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June 25, 2013 Reference No. 017390

Mr. Glenn May, CPG
NEW YORK STATE DEPARTMENT OF
ENVIRONMENTAL CONSERVATION
270 Michigan Avenue
Buffalo, New York 14203-2999

Dear Mr. May:

Re: GM Powertrain Group – Tonawanda, New York
Endoline Area Semi-Annual Groundwater Monitoring Report
Spill Number 9875474

Conestoga-Rovers & Associates (CRA) has prepared this Semi-Annual Groundwater Monitoring Report on behalf of the General Motors Company (GM) in accordance with the Enhanced Attenuation Work Plan for the Endoline Area Chlorinated Solvent Plume dated February 22, 2011(Work Plan). The New York State Department of Environmental Conservation (NYSDEC) approved the Work Plan on March 14, 2011.

The third round of semi-annual groundwater monitoring was completed on March 11, 2013. All samples were sent to TestAmerica Laboratories of North Canton, Ohio for analysis. Groundwater samples were collected from perimeter monitoring wells MW-1, MW-9, MW-101, MW-102, and MW-103 and analyzed for Target Compound List (TCL) volatile organic compounds (VOCs) to monitor for potential plume migration. Groundwater samples collected from MW-2, MW-11, and MW-12 as well as injection wells IP-2, IP-10, and IP-13 were analyzed for TCL VOCs and the following natural attenuation parameters to monitor changes in contaminant and biodegradation indicator parameter concentrations:

Wet Chemistry

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

Dissolved Gases

Ethane
Methane

Field Parameters

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

Monitoring wells MW-2, MW-3, MW-4, and MW-5 were sampled for the NYSDEC Spill Technology and Remediation Series (STARS) Memo #1 list of petroleum-related VOCs to monitor the conditions in the Endoline area related to residual petroleum impacts.

Monitoring and injection well locations are shown on Figure 1. Figure 2 presents total chlorinated VOC (CVOC) contours. Analytical results for the chlorinated solvent plume enhanced attenuation program are summarized on Table 1, while the STARS results are summarized on Table 2. As requested, attenuation plots are provided as Attachment 1. Please note that the scales on the plots may vary depending on concentrations.

The data was validated by CRA. Application of quality assurance criteria was consistent with "USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review," EPA-540/R-99/008, October 1999. The data were found to exhibit acceptable levels of accuracy and precision with the qualifiers noted on the tables.

The data from the third semi-annual event were reviewed to evaluate the enhanced biodegradation treatment at the Endoline Area. In September 2012, for well MW-2, both 1,1,1-TCA and 1,1-DCA had been reduced to non-detect levels accompanied by a large increase in chloroethane. In March 2013, lower detection limits were able to be achieved; therefore, 1,1,1-TCA was detected at a low level and the concentration of 1,1-DCA had increased. This suggests that further dechlorination of 1,1,1-TCA has occurred, resulting in a slight increase in the 1,1-DCA concentration. However, a significant decrease in the chloroethane concentration was also observed. Therefore, significant conversion of chloroethane to ethane has occurred at well MW-2 location since the September 2012 sampling event. These results show that complete dechlorination to ethane is occurring at this location.

This decrease in chloroethane, as well as the lower detection limits for 1,1,1-TCA and 1,1-DCA achieved by the lab drive the significant decrease in total VOC observed at well MW-2.

Concentrations of VOC in wells MW-11 and MW-12 remained similar to those found during the March sampling event.

Injection wells IP-2, IP-10, and IP-13 were sampled at six months and 18 months post injection to monitor the migration of the organic substrate out of the injection well area and confirm that enhanced biodegradation is occurring in the injection well area. The conditions at the injection points changed significantly in the year.

The concentrations of STARS parameters at wells MW-2 through MW-5 are consistent with previous sampling rounds.

No conclusions are being made at this time. As stated in the approved Work Plan, CRA will evaluate the effectiveness of the enhanced attenuation program after two years (four rounds) of semiannual sampling. An evaluation report will be prepared and submitted to the NYSDEC with recommendations for future sampling or additional remedial actions if necessary.

Please contact Jim Hartnett at 315-463-2391 (GM) or Katherine Galanti at 716-856-2142 (CRA) if you should have any questions or comments.

Yours truly,

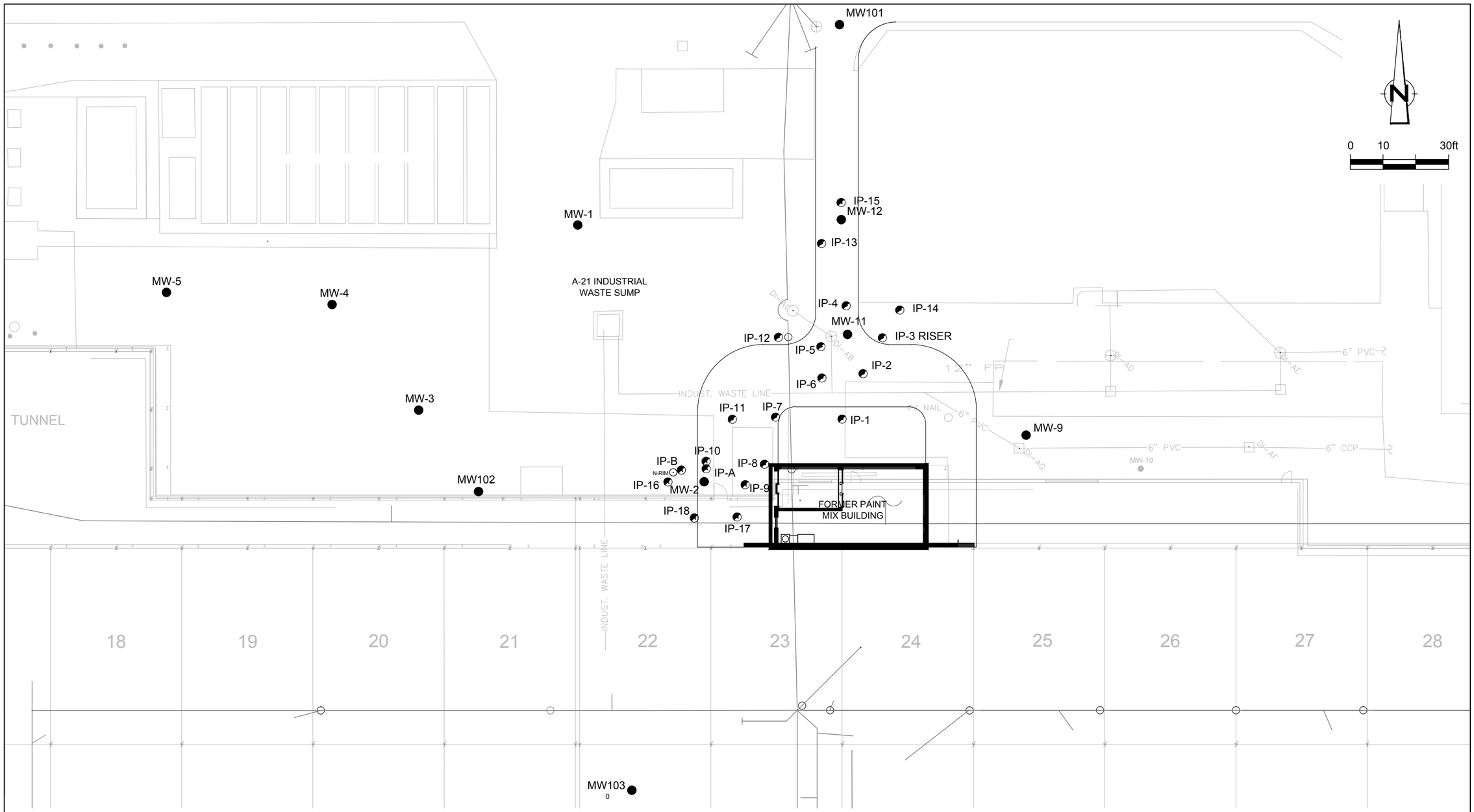
CONESTOGA-ROVERS & ASSOCIATES

Katherine B. Galanti
Project Manager

KBG/ck/017390-May-008

Encl.
c.c.: M. Antonetti – GM
J. Hartnett – GM

FIGURES



LEGEND

MW-1 ● MONITORING WELL LOCATION

IP-11 ◐ INJECTION WELL LOCATION

figure 1

WELL LOCATIONS
ENHANCED ATTENUATION AT THE ENDOLINE AREA CHLORINATED SOLVENT PLUME
GENERAL MOTORS COMPANY TONAWANDA ENGINE PLANT
Tonawanda, New York

17390-00(MAY008)GN-BU001 JUN 07/2013

MW101
<2.5

MW-1
<2.5

MW-12
53.25

IP-13
13.25

A-21 INDUSTRIAL
WASTE SUMP

MW-5

MW-4

MW-11
5349.92

IP-2
246.90

MW-3

TUNNEL

MW-9
3.45

IP-10
5736

MW-2
17148

MW102
4.10

10000

1000

100

10

2

MW103
<2.5

FORMER PAINT
MIX BUILDING

INDUST. WASTE LINE

6" PVC

6" CCP

MW-10

0 10 30ft

N

18 19 20 21 22 23 24 25 26 27 28

LEGEND

MW-1 ● MONITORING WELL LOCATION

IP-11 ◐ INJECTION WELL LOCATIONS

CVOC CONCENTRATION CONTOUR

MW-102 4.10 ● TOTAL CHLORINATED VOC CONCENTRATION IN GROUNDWATER (ppb)

MW-1 <2.5 ● INDICATES TOTAL CVOC CONCENTRATION IS NON-DETECT

figure 2

TOTAL CVOC CONTOURS - MARCH 2013
ENHANCED ATTENUATION AT THE ENDOLINE AREA CHLORINATED SOLVENT PLUME
GENERAL MOTORS COMPANY TONAWANDA ENGINE PLANT
Tonawanda, New York

17390-00(MAY008)GN-BU002 JUN 21/2013

TABLES

TABLE 1

ANALYTICAL RESULTS SUMMARY - TCL VOC PARAMETERS
GROUNDWATER MONITORING
GENERAL MOTORS CORPORATION
TONAWANDA, NEW YORK
MARCH 2013

