

Conestoga-Rovers & Associates, Inc.

Client Sample ID: GW-17360-100809-DR-318

GC/MS Volatiles

Lot-Sample #...: A9J090242-028 **Work Order #...**: LMAQL1AA **Matrix.....**: WG

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING LIMIT</u>	<u>UNITS</u>	<u>MDL</u>
1,1,2,2-Tetrachloroethane	ND	1.0	ug/L	0.18
Tetrachloroethene	ND	1.0	ug/L	0.29
Toluene	ND	1.0	ug/L	0.13
1,2,4-Trichloro- benzene	ND	5.0	ug/L	0.15
1,1,1-Trichloroethane	0.50 J	1.0	ug/L	0.22
1,1,2-Trichloroethane	ND	1.0	ug/L	0.27
Trichloroethene	1.5	1.0	ug/L	0.17
Trichlorofluoromethane	ND	1.0	ug/L	0.21
1,1,2-Trichloro- 1,2,2-trifluoroethane	ND	1.0	ug/L	0.28
Vinyl chloride	ND	1.0	ug/L	0.22
Xylenes (total)	ND	2.0	ug/L	0.28
<u>SURROGATE</u>	<u>PERCENT RECOVERY</u>	<u>RECOVERY LIMITS</u>		
Dibromofluoromethane	95	(73 - 122)		
1,2-Dichloroethane-d4	97	(61 - 128)		
Toluene-d8	81	(76 - 110)		
4-Bromofluorobenzene	82	(74 - 116)		

NOTE(S):

J Estimated result. Result is less than RL.

Conestoga-Rovers & Associates, Inc.

Client Sample ID: GW-17360-100809-DR-319

GC/MS Volatiles

Lot-Sample #....: A9J090242-029 Work Order #....: LMAQN1AA Matrix.....: WG
 Date Sampled....: 10/08/09 14:05 Date Received...: 10/09/09
 Prep Date.....: 10/17/09 Analysis Date...: 10/17/09
 Prep Batch #....: 9292286
 Dilution Factor: 1 Initial Wgt/Vol: 5 mL Final Wgt/Vol...: 5 mL
 Method.....: SW846 8260B

PARAMETER	RESULT	REPORTING		
		LIMIT	UNITS	MDL
Acetone	ND	25	ug/L	1.1
Benzene	ND	1.0	ug/L	0.13
Bromodichloromethane	ND	1.0	ug/L	0.15
Bromoform	ND	1.0	ug/L	0.64
Bromomethane	ND	1.0	ug/L	0.41
2-Butanone	ND	25	ug/L	0.57
Carbon disulfide	ND	5.0	ug/L	0.13
Carbon tetrachloride	ND	1.0	ug/L	0.13
Chlorobenzene	ND	1.0	ug/L	0.15
Chloroethane	ND	1.0	ug/L	0.29
Chloroform	1.5	1.0	ug/L	0.16
Chloromethane	ND	1.0	ug/L	0.30
Cyclohexane	ND	1.0	ug/L	0.12
Dibromochloromethane	ND	1.0	ug/L	0.18
1,2-Dibromo-3-chloro-propane	ND	1.0	ug/L	0.67
1,2-Dibromoethane	ND	1.0	ug/L	0.24
1,2-Dichlorobenzene	ND	1.0	ug/L	0.13
1,3-Dichlorobenzene	ND	1.0	ug/L	0.14
1,4-Dichlorobenzene	ND	1.0	ug/L	0.13
Dichlorodifluoromethane	ND	1.0	ug/L	0.31
1,1-Dichloroethane	ND	1.0	ug/L	0.15
1,2-Dichloroethane	ND	1.0	ug/L	0.22
1,1-Dichloroethene	ND	1.0	ug/L	0.19
cis-1,2-Dichloroethene	ND	1.0	ug/L	0.17
trans-1,2-Dichloroethene	ND	1.0	ug/L	0.19
1,2-Dichloropropane	ND	1.0	ug/L	0.18
cis-1,3-Dichloropropene	ND	1.0	ug/L	0.14
trans-1,3-Dichloropropene	ND	1.0	ug/L	0.19
Ethylbenzene	ND	1.0	ug/L	0.17
2-Hexanone	ND	50	ug/L	0.41
Isopropylbenzene	ND	5.0	ug/L	0.13
Methyl acetate	ND	10	ug/L	0.38
Methylene chloride	ND	5.0	ug/L	0.33
Methylcyclohexane	ND	1.0	ug/L	0.13
4-Methyl-2-pentanone	ND	50	ug/L	0.32
Methyl tert-butyl ether	ND	5.0	ug/L	0.17
Styrene	ND	1.0	ug/L	0.11

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Conestoga-Rovers & Associates, Inc.

Client Sample ID: GW-17360-100809-DR-319

GC/MS Volatiles

Lot-Sample #...: A9J090242-029 **Work Order #...**: LMAQN1AA **Matrix.....**: WG

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING LIMIT</u>	<u>UNITS</u>	<u>MDL</u>
1,1,2,2-Tetrachloroethane	ND	1.0	ug/L	0.18
Tetrachloroethene	ND	1.0	ug/L	0.29
Toluene	ND	1.0	ug/L	0.13
1,2,4-Trichloro- benzene	ND	5.0	ug/L	0.15
1,1,1-Trichloroethane	0.50 J	1.0	ug/L	0.22
1,1,2-Trichloroethane	ND	1.0	ug/L	0.27
Trichloroethene	1.5	1.0	ug/L	0.17
Trichlorofluoromethane	ND	1.0	ug/L	0.21
1,1,2-Trichloro- 1,2,2-trifluoroethane	ND	1.0	ug/L	0.28
Vinyl chloride	ND	1.0	ug/L	0.22
Xylenes (total)	ND	2.0	ug/L	0.28
<u>SURROGATE</u>	<u>PERCENT RECOVERY</u>	<u>RECOVERY LIMITS</u>		
Dibromofluoromethane	94	(73 - 122)		
1,2-Dichloroethane-d4	100	(61 - 128)		
Toluene-d8	81	(76 - 110)		
4-Bromofluorobenzene	84	(74 - 116)		

NOTE(S):

J Estimated result. Result is less than RL.

