CONESTOGA-ROVERS
& ASSOCIATES

285 Delaware Avenue, Suite 500
Buffalo, NY 14202
Telephone: (716) 856-2142 Fax: (716) 856-2160
http://www.craworld.com

December 4, 2009 Reference No.017390

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

Dear Mr. May:

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

Conestoga-Rovers & Associates (CRA) has prepared this Semi-Annual Groundwater Monitoring Report on behalf of the General Motors Company (GM) in accordance with the Sampling and Analysis Plan (SAP) for Monitored Natural Attenuation – Endoline Area Chlorinated Solvent Plume, dated August 2008. New York State Department of Environmental Conservation (NYSDEC) approved the SAP on October 8, 2008. The SAP specifies the groundwater sample collection schedule, sampling methods, laboratory analysis, and reporting schedule for the MNA program. In addition, NYSDEC requested that sampling be conducted for gasoline constituents at MW-2 through MW-5 located adjacent to the chlorinated solvent plume on an annual basis in order to evaluate current conditions related to Petroleum Spill No. 9875474.

The third round of semi-annual groundwater monitoring was completed on October 19, 2009. All samples were sent to TestAmerica Laboratories of North Canton, Ohio for analysis. Groundwater samples were collected from MW-2, MW-11, and MW-12 and analyzed for Target Compound List (TCL) volatile organic compounds (VOCs) and the following natural attenuation parameters:

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

Groundwater samples were collected from perimeter monitoring wells MW-1, MW-9, MW-101, MW-102, and MW-103 and analyzed for TCL VOCs to monitor for potential plume migration. Additionally, groundwater samples were collected from monitoring wells MW-2, MW-3, MW-4, and MW-5 and analyzed for the NYSDEC Spill Technology and Remediation Series (STARS) Memo #1 list of petroleum-related VOC compounds to monitor the conditions in the area related to residual petroleum impacts.

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Monitoring Well locations are shown on Figure 1. Analytical results for the MNA program are summarized on Table 1 while STARs sampling results are summarized on Table 2.

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.

No conclusions are being made at this time based on these results. As stated in the approved SAP, CRA will evaluate the effectiveness of the MNA program after two years (four rounds of semiannual sampling). An MNA 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 have any questions or comments.

Yours truly,

CONESTOGA-ROVERS & ASSOCIATES

Katherine B. Galanti
Project Manager

KBG/ck/017390-May-002

Encl.

