (Surr)	*104*		*73 - 120*		*05/22/16 12:23*	*1*
Toluene-d8 (Surr)	*101*		*71 - 126*		*05/22/16 12:23*	*1*
Dibromofluoromethane (Surr)	*117*		*60 - 140*		*05/22/16 12:23*	*1*

Lab Sample ID: LCS 480-303038/5
Matrix: Water
Analysis Batch: 303038

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
cis-1,2-Dichloroethene	25.0	24.0		ug/L		96	74 - 124
Tetrachloroethene	25.0	25.3		ug/L		101	74 - 122
trans-1,2-Dichloroethene	25.0	24.3		ug/L		97	73 - 127
Trichloroethene	25.0	24.1		ug/L		97	74 - 123
Vinyl chloride	25.0	29.3		ug/L		117	65 - 133

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*113*		*66 - 137*
4-Bromofluorobenzene (Surr)	*109*		*73 - 120*
Toluene-d8 (Surr)	*109*		*71 - 126*
Dibromofluoromethane (Surr)	*110*		*60 - 140*

Lab Sample ID: MB 480-303236/7
Matrix: Water
Analysis Batch: 303236

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	ND		1.0	0.81	ug/L			05/23/16 21:14	1
Tetrachloroethene	ND		1.0	0.36	ug/L			05/23/16 21:14	1
trans-1,2-Dichloroethene	ND		1.0	0.90	ug/L			05/23/16 21:14	1
Trichloroethene	ND		1.0	0.46	ug/L			05/23/16 21:14	1
Vinyl chloride	ND		1.0	0.90	ug/L			05/23/16 21:14	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*85*		*66 - 137*		*05/23/16 21:14*	*1*
4-Bromofluorobenzene (Surr)	*91*		*73 - 120*		*05/23/16 21:14*	*1*
Toluene-d8 (Surr)	*97*		*71 - 126*		*05/23/16 21:14*	*1*
Dibromofluoromethane (Surr)	*90*		*60 - 140*		*05/23/16 21:14*	*1*

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

Lab Sample ID: LCS 480-303236/5
Matrix: Water
Analysis Batch: 303236

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
cis-1,2-Dichloroethene	25.0	22.5		ug/L		90	74 - 124
Tetrachloroethene	25.0	29.3		ug/L		117	74 - 122
trans-1,2-Dichloroethene	25.0	25.3		ug/L		101	73 - 127
Trichloroethene	25.0	23.5		ug/L		94	74 - 123
Vinyl chloride	25.0	26.5		ug/L		106	65 - 133

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*77*		*66 - 137*
4-Bromofluorobenzene (Surr)	*98*		*73 - 120*
Toluene-d8 (Surr)	*100*		*71 - 126*
Dibromofluoromethane (Surr)	*85*		*60 - 140*

Method: RSK-175 - Dissolved Gases (GC)

Lab Sample ID: MB 480-302347/3
Matrix: Water
Analysis Batch: 302347

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ethane	ND		7.5	1.5	ug/L			05/18/16 08:33	1
Ethene	ND		7.0	1.5	ug/L			05/18/16 08:33	1
Methane	ND		4.0	1.0	ug/L			05/18/16 08:33	1

Lab Sample ID: LCS 480-302347/4
Matrix: Water
Analysis Batch: 302347

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Ethane	14.6	16.2		ug/L		111	79 - 120
Ethene	13.6	15.3		ug/L		113	78 - 115
Methane	7.77	8.64		ug/L		111	71 - 118

Lab Sample ID: LCSD 480-302347/5
Matrix: Water
Analysis Batch: 302347

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

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Ethane	14.6	15.0		ug/L		103	79 - 120	8	50
Ethene	13.6	13.9		ug/L		103	78 - 115	9	50
Methane	7.77	8.02		ug/L		103	71 - 118	7	50