METHOD BLANK REPORT

GC/MS Volatiles

Client Lot #...: 9J07288
MB Lot-Sample #: A9J150000-558

Work Order #...: LMNGK1AA

Matrix.....: WATER

Analysis Date...: 10/15/09

Prep Date.....: 10/15/09

Final Wgt/Vol...: 5 mL

Dilution Factor: 1

Prep Batch #...: 9288558

Initial Wgt/Vol: 5 mL

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD
Acetone	ND	25	ug/L	SW846 8260B
Benzene	ND	1.0	ug/L	SW846 8260B
Bromodichloromethane	ND	1.0	ug/L	SW846 8260B
Bromoform	ND	1.0	ug/L	SW846 8260B
Bromomethane	ND	1.0	ug/L	SW846 8260B
2-Butanone	ND	25	ug/L	SW846 8260B
Carbon disulfide	ND	5.0	ug/L	SW846 8260B
Carbon tetrachloride	ND	1.0	ug/L	SW846 8260B
Chlorobenzene	ND	1.0	ug/L	SW846 8260B
Chloroethane	ND	1.0	ug/L	SW846 8260B
Chloroform	ND	1.0	ug/L	SW846 8260B
Chloromethane	ND	1.0	ug/L	SW846 8260B
Cyclohexane	ND	1.0	ug/L	SW846 8260B
Dibromochloromethane	ND	1.0	ug/L	SW846 8260B
1,2-Dibromo-3-chloro- propane	ND	1.0	ug/L	SW846 8260B
1,2-Dibromoethane	ND	1.0	ug/L	SW846 8260B
1,2-Dichlorobenzene	ND	1.0	ug/L	SW846 8260B
1,3-Dichlorobenzene	ND	1.0	ug/L	SW846 8260B
1,4-Dichlorobenzene	ND	1.0	ug/L	SW846 8260B
Dichlorodifluoromethane	ND	1.0	ug/L	SW846 8260B
1,1-Dichloroethane	ND	1.0	ug/L	SW846 8260B
1,2-Dichloroethane	ND	1.0	ug/L	SW846 8260B
1,1-Dichloroethene	ND	1.0	ug/L	SW846 8260B
cis-1,2-Dichloroethene	ND	1.0	ug/L	SW846 8260B
trans-1,2-Dichloroethene	ND	1.0	ug/L	SW846 8260B
1,2-Dichloropropane	ND	1.0	ug/L	SW846 8260B
cis-1,3-Dichloropropene	ND	1.0	ug/L	SW846 8260B
trans-1,3-Dichloropropene	ND	1.0	ug/L	SW846 8260B
Ethylbenzene	ND	1.0	ug/L	SW846 8260B
2-Hexanone	ND	50	ug/L	SW846 8260B
Isopropylbenzene	ND	5.0	ug/L	SW846 8260B
Methyl acetate	ND	10	ug/L	SW846 8260B
Methylene chloride	0.50 J	5.0	ug/L	SW846 8260B
Methylcyclohexane	0.58 J	1.0	ug/L	SW846 8260B
4-Methyl-2-pentanone	ND	50	ug/L	SW846 8260B
Methyl tert-butyl ether	ND	5.0	ug/L	SW846 8260B
Styrene	ND	1.0	ug/L	SW846 8260B
1,1,2,2-Tetrachloroethane	ND	1.0	ug/L	SW846 8260B
Tetrachloroethene	ND	1.0	ug/L	SW846 8260B
Toluene	ND	1.0	ug/L	SW846 8260B

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METHOD BLANK REPORT

GC/MS Volatiles

Client Lot #...: 9J07288

Work Order #...: LMNGK1AA

Matrix.....: WATER

PARAMETER	RESULT	REPORTING		METHOD
		LIMIT	UNITS	
1,2,4-Trichloro-benzene	ND	5.0	ug/L	SW846 8260B
1,1,1-Trichloroethane	ND	1.0	ug/L	SW846 8260B
1,1,2-Trichloroethane	ND	1.0	ug/L	SW846 8260B
Trichloroethene	ND	1.0	ug/L	SW846 8260B
Trichlorofluoromethane	ND	1.0	ug/L	SW846 8260B
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	1.0	ug/L	SW846 8260B
Vinyl chloride	ND	1.0	ug/L	SW846 8260B
Xylenes (total)	ND	2.0	ug/L	SW846 8260B
SURROGATE	PERCENT		RECOVERY	
	RECOVERY		LIMITS	
Dibromofluoromethane	95		(73 - 122)	
1,2-Dichloroethane-d4	88		(61 - 128)	
Toluene-d8	84		(76 - 110)	
4-Bromofluorobenzene	82		(74 - 116)	

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

J Estimated result. Result is less than RL.

METHOD BLANK REPORT

GC/MS Volatiles

Client Lot #...: 9J07288
MB Lot-Sample #: A9J190000-076

Work Order #...: LMTDP1AA

Matrix.....: WATER

Analysis Date...: 10/15/09

Prep Date.....: 10/15/09

Final Wgt/Vol...: 5 mL

Dilution Factor: 1

Prep Batch #...: 9292076

Initial Wgt/Vol: 5 mL

PARAMETER	RESULT	REPORTING			METHOD
		LIMIT	UNITS		
Acetone	ND	25	ug/L	SW846	8260B
Benzene	ND	1.0	ug/L	SW846	8260B
Bromodichloromethane	ND	1.0	ug/L	SW846	8260B
Bromoform	ND	1.0	ug/L	SW846	8260B
Bromomethane	ND	1.0	ug/L	SW846	8260B
2-Butanone	ND	25	ug/L	SW846	8260B
Carbon disulfide	ND	5.0	ug/L	SW846	8260B
Carbon tetrachloride	ND	1.0	ug/L	SW846	8260B
Chlorobenzene	ND	1.0	ug/L	SW846	8260B
Chloroethane	ND	1.0	ug/L	SW846	8260B
Chloroform	ND	1.0	ug/L	SW846	8260B
Chloromethane	ND	1.0	ug/L	SW846	8260B
Cyclohexane	ND	1.0	ug/L	SW846	8260B
Dibromochloromethane	ND	1.0	ug/L	SW846	8260B
1,2-Dibromo-3-chloro-propane	ND	1.0	ug/L	SW846	8260B
1,2-Dibromoethane	ND	1.0	ug/L	SW846	8260B
1,2-Dichlorobenzene	ND	1.0	ug/L	SW846	8260B
1,3-Dichlorobenzene	ND	1.0	ug/L	SW846	8260B
1,4-Dichlorobenzene	ND	1.0	ug/L	SW846	8260B
Dichlorodifluoromethane	ND	1.0	ug/L	SW846	8260B
1,1-Dichloroethane	ND	1.0	ug/L	SW846	8260B
1,2-Dichloroethane	ND	1.0	ug/L	SW846	8260B
1,1-Dichloroethene	ND	1.0	ug/L	SW846	8260B
cis-1,2-Dichloroethene	ND	1.0	ug/L	SW846	8260B
trans-1,2-Dichloroethene	ND	1.0	ug/L	SW846	8260B
1,2-Dichloropropane	ND	1.0	ug/L	SW846	8260B
cis-1,3-Dichloropropene	ND	1.0	ug/L	SW846	8260B
trans-1,3-Dichloropropene	ND	1.0	ug/L	SW846	8260B
Ethylbenzene	ND	1.0	ug/L	SW846	8260B
2-Hexanone	ND	50	ug/L	SW846	8260B
Isopropylbenzene	ND	5.0	ug/L	SW846	8260B
Methyl acetate	ND	10	ug/L	SW846	8260B
Methylene chloride	ND	5.0	ug/L	SW846	8260B
Methylcyclohexane	ND	1.0	ug/L	SW846	8260B
4-Methyl-2-pentanone	ND	50	ug/L	SW846	8260B
Methyl tert-butyl ether	ND	5.0	ug/L	SW846	8260B
Styrene	ND	1.0	ug/L	SW846	8260B
1,1,2,2-Tetrachloroethane	ND	1.0	ug/L	SW846	8260B
Tetrachloroethene	ND	1.0	ug/L	SW846	8260B
Toluene	ND	1.0	ug/L	SW846	8260B

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METHOD BLANK REPORT

GC/MS Volatiles

Client Lot #...: 9J07288

Work Order #...: LMTDP1AA

Matrix.....: WATER

PARAMETER	RESULT	REPORTING		METHOD
		LIMIT	UNITS	
1,2,4-Trichloro-benzene	ND	5.0	ug/L	SW846 8260B
1,1,1-Trichloroethane	ND	1.0	ug/L	SW846 8260B
1,1,2-Trichloroethane	ND	1.0	ug/L	SW846 8260B
Trichloroethene	ND	1.0	ug/L	SW846 8260B
Trichlorofluoromethane	ND	1.0	ug/L	SW846 8260B
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	1.0	ug/L	SW846 8260B
Vinyl chloride	ND	1.0	ug/L	SW846 8260B
Xylenes (total)	ND	2.0	ug/L	SW846 8260B
SURROGATE	PERCENT		RECOVERY	
	RECOVERY		LIMITS	
Dibromofluoromethane	85		(73 - 122)	
1,2-Dichloroethane-d4	89		(61 - 128)	
Toluene-d8	82		(76 - 110)	
4-Bromofluorobenzene	85		(74 - 116)	