Location ID:				*IP-2*	*IP-2*	*IP-10*	*IP-13*	*MW-1*	*MW-2*
Sample Name:				*WG-17390-031213-KL-007*	*WG-17390-031213-KL-008*	*WG-17390-031113-KL-004*	*WG-17390-031213-KL-009*	*WG-17390-031113-KL-006*	*WG-17390-031113-KL-002*
Sample Date:				*3/12/2013*	*3/12/2013*	*3/11/2013*	*3/12/2013*	*3/11/2013*	*3/11/2013*
	NYSDEC TOGs Groundwater				*Duplicate*				
Parameters	*Guidance Value*	*Standard*	*Units*						
Volatile Organic Compounds									
1,1,1-Trichloroethane	NC	5	ug/L	6.7 U	6.7 U	140 U	1.0 U	1.0 U	**170 J**
1,1,2,2-Tetrachloroethane	NC	5	ug/L	6.7 U	6.7 U	140 U	1.0 U	1.0 U	330 U
1,1,2-Trichloroethane	NC	1	ug/L	6.7 U	6.7 U	140 U	1.0 U	1.0 U	330 U
1,1-Dichloroethane	NC	5	ug/L	**220**	**210**	**220**	1.6	1.0 U	**3600**
1,1-Dichloroethene	NC	5	ug/L	**12**	**12**	**71 J**	1.0 U	1.0 U	330 U
1,2,4-Trichlorobenzene	NC	5	ug/L	6.7 U	6.7 U	140 U	1.0 U	1.0 U	330 U
1,2,4-Trimethylbenzene	NC	5	ug/L	-	-	-	-	-	330 U
1,2-Dibromo-3-chloropropane (DBCP)	NC	0.04	ug/L	13 U	13 U	290 U	2.0 U	2.0 U	670 U
1,2-Dibromoethane (Ethylene dibromide)	NC	0.0006	ug/L	6.7 U	6.7 U	140 U	1.0 U	1.0 U	330 U
1,2-Dichlorobenzene	NC	3	ug/L	6.7 U	6.7 U	140 U	1.0 U	1.0 U	330 U
1,2-Dichloroethane	NC	0.6	ug/L	6.7 U	6.7 U	140 U	1.0 U	1.0 U	330 U
1,2-Dichloropropane	NC	1	ug/L	6.7 U	6.7 U	140 U	1.0 U	1.0 U	330 U
1,3,5-Trimethylbenzene	NC	5	ug/L	-	-	-	-	-	330 U
1,3-Dichlorobenzene	NC	3	ug/L	6.7 U	6.7 U	140 U	1.0 U	1.0 U	330 U
1,4-Dichlorobenzene	NC	3	ug/L	6.7 U	6.7 U	140 U	1.0 U	1.0 U	330 U
1,4-Dioxane	NC	NC	ug/L	330 U	330 U	7100 U	36 J	50 U	17000 U
2-Butanone (Methyl ethyl ketone) (MEK)	50	NC	ug/L	67 U	67 U	1400 U	10 U	10 U	3300 U
2-Hexanone	50	NC	ug/L	67 U	67 U	1400 U	10 U	10 U	3300 U
2-Phenylbutane (sec-Butylbenzene)	NC	5	ug/L	-	-	-	-	-	330 U
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	NC	NC	ug/L	67 U	67 U	1400 U	10 U	10 U	3300 U
Acetone	50	NC	ug/L	67 U	67 U	1400 U	10 U	10 U	3300 U
Benzene	NC	1	ug/L	6.7 U	6.7 U	**46 J**	1.0 U	1.0 U	**190 J**
Bromodichloromethane	50	NC	ug/L	6.7 U	6.7 U	140 U	1.0 U	1.0 U	330 U
Bromoform	50	NC	ug/L	6.7 U	6.7 U	140 U	1.0 U	1.0 U	330 U
Bromomethane (Methyl bromide)	NC	5	ug/L	6.7 U	6.7 U	140 U	1.0 U	1.0 U	330 U
Carbon disulfide	60	60	ug/L	6.7 U	2.0 J	140 U	0.40 J	1.0 U	330 U
Carbon tetrachloride	NC	5	ug/L	6.7 U	6.7 U	140 U	1.0 U	1.0 U	330 U
Chlorobenzene	NC	5	ug/L	6.7 U	6.7 U	140 U	1.0 U	1.0 U	330 U
Chloroethane	NC	5	ug/L	6.7 U	6.7 U	**5300**	**9.3**	1.0 U	**13000**
Chloroform (Trichloromethane)	NC	7	ug/L	6.7 U	6.7 U	140 U	1.0 U	1.0 U	330 U
Chloromethane (Methyl chloride)	NC	5	ug/L	6.7 U	6.7 U	140 U	1.0 U	1.0 U	330 U
cis-1,2-Dichloroethene	NC	5	ug/L	**13**	**12**	140 U	1.2	1.0 U	330 U
cis-1,3-Dichloropropene	NC	NC	ug/L	6.7 U	6.7 U	140 U	1.0 U	1.0 U	330 U
Cyclohexane	NC	NC	ug/L	6.7 U	6.7 U	140 U	0.17 J	1.0 U	330 U
Cymene (p-Isopropyltoluene)	NC	5	ug/L	-	-	-	-	-	330 U
Dibromochloromethane	50	NC	ug/L	6.7 U	6.7 U	140 U	1.0 U	1.0 U	330 U
Dichlorodifluoromethane (CFC-12)	NC	5	ug/L	6.7 U	6.7 U	140 U	1.0 U	1.0 U	330 U
Ethylbenzene	NC	5	ug/L	6.7 U	6.7 U	140 U	1.0 U	1.0 U	**90 J**
Isopropyl benzene	NC	5	ug/L	6.7 U	6.7 U	140 U	1.0 U	1.0 U	330 U
Methyl acetate	NC	NC	ug/L	67 U	67 U	1400 U	10 U	10 U	3300 U
Methyl cyclohexane	NC	NC	ug/L	6.7 U	6.7 U	140 U	1.0 U	1.0 U	330 U
Methyl tert butyl ether (MTBE)	10	NC	ug/L	6.7 U	6.7 U	140 U	0.37 J	1.3	330 U
Methylene chloride	NC	5	ug/L	2.2 J	6.7 U	140 U	1.0 U	1.0 U	340 U
Naphthalene	10	NC	ug/L	-	-	-	-	-	330 U
N-Butylbenzene	NC	5	ug/L	-	-	-	-	-	330 U
N-Propylbenzene	NC	5	ug/L	-	-	-	-	-	330 U
Styrene	NC	5	ug/L	6.7 U	6.7 U	140 U	1.0 U	1.0 U	330 U

ANALYTICAL RESULTS SUMMARY - TCL VOC PARAMETERS
GROUNDWATER MONITORING
GENERAL MOTORS CORPORATION
TONAWANDA, NEW YORK
MARCH 2013

Location ID:				*IP-2*	*IP-2*	*IP-10*	*IP-13*	*MW-1*	*MW-2*
Sample Name:				*WG-17390-031213-KL-007*	*WG-17390-031213-KL-008*	*WG-17390-031113-KL-004*	*WG-17390-031213-KL-009*	*WG-17390-031113-KL-006*	*WG-17390-031113-KL-002*
Sample Date:				*3/12/2013*	*3/12/2013*	*3/11/2013*	*3/12/2013*	*3/11/2013*	*3/11/2013*
	NYSDEC TOGs Groundwater				*Duplicate*				
Parameters	*Guidance Value*	*Standard*	*Units*						
tert-Butylbenzene	NC	5	ug/L	-	-	-	-	-	330 U
Tetrachloroethene	NC	5	ug/L	6.7 U	6.7 U	140 U	1.0 U	1.0 U	330 U
Toluene	NC	5	ug/L	6.7 U	6.7 U	140 U	1.0 U	1.0 U	**220 J**
trans-1,2-Dichloroethene	NC	5	ug/L	6.7 U	6.7 U	140 U	1.0 U	1.0 U	330 U
trans-1,3-Dichloropropene	NC	NC	ug/L	6.7 U	6.7 U	140 U	1.0 U	1.0 U	330 U
Trichloroethene	NC	5	ug/L	6.7 U	6.7 U	140 U	1.0 U	1.0 U	330 U
Trichlorofluoromethane (CFC-11)	NC	5	ug/L	6.7 U	6.7 U	140 U	1.0 U	1.0 U	330 U
Trifluorotrichloroethane (Freon 113)	NC	5	ug/L	6.7 U	6.7 U	140 U	1.0 U	1.0 U	330 U
Vinyl chloride	NC	2	ug/L	**11**	**10**	**54 J**	1.1	1.0 U	330 U
Xylenes (total)	NC	NC	ug/L	13 U	13 U	290 U	2.0 U	2.0 U	450 J
Dissolved Gases									
Ethane	NC	NC	ug/L	-	2.7	21	0.25 J	-	48
Methane	NC	NC	ug/L	-	710	5900	9100	-	6300
Wet Chemistry									
Alkalinity, total (as CaCO3)	NC	NC	mg/L	-	920	710	1400	-	330
Ammonia	NC	2	mg/L	-	**5.9**	2.0 U	0.85 J	-	**3.4 J**
Biochemical oxygen demand (BOD)	NC	NC	mg/L	-	39	6.6	2.0 U	-	71
Chemical oxygen demand (COD)	NC	NC	mg/L	-	240	56	110	-	130
Nitrate (as N)	NC	10	mg/L	-	0.10 U	0.10 U	0.10 U	-	0.10 U
Nitrite (as N)	NC	1	mg/L	-	2.5 U	1.0 U	0.10 U	-	0.10 U
Phosphate (ortho as PO4)	NC	NC	mg/L	-	0.23	0.10 U	0.12	-	0.045 J
Sulfate	NC	250	mg/L	-	**4500**	190	**610**	-	0.85 J
Sulfide	0.05	NC	mg/L	-	**2.6**	**0.74 J**	1.0 U	-	1.0 U
Total organic carbon (TOC)	NC	NC	mg/L	-	56	14	38	-	37

Notes:

µg/L	Micrograms per Liter
mg/L	Milligrams per Liter
J	Estimated
U	Not present at or above the associated value.
220	Exceeds Criteria

ANALYTICAL RESULTS SUMMARY - TCL VOC PARAMETERS
GROUNDWATER MONITORING
GENERAL MOTORS CORPORATION
TONAWANDA, NEW YORK
MARCH 2013