Lab Sample ID: MB 440-332666/8
Matrix: Water
Analysis Batch: 332666

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbon Dioxide (TCD)	ND		2000	1000	ug/L			05/25/16 12:55	1

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

Lab Sample ID: LCS 440-332666/4
Matrix: Water
Analysis Batch: 332666

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Carbon Dioxide (TCD)	11500	11100		ug/L		96	80 - 120

Lab Sample ID: LCSD 440-332666/5
Matrix: Water
Analysis Batch: 332666

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

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Carbon Dioxide (TCD)	11500	11200		ug/L		98	80 - 120	1	20

Method: 6010C - Metals (ICP)

Lab Sample ID: MB 480-302344/1-A
Matrix: Water
Analysis Batch: 302789

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 302344

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Magnesium	ND		0.20	0.043	mg/L		05/18/16 09:13	05/20/16 03:19	1
Manganese	0.00105	J	0.0030	0.00040	mg/L		05/18/16 09:13	05/20/16 03:19	1
Potassium	ND		0.50	0.10	mg/L		05/18/16 09:13	05/20/16 03:19	1
Sodium	ND		1.0	0.32	mg/L		05/18/16 09:13	05/20/16 03:19	1

Lab Sample ID: LCS 480-302344/2-A
Matrix: Water
Analysis Batch: 302789

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 302344

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Magnesium	10.0	10.57		mg/L		106	80 - 120
Manganese	0.200	0.207		mg/L		103	80 - 120
Potassium	10.0	10.31		mg/L		103	80 - 120
Sodium	10.0	10.22		mg/L		102	80 - 120

Lab Sample ID: MB 480-302901/1-A
Matrix: Water
Analysis Batch: 303329

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 302901

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	ND		0.050	0.019	mg/L		05/21/16 09:05	05/23/16 21:23	1

Lab Sample ID: LCS 480-302901/2-A
Matrix: Water
Analysis Batch: 303329

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 302901

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Iron	10.0	9.99		mg/L		100	80 - 120

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 480-302449/30
Matrix: Water
Analysis Batch: 302449

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		0.50	0.28	mg/L			05/18/16 19:54	1
Sulfate	ND		2.0	0.35	mg/L			05/18/16 19:54	1

Lab Sample ID: MB 480-302449/4
Matrix: Water
Analysis Batch: 302449

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		0.50	0.28	mg/L			05/18/16 16:22	1
Sulfate	ND		2.0	0.35	mg/L			05/18/16 16:22	1

Lab Sample ID: LCS 480-302449/29
Matrix: Water
Analysis Batch: 302449

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	50.0	51.50		mg/L		103	90 - 110
Sulfate	50.0	48.52		mg/L		97	90 - 110

Lab Sample ID: LCS 480-302449/3
Matrix: Water
Analysis Batch: 302449

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	50.0	51.45		mg/L		103	90 - 110
Sulfate	50.0	49.10		mg/L		98	90 - 110

Lab Sample ID: 480-100253-1 MS
Matrix: Water
Analysis Batch: 302449

Client Sample ID: MW-8-2 051716
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	290		250	535.6		mg/L		98	81 - 120
Sulfate	157		250	387.6		mg/L		92	80 - 120

Lab Sample ID: 480-100253-3 MS
Matrix: Water
Analysis Batch: 302449

Client Sample ID: MW-7 051716
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	268		250	514.7		mg/L		99	81 - 120
Sulfate	177		250	409.4		mg/L		93	80 - 120

Lab Sample ID: 480-100253-3 MSD
Matrix: Water
Analysis Batch: 302449

Client Sample ID: MW-7 051716
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	268		250	518.4		mg/L		100	81 - 120	1	20

Method: 300.0 - Anions, Ion Chromatography (Continued)

Lab Sample ID: 480-100253-3 MSD
Matrix: Water
Analysis Batch: 302449

Client Sample ID: MW-7 051716
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Sulfate	177		250	412.7		mg/L		94	80 - 120	1	20