c.c.: M. Antonetti – GM
J. Hartnett – GM
K. Malinowski – CRA

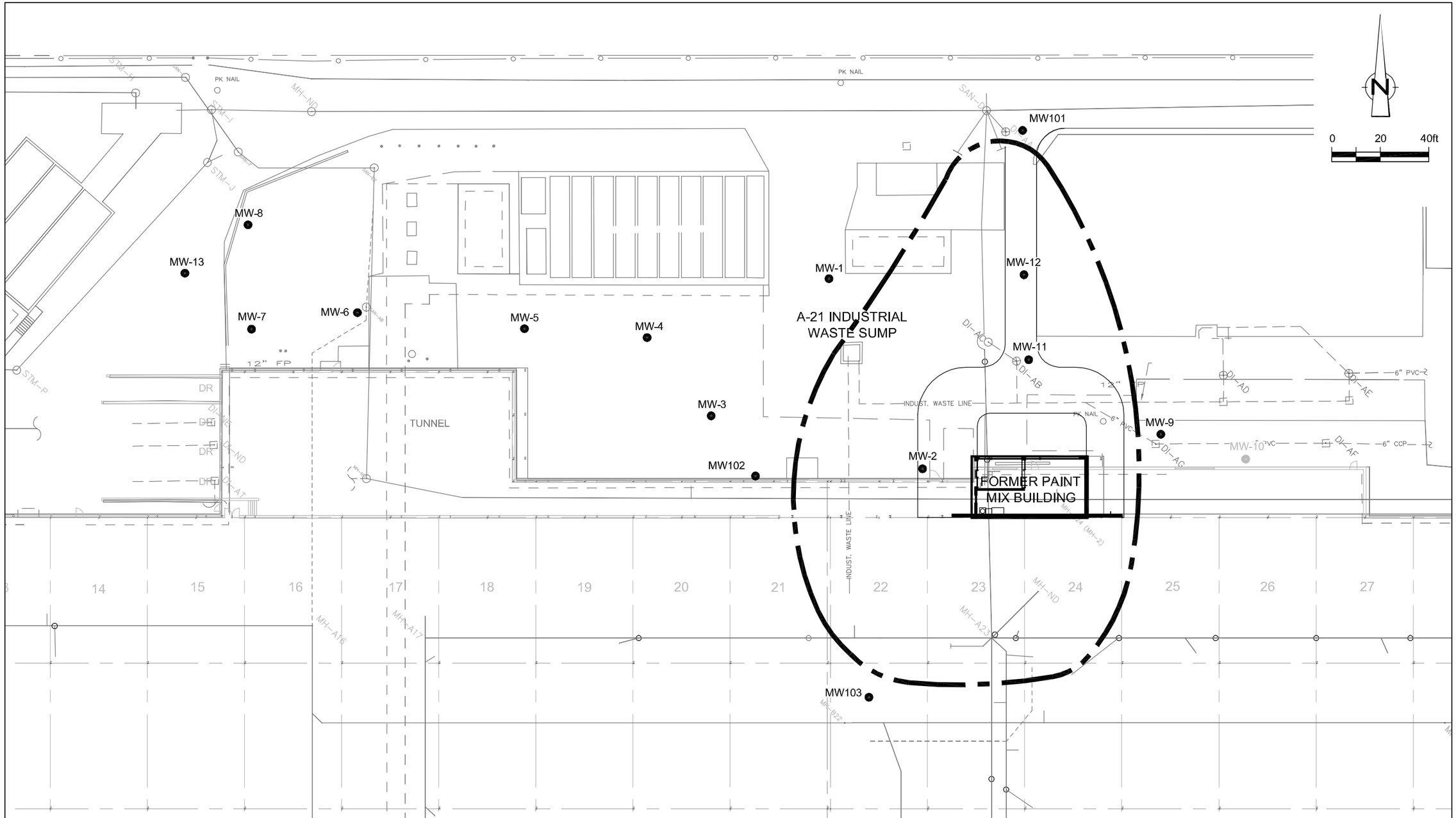

figure 1

LEGEND

MW-1 ● MONITORING WELL LOCATION

EXTENT OF GROUNDWATER CONTAMINATION

EXTENT OF GROUNDWATER CONTAMINATION AND MONITORING WELL LOCATIONS
ENDOLINE AREA CHLORINATED SOLVENT PLUME MNA
GM POWERTRAIN GROUP TONAWANDA ENGINE PLANT
Tonawanda, New York