Location ID:			*MW-9*	*MW-101*	*MW-102*	*MW-103*	*MW-11*	*MW-12*
Sample Name:			*WG-17390-031213-KL-010*	*WG-17390-031113-KL-005*	*WG-17390-031213-KL-011*	*WG-17390-031213-KL-015*	*WG-17390-031113-KL-001*	*WG-17390-031113-KL-003*
Sample Date:			*3/12/2013*	*3/11/2013*	*3/12/2013*	*3/12/2013*	*3/11/2013*	*3/11/2013*
Parameters	*NYSDEC TOGs Groundwater Guidance Value*	*Standard*						
Volatile Organic Compounds								
1,1,1-Trichloroethane	NC	5	1.0 U	1.0 U	1.0 U	1.0 U	**690**	2.5 U
1,1,2,2-Tetrachloroethane	NC	5	1.0 U	1.0 U	1.0 U	1.0 U	67 U	2.5 U
1,1,2-Trichloroethane	NC	1	1.0 U	1.0 U	1.0 U	1.0 U	67 U	2.5 U
1,1-Dichloroethane	NC	5	1.6	1.0 U	2.1	1.0 U	**2600**	**48**
1,1-Dichloroethene	NC	5	1.0 U	1.0 U	1.0 U	1.0 U	**2000**	2.5 U
1,2,4-Trichlorobenzene	NC	5	1.0 U	1.0 U	1.0 U	1.0 U	67 U	2.5 U
1,2,4-Trimethylbenzene	NC	5	-	-	-	-	-	-
1,2-Dibromo-3-chloropropane (DBCP)	NC	0.04	2.0 U	2.0 U	2.0 U	2.0 U	130 U	5.0 U
1,2-Dibromoethane (Ethylene dibromide)	NC	0.0006	1.0 U	1.0 U	1.0 U	1.0 U	67 U	2.5 U
1,2-Dichlorobenzene	NC	3	1.0 U	1.0 U	1.0 U	1.0 U	67 U	2.5 U
1,2-Dichloroethane	NC	0.6	1.0 U	1.0 U	1.0 U	1.0 U	67 U	2.5 U
1,2-Dichloropropane	NC	1	1.0 U	1.0 U	1.0 U	1.0 U	67 U	2.5 U
1,3,5-Trimethylbenzene	NC	5	-	-	-	-	-	-
1,3-Dichlorobenzene	NC	3	1.0 U	1.0 U	1.0 U	1.0 U	67 U	2.5 U
1,4-Dichlorobenzene	NC	3	1.0 U	1.0 U	1.0 U	1.0 U	67 U	2.5 U
1,4-Dioxane	NC	NC	50 U	50 U	50 U	50 U	3300 U	130 U
2-Butanone (Methyl ethyl ketone) (MEK)	50	NC	10 U	10 U	10 U	10 U	670 U	25 U
2-Hexanone	50	NC	10 U	10 U	10 U	10 U	670 U	25 U
2-Phenylbutane (sec-Butylbenzene)	NC	5	-	-	-	-	-	-
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	NC	NC	10 U	10 U	10 U	10 U	670 U	25 U
Acetone	50	NC	10 U	10 U	10 U	10 U	670 U	25 U
Benzene	NC	1	1.0 U	1.0 U	**1.1**	1.0 U	67 U	2.5 U
Bromodichloromethane	50	NC	1.0 U	1.0 U	1.0 U	1.0 U	67 U	2.5 U
Bromoform	50	NC	1.0 U	1.0 U	1.0 U	1.0 U	67 U	2.5 U
Bromomethane (Methyl bromide)	NC	5	1.0 U	1.0 U	1.0 U	1.0 U	67 U	2.5 U
Carbon disulfide	60	60	1.0 U	1.0 U	1.0 U	0.17 J	67 U	2.5 U
Carbon tetrachloride	NC	5	1.0 U	1.0 U	1.0 U	1.0 U	67 U	2.5 U
Chlorobenzene	NC	5	1.0 U	1.0 U	1.0 U	1.0 U	67 U	2.5 U
Chloroethane	NC	5	1.0 U	1.0 U	1.0 U	1.0 U	**26 J**	2.5 U
Chloroform (Trichloromethane)	NC	7	1.0 U	1.0 U	1.0 U	1.0 U	67 U	2.5 U
Chloromethane (Methyl chloride)	NC	5	1.0 U	1.0 U	1.0 U	1.0 U	67 U	2.5 U
cis-1,2-Dichloroethene	NC	5	1.0 U	1.0 U	1.0 U	1.0 U	**100**	2.5 U
cis-1,3-Dichloropropene	NC	NC	1.0 U	1.0 U	1.0 U	1.0 U	67 U	2.5 U
Cyclohexane	NC	NC	1.0 U	1.0 U	1.0 U	1.0 U	67 U	2.5 U
Cymene (p-Isopropyltoluene)	NC	5	-	-	-	-	-	-
Dibromochloromethane	50	NC	1.0 U	1.0 U	1.0 U	1.0 U	67 U	2.5 U
Dichlorodifluoromethane (CFC-12)	NC	5	1.0 U	1.0 U	1.0 U	1.0 U	67 U	4.7
Ethylbenzene	NC	5	1.0 U	1.0 U	1.0 U	1.0 U	67 U	2.5 U
Isopropyl benzene	NC	5	1.0 U	1.0 U	1.0 U	1.0 U	67 U	2.5 U
Methyl acetate	NC	NC	10 U	10 U	10 U	10 U	670 U	25 U
Methyl cyclohexane	NC	NC	1.0 U	1.0 U	1.0 U	1.0 U	67 U	2.5 U
Methyl tert butyl ether (MTBE)	10	NC	1.0 U	1.0 U	**27**	1.0 U	67 U	2.5 U
Methylene chloride	NC	5	1.0 U	1.0 U	1.0 U	1.0 U	83 U	2.5 U
Naphthalene	10	NC	-	-	-	-	-	-
N-Butylbenzene	NC	5	-	-	-	-	-	-
N-Propylbenzene	NC	5	-	-	-	-	-	-
Styrene	NC	5	1.0 U	1.0 U	1.0 U	1.0 U	67 U	2.5 U

TABLE 1

ANALYTICAL RESULTS SUMMARY - TCL VOC PARAMETERS
GROUNDWATER MONITORING
GENERAL MOTORS CORPORATION
TONAWANDA, NEW YORK
MARCH 2013

Location ID:			*MW-9*	*MW-101*	*MW-102*	*MW-103*	*MW-11*	*MW-12*
Sample Name:			*WG-17390-031213-KL-010*	*WG-17390-031113-KL-005*	*WG-17390-031213-KL-011*	*WG-17390-031213-KL-015*	*WG-17390-031113-KL-001*	*WG-17390-031113-KL-003*
Sample Date:			*3/12/2013*	*3/11/2013*	*3/12/2013*	*3/12/2013*	*3/11/2013*	*3/11/2013*
Parameters	*NYSDEC TOGs Groundwater Guidance Value*	*Standard*						
tert-Butylbenzene	NC	5	-	-	-	-	-	-
Tetrachloroethene	NC	5	1.0 U	1.0 U	1.0 U	1.0 U	67 U	2.5 U
Toluene	NC	5	1.0 U	1.0 U	1.0 U	1.0 U	67 U	2.5 U
trans-1,2-Dichloroethene	NC	5	1.0 U	1.0 U	1.0 U	1.0 U	67 U	2.5 U
trans-1,3-Dichloropropene	NC	NC	1.0 U	1.0 U	1.0 U	1.0 U	67 U	2.5 U
Trichloroethene	NC	5	1.0 U	1.0 U	1.0 U	1.0 U	**20 J**	2.5 U
Trichlorofluoromethane (CFC-11)	NC	5	1.0 U	1.0 U	1.0 U	1.0 U	67 U	2.5 U
Trifluorotrichloroethane (Freon 113)	NC	5	1.0 U	1.0 U	1.0 U	1.0 U	67 U	2.5 U
Vinyl chloride	NC	2	1.0 U	1.0 U	1.0 U	1.0 U	67 U	2.5 U
Xylenes (total)	NC	NC	2.0 U	2.0 U	2.0 U	2.0 U	130 U	5.0 U
Dissolved Gases								
Ethane	NC	NC	-	-	-	-	0.42 J	0.50 U
Methane	NC	NC	-	-	-	-	59	5.8
Wet Chemistry								
Alkalinity, total (as CaCO3)	NC	NC	-	-	-	-	470	450
Ammonia	NC	2	-	-	-	-	2.0 U	0.85 J
Biochemical oxygen demand (BOD)	NC	NC	-	-	-	-	2.0 U	2.0 U
Chemical oxygen demand (COD)	NC	NC	-	-	-	-	99	25
Nitrate (as N)	NC	10	-	-	-	-	0.10 U	0.15
Nitrite (as N)	NC	1	-	-	-	-	2.5 U	1.0 U
Phosphate (ortho as PO4)	NC	NC	-	-	-	-	0.10 U	0.10 U
Sulfate	NC	250	-	-	-	-	**2600**	**1100**
Sulfide	0.05	NC	-	-	-	-	1.0 U	1.0 U
Total organic carbon (TOC)	NC	NC	-	-	-	-	4.8	6.1

Micrograms per Liter
Milligrams per Liter
Estimated
Not present at or above the associated value.
Exceeds Criteria

TABLE 2

ANALYTICAL RESULTS SUMMARY- STARS
GROUNDWATER MONITORING
GENERAL MOTORS CORPORATION
TONAWANDA, NEW YORK
MARCH 2013

Location ID:				*MW-2*	*MW-2*	*MW-2*	*MW-2*
Sample Name:				*WG-30264-103108-DJT-006*	*WG-017390-101909-002*	*WG-17390-032612-KL-01*	*WG-17390-031113-KL-002*
Sample Date:				*10/31/2008*	*10/19/2009*	*3/26/2012*	*3/11/2013*
		NYSDEC TOGs Groundwater [1]					
Parameters	*Units*	*Guidance Value*	*Standard*				
Volatile Organic Compounds							
1,2,4-Trimethylbenzene	ug/L		5	2500 U	**19 J**	830 U	330 U
1,3,5-Trimethylbenzene	ug/L		5	2500 U	420 U	830 U	330 U
2-Phenylbutane (sec-Butylbenzene)	ug/L		5	2500 U	420 U	830 U	330 U
Benzene	ug/L		1	**190 J**	**220**	**270 J**	**190 J**
Cymene (p-Isopropyltoluene)	ug/L		5	2500 U	420 U	830 U	330 U
Ethylbenzene	ug/L		5	**93 J**	**86 J**	**160 J**	**90 J**
Isopropyl benzene	ug/L		5	2500 U	420 U	830 U	330 U
Methyl tert butyl ether (MTBE)	ug/L	10		5000 U	830 U	4200 U	330 U
Naphthalene	ug/L	10		5000 U	830 U	830 U	330 U
N-Butylbenzene	ug/L	5		2500 U	420 U	830 U	330 U
N-Propylbenzene	ug/L	5		2500 U	420 U	830 U	330 U
tert-Butylbenzene	ug/L	5		2500 U	420 U	830 U	330 U
Toluene	ug/L	5		**120 J**	**120 J**	**180 J**	**220 J**
Xylenes (total)	ug/L			600 J	620	680 J	450 J

Notes:

[1] NYSDEC TOGs Groundwater Standards and Guidance - NYSDEC Division of Water Technical and Operational Guidance Series (1.1.1) Ambient Water Quality Standards and Guidance Values, dated June 1998 and addenda.

220 Value exceeds criteria.

U Not present at or above the associated value.

J Estimated.

ug/L Micrograms per liter.

TABLE 2

ANALYTICAL RESULTS SUMMARY- STARS
GROUNDWATER MONITORING
GENERAL MOTORS CORPORATION
TONAWANDA, NEW YORK
MARCH 2013

Location ID:				*MW-3*	*MW-3*	*MW-3*	*MW-3*
Sample Name:				*WG-30264-103108-DJT-003*	*WG-017390-101909-005*	*WG-17390-032712-KL-08*	*WG-17390-031213-KL-012*
Sample Date:				*10/31/2008*	*10/19/2009*	*3/27/2012*	*3/12/2013*
		NYSDEC TOGs Groundwater [1]					
Parameters	***Units***	***Guidance Value***	***Standard***				
Volatile Organic Compounds							
1,2,4-Trimethylbenzene	ug/L		5	20 U	5.0 U	10 U	13 U
1,3,5-Trimethylbenzene	ug/L		5	20 U	5.0 U	10 U	13 U
2-Phenylbutane (sec-Butylbenzene)	ug/L		5	20 U	5.0 U	10 U	13 U
Benzene	ug/L		1	**12**	**3.9**	**6.1 J**	**4.2 J**
Cymene (p-Isopropyltoluene)	ug/L		5	20 U	5.0 U	10 U	13 U
Ethylbenzene	ug/L		5	20 U	5.0 U	10 U	13 U
Isopropyl benzene	ug/L		5	20 U	0.21 J	10 U	13 U
Methyl tert butyl ether (MTBE)	ug/L	10		**130**	**160**	**300**	**360**
Naphthalene	ug/L	10		40 U	10 U	10 U	13 U
N-Butylbenzene	ug/L		5	20 U	5.0 U	10 U	13 U
N-Propylbenzene	ug/L		5	20 U	5.0 U	10 U	13 U
tert-Butylbenzene	ug/L		5	20 U	5.0 U	10 U	13 U
Toluene	ug/L		5	20 U	5.0 U	10 U	2.0 J
Xylenes (total)	ug/L			20 U	5.0 U	20 U	25 U

NYSDEC TOGs Groundwater Standards and Guidance - NYSDEC Division of Water Techni
Operational Guidance Series (1.1.1) Ambient Water Quality Standards and Guidance Values,
June 1998 and addenda.
Value exceeds criteria.
Not present at or above the associated value.
Estimated.
Micrograms per liter.