Method: 350.1 - Nitrogen, Ammonia

Lab Sample ID: MB 480-302513/123
Matrix: Water
Analysis Batch: 302513

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ammonia	ND		0.020	0.0090	mg/L			05/18/16 17:13	1

Lab Sample ID: MB 480-302513/3
Matrix: Water
Analysis Batch: 302513

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ammonia	ND		0.020	0.0090	mg/L			05/18/16 15:28	1

Lab Sample ID: LCS 480-302513/124
Matrix: Water
Analysis Batch: 302513

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Ammonia	1.00	0.997		mg/L		100	90 - 110

Lab Sample ID: LCS 480-302513/4
Matrix: Water
Analysis Batch: 302513

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Ammonia	1.00	0.999		mg/L		100	90 - 110

Method: 353.2 - Nitrogen, Nitrite

Lab Sample ID: MB 480-302289/27
Matrix: Water
Analysis Batch: 302289

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrite	ND		0.050	0.020	mg/L			05/17/16 19:07	1

Lab Sample ID: MB 480-302289/3
Matrix: Water
Analysis Batch: 302289

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrite	ND		0.050	0.020	mg/L			05/17/16 18:40	1

Method: 353.2 - Nitrogen, Nitrite (Continued)

Lab Sample ID: LCS 480-302289/28
Matrix: Water
Analysis Batch: 302289

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Nitrite	1.50	1.57		mg/L		105	90 - 110

Lab Sample ID: LCS 480-302289/4
Matrix: Water
Analysis Batch: 302289

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Nitrite	1.50	1.56		mg/L		104	90 - 110

Method: 9060A - Organic Carbon, Total (TOC)

Lab Sample ID: MB 480-302927/30
Matrix: Water
Analysis Batch: 302927

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	ND		1.0	0.43	mg/L			05/19/16 03:58	1

Lab Sample ID: MB 480-302927/6
Matrix: Water
Analysis Batch: 302927

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	ND		1.0	0.43	mg/L			05/18/16 16:33	1

Lab Sample ID: LCS 480-302927/31
Matrix: Water
Analysis Batch: 302927

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	60.0	64.26		mg/L		107	90 - 110

Lab Sample ID: LCS 480-302927/7
Matrix: Water
Analysis Batch: 302927

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	60.0	63.91		mg/L		107	90 - 110

Method: SM 2320B - Alkalinity

Lab Sample ID: MB 480-302598/30
Matrix: Water
Analysis Batch: 302598

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Alkalinity	0.960	J	5.0	0.79	mg/L			05/18/16 15:45	1

Method: SM 2320B - Alkalinity (Continued)

Lab Sample ID: MB 480-302598/7
Matrix: Water
Analysis Batch: 302598

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Alkalinity	0.920	J	5.0	0.79	mg/L			05/18/16 13:03	1

Lab Sample ID: LCS 480-302598/31
Matrix: Water
Analysis Batch: 302598

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Alkalinity	100	96.73		mg/L		97	90 - 110

Lab Sample ID: LCS 480-302598/8
Matrix: Water
Analysis Batch: 302598

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Alkalinity	100	98.54		mg/L		99	90 - 110

Method: SM 4500 S2 D - Sulfide, Total

Lab Sample ID: MB 480-302671/3
Matrix: Water
Analysis Batch: 302671

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfide	ND		0.10	0.052	mg/L			05/19/16 11:57	1

Lab Sample ID: LCS 480-302671/4
Matrix: Water
Analysis Batch: 302671

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Sulfide	0.750	0.765		mg/L		102	90 - 110

QC Association Summary

Client: GHD Services Inc.
Project/Site: 058507, GM-Lockport Groundwater Sampling

TestAmerica Job ID: 480-100253-1

GC/MS VOA

Analysis Batch: 303236

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-100253-3	MW-7 051716	Total/NA	Water	8260C	

GC VOA

Analysis Batch: 302347

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-100253-3	MW-7 051716	Total/NA	Water	RSK-175	