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

METHOD BLANK REPORT

GC/MS Volatiles

Client Lot #...: 9J07288
MB Lot-Sample #: A9J190000-286

Work Order #...: LMT6Q1AA

Matrix.....: WATER

Analysis Date...: 10/17/09
Dilution Factor: 1

Prep Date.....: 10/17/09

Final Wgt/Vol...: 5 mL

Prep Batch #...: 9292286

Initial Wgt/Vol: 5 mL

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD
Acetone	ND	25	ug/L	SW846 8260B
Benzene	ND	1.0	ug/L	SW846 8260B
Bromodichloromethane	ND	1.0	ug/L	SW846 8260B
Bromoform	ND	1.0	ug/L	SW846 8260B
Bromomethane	ND	1.0	ug/L	SW846 8260B
2-Butanone	ND	25	ug/L	SW846 8260B
Carbon disulfide	0.66 J	5.0	ug/L	SW846 8260B
Carbon tetrachloride	ND	1.0	ug/L	SW846 8260B
Chlorobenzene	ND	1.0	ug/L	SW846 8260B
Chloroethane	ND	1.0	ug/L	SW846 8260B
Chloroform	ND	1.0	ug/L	SW846 8260B
Chloromethane	ND	1.0	ug/L	SW846 8260B
Cyclohexane	ND	1.0	ug/L	SW846 8260B
Dibromochloromethane	ND	1.0	ug/L	SW846 8260B
1,2-Dibromo-3-chloro- propane	ND	1.0	ug/L	SW846 8260B
1,2-Dibromoethane	ND	1.0	ug/L	SW846 8260B
1,2-Dichlorobenzene	ND	1.0	ug/L	SW846 8260B
1,3-Dichlorobenzene	ND	1.0	ug/L	SW846 8260B
1,4-Dichlorobenzene	ND	1.0	ug/L	SW846 8260B
Dichlorodifluoromethane	ND	1.0	ug/L	SW846 8260B
1,1-Dichloroethane	ND	1.0	ug/L	SW846 8260B
1,2-Dichloroethane	ND	1.0	ug/L	SW846 8260B
1,1-Dichloroethene	ND	1.0	ug/L	SW846 8260B
cis-1,2-Dichloroethene	ND	1.0	ug/L	SW846 8260B
trans-1,2-Dichloroethene	ND	1.0	ug/L	SW846 8260B
1,2-Dichloropropane	ND	1.0	ug/L	SW846 8260B
cis-1,3-Dichloropropene	ND	1.0	ug/L	SW846 8260B
trans-1,3-Dichloropropene	ND	1.0	ug/L	SW846 8260B
Ethylbenzene	ND	1.0	ug/L	SW846 8260B
2-Hexanone	ND	50	ug/L	SW846 8260B
Isopropylbenzene	ND	5.0	ug/L	SW846 8260B
Methyl acetate	ND	10	ug/L	SW846 8260B
Methylene chloride	2.0 J	5.0	ug/L	SW846 8260B
Methylcyclohexane	ND	1.0	ug/L	SW846 8260B
4-Methyl-2-pentanone	ND	50	ug/L	SW846 8260B
Methyl tert-butyl ether	ND	5.0	ug/L	SW846 8260B
Styrene	ND	1.0	ug/L	SW846 8260B
1,1,2,2-Tetrachloroethane	ND	1.0	ug/L	SW846 8260B
Tetrachloroethene	ND	1.0	ug/L	SW846 8260B
Toluene	ND	1.0	ug/L	SW846 8260B

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METHOD BLANK REPORT

GC/MS Volatiles

Client Lot #...: 9J07288

Work Order #...: LMT6Q1AA

Matrix.....: WATER

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD
1,2,4-Trichloro- benzene	ND	5.0	ug/L	SW846 8260B
1,1,1-Trichloroethane	ND	1.0	ug/L	SW846 8260B
1,1,2-Trichloroethane	ND	1.0	ug/L	SW846 8260B
Trichloroethene	ND	1.0	ug/L	SW846 8260B
Trichlorofluoromethane	ND	1.0	ug/L	SW846 8260B
1,1,2-Trichloro- 1,2,2-trifluoroethane	ND	1.0	ug/L	SW846 8260B
Vinyl chloride	ND	1.0	ug/L	SW846 8260B
Xylenes (total)	ND	2.0	ug/L	SW846 8260B
SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS		
Dibromofluoromethane	87	(73 - 122)		
1,2-Dichloroethane-d4	91	(61 - 128)		
Toluene-d8	81	(76 - 110)		
4-Bromofluorobenzene	85	(74 - 116)		

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

J Estimated result. Result is less than RL.

LABORATORY CONTROL SAMPLE DATA REPORT

GC/MS Volatiles

Client Lot #....: 9J07288 Work Order #....: LMNGK1AC-LCS Matrix.....: WATER
 LCS Lot-Sample#: A9J150000-558 LMNGK1AD-LCSD
 Prep Date.....: 10/15/09 Analysis Date...: 10/15/09
 Prep Batch #....: 9288558
 Dilution Factor: 1 Final Wgt/Vol...: 5 mL
 Initial Wgt/Vol: 5 mL

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCENT RECOVERY	RPD	METHOD
Acetone	10	9.0	ug/L	90		SW846 8260B
	10	9.9	ug/L	99	9.8	SW846 8260B
Benzene	10	8.6	ug/L	86		SW846 8260B
	10	8.8	ug/L	88	1.8	SW846 8260B
Bromodichloromethane	10	8.7	ug/L	87		SW846 8260B
	10	8.6 a	ug/L	86	0.92	SW846 8260B
Bromoform	10	9.0	ug/L	90		SW846 8260B
	10	9.3	ug/L	93	3.6	SW846 8260B
Bromomethane	10	10	ug/L	101		SW846 8260B
	10	13	ug/L	129	25	SW846 8260B
2-Butanone	10	8.3	ug/L	83		SW846 8260B
	10	8.2	ug/L	82	1.3	SW846 8260B
Carbon disulfide	10	8.8	ug/L	88		SW846 8260B
	10	8.9	ug/L	89	0.78	SW846 8260B
Carbon tetrachloride	10	10	ug/L	104		SW846 8260B
	10	11	ug/L	108	3.6	SW846 8260B
Chlorobenzene	10	9.4	ug/L	94		SW846 8260B
	10	9.4	ug/L	94	0.11	SW846 8260B
Chloroethane	10	8.1	ug/L	81		SW846 8260B
	10	9.5	ug/L	95	15	SW846 8260B
Chloroform	10	9.1	ug/L	91		SW846 8260B
	10	9.1	ug/L	91	0.49	SW846 8260B
Chloromethane	10	7.1	ug/L	71		SW846 8260B
	10	8.0	ug/L	80	12	SW846 8260B
Cyclohexane	10	8.9	ug/L	89		SW846 8260B
	10	9.1	ug/L	91	2.8	SW846 8260B
Dibromochloromethane	10	8.9	ug/L	89		SW846 8260B
	10	9.1	ug/L	91	1.6	SW846 8260B
1,2-Dibromo-3-chloro- propane	10	8.5	ug/L	85		SW846 8260B
	10	8.9	ug/L	89	4.5	SW846 8260B
1,2-Dibromoethane	10	9.0	ug/L	90		SW846 8260B
	10	9.0	ug/L	90	0.32	SW846 8260B
1,2-Dichlorobenzene	10	9.3	ug/L	93		SW846 8260B
	10	9.2	ug/L	92	1.5	SW846 8260B
1,3-Dichlorobenzene	10	9.2	ug/L	92		SW846 8260B
	10	9.3	ug/L	93	1.9	SW846 8260B