TABLE 2

ANALYTICAL RESULTS SUMMARY- STARS
GROUNDWATER MONITORING
GENERAL MOTORS CORPORATION
TONAWANDA, NEW YORK
MARCH 2013

Location ID:				*MW-4*	*MW-4*	*MW-4*	*MW-4*
Sample Name:				*WG-30264-103108-DJT-002*	*WG-017390-101909-006*	*WG-17390-032712-KL-10*	*WG-17390-031213-KL-013*
Sample Date:				*10/31/2008*	*10/19/2009*	*3/27/2012*	*3/12/2013*
		NYSDEC TOGs Groundwater [1]					
Parameters	***Units***	***Guidance Value***	***Standard***				
Volatile Organic Compounds							
1,2,4-Trimethylbenzene	ug/L		5	5.0 U	5.0 U	1.0 U	1.0 U
1,3,5-Trimethylbenzene	ug/L		5	5.0 U	5.0 U	1.0 U	1.0 U
2-Phenylbutane (sec-Butylbenzene)	ug/L		5	5.0 U	5.0 U	1.0 U	1.0 U
Benzene	ug/L		1	1.0 U	1.0 U	1.0 U	1.0 U
Cymene (p-Isopropyltoluene)	ug/L		5	5.0 U	5.0 U	1.0 U	1.0 U
Ethylbenzene	ug/L		5	5.0 U	5.0 U	1.0 U	1.0 U
Isopropyl benzene	ug/L		5	5.0 U	5.0 U	1.0 U	1.0 U
Methyl tert butyl ether (MTBE)	ug/L	10		8.9 J	**12**	**18**	**14**
Naphthalene	ug/L	10		10 U	10 U	1.0 U	1.0 U
N-Butylbenzene	ug/L		5	5.0 U	5.0 U	1.0 U	1.0 U
N-Propylbenzene	ug/L		5	5.0 U	5.0 U	1.0 U	1.0 U
tert-Butylbenzene	ug/L		5	5.0 U	5.0 U	1.0 U	1.0 U
Toluene	ug/L		5	5.0 U	5.0 U	1.0 U	1.0 U
Xylenes (total)	ug/L			5.0 U	5.0 U	2.0 U	2.0 U

NYSDEC TOGs Groundwater Standards and Guidance - NYSDEC Division of Water Techni
Operational Guidance Series (1.1.1) Ambient Water Quality Standards and Guidance Values,
June 1998 and addenda.
Value exceeds criteria.
Not present at or above the associated value.
Estimated.
Micrograms per liter.

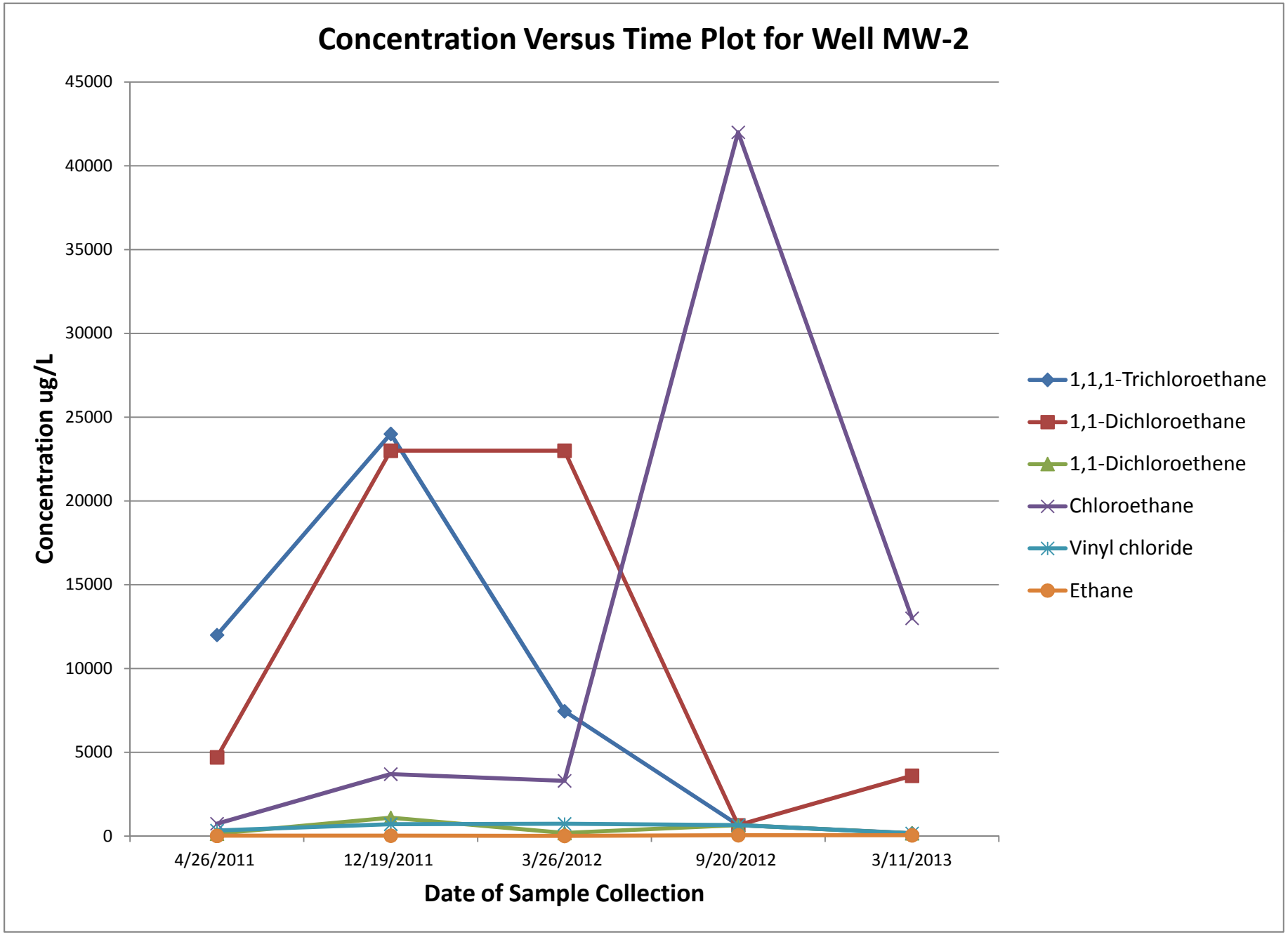
TABLE 2

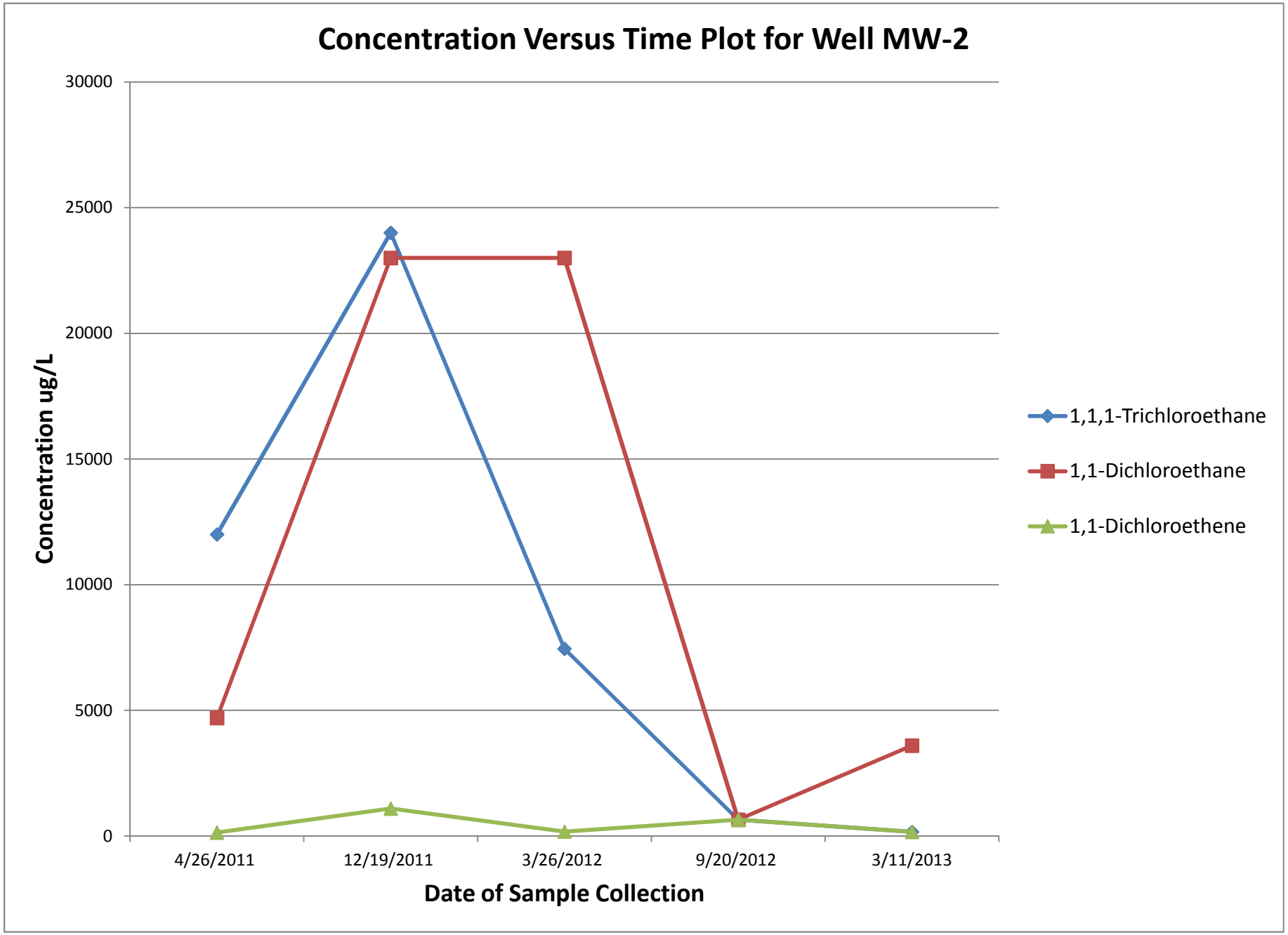
ANALYTICAL RESULTS SUMMARY- STARS
GROUNDWATER MONITORING
GENERAL MOTORS CORPORATION
TONAWANDA, NEW YORK
MARCH 2013