17390-03(MAY002)GN-BU001 NOV 30/2009

TABLE 1

ENDOLINE AREA CHLORINATED SOLVENT MNA SEMI-ANNUAL SAMPLING
OCTOBER 2009
GM TONAWANDA ENGINE PLANT
TONAWANDA, NEW YORK

		Location ID:	*MW-1*	*MW-1*	*MW-2*	*MW-9*	*MW-101*	*MW-102*
		Sample Name:	*WG-017390-101909-008*	*WG-017390-101909-009*	*WG-017390-101909-002*	*WG-017390-101909-011*	*WG-017390-101909-010*	*WG-017390-101909-004*
		Sample Date:	*10/19/2009*	*10/19/2009 (Duplicate)*	*10/19/2009*	*10/19/2009*	*10/19/2009*	*10/19/2009*
Parameters	***Units***	***NYS TOGs***						
Volatile Organic Compounds								
1,1,1-Trichloroethane	ug/L	5	1.0 U	1.0 U	**1100**	1.0 U	0.31 J	1.0 U
1,1,2,2-Tetrachloroethane	ug/L	5	1.0 U	1.0 U	710 U	1.0 U	1.0 U	1.0 U
1,1,2-Trichloroethane	ug/L	1	1.0 U	1.0 U	710 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethane	ug/L	5	1.0 U	1.0 U	**25000**	2.8	1.0 U	2.7
1,1-Dichloroethene	ug/L	5	1.0 U	1.0 U	710 U	1.0 U	1.0 U	1.0 U
1,2-Dichloroethane	ug/L	0.6	1.0 U	1.0 U	710 U	1.0 U	1.0 U	1.0 U
1,2-Dichloroethene (total)	ug/L	5	2.0 U	2.0 U	1400 U	2.0 U	2.0 U	2.0 U
1,2-Dichloropropane	ug/L	1	1.0 U	1.0 U	710 U	1.0 U	1.0 U	1.0 U
1,4-Dioxane	ug/L	NC	50 U	50 U	36000 U	50 U	50 U	50 U
2-Butanone (Methyl Ethyl Ketone)	ug/L	50	10 U	10 U	7100 U	10 U	10 U	10 U
2-Hexanone	ug/L	50	10 U	10 U	7100 U	10 U	10 U	10 U
4-Methyl-2-Pentanone (Methyl Isobutyl Ketone)	ug/L	NC	10 U	10 U	7100 U	10 U	10 U	10 U
Acetone	ug/L	50	10 U	10 U	7100 U	10 U	10 UJ	10 U
Benzene	ug/L	1	1.0 U	1.0 U	**300 J**	1.0 U	1.0 U	1.0 U
Bromodichloromethane	ug/L	50	1.0 U	1.0 U	710 U	1.0 U	1.0 U	1.0 U
Bromoform	ug/L	50	1.0 U	1.0 U	710 U	1.0 U	1.0 U	1.0 U
Bromomethane (Methyl Bromide)	ug/L	5	1.0 UJ	1.0 UJ	710 U	1.0 UJ	1.0 UJ	1.0 UJ
Carbon disulfide	ug/L	60	1.0 U	1.0 U	710 U	1.0 U	1.0 U	0.42 J
Carbon tetrachloride	ug/L	5	1.0 U	1.0 U	710 U	1.0 U	1.0 U	1.0 U
Chlorobenzene	ug/L	5	1.0 U	1.0 U	710 U	1.0 U	1.0 U	1.0 U
Chloroethane	ug/L	5	1.0 UJ	1.0 UJ	**1400**	1.0 UJ	1.0 UJ	1.0 UJ
Chloroform (Trichloromethane)	ug/L	7	1.0 U	1.0 U	710 U	1.0 U	1.0 U	1.0 U
Chloromethane (Methyl Chloride)	ug/L	5	1.0 U	1.0 U	710 U	1.0 U	1.0 U	1.0 U
cis-1,3-Dichloropropene	ug/L	NC	1.0 UJ	1.0 UJ	710 U	1.0 UJ	1.0 UJ	1.0 UJ
Dibromochloromethane	ug/L	50	1.0 U	1.0 U	710 U	1.0 U	1.0 U	1.0 U
Ethylbenzene	ug/L	5	1.0 U	1.0 U	710 U	1.0 U	1.0 U	1.0 U
Methylene chloride	ug/L	5	1.0 U	1.0 U	710 U	1.0 U	1.0 U	1.0 U
Styrene	ug/L	5	1.0 U	1.0 U	710 U	1.0 U	1.0 U	1.0 U
Tetrachloroethene	ug/L	5	1.0 U	1.0 U	710 U	1.0 U	1.0 U	1.0 U
Toluene	ug/L	5	1.0 U	1.0 U	**130 J**	1.0 U	1.0 U	1.0 U
trans-1,3-Dichloropropene	ug/L	NC	1.0 UJ	1.0 UJ	710 U	1.0 UJ	1.0 UJ	1.0 UJ
Trichloroethene	ug/L	5	1.0 U	1.0 U	710 U	1.0 U	1.0 U	1.0 U
Vinyl chloride	ug/L	2	1.0 U	1.0 U	**240 J**	1.0 U	1.0 UJ	1.0 U
Xylene (total)	ug/L	NC	2.0 U	2.0 U	530 J	2.0 U	2.0 U	2.0 U
Metals								
Iron	ug/L	300	--	--	**440**	--	--	--
Manganese	ug/L	300	--	--	124	--	--	--
Metals (Dissolved)								
Iron (Dissolved)	ug/L	300	--	--	259	--	--	--