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LABORATORY CONTROL SAMPLE DATA REPORT

GC/MS Volatiles

Client Lot #...: 9J07288 Work Order #...: LMNGK1AC-LCS Matrix.....: WATER
 LCS Lot-Sample#: A9J150000-558 LMNGK1AD-LCSD

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCENT RECOVERY	RPD	METHOD
1,4-Dichlorobenzene	10	9.3	ug/L	93		SW846 8260B
	10	9.4	ug/L	94	1.4	SW846 8260B
Dichlorodifluoromethane	10	6.1 a	ug/L	61		SW846 8260B
	10	6.9 a	ug/L	69	12	SW846 8260B
1,1-Dichloroethane	10	9.0	ug/L	90		SW846 8260B
	10	9.2	ug/L	92	1.5	SW846 8260B
1,2-Dichloroethane	10	8.9	ug/L	89		SW846 8260B
	10	8.7	ug/L	87	1.7	SW846 8260B
1,1-Dichloroethene	10	8.9	ug/L	89		SW846 8260B
	10	9.2	ug/L	92	3.1	SW846 8260B
cis-1,2-Dichloroethene	10	8.9	ug/L	89		SW846 8260B
	10	8.8	ug/L	88	0.89	SW846 8260B
trans-1,2-Dichloroethene	10	9.0	ug/L	90		SW846 8260B
	10	9.2	ug/L	92	1.9	SW846 8260B
1,2-Dichloropropane	10	8.9	ug/L	89		SW846 8260B
	10	8.9	ug/L	89	0.0	SW846 8260B
cis-1,3-Dichloropropene	10	7.9 a	ug/L	79		SW846 8260B
	10	8.0 a	ug/L	80	0.70	SW846 8260B
trans-1,3-Dichloropropene	10	7.8 a	ug/L	78		SW846 8260B
	10	8.0 a	ug/L	80	2.7	SW846 8260B
Ethylbenzene	10	9.5	ug/L	95		SW846 8260B
	10	9.7	ug/L	97	1.9	SW846 8260B
2-Hexanone	10	8.8	ug/L	88		SW846 8260B
	10	8.8	ug/L	88	0.17	SW846 8260B
Isopropylbenzene	10	9.7	ug/L	97		SW846 8260B
	10	9.9	ug/L	99	2.7	SW846 8260B
Methyl acetate	10	7.3	ug/L	73		SW846 8260B
	10	6.7 a	ug/L	67	7.9	SW846 8260B
Methylene chloride	10	9.1	ug/L	91		SW846 8260B
	10	9.1	ug/L	91	0.45	SW846 8260B
Methylcyclohexane	10	8.7	ug/L	87		SW846 8260B
	10	9.2	ug/L	92	5.2	SW846 8260B
4-Methyl-2-pentanone	10	8.1	ug/L	81		SW846 8260B
	10	8.2	ug/L	82	1.4	SW846 8260B
Methyl tert-butyl ether (MTBE)	10	8.6	ug/L	86		SW846 8260B
	10	8.6	ug/L	86	0.25	SW846 8260B
Styrene	10	9.5	ug/L	95		SW846 8260B
	10	9.6	ug/L	96	0.67	SW846 8260B
1,1,2,2-Tetrachloroethane	10	7.9 a	ug/L	79		SW846 8260B
	10	8.1 a	ug/L	81	1.5	SW846 8260B

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LABORATORY CONTROL SAMPLE DATA REPORT

GC/MS Volatiles

Client Lot #...: 9J07288 Work Order #...: LMNGK1AC-LCS Matrix.....: WATER
 LCS Lot-Sample#: A9J150000-558 LMNGK1AD-LCSD

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCENT RECOVERY	RPD	METHOD
Tetrachloroethene	10	10	ug/L	103		SW846 8260B
	10	11	ug/L	107	3.1	SW846 8260B
Toluene	10	9.0	ug/L	90		SW846 8260B
	10	9.0	ug/L	90	0.14	SW846 8260B
1,2,4-Trichloro- benzene	10	9.3	ug/L	93		SW846 8260B
	10	9.7	ug/L	97	4.0	SW846 8260B
1,1,1-Trichloroethane	10	9.7	ug/L	97		SW846 8260B
	10	9.7	ug/L	97	0.070	SW846 8260B
1,1,2-Trichloroethane	10	8.8	ug/L	88		SW846 8260B
	10	8.6	ug/L	86	2.2	SW846 8260B
Trichloroethene	10	9.2	ug/L	92		SW846 8260B
	10	9.4	ug/L	94	1.4	SW846 8260B
Trichlorofluoromethane	10	15 a	ug/L	147		SW846 8260B
	10	16 a	ug/L	162	9.9	SW846 8260B
1,1,2-Trichloro- 1,2,2-trifluoroethane	10	16 a	ug/L	162		SW846 8260B
	10	17 a	ug/L	166	2.5	SW846 8260B
Vinyl chloride	10	9.6	ug/L	96		SW846 8260B
	10	9.9	ug/L	99	3.0	SW846 8260B
Xylenes (total)	30	30	ug/L	99		SW846 8260B
	30	29	ug/L	98	1.0	SW846 8260B

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Dibromofluoromethane	89	(73 - 122)
	88	(73 - 122)
1,2-Dichloroethane-d4	86	(61 - 128)
	85	(61 - 128)
Toluene-d8	92	(76 - 110)
	91	(76 - 110)
4-Bromofluorobenzene	99	(74 - 116)
	99	(74 - 116)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters

a Spiked analyte recovery is outside stated control limits.

LABORATORY CONTROL SAMPLE EVALUATION REPORT

GC/MS Volatiles

Client Lot #...: 9J07288 Work Order #...: LMNGK1AC-LCS Matrix.....: WATER
 LCS Lot-Sample#: A9J150000-558 LMNGK1AD-LCSD
 Prep Date.....: 10/15/09 Analysis Date...: 10/15/09
 Prep Batch #...: 9288558
 Dilution Factor: 1 Final Wgt/Vol...: 5 mL
 Initial Wgt/Vol: 5 mL

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD
Acetone	90	(22 - 200)			SW846 8260B
	99	(22 - 200)	9.8	(0-95)	SW846 8260B
Benzene	86	(80 - 116)			SW846 8260B
	88	(80 - 116)	1.8	(0-20)	SW846 8260B
Bromodichloromethane	87	(87 - 130)			SW846 8260B
	86 a	(87 - 130)	0.92	(0-30)	SW846 8260B
Bromoform	90	(76 - 150)			SW846 8260B
	93	(76 - 150)	3.6	(0-30)	SW846 8260B
Bromomethane	101	(64 - 129)			SW846 8260B
	129	(64 - 129)	25	(0-30)	SW846 8260B
2-Butanone	83	(28 - 237)			SW846 8260B
	82	(28 - 237)	1.3	(0-65)	SW846 8260B
Carbon disulfide	88	(73 - 139)			SW846 8260B
	89	(73 - 139)	0.78	(0-30)	SW846 8260B
Carbon tetrachloride	104	(75 - 149)			SW846 8260B
	108	(75 - 149)	3.6	(0-30)	SW846 8260B
Chlorobenzene	94	(76 - 117)			SW846 8260B
	94	(76 - 117)	0.11	(0-20)	SW846 8260B
Chloroethane	81	(66 - 126)			SW846 8260B
	95	(66 - 126)	15	(0-30)	SW846 8260B
Chloroform	91	(84 - 128)			SW846 8260B
	91	(84 - 128)	0.49	(0-30)	SW846 8260B
Chloromethane	71	(48 - 123)			SW846 8260B
	80	(48 - 123)	12	(0-30)	SW846 8260B
Cyclohexane	89	(70 - 130)			SW846 8260B
	91	(70 - 130)	2.8	(0-30)	SW846 8260B
Dibromochloromethane	89	(81 - 138)			SW846 8260B
	91	(81 - 138)	1.6	(0-30)	SW846 8260B
1,2-Dibromo-3-chloro- propane	85	(70 - 130)			SW846 8260B
	89	(70 - 130)	4.5	(0-30)	SW846 8260B
1,2-Dibromoethane	90	(70 - 130)			SW846 8260B
	90	(70 - 130)	0.32	(0-30)	SW846 8260B
1,2-Dichlorobenzene	93	(70 - 130)			SW846 8260B
	92	(70 - 130)	1.5	(0-30)	SW846 8260B
1,3-Dichlorobenzene	92	(70 - 130)			SW846 8260B
	93	(70 - 130)	1.9	(0-30)	SW846 8260B