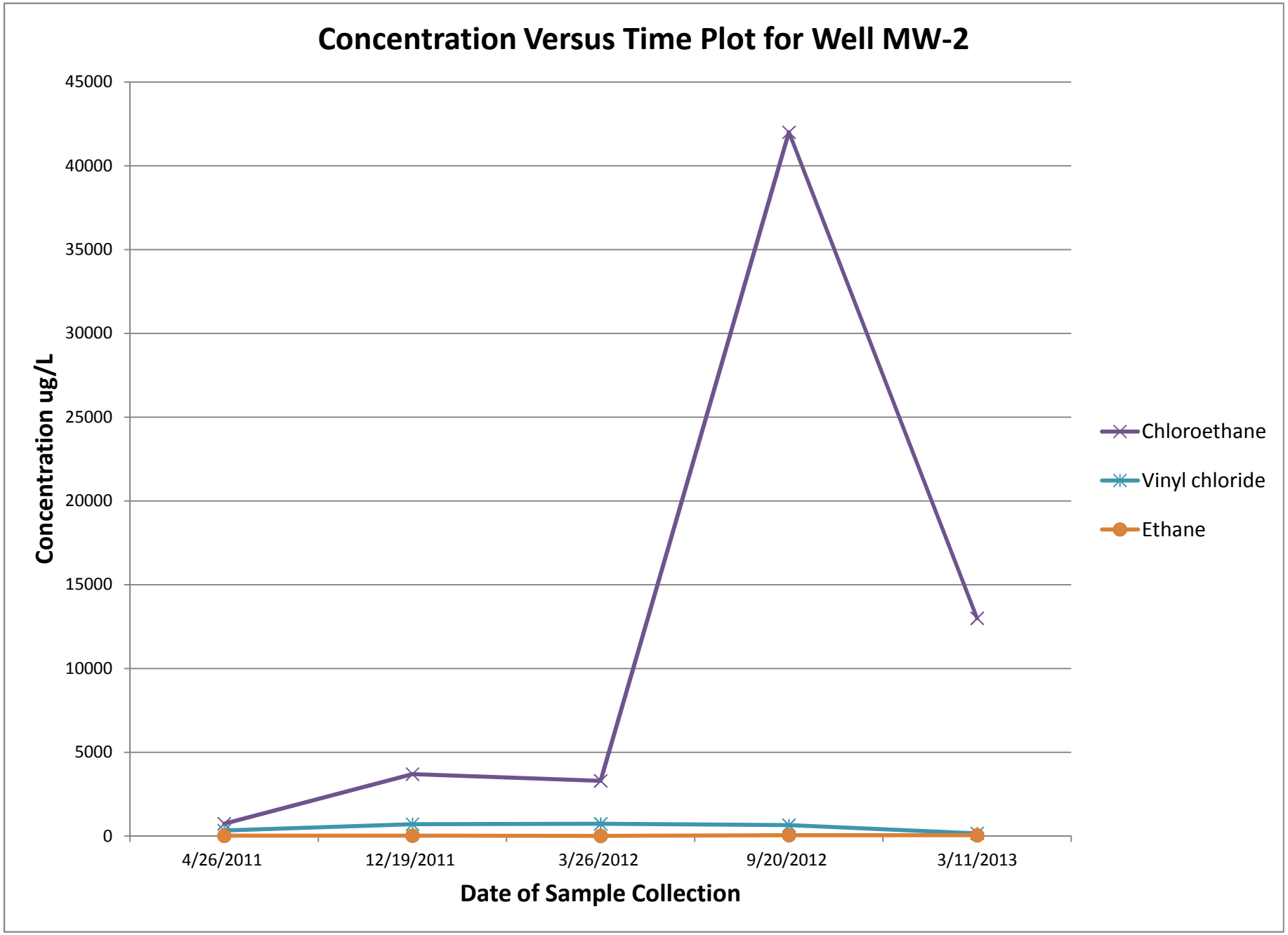
Location ID:			*MW-5*	*MW-5*	*MW-5*	*MW-5*
Sample Name:			*WG-30264-103108-DJT-001*	*WG-017390-101909-007*	*WG-17390-032712-KL-12*	*WG-17390-031213-KL-014*
Sample Date:			*10/31/2008*	*10/19/2009*	*3/27/2012*	*3/12/2013*
		NYSDEC TOGs Groundwater [1]				
Parameters	*Units*	*Guidance Value* *Standard*				
Volatile Organic Compounds						
1,2,4-Trimethylbenzene	ug/L	5	5.0 U	5.0 U	1.0 U	1.0 U
1,3,5-Trimethylbenzene	ug/L	5	5.0 U	5.0 U	1.0 U	1.0 U
2-Phenylbutane (sec-Butylbenzene)	ug/L	5	5.0 U	5.0 U	1.0 U	1.0 U
Benzene	ug/L	1	1.0 U	1.0 U	0.38 J	1.0 U
Cymene (p-Isopropyltoluene)	ug/L	5	5.0 U	5.0 U	1.0 U	1.0 U
Ethylbenzene	ug/L	5	5.0 U	5.0 U	1.0 U	1.0 U
Isopropyl benzene	ug/L	5	5.0 U	5.0 U	1.0 U	1.0 U
Methyl tert butyl ether (MTBE)	ug/L	10	8.8 J	7.3 J	4.3 J	6.9
Naphthalene	ug/L	10	10 U	10 U	1.0 U	1.0 U
N-Butylbenzene	ug/L	5	5.0 U	5.0 U	1.0 U	1.0 U
N-Propylbenzene	ug/L	5	5.0 U	5.0 U	1.0 U	1.0 U
tert-Butylbenzene	ug/L	5	5.0 U	5.0 U	1.0 U	1.0 U
Toluene	ug/L	5	5.0 U	5.0 U	1.9	1.0 U
Xylenes (total)	ug/L		5.0 U	5.0 U	0.93 J	2.0 U

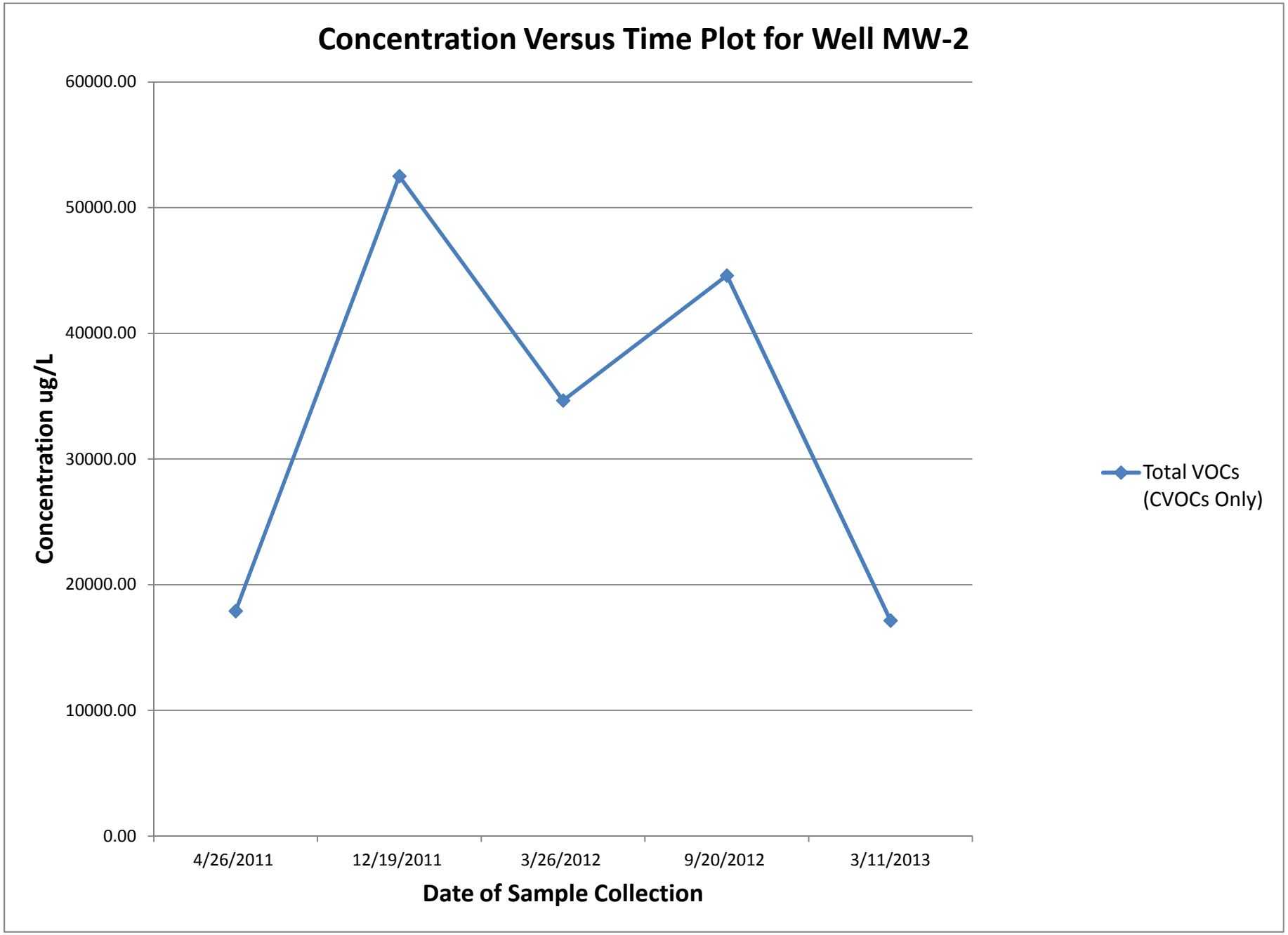
NYSDEC TOGs Groundwater Standards and Guidance - NYSDEC Division of Water Techni
Operational Guidance Series (1.1.1) Ambient Water Quality Standards and Guidance Values,
June 1998 and addenda.
Value exceeds criteria.
Not present at or above the associated value.
Estimated.
Micrograms per liter.