TABLE 1

ENDOLINE AREA CHLORINATED SOLVENT MNA SEMI-ANNUAL SAMPLING
OCTOBER 2009
GM TONAWANDA ENGINE PLANT
TONAWANDA, NEW YORK

		Location ID:	*MW-1*	*MW-1*	*MW-2*	*MW-9*	*MW-101*	*MW-102*
		Sample Name:	*WG-017390-101909-008*	*WG-017390-101909-009*	*WG-017390-101909-002*	*WG-017390-101909-011*	*WG-017390-101909-010*	*WG-017390-101909-004*
		Sample Date:	*10/19/2009*	*10/19/2009*	*10/19/2009*	*10/19/2009*	*10/19/2009*	*10/19/2009*
				(Duplicate)				
Parameters	***Units***	***NYS TOGs***						
Manganese (Dissolved)	ug/L	300	--	--	118	--	--	--
Dissolved Gases								
Ethane	ug/L	NC	--	--	6.7	--	--	--
Methane	ug/L	NC	--	--	1500	--	--	--
Field Parameters								
Conductivity	mS/cm	NC	3.26	3.26	2.49	2.73	35.3	1.62
Dissolved Oxygen	ug/L	NC	260	260	560	680	390	260
Oxidation reduction potential	millivolts	NC	-210	-210	-157	-131	-157	-196
pH	pH units	NC	6.9	6.9	6.88	6.99	6.91	6.69
Temperature, Field	Deg C	NC	16.81	16.81	12.13	15.42	17.47	14.27
Turbidity	NTU	NC	5.23	5.23	2.05	0.62	0.59	1.89
Wet Chemistry								
Aerobic 1,1,1-TCA Specific Microbial Population	cfu/mL	NC	--	--	1080	--	--	--
Aerobic Total Microbial Population	cfu/mL	NC	--	--	980	--	--	--
Alkalinity, Total (as CaCO3)	ug/L	NC	--	--	222000	--	--	--
Ammonia	ug/L	2000	--	--	**10000**	--	--	--
Anaerobic 1,1,1-TCA Specific Microbial Population	cfu/mL	NC	--	--	665	--	--	--
Anaerobic Total Microbial Population	cfu/mL	NC	--	--	600	--	--	--
Biochemical Oxygen Demand (BOD)	ug/L	NC	--	--	14000	--	--	--
Chemical Oxygen Demand (COD)	ug/L	NC	--	--	55000	--	--	--
Nitrate (as N)	ug/L	10000	--	--	100 U	--	--	--
Nitrite (as N)	ug/L	1000	--	--	100 U	--	--	--
Orthophosphate	ug/L	NC	--	--	100 U	--	--	--
Sulfate	ug/L	250000	--	--	7400	--	--	--
Sulfide	ug/L	50	--	--	**1700**	--	--	--
Total Organic Carbon (TOC)	ug/L	NC	--	--	13000	--	--	--

Notes:

51 - Value exceeds criteria.

U - Not present at or above the associated value.

J - Estimated.

-- - Not available.

NC - No criteria.