Analysis Batch: 332666

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-100253-3	MW-7 051716	Total/NA	Water	RSK-175	

Metals

Prep Batch: 302344

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-100253-3	MW-7 051716	Total/NA	Water	3005A	

Analysis Batch: 302789

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-100253-3	MW-7 051716	Total/NA	Water	6010C	302344

Prep Batch: 302901

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-100253-3	MW-7 051716	Total/NA	Water	3005A	

Analysis Batch: 303329

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-100253-3	MW-7 051716	Total/NA	Water	6010C	302901

General Chemistry

Analysis Batch: 302298

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-100253-3	MW-7 051716	Total/NA	Water	353.2	

Analysis Batch: 302299

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-100253-3	MW-7 051716	Total/NA	Water	353.2	

Analysis Batch: 302449

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-100253-3	MW-7 051716	Total/NA	Water	300.0	

Analysis Batch: 302513

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-100253-3	MW-7 051716	Total/NA	Water	350.1	

General Chemistry (Continued)

Analysis Batch: 302598

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-100253-3	MW-7 051716	Total/NA	Water	SM 2320B	

Analysis Batch: 302671

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-100253-3	MW-7 051716	Total/NA	Water	SM 4500 S2 D	

Analysis Batch: 302927

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-100253-3	MW-7 051716	Total/NA	Water	9060A	

Lab Chronicle

Client: GHD Services Inc.
Project/Site: 058507, GM-Lockport Groundwater Sampling

TestAmerica Job ID: 480-100253-1

Client Sample ID: MW-7 051716

Date Collected: 05/17/16 13:00
Date Received: 05/17/16 15:15

Lab Sample ID: 480-100253-3

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		10000	303236	05/23/16 23:32	GVF	TAL BUF
Total/NA	Analysis	RSK-175		1	332666	05/25/16 18:40	EI	TAL IRV
Total/NA	Analysis	RSK-175		1	302347	05/18/16 10:31	TRG	TAL BUF
Total/NA	Prep	3005A			302344	05/18/16 09:13	BAE	TAL BUF
Total/NA	Analysis	6010C		1	302789	05/20/16 04:20	AMH	TAL BUF
Total/NA	Prep	3005A			302901	05/21/16 09:05	BAE	TAL BUF
Total/NA	Analysis	6010C		1	303329	05/23/16 22:55	TRB	TAL BUF
Total/NA	Analysis	300.0		10	302449	05/18/16 20:10	CAV	TAL BUF
Total/NA	Analysis	350.1		1	302513	05/18/16 15:43	CEA	TAL BUF
Total/NA	Analysis	353.2		1	302298	05/17/16 21:29	JJK	TAL BUF
Total/NA	Analysis	353.2		1	302299	05/17/16 21:29	JJK	TAL BUF
Total/NA	Analysis	9060A		1	302927	05/19/16 13:25	MRF	TAL BUF
Total/NA	Analysis	SM 2320B		1	302598	05/18/16 16:13	KMF	TAL BUF
Total/NA	Analysis	SM 4500 S2 D		1	302671	05/19/16 11:57	LED	TAL BUF

Laboratory References:

TAL BUF = TestAmerica Buffalo, 10 Hazelwood Drive, Amherst, NY 14228-2298, TEL (716)691-2600
TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

Certification Summary

Client: GHD Services Inc.
Project/Site: 058507, GM-Lockport Groundwater Sampling

TestAmerica Job ID: 480-100253-1

Laboratory: TestAmerica Buffalo

The certifications listed below are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
New York	NELAP	2	10026	03-31-17

Laboratory: TestAmerica Irvine

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

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska	State Program	10	CA01531	06-30-16
Arizona	State Program	9	AZ0671	10-13-16
California	LA Cty Sanitation Districts	9	10256	01-31-17 *
California	State Program	9	CA ELAP 2706	06-30-16
Guam	State Program	9	Cert. No. 12.002r	01-23-17
Hawaii	State Program	9	N/A	01-29-17
Kansas	NELAP Secondary AB	7	E-10420	07-31-16
Nevada	State Program	9	CA015312016-2	07-31-16
New Mexico	State Program	6	N/A	01-29-17
Northern Mariana Islands	State Program	9	MP0002	01-29-17
Oregon	NELAP	10	4028	01-29-17
USDA	Federal		P330-09-00080	07-08-18
Washington	State Program	10	C900	09-03-16

* Certification renewal pending - certification considered valid.