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LABORATORY CONTROL SAMPLE EVALUATION REPORT

GC/MS Volatiles

Client Lot #...: 9J07288 Work Order #...: LMNGK1AC-LCS Matrix.....: WATER
 LCS Lot-Sample#: A9J150000-558 LMNGK1AD-LCSD

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD
1,4-Dichlorobenzene	93	(70 - 130)			SW846 8260B
	94	(70 - 130)	1.4	(0-30)	SW846 8260B
Dichlorodifluoromethane	61 a	(70 - 130)			SW846 8260B
	69 a	(70 - 130)	12	(0-30)	SW846 8260B
1,1-Dichloroethane	90	(86 - 123)			SW846 8260B
	92	(86 - 123)	1.5	(0-30)	SW846 8260B
1,2-Dichloroethane	89	(79 - 136)			SW846 8260B
	87	(79 - 136)	1.7	(0-30)	SW846 8260B
1,1-Dichloroethene	89	(63 - 130)			SW846 8260B
	92	(63 - 130)	3.1	(0-20)	SW846 8260B
cis-1,2-Dichloroethene	89	(85 - 113)			SW846 8260B
	88	(85 - 113)	0.89	(0-30)	SW846 8260B
trans-1,2-Dichloroethene	90	(80 - 120)			SW846 8260B
	92	(80 - 120)	1.9	(0-30)	SW846 8260B
1,2-Dichloropropane	89	(82 - 115)			SW846 8260B
	89	(82 - 115)	0.0	(0-30)	SW846 8260B
cis-1,3-Dichloropropene	79 a	(84 - 130)			SW846 8260B
	80 a	(84 - 130)	0.70	(0-30)	SW846 8260B
trans-1,3-Dichloropropene	78 a	(84 - 130)			SW846 8260B
	80 a	(84 - 130)	2.7	(0-30)	SW846 8260B
Ethylbenzene	95	(86 - 116)			SW846 8260B
	97	(86 - 116)	1.9	(0-30)	SW846 8260B
2-Hexanone	88	(35 - 200)			SW846 8260B
	88	(35 - 200)	0.17	(0-52)	SW846 8260B
Isopropylbenzene	97	(70 - 130)			SW846 8260B
	99	(70 - 130)	2.7	(0-30)	SW846 8260B
Methyl acetate	73	(70 - 130)			SW846 8260B
	67 a	(70 - 130)	7.9	(0-30)	SW846 8260B
Methylene chloride	91	(78 - 118)			SW846 8260B
	91	(78 - 118)	0.45	(0-30)	SW846 8260B
Methylcyclohexane	87	(70 - 130)			SW846 8260B
	92	(70 - 130)	5.2	(0-30)	SW846 8260B
4-Methyl-2-pentanone	81	(78 - 141)			SW846 8260B
	82	(78 - 141)	1.4	(0-32)	SW846 8260B
Methyl tert-butyl ether (MTBE)	86	(70 - 130)			SW846 8260B
	86	(70 - 130)	0.25	(0-30)	SW846 8260B
Styrene	95	(85 - 117)			SW846 8260B
	96	(85 - 117)	0.67	(0-30)	SW846 8260B
1,1,2,2-Tetrachloroethane	79 a	(85 - 118)			SW846 8260B
	81 a	(85 - 118)	1.5	(0-30)	SW846 8260B

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LABORATORY CONTROL SAMPLE EVALUATION REPORT

GC/MS Volatiles

Client Lot #...: 9J07288 Work Order #...: LMNGK1AC-LCS Matrix.....: WATER
 LCS Lot-Sample#: A9J150000-558 LMNGK1AD-LCSD

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD
Tetrachloroethene	103	(88 - 113)			SW846 8260B
	107	(88 - 113)	3.1	(0-30)	SW846 8260B
Toluene	90	(74 - 119)			SW846 8260B
	90	(74 - 119)	0.14	(0-20)	SW846 8260B
1,2,4-Trichloro- benzene	93	(70 - 130)			SW846 8260B
	97	(70 - 130)	4.0	(0-30)	SW846 8260B
1,1,1-Trichloroethane	97	(78 - 140)			SW846 8260B
	97	(78 - 140)	0.070	(0-30)	SW846 8260B
1,1,2-Trichloroethane	88	(83 - 122)			SW846 8260B
	86	(83 - 122)	2.2	(0-30)	SW846 8260B
Trichloroethene	92	(75 - 122)			SW846 8260B
	94	(75 - 122)	1.4	(0-20)	SW846 8260B
Trichlorofluoromethane	147 a	(70 - 130)			SW846 8260B
	162 a	(70 - 130)	9.9	(0-30)	SW846 8260B
1,1,2-Trichloro- 1,2,2-trifluoroethane	162 a	(70 - 130)			SW846 8260B
	166 a	(70 - 130)	2.5	(0-30)	SW846 8260B
Vinyl chloride	96	(61 - 120)			SW846 8260B
	99	(61 - 120)	3.0	(0-30)	SW846 8260B
Xylenes (total)	99	(87 - 116)			SW846 8260B
	98	(87 - 116)	1.0	(0-30)	SW846 8260B

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Dibromofluoromethane	89	(73 - 122)
	88	(73 - 122)
1,2-Dichloroethane-d4	86	(61 - 128)
	85	(61 - 128)
Toluene-d8	92	(76 - 110)
	91	(76 - 110)
4-Bromofluorobenzene	99	(74 - 116)
	99	(74 - 116)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters

a Spiked analyte recovery is outside stated control limits.

LABORATORY CONTROL SAMPLE DATA REPORT

GC/MS Volatiles

Client Lot #....: 9J07288 Work Order #....: LMTDP1AC-LCS Matrix.....: WATER
 LCS Lot-Sample#: A9J190000-076 LMTDP1AD-LCSD
 Prep Date.....: 10/15/09 Analysis Date...: 10/15/09
 Prep Batch #....: 9292076
 Dilution Factor: 1 Final Wgt/Vol...: 5 mL
 Initial Wgt/Vol: 5 mL