TABLE 1

ENDOLINE AREA CHLORINATED SOLVENT MNA SEMI-ANNUAL SAMPLING
OCTOBER 2009
GM TONAWANDA ENGINE PLANT
TONAWANDA, NEW YORK

		Location ID:	*MW-103*	*MW-11*	*MW-12*
		Sample Name:	*WG-017390-101909-012*	*WG-017390-101909-001*	*WG-017390-101909-003*
		Sample Date:	*10/19/2009*	*10/19/2009*	*10/19/2009*
Parameters	***Units***	***NYS TOGs***			
Volatile Organic Compounds					
1,1,1-Trichloroethane	ug/L	5	1.0 U	**430**	2.5 U
1,1,2,2-Tetrachloroethane	ug/L	5	1.0 U	67 U	2.5 U
1,1,2-Trichloroethane	ug/L	1	1.0 U	67 U	2.5 U
1,1-Dichloroethane	ug/L	5	0.25 J	**1900**	**80**
1,1-Dichloroethene	ug/L	5	1.0 U	**1200**	2.5 U
1,2-Dichloroethane	ug/L	0.6	1.0 U	67 U	2.5 U
1,2-Dichloroethene (total)	ug/L	5	2.0 U	**110 J**	5.0 U
1,2-Dichloropropane	ug/L	1	1.0 U	67 U	2.5 U
1,4-Dioxane	ug/L	NC	50 U	3300 U	120 U
2-Butanone (Methyl Ethyl Ketone)	ug/L	50	10 U	670 U	25 U
2-Hexanone	ug/L	50	10 U	670 U	25 U
4-Methyl-2-Pentanone (Methyl Isobutyl Ketone)	ug/L	NC	10 U	670 U	25 U
Acetone	ug/L	50	10 U	670 U	3.3 J
Benzene	ug/L	1	1.0 U	67 U	2.5 U
Bromodichloromethane	ug/L	50	1.0 U	67 U	2.5 U
Bromoform	ug/L	50	1.0 U	67 U	2.5 U
Bromomethane (Methyl Bromide)	ug/L	5	1.0 UJ	67 U	2.5 U
Carbon disulfide	ug/L	60	1.0 U	67 U	2.5 U
Carbon tetrachloride	ug/L	5	1.0 U	67 U	2.5 U
Chlorobenzene	ug/L	5	1.0 U	67 U	2.5 U
Chloroethane	ug/L	5	1.0 UJ	67 U	2.5 U
Chloroform (Trichloromethane)	ug/L	7	1.0 U	67 U	2.5 U
Chloromethane (Methyl Chloride)	ug/L	5	1.0 U	67 U	2.5 U
cis-1,3-Dichloropropene	ug/L	NC	1.0 UJ	67 U	2.5 U
Dibromochloromethane	ug/L	50	1.0 U	67 U	2.5 U
Ethylbenzene	ug/L	5	1.0 U	67 U	2.5 U
Methylene chloride	ug/L	5	1.0 U	67 U	2.5 U
Styrene	ug/L	5	1.0 U	67 U	2.5 U
Tetrachloroethene	ug/L	5	1.0 U	67 U	2.5 U
Toluene	ug/L	5	1.0 U	67 U	2.5 U
trans-1,3-Dichloropropene	ug/L	NC	1.0 UJ	67 U	2.5 U
Trichloroethene	ug/L	5	1.0 U	67 U	2.5 U
Vinyl chloride	ug/L	2	1.0 U	**25 J**	2.5 U
Xylene (total)	ug/L	NC	2.0 U	130 U	5.0 U
Metals					
Iron	ug/L	300	--	**1140**	229
Manganese	ug/L	300	--	270	204
Metals (Dissolved)					
Iron (Dissolved)	ug/L	300	--	**973**	**572**