Method Summary

Client: GHD Services Inc.
Project/Site: 058507, GM-Lockport Groundwater Sampling

TestAmerica Job ID: 480-100253-1

Method	Method Description	Protocol	Laboratory
8260C	Volatile Organic Compounds by GC/MS	SW846	TAL BUF
RSK-175	Dissolved Gases (GC)	RSK	TAL IRV
RSK-175	Dissolved Gases (GC)	RSK	TAL BUF
6010C	Metals (ICP)	SW846	TAL BUF
300.0	Anions, Ion Chromatography	MCAWW	TAL BUF
350.1	Nitrogen, Ammonia	MCAWW	TAL BUF
353.2	Nitrate	EPA	TAL BUF
353.2	Nitrogen, Nitrite	MCAWW	TAL BUF
9060A	Organic Carbon, Total (TOC)	SW846	TAL BUF
SM 2320B	Alkalinity	SM	TAL BUF
SM 4500 S2 D	Sulfide, Total	SM	TAL BUF

Protocol References:

EPA = US Environmental Protection Agency

MCAWW = "Methods For Chemical Analysis Of Water And Wastes", EPA-600/4-79-020, March 1983 And 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

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:

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

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

Sample Summary

Client: GHD Services Inc.
Project/Site: 058507, GM-Lockport Groundwater Sampling

TestAmerica Job ID: 480-100253-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
480-100253-3	MW-7 051716	Water	05/17/16 13:00	05/17/16 15:15

TestAmerica Buffalo
10 Hazelwood Drive
Amherst, NY 14228-2298
Phone (716) 691-2600 Fax (716) 691-7991

Chain of Custody Record

480-100253 Chain of Custody

597-20280.19

stAmerica
ADEE IN ENVIRONMENTAL TESTING

Client Information	Sampler: Peter Nyznyk	Lab PM: Deyo, Melissa L		Page: Page 8 of 8
Client Contact: Mr. Tom Bohlen	Phone: 517-5708	E-Mail: melissa.deyo@testamericainc.com		
Company: GZA GeoEnvironmental, Inc.				Job #:
Address: 535 Washington Street 11th Floor	Due Date Requested:			
City: Buffalo	TAT Requested (days):			
State, Zip: NY, 14203				
Phone:	PO #: 4065906			
Email: thomas.bohlen@gza.com	WO #: 256028			
Project Name: 058507, GM-Lockport Groundwater Sampling	Project #: 48004014			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL	M - Hexane
B - NaOH	N - None
C - Zn Acetate	O - AsNaO2
D - Nitric Acid	P - Na2O4S
E - NaHSO4	Q - Na2SO3
F - MeOH	R - Na2S2O3
G - Amchlor	S - H2SO4
H - Ascorbic Acid	T - TSP Dodecahydrate
I - Ice	U - Acetone
J - DI Water	V - MCAA
K - EDTA	W - ph 4-5
L - EDA	Z - other (specify)

Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	8260C - PCE, TCE, DCE (trans and cis), Vinyl Chl	RSK_175_CO2 - Carbon dioxide	VFA_IC - Standard VFA Compounds	300.0_28D - Anions (Chloride & Sulfate)	350.1 - Ammonia	6010C - Metals - Fe, Mn, Mg, K & Na	RSK_175 - Methane, Ethane & Ethene	9060A - Total Organic Carbon	SM4500_S2_D - Sulfide	353.2, 353.2_Nitrite, Nitrate_Calc	2320B - Total Alkalinity			Total Number of containers	Special Instructions/Note:
Preservation Code:							A	N	N	N	S	D	A	A	CB	N	N				
MW-8-2 051716	5/17/16	0955	G	Water	N	N	X	X		X	X	X	X	X	X	X	X				
MW-10-2 051716	5/17/16	1200	G	Water	N	N	X	X		X	X	X	X	X	X	X	X				
MW-7 051716	5/17/16	1300	G	Water	N	N	X	X		X	X	X	X	X	X	X	X				
TRIP BLANK	5/17/16	0900	G	Water	N	N	X														
				Water																	

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
1		5/17/16 1515	GZA		5/17/16 1515	
2	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
3	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks: 3.9 #1

6/6/2016

TestAmerica Buffalo
10 Hazelwood Drive
Amherst, NY 14228-2298
Phone (716) 691-2600 Fax (716) 691-7991

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Deyo, Melissa L	Carrier Tracking No(s):	COC No: 480-29384.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: melissa.deyo@testamericainc.com		Page: Page 1 of 1
Company: TestAmerica Laboratories, Inc		Analysis Requested		Job #: 480-100253-1
Address: 17461 Derian Ave, Suite 100,	Due Date Requested: 5/27/2016			Preservation Codes:
City: Irvine	TAT Requested (days):			A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - ph 4-5, Z - other (specify)
State, Zip: CA, 92614-5817				
Phone: 949-261-1022(Tel) 949-260-3297(Fax)	PO #:			Other:
Email:	WO #:			
Project Name: 058507, GM-Lockport Groundwater Sampling	Project #: 48004014			
Site:	SSOW#:			

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	RSK_175_CO2/ Carbon dioxide	Total Number of containers	Special Instructions/Note:
			Preservation Code:						
MW8-2 051716 (480-100253-1)	5/17/16	09:55 Eastern		Water			X	3	
MW-10-2 051716 (480-100253-2)	5/17/16	12:00 Eastern		Water			X	3	
MW-7 051716 (480-100253-3)	5/17/16	13:00 Eastern		Water			X	3	

Possible Hazard Identification	Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
Unconfirmed	☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months
Deliverable Requested: I, II, III, IV, Other (specify)	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment: Fed Ex 0657 0120 1888
Relinquished by: Cwallace	Date/Time: 5/18/16 1900	Company TAB	Received by: JwBarb
Relinquished by:	Date/Time:	Company	Received by:
Relinquished by:	Date/Time:	Company	Received by:

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks: CS 4.0/3.8 IR-78

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6/6/2016

Login Sample Receipt Checklist

Client: GHD Services Inc.

Job Number: 480-100253-1

Login Number: 100253
List Number: 1
Creator: Conway, Curtis R

List Source: TestAmerica Buffalo

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

Login Sample Receipt Checklist

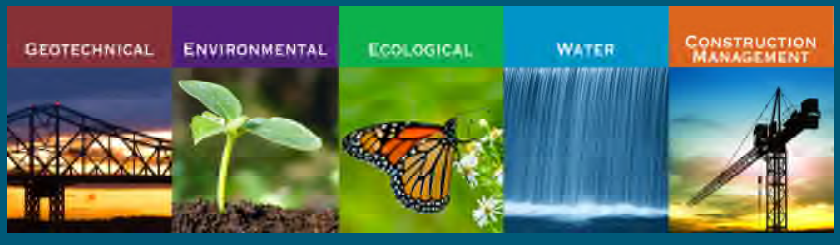
Client: GHD Services Inc.

Job Number: 480-100253-1

Login Number: 100253
List Number: 2
Creator: Ornelas, Olga

List Source: TestAmerica Irvine
List Creation: 05/19/16 12:09 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	N/A	Received project as a subcontract.
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



GZA GeoEnvironmental, Inc.