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCENT RECOVERY	RPD	METHOD
Acetone	10	12	ug/L	119		SW846 8260B
	10	12	ug/L	123	3.4	SW846 8260B
Benzene	10	9.4	ug/L	94		SW846 8260B
	10	9.4	ug/L	94	0.010	SW846 8260B
Bromodichloromethane	10	11	ug/L	106		SW846 8260B
	10	11	ug/L	107	1.0	SW846 8260B
Bromoform	10	12	ug/L	122		SW846 8260B
	10	12	ug/L	122	0.23	SW846 8260B
Bromomethane	10	12	ug/L	122		SW846 8260B
	10	12	ug/L	122	0.17	SW846 8260B
2-Butanone	10	9.1	ug/L	91		SW846 8260B
	10	9.6	ug/L	96	4.9	SW846 8260B
Carbon disulfide	10	10	ug/L	103		SW846 8260B
	10	10	ug/L	104	1.5	SW846 8260B
Carbon tetrachloride	10	10	ug/L	103		SW846 8260B
	10	10	ug/L	104	1.3	SW846 8260B
Chlorobenzene	10	9.2	ug/L	92		SW846 8260B
	10	9.1	ug/L	91	1.9	SW846 8260B
Chloroethane	10	10	ug/L	102		SW846 8260B
	10	10	ug/L	102	0.81	SW846 8260B
Chloroform	10	9.8	ug/L	98		SW846 8260B
	10	10	ug/L	101	2.4	SW846 8260B
Chloromethane	10	8.5	ug/L	85		SW846 8260B
	10	8.2	ug/L	82	3.0	SW846 8260B
Cyclohexane	10	7.6	ug/L	76		SW846 8260B
	10	7.5	ug/L	75	1.6	SW846 8260B
Dibromochloromethane	10	11	ug/L	109		SW846 8260B
	10	11	ug/L	106	3.1	SW846 8260B
1,2-Dibromo-3-chloro- propane	10	11	ug/L	107		SW846 8260B
	10	10	ug/L	104	3.1	SW846 8260B
1,2-Dibromoethane	10	9.6	ug/L	96		SW846 8260B
	10	9.4	ug/L	94	1.8	SW846 8260B
1,2-Dichlorobenzene	10	10	ug/L	101		SW846 8260B
	10	9.8	ug/L	98	2.8	SW846 8260B
1,3-Dichlorobenzene	10	8.8	ug/L	88		SW846 8260B
	10	8.8	ug/L	88	0.10	SW846 8260B

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LABORATORY CONTROL SAMPLE DATA REPORT

GC/MS Volatiles

Client Lot #...: 9J07288 Work Order #...: LMTDP1AC-LCS Matrix.....: WATER
 LCS Lot-Sample#: A9J190000-076 LMTDP1AD-LCSD

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCENT RECOVERY	RPD	METHOD
1,4-Dichlorobenzene	10	8.8	ug/L	88		SW846 8260B
	10	8.9	ug/L	89	1.1	SW846 8260B
Dichlorodifluoromethane	10	8.6	ug/L	86		SW846 8260B
	10	8.7	ug/L	87	0.64	SW846 8260B
1,1-Dichloroethane	10	10	ug/L	100		SW846 8260B
	10	10	ug/L	101	1.5	SW846 8260B
1,2-Dichloroethane	10	10	ug/L	102		SW846 8260B
	10	10	ug/L	103	0.70	SW846 8260B
1,1-Dichloroethene	10	9.6	ug/L	96		SW846 8260B
	10	9.9	ug/L	99	3.0	SW846 8260B
cis-1,2-Dichloroethene	10	9.1	ug/L	91		SW846 8260B
	10	9.3	ug/L	93	2.2	SW846 8260B
trans-1,2-Dichloroethene	10	9.3	ug/L	93		SW846 8260B
	10	9.2	ug/L	92	1.2	SW846 8260B
1,2-Dichloropropane	10	9.7	ug/L	97		SW846 8260B
	10	9.7	ug/L	97	0.44	SW846 8260B
cis-1,3-Dichloropropene	10	9.0	ug/L	90		SW846 8260B
	10	9.4	ug/L	94	3.7	SW846 8260B
trans-1,3-Dichloropropene	10	8.7	ug/L	87		SW846 8260B
	10	8.4	ug/L	84	3.2	SW846 8260B
Ethylbenzene	10	9.4	ug/L	94		SW846 8260B
	10	9.0	ug/L	90	4.1	SW846 8260B
2-Hexanone	10	8.4	ug/L	84		SW846 8260B
	10	8.2	ug/L	82	3.2	SW846 8260B
Isopropylbenzene	10	9.8	ug/L	98		SW846 8260B
	10	9.3	ug/L	93	5.2	SW846 8260B
Methyl acetate	10	8.0	ug/L	80		SW846 8260B
	10	8.4	ug/L	84	4.6	SW846 8260B
Methylene chloride	10	10	ug/L	102		SW846 8260B
	10	11	ug/L	106	3.8	SW846 8260B
Methylcyclohexane	10	6.8 a	ug/L	68		SW846 8260B
	10	6.7 a	ug/L	67	0.41	SW846 8260B
4-Methyl-2-pentanone	10	8.5	ug/L	85		SW846 8260B
	10	8.9	ug/L	89	4.3	SW846 8260B
Methyl tert-butyl ether (MTBE)	10	8.8	ug/L	88		SW846 8260B
	10	9.2	ug/L	92	4.4	SW846 8260B
Styrene	10	9.9	ug/L	99		SW846 8260B
	10	9.7	ug/L	97	1.9	SW846 8260B
1,1,2,2-Tetrachloroethane	10	7.4 a	ug/L	74		SW846 8260B
	10	7.4 a	ug/L	74	0.14	SW846 8260B

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LABORATORY CONTROL SAMPLE DATA REPORT

GC/MS Volatiles

Client Lot #...: 9J07288 Work Order #...: LMTDP1AC-LCS Matrix.....: WATER
 LCS Lot-Sample#: A9J190000-076 LMTDP1AD-LCSD

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCENT RECOVERY	RPD	METHOD
Tetrachloroethene	10	9.4	ug/L	94		SW846 8260B
	10	9.1	ug/L	91	3.3	SW846 8260B
Toluene	10	9.3	ug/L	93		SW846 8260B
	10	8.9	ug/L	89	3.9	SW846 8260B
1,2,4-Trichloro- benzene	10	5.5 a	ug/L	55		SW846 8260B
	10	5.8 a	ug/L	58	4.5	SW846 8260B
1,1,1-Trichloroethane	10	10	ug/L	104		SW846 8260B
	10	10	ug/L	104	0.070	SW846 8260B
1,1,2-Trichloroethane	10	9.5	ug/L	95		SW846 8260B
	10	9.2	ug/L	92	4.2	SW846 8260B
Trichloroethene	10	9.4	ug/L	94		SW846 8260B
	10	9.3	ug/L	93	1.2	SW846 8260B
Trichlorofluoromethane	10	12	ug/L	120		SW846 8260B
	10	12	ug/L	122	1.6	SW846 8260B
1,1,2-Trichloro- 1,2,2-trifluoroethane	10	13	ug/L	130		SW846 8260B
	10	13 a	ug/L	132	1.8	SW846 8260B
Vinyl chloride	10	9.4	ug/L	94		SW846 8260B
	10	9.5	ug/L	95	0.91	SW846 8260B
Xylenes (total)	30	29	ug/L	98		SW846 8260B
	30	28	ug/L	94	4.6	SW846 8260B

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Dibromofluoromethane	88	(73 - 122)
	87	(73 - 122)
1,2-Dichloroethane-d4	87	(61 - 128)
	86	(61 - 128)
Toluene-d8	85	(76 - 110)
	83	(76 - 110)
4-Bromofluorobenzene	100	(74 - 116)
	96	(74 - 116)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters

a Spiked analyte recovery is outside stated control limits.