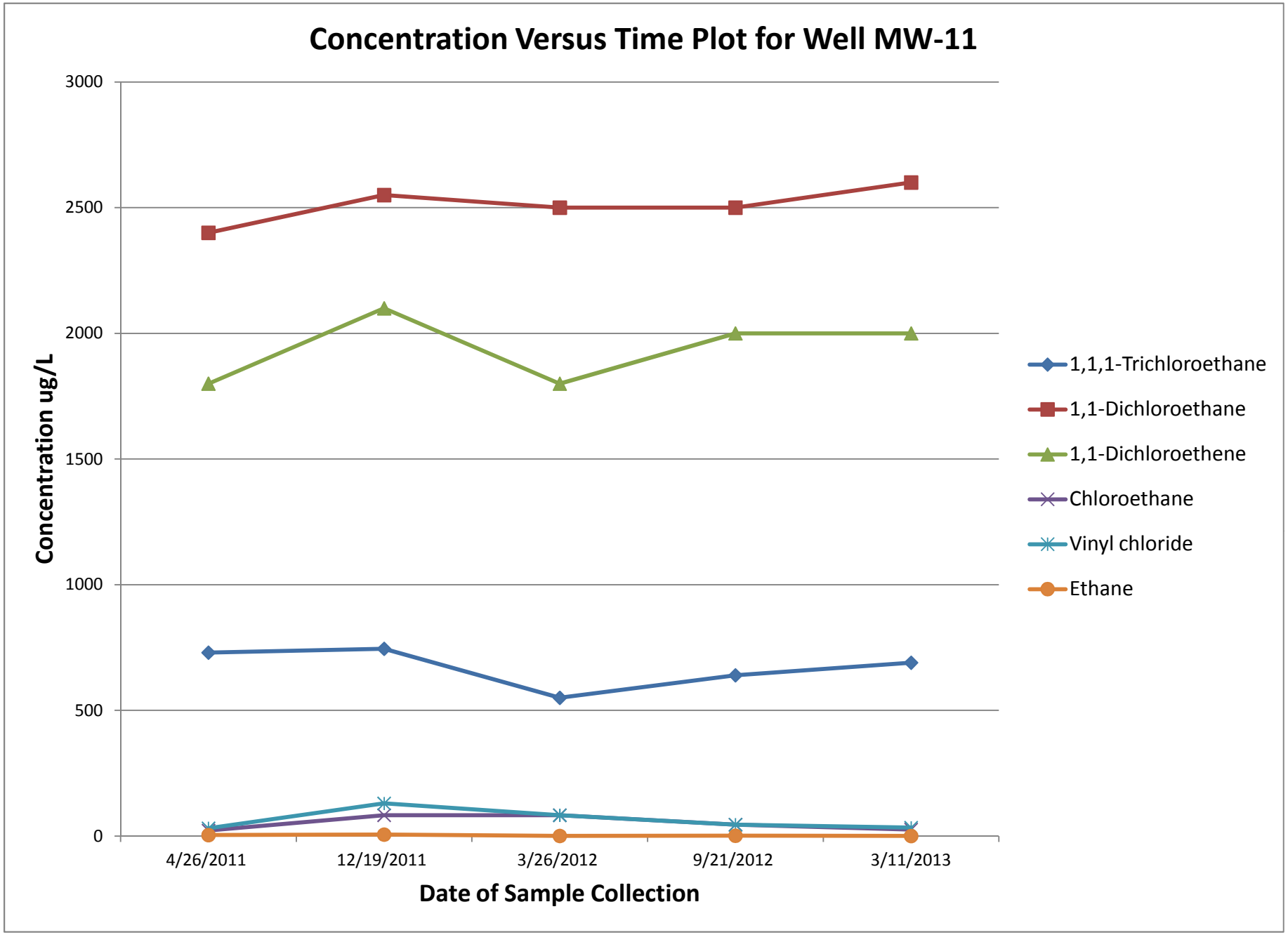
ATTACHMENT 1

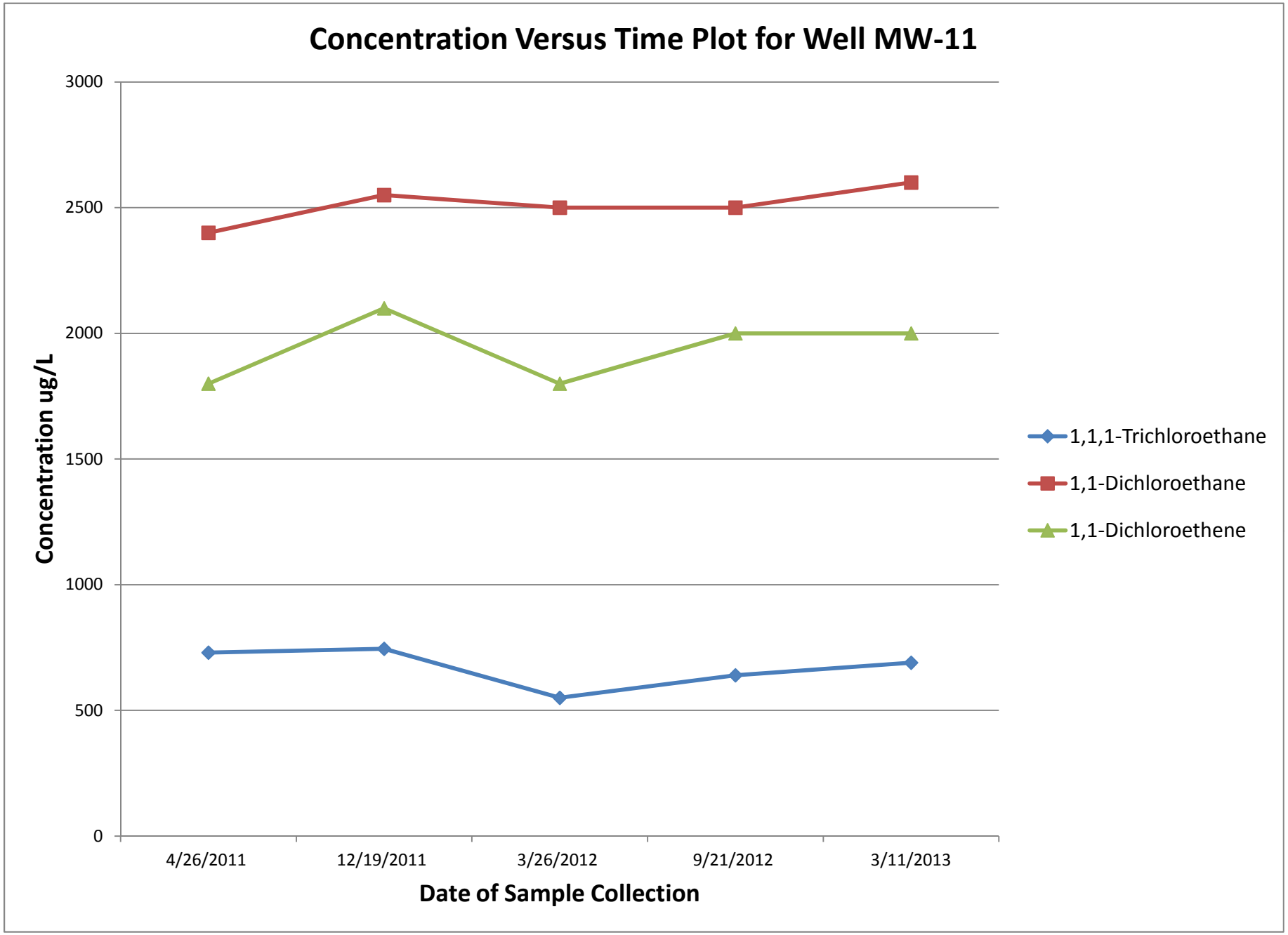

Concentration Versus Time Plot for Well MW-2
45000
40000
35000
30000
25000
20000
15000
10000
5000
0
Concentration ug/L
4/26/2011
12/19/2011
3/26/2012
9/20/2012
3/11/2013
Date of Sample Collection
1,1,1-Trichloroethane
1,1-Dichloroethane
1,1-Dichloroethene
Chloroethane
Vinyl chloride
Ethane

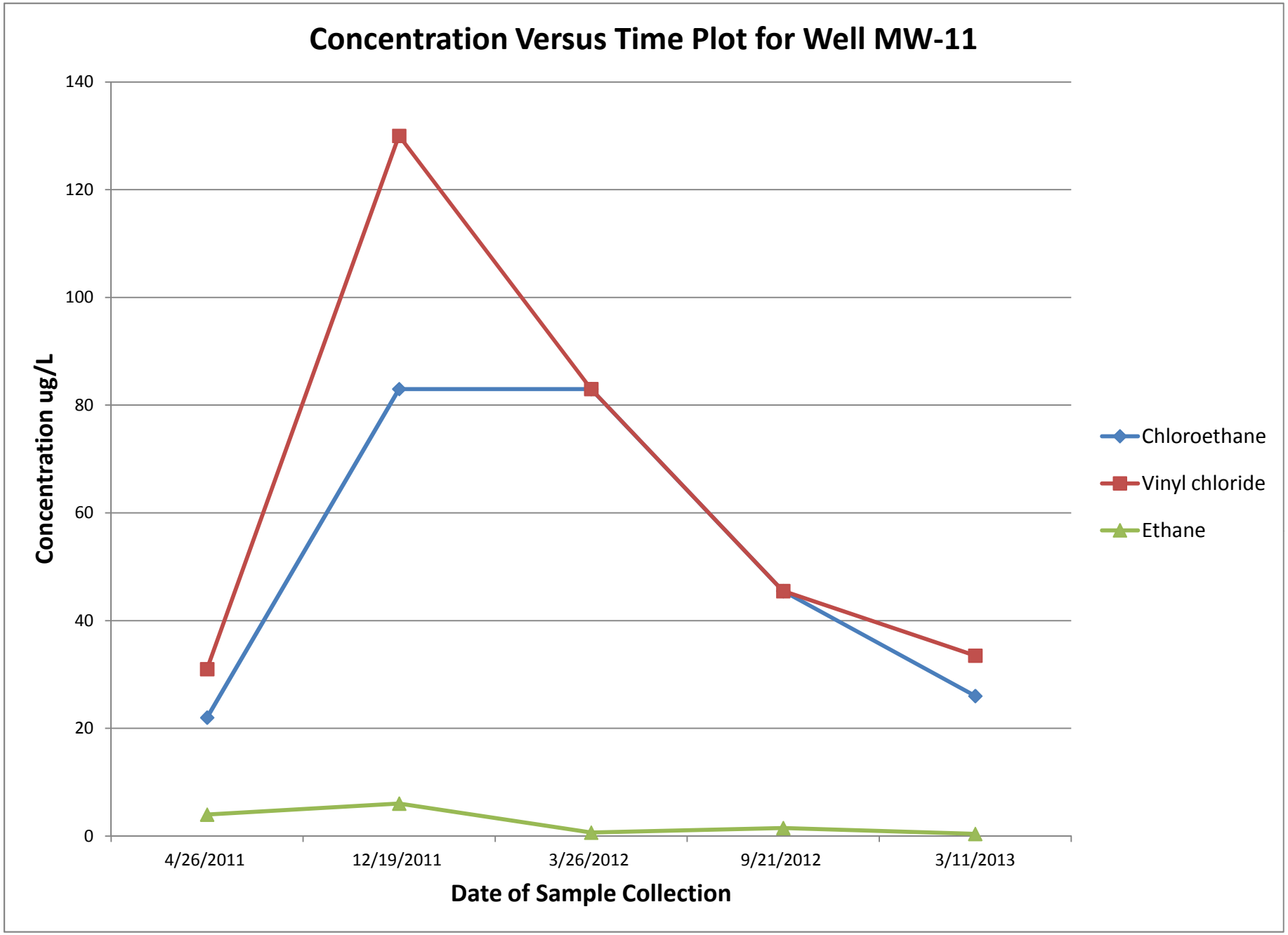

Concentration Versus Time Plot for Well MW-2
30000
25000
20000
15000
10000
5000
0
Concentration ug/L
4/26/2011
12/19/2011
3/26/2012
9/20/2012
3/11/2013
Date of Sample Collection
1,1,1-Trichloroethane
1,1-Dichloroethane
1,1-Dichloroethene