TABLE 1

ENDOLINE AREA CHLORINATED SOLVENT MNA SEMI-ANNUAL SAMPLING
OCTOBER 2009
GM TONAWANDA ENGINE PLANT
TONAWANDA, NEW YORK

		Location ID:	*MW-103*	*MW-11*	*MW-12*
		Sample Name:	*WG-017390-101909-012*	*WG-017390-101909-001*	*WG-017390-101909-003*
		Sample Date:	*10/19/2009*	*10/19/2009*	*10/19/2009*
Parameters	***Units***	***NYS TOGs***			
Manganese (Dissolved)	ug/L	300	--	260	**410**
Dissolved Gases					
Ethane	ug/L	NC	--	1.4	0.50 U
Methane	ug/L	NC	--	320	9.3
Field Parameters					
Conductivity	mS/cm	NC	3.52	14.42	5.92
Dissolved Oxygen	ug/L	NC	340	1260	1860
Oxidation reduction potential	millivolts	NC	-131	-40	5
pH	pH units	NC	6.56	6.25	6.58
Temperature, Field	Deg C	NC	19.52	15.4	15.53
Turbidity	NTU	NC	1.43	0.52	1.02
Wet Chemistry					
Aerobic 1,1,1-TCA Specific Microbial Population	cfu/mL	NC	--	225	115
Aerobic Total Microbial Population	cfu/mL	NC	--	730	35
Alkalinity, Total (as CaCO3)	ug/L	NC	--	424000	469000
Ammonia	ug/L	2000	--	1400 J	2000 U
Anaerobic 1,1,1-TCA Specific Microbial Population	cfu/mL	NC	--	45	10
Anaerobic Total Microbial Population	cfu/mL	NC	--	30	25
Biochemical Oxygen Demand (BOD)	ug/L	NC	--	2000 U	2000 U
Chemical Oxygen Demand (COD)	ug/L	NC	--	73000	37000
Nitrate (as N)	ug/L	10000	--	100 U	100 U
Nitrite (as N)	ug/L	1000	--	2000 U	100 U
Orthophosphate	ug/L	NC	--	100 U	100 U
Sulfate	ug/L	250000	--	**1680000**	**1040000**
Sulfide	ug/L	50	--	1000 U	1000 U
Total Organic Carbon (TOC)	ug/L	NC	--	7000	8000

Notes:

51 - Value exceeds criteria.

U - Not present at or above the associated value.

J - Estimated.

-- - Not available.

NC - No criteria.

TABLE 2

ENDOLINE AREA SPILL NO. 9875474 STARS SAMPLING
OCTOBER 2009
GM TONAWANDA ENGINE PLANT
TONAWANDA, NEW YORK

		Location ID:	*MW-2*	*MW-3*	*MW-4*	*MW-5*
		Sample Name:	*WG-017390-101909-002*	*WG-017390-101909-005*	*WG-017390-101909-006*	*WG-017390-101909-007*
		Sample Date:	*10/19/2009*	*10/19/2009*	*10/19/2009*	*10/19/2009*
Parameters	***Units***	***NYS TOGs***				
Volatile Organic Compounds						
1,2,4-Trimethylbenzene	ug/L	5	**19 J**	5.0 U	5.0 U	5.0 U
1,3,5-Trimethylbenzene	ug/L	5	420 U	5.0 U	5.0 U	5.0 U
2-Phenylbutane (sec-Butylbenzene)	ug/L	5	420 U	5.0 U	5.0 U	5.0 U
Benzene	ug/L	1	**220**	**3.9**	1.0 U	1.0 U
Cymene (p-Isopropyltoluene)	ug/L	5	420 U	5.0 U	5.0 U	5.0 U
Ethylbenzene	ug/L	5	**86 J**	5.0 U	5.0 U	5.0 U
Isopropylbenzene	ug/L	5	420 U	0.21 J	5.0 U	5.0 U
Methyl Tert Butyl Ether	ug/L	10	830 U	**160**	**12**	7.3 J
Naphthalene	ug/L	10	830 U	10 U	10 U	10 U
n-Butylbenzene	ug/L	5	420 U	5.0 U	5.0 U	5.0 U
n-Propylbenzene	ug/L	5	420 U	5.0 U	5.0 U	5.0 U
tert-Butylbenzene	ug/L	5	420 U	5.0 U	5.0 U	5.0 U
Toluene	ug/L	5	**120 J**	5.0 U	5.0 U	5.0 U
Xylene (total)	ug/L	NC	620	5.0 U	5.0 U	5.0 U
Field Parameters						
Conductivity	mS/cm	NC	2.49	1.74	3.48	3.07
Dissolved Oxygen	ug/L	NC	560	310	110	150
Oxidation reduction potential	millivolts	NC	-157	-128	-216	-340
pH	pH units	NC	6.88	6.41	7.12	7.11
Temperature, Field	Deg C	NC	12.13	13.8	16.26	14.46
Turbidity	NTU	NC	2.05	23.4	4.51	1.23

Notes:

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J - Estimated.

-- - Not available.

NC - No criteria.