LABORATORY CONTROL SAMPLE EVALUATION REPORT

GC/MS Volatiles

Client Lot #....: 9J07288 Work Order #....: LMTDP1AC-LCS Matrix.....: WATER
 LCS Lot-Sample#: A9J190000-076 LMTDP1AD-LCSD
 Prep Date.....: 10/15/09 Analysis Date...: 10/15/09
 Prep Batch #....: 9292076
 Dilution Factor: 1 Final Wgt/Vol...: 5 mL
 Initial Wgt/Vol: 5 mL

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD
Acetone	119	(22 - 200)			SW846 8260B
	123	(22 - 200)	3.4	(0-95)	SW846 8260B
Benzene	94	(80 - 116)			SW846 8260B
	94	(80 - 116)	0.010	(0-20)	SW846 8260B
Bromodichloromethane	106	(87 - 130)			SW846 8260B
	107	(87 - 130)	1.0	(0-30)	SW846 8260B
Bromoform	122	(76 - 150)			SW846 8260B
	122	(76 - 150)	0.23	(0-30)	SW846 8260B
Bromomethane	122	(64 - 129)			SW846 8260B
	122	(64 - 129)	0.17	(0-30)	SW846 8260B
2-Butanone	91	(28 - 237)			SW846 8260B
	96	(28 - 237)	4.9	(0-65)	SW846 8260B
Carbon disulfide	103	(73 - 139)			SW846 8260B
	104	(73 - 139)	1.5	(0-30)	SW846 8260B
Carbon tetrachloride	103	(75 - 149)			SW846 8260B
	104	(75 - 149)	1.3	(0-30)	SW846 8260B
Chlorobenzene	92	(76 - 117)			SW846 8260B
	91	(76 - 117)	1.9	(0-20)	SW846 8260B
Chloroethane	102	(66 - 126)			SW846 8260B
	102	(66 - 126)	0.81	(0-30)	SW846 8260B
Chloroform	98	(84 - 128)			SW846 8260B
	101	(84 - 128)	2.4	(0-30)	SW846 8260B
Chloromethane	85	(48 - 123)			SW846 8260B
	82	(48 - 123)	3.0	(0-30)	SW846 8260B
Cyclohexane	76	(70 - 130)			SW846 8260B
	75	(70 - 130)	1.6	(0-30)	SW846 8260B
Dibromochloromethane	109	(81 - 138)			SW846 8260B
	106	(81 - 138)	3.1	(0-30)	SW846 8260B
1,2-Dibromo-3-chloro- propane	107	(70 - 130)			SW846 8260B
	104	(70 - 130)	3.1	(0-30)	SW846 8260B
1,2-Dibromoethane	96	(70 - 130)			SW846 8260B
	94	(70 - 130)	1.8	(0-30)	SW846 8260B
1,2-Dichlorobenzene	101	(70 - 130)			SW846 8260B
	98	(70 - 130)	2.8	(0-30)	SW846 8260B
1,3-Dichlorobenzene	88	(70 - 130)			SW846 8260B
	88	(70 - 130)	0.10	(0-30)	SW846 8260B

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LABORATORY CONTROL SAMPLE EVALUATION REPORT

GC/MS Volatiles

Client Lot #...: 9J07288 Work Order #...: LMTDP1AC-LCS Matrix.....: WATER
 LCS Lot-Sample#: A9J190000-076 LMTDP1AD-LCSD

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD
1,4-Dichlorobenzene	88	(70 - 130)			SW846 8260B
	89	(70 - 130)	1.1	(0-30)	SW846 8260B
Dichlorodifluoromethane	86	(70 - 130)			SW846 8260B
	87	(70 - 130)	0.64	(0-30)	SW846 8260B
1,1-Dichloroethane	100	(86 - 123)			SW846 8260B
	101	(86 - 123)	1.5	(0-30)	SW846 8260B
1,2-Dichloroethane	102	(79 - 136)			SW846 8260B
	103	(79 - 136)	0.70	(0-30)	SW846 8260B
1,1-Dichloroethene	96	(63 - 130)			SW846 8260B
	99	(63 - 130)	3.0	(0-20)	SW846 8260B
cis-1,2-Dichloroethene	91	(85 - 113)			SW846 8260B
	93	(85 - 113)	2.2	(0-30)	SW846 8260B
trans-1,2-Dichloroethene	93	(80 - 120)			SW846 8260B
	92	(80 - 120)	1.2	(0-30)	SW846 8260B
1,2-Dichloropropane	97	(82 - 115)			SW846 8260B
	97	(82 - 115)	0.44	(0-30)	SW846 8260B
cis-1,3-Dichloropropene	90	(84 - 130)			SW846 8260B
	94	(84 - 130)	3.7	(0-30)	SW846 8260B
trans-1,3-Dichloropropene	87	(84 - 130)			SW846 8260B
	84	(84 - 130)	3.2	(0-30)	SW846 8260B
Ethylbenzene	94	(86 - 116)			SW846 8260B
	90	(86 - 116)	4.1	(0-30)	SW846 8260B
2-Hexanone	84	(35 - 200)			SW846 8260B
	82	(35 - 200)	3.2	(0-52)	SW846 8260B
Isopropylbenzene	98	(70 - 130)			SW846 8260B
	93	(70 - 130)	5.2	(0-30)	SW846 8260B
Methyl acetate	80	(70 - 130)			SW846 8260B
	84	(70 - 130)	4.6	(0-30)	SW846 8260B
Methylene chloride	102	(78 - 118)			SW846 8260B
	106	(78 - 118)	3.8	(0-30)	SW846 8260B
Methylcyclohexane	68 a	(70 - 130)			SW846 8260B
	67 a	(70 - 130)	0.41	(0-30)	SW846 8260B
4-Methyl-2-pentanone	85	(78 - 141)			SW846 8260B
	89	(78 - 141)	4.3	(0-32)	SW846 8260B
Methyl tert-butyl ether (MTBE)	88	(70 - 130)			SW846 8260B
	92	(70 - 130)	4.4	(0-30)	SW846 8260B
Styrene	99	(85 - 117)			SW846 8260B
	97	(85 - 117)	1.9	(0-30)	SW846 8260B
1,1,2,2-Tetrachloroethane	74 a	(85 - 118)			SW846 8260B
	74 a	(85 - 118)	0.14	(0-30)	SW846 8260B

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LABORATORY CONTROL SAMPLE EVALUATION REPORT

GC/MS Volatiles

Client Lot #...: 9J07288 Work Order #...: LMTDP1AC-LCS Matrix.....: WATER
 LCS Lot-Sample#: A9J190000-076 LMTDP1AD-LCSD

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD
Tetrachloroethene	94	(88 - 113)			SW846 8260B
	91	(88 - 113)	3.3	(0-30)	SW846 8260B
Toluene	93	(74 - 119)			SW846 8260B
	89	(74 - 119)	3.9	(0-20)	SW846 8260B
1,2,4-Trichloro- benzene	55 a	(70 - 130)			SW846 8260B
	58 a	(70 - 130)	4.5	(0-30)	SW846 8260B
1,1,1-Trichloroethane	104	(78 - 140)			SW846 8260B
	104	(78 - 140)	0.070	(0-30)	SW846 8260B
1,1,2-Trichloroethane	95	(83 - 122)			SW846 8260B
	92	(83 - 122)	4.2	(0-30)	SW846 8260B
Trichloroethene	94	(75 - 122)			SW846 8260B
	93	(75 - 122)	1.2	(0-20)	SW846 8260B
Trichlorofluoromethane	120	(70 - 130)			SW846 8260B
	122	(70 - 130)	1.6	(0-30)	SW846 8260B
1,1,2-Trichloro- 1,2,2-trifluoroethane	130	(70 - 130)			SW846 8260B
	132 a	(70 - 130)	1.8	(0-30)	SW846 8260B
Vinyl chloride	94	(61 - 120)			SW846 8260B
	95	(61 - 120)	0.91	(0-30)	SW846 8260B
Xylenes (total)	98	(87 - 116)			SW846 8260B
	94	(87 - 116)	4.6	(0-30)	SW846 8260B
SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS			
Dibromofluoromethane	88	(73 - 122)			
	87	(73 - 122)			
1,2-Dichloroethane-d4	87	(61 - 128)			
	86	(61 - 128)			
Toluene-d8	85	(76 - 110)			
	83	(76 - 110)			
4-Bromofluorobenzene	100	(74 - 116)			
	96	(74 - 116)			

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters

a Spiked analyte recovery is outside stated control limits.