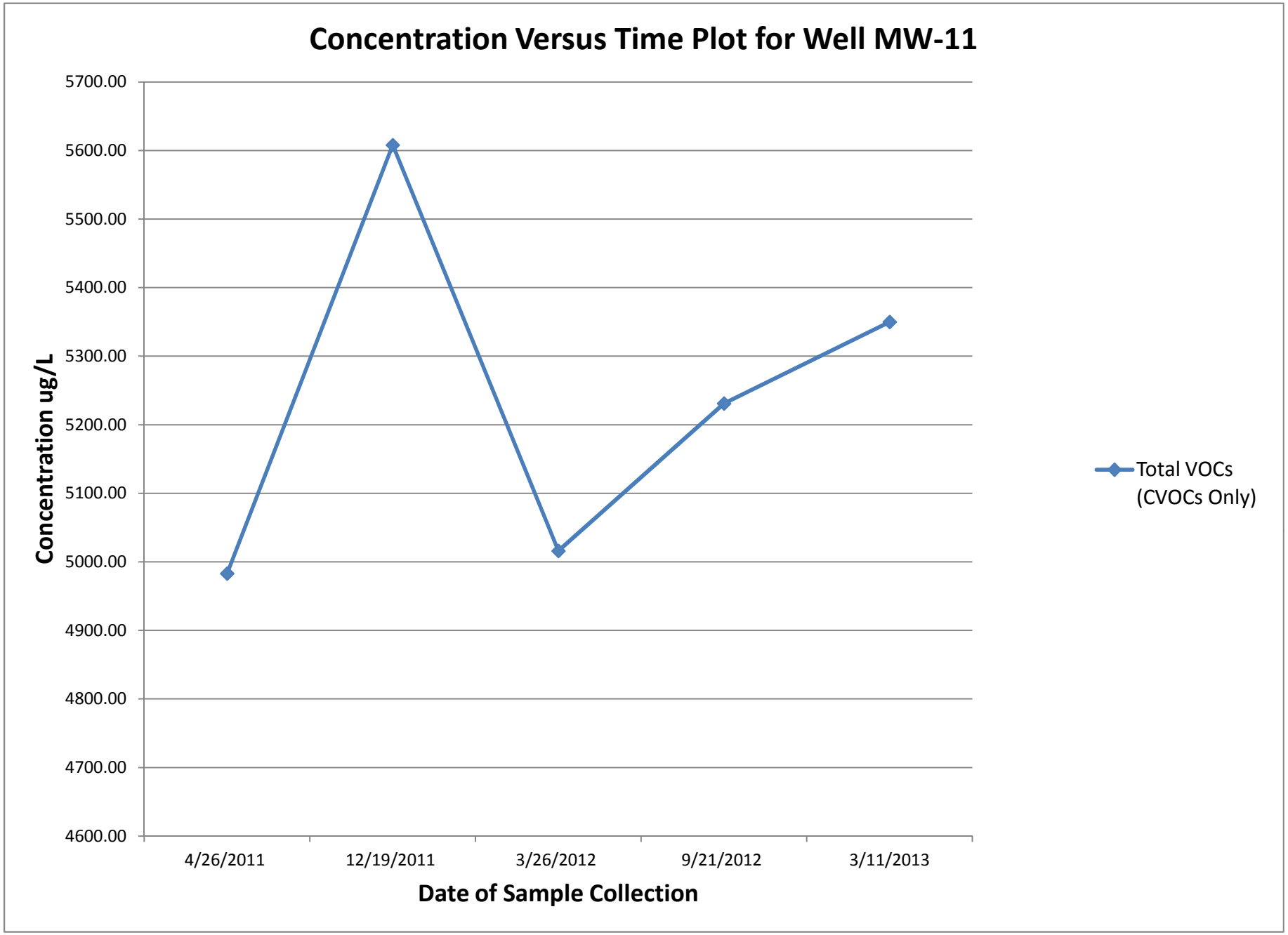

Concentration Versus Time Plot for Well MW-2
45000
40000
35000
30000
25000
20000
15000
10000
5000
0
Concentration ug/L
4/26/2011
12/19/2011
3/26/2012
9/20/2012
3/11/2013
Date of Sample Collection
Chloroethane
Vinyl chloride
Ethane

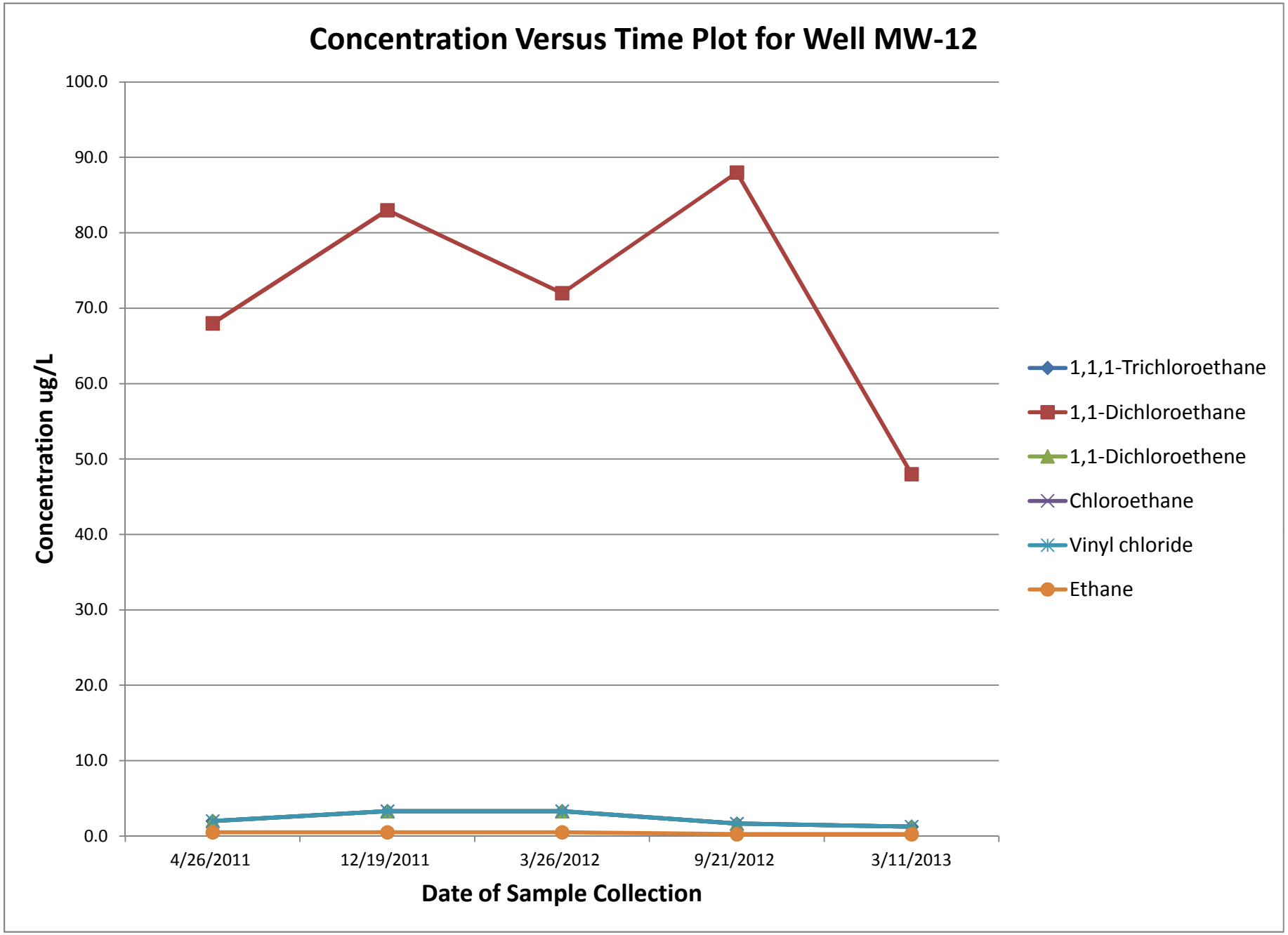

Concentration Versus Time Plot for Well MW-2
60000.00
50000.00
40000.00
30000.00
20000.00
10000.00
0.00
Concentration ug/L
4/26/2011
12/19/2011
3/26/2012
9/20/2012
3/11/2013
Date of Sample Collection
Total VOCs
(CVOCs Only)

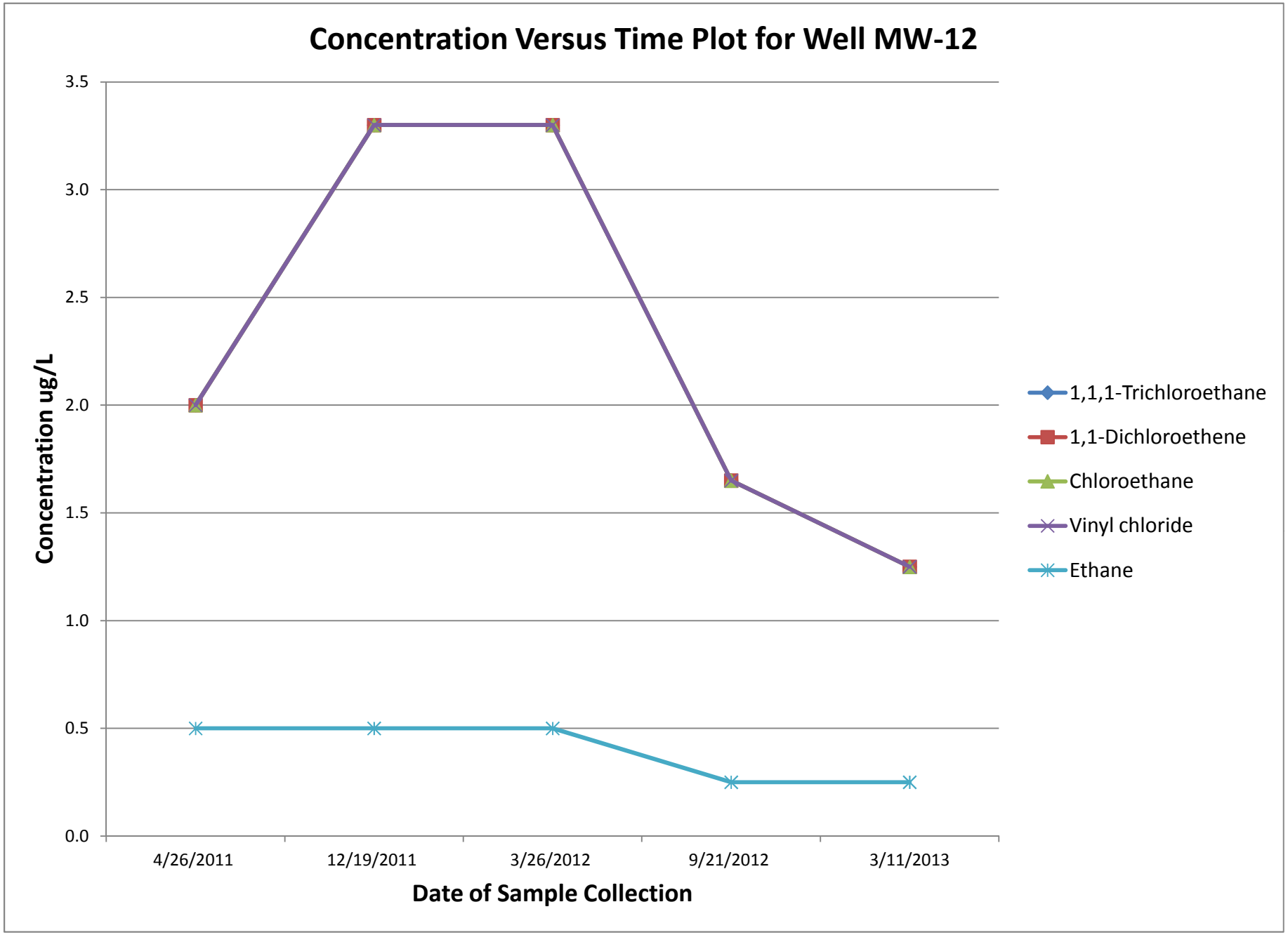

Concentration Versus Time Plot for Well MW-11
3000
2500
2000
1500
1000
500
0
Concentration ug/L
4/26/2011
12/19/2011
3/26/2012
9/21/2012
3/11/2013
Date of Sample Collection
1,1,1-Trichloroethane
1,1-Dichloroethane
1,1-Dichloroethene
Chloroethane
Vinyl chloride
Ethane

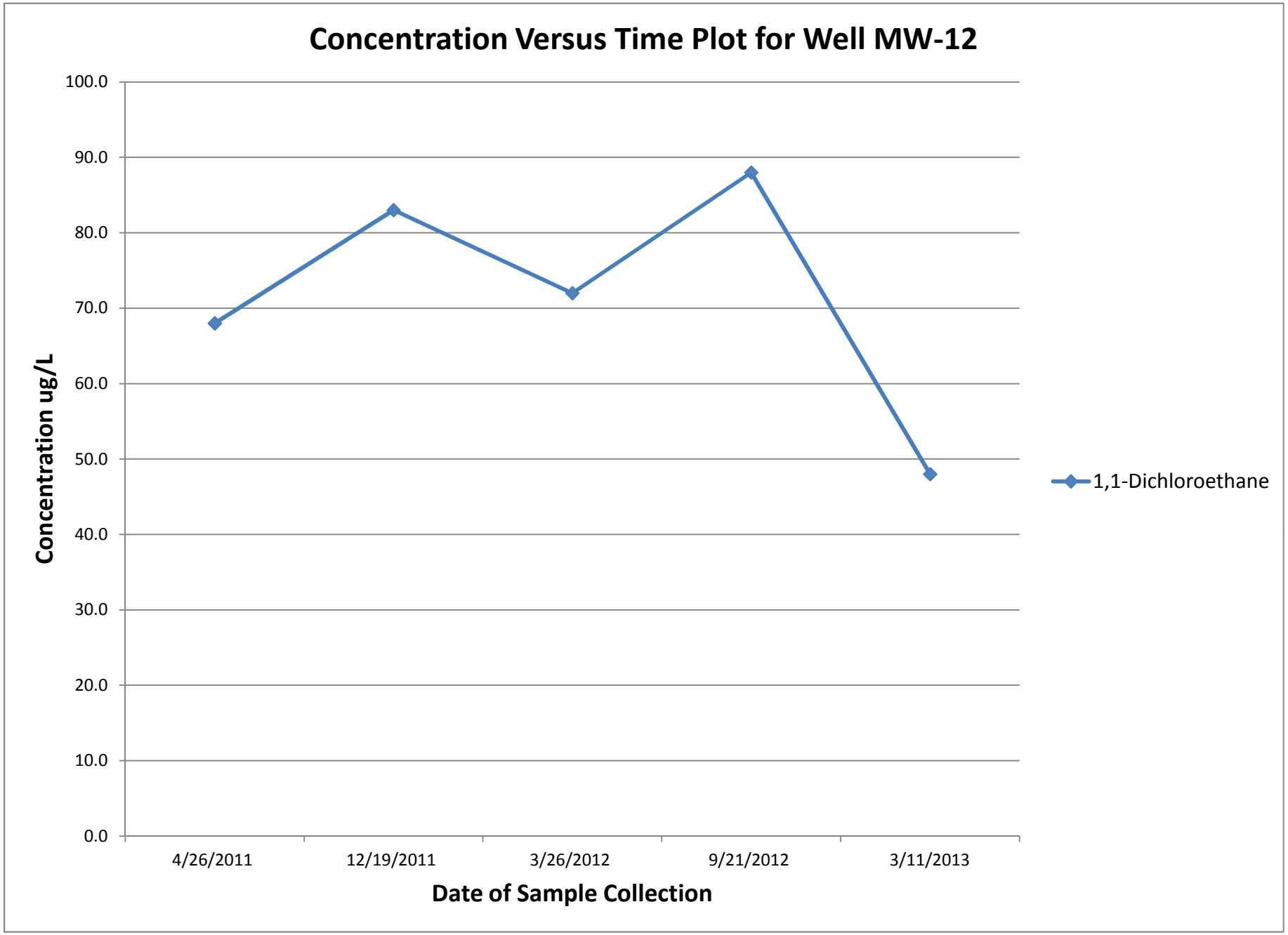

Concentration Versus Time Plot for Well MW-11
3000
2500
2000
1500
1000
500
0
Concentration ug/L
4/26/2011
12/19/2011
3/26/2012
9/21/2012
3/11/2013
Date of Sample Collection
1,1,1-Trichloroethane
1,1-Dichloroethane
1,1-Dichloroethene

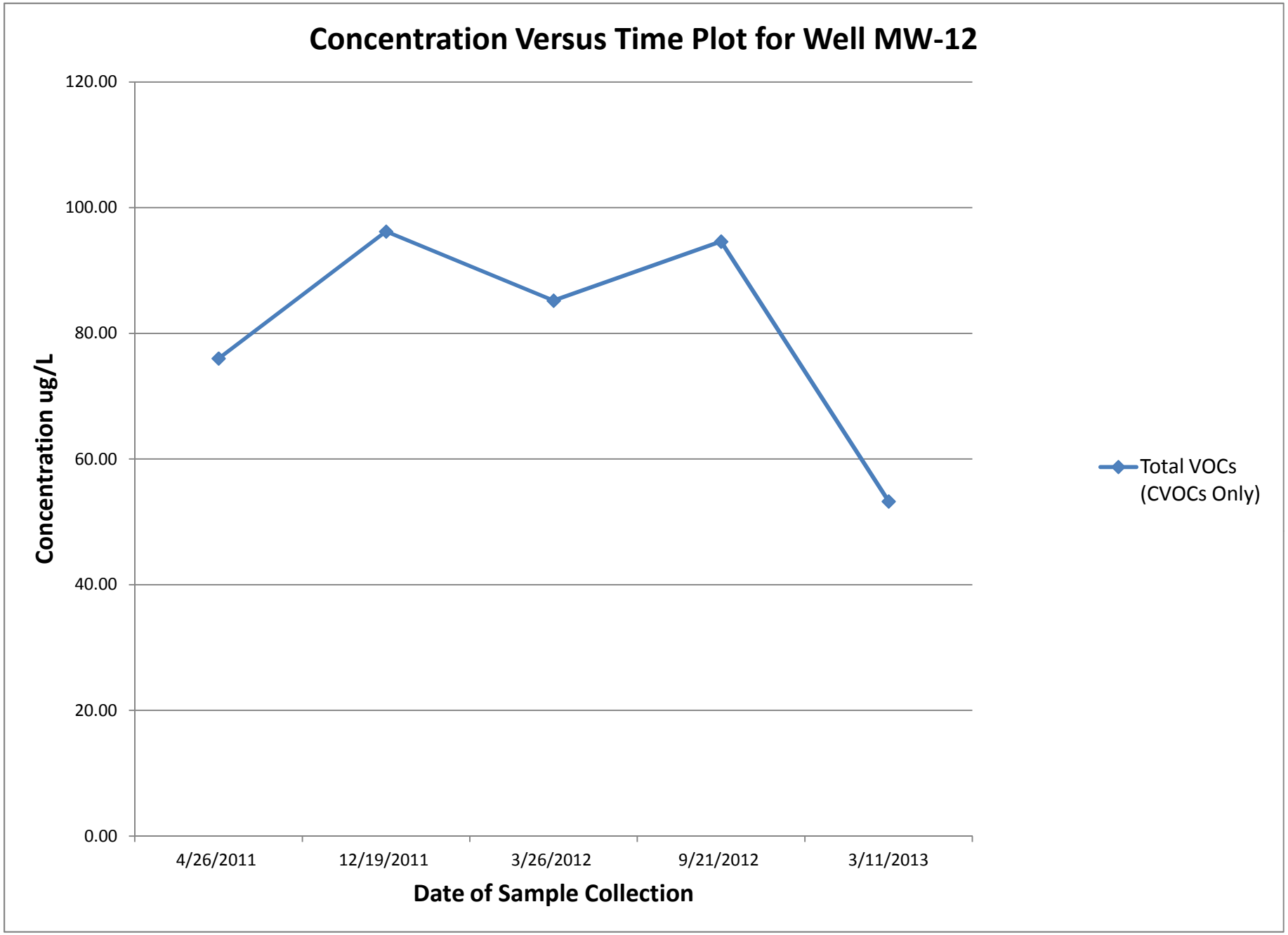

Concentration Versus Time Plot for Well MW-11
140
120
100
80
60
40
20
0
Concentration ug/L
4/26/2011
12/19/2011
3/26/2012
9/21/2012
3/11/2013
Date of Sample Collection
Chloroethane
Vinyl chloride
Ethane


Concentration Versus Time Plot for Well MW-11
5700.00
5600.00
5500.00
5400.00
5300.00
5200.00
5100.00
5000.00
4900.00
4800.00
4700.00
4600.00
Concentration ug/L
4/26/2011
12/19/2011
3/26/2012
9/21/2012
3/11/2013
Date of Sample Collection
Total VOCs
(CVOCs Only)


Concentration Versus Time Plot for Well MW-12
100.0
90.0
80.0
70.0
60.0
50.0
40.0
30.0
20.0
10.0
0.0
Concentration ug/L
4/26/2011
12/19/2011
3/26/2012
9/21/2012
3/11/2013
Date of Sample Collection
1,1,1-Trichloroethane
1,1-Dichloroethane
1,1-Dichloroethene
Chloroethane
Vinyl chloride
Ethane


Concentration Versus Time Plot for Well MW-12
Concentration ug/L
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
4/26/2011
12/19/2011
3/26/2012
9/21/2012
3/11/2013
Date of Sample Collection
1,1,1-Trichloroethane
1,1-Dichloroethene
Chloroethane
Vinyl chloride
Ethane


Concentration Versus Time Plot for Well MW-12
100.0
90.0
80.0
70.0
60.0
50.0
40.0
30.0
20.0
10.0
0.0
Concentration ug/L
4/26/2011
12/19/2011
3/26/2012
9/21/2012
3/11/2013
Date of Sample Collection
1,1-Dichloroethane


Concentration Versus Time Plot for Well MW-12
120.00
100.00
80.00
60.00
40.00
20.00
0.00
Concentration ug/L
4/26/2011
12/19/2011
3/26/2012
9/21/2012
3/11/2013
Date of Sample Collection
Total VOCs
(CVOCs Only)