LABORATORY CONTROL SAMPLE DATA REPORT

GC/MS Volatiles

Client Lot #....: 9J07288 Work Order #....: LMT6Q1AC-LCS Matrix.....: WATER
 LCS Lot-Sample#: A9J190000-286 LMT6Q1AD-LCSD
 Prep Date.....: 10/16/09 Analysis Date...: 10/16/09
 Prep Batch #....: 9292286
 Dilution Factor: 1 Final Wgt/Vol...: 5 mL
 Initial Wgt/Vol: 5 mL

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCENT RECOVERY	RPD	METHOD
Acetone	10	13	ug/L	129		SW846 8260B
	10	12	ug/L	121	6.6	SW846 8260B
Benzene	10	9.7	ug/L	97		SW846 8260B
	10	9.7	ug/L	97	0.28	SW846 8260B
Bromodichloromethane	10	11	ug/L	110		SW846 8260B
	10	11	ug/L	109	1.0	SW846 8260B
Bromoform	10	13	ug/L	126		SW846 8260B
	10	13	ug/L	128	1.6	SW846 8260B
Bromomethane	10	14 a	ug/L	140		SW846 8260B
	10	14 a	ug/L	138	2.0	SW846 8260B
2-Butanone	10	11	ug/L	105		SW846 8260B
	10	10	ug/L	102	3.8	SW846 8260B
Carbon disulfide	10	10	ug/L	103		SW846 8260B
	10	10	ug/L	102	0.71	SW846 8260B
Carbon tetrachloride	10	11	ug/L	107		SW846 8260B
	10	11	ug/L	107	0.28	SW846 8260B
Chlorobenzene	10	9.3	ug/L	93		SW846 8260B
	10	9.2	ug/L	92	0.74	SW846 8260B
Chloroethane	10	12	ug/L	118		SW846 8260B
	10	12	ug/L	124	5.2	SW846 8260B
Chloroform	10	10	ug/L	104		SW846 8260B
	10	10	ug/L	101	2.6	SW846 8260B
Chloromethane	10	9.2	ug/L	92		SW846 8260B
	10	9.2	ug/L	92	0.10	SW846 8260B
Cyclohexane	10	8.1	ug/L	81		SW846 8260B
	10	8.1	ug/L	81	0.38	SW846 8260B
Dibromochloromethane	10	11	ug/L	110		SW846 8260B
	10	11	ug/L	111	0.34	SW846 8260B
1,2-Dibromo-3-chloro- propane	10	12	ug/L	122		SW846 8260B
	10	11	ug/L	114	6.7	SW846 8260B
1,2-Dibromoethane	10	10	ug/L	101		SW846 8260B
	10	10	ug/L	101	0.55	SW846 8260B
1,2-Dichlorobenzene	10	10	ug/L	102		SW846 8260B
	10	10	ug/L	103	1.8	SW846 8260B
1,3-Dichlorobenzene	10	9.0	ug/L	90		SW846 8260B
	10	8.9	ug/L	89	0.55	SW846 8260B

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LABORATORY CONTROL SAMPLE DATA REPORT

GC/MS Volatiles

Client Lot #...: 9J07288 Work Order #...: LMT6Q1AC-LCS Matrix.....: WATER
 LCS Lot-Sample#: A9J190000-286 LMT6Q1AD-LCSD

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCENT RECOVERY	RPD	METHOD
1,4-Dichlorobenzene	10	8.9	ug/L	89		SW846 8260B
	10	9.0	ug/L	90	1.4	SW846 8260B
Dichlorodifluoromethane	10	11	ug/L	109		SW846 8260B
	10	11	ug/L	110	0.94	SW846 8260B
1,1-Dichloroethane	10	10	ug/L	103		SW846 8260B
	10	10	ug/L	103	0.27	SW846 8260B
1,2-Dichloroethane	10	11	ug/L	105		SW846 8260B
	10	10	ug/L	104	0.92	SW846 8260B
1,1-Dichloroethene	10	9.7	ug/L	97		SW846 8260B
	10	9.8	ug/L	98	0.56	SW846 8260B
cis-1,2-Dichloroethene	10	9.4	ug/L	94		SW846 8260B
	10	9.6	ug/L	96	1.4	SW846 8260B
trans-1,2-Dichloroethene	10	9.6	ug/L	96		SW846 8260B
	10	9.5	ug/L	95	0.73	SW846 8260B
1,2-Dichloropropane	10	9.8	ug/L	98		SW846 8260B
	10	9.9	ug/L	99	1.0	SW846 8260B
cis-1,3-Dichloropropene	10	9.2	ug/L	92		SW846 8260B
	10	9.3	ug/L	93	1.5	SW846 8260B
trans-1,3-Dichloropropene	10	8.7	ug/L	87		SW846 8260B
	10	8.8	ug/L	88	0.30	SW846 8260B
Ethylbenzene	10	9.3	ug/L	93		SW846 8260B
	10	9.5	ug/L	95	2.1	SW846 8260B
2-Hexanone	10	9.6	ug/L	96		SW846 8260B
	10	9.6	ug/L	96	0.36	SW846 8260B
Isopropylbenzene	10	9.6	ug/L	96		SW846 8260B
	10	9.6	ug/L	96	0.58	SW846 8260B
Methyl acetate	10	8.9	ug/L	89		SW846 8260B
	10	8.9	ug/L	89	0.18	SW846 8260B
Methylene chloride	10	12 a	ug/L	124		SW846 8260B
	10	12 a	ug/L	124	0.050	SW846 8260B
Methylcyclohexane	10	7.0	ug/L	70		SW846 8260B
	10	7.0	ug/L	70	0.14	SW846 8260B
4-Methyl-2-pentanone	10	9.8	ug/L	98		SW846 8260B
	10	9.8	ug/L	98	0.55	SW846 8260B
Methyl tert-butyl ether (MTBE)	10	9.6	ug/L	96		SW846 8260B
	10	9.7	ug/L	97	0.58	SW846 8260B
Styrene	10	9.8	ug/L	98		SW846 8260B
	10	9.9	ug/L	99	1.2	SW846 8260B
1,1,2,2-Tetrachloroethane	10	8.0 a	ug/L	80		SW846 8260B
	10	7.9 a	ug/L	79	0.21	SW846 8260B

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LABORATORY CONTROL SAMPLE DATA REPORT

GC/MS Volatiles

Client Lot #...: 9J07288 Work Order #...: LMT6Q1AC-LCS Matrix.....: WATER
 LCS Lot-Sample#: A9J190000-286 LMT6Q1AD-LCSD

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCENT RECOVERY	RPD	METHOD
Tetrachloroethene	10	9.1	ug/L	91		SW846 8260B
	10	9.0	ug/L	90	0.79	SW846 8260B
Toluene	10	9.2	ug/L	92		SW846 8260B
	10	9.2	ug/L	92	0.27	SW846 8260B
1,2,4-Trichloro- benzene	10	5.9 a	ug/L	59		SW846 8260B
	10	5.9 a	ug/L	59	0.49	SW846 8260B
1,1,1-Trichloroethane	10	11	ug/L	107		SW846 8260B
	10	11	ug/L	108	0.67	SW846 8260B
1,1,2-Trichloroethane	10	9.8	ug/L	98		SW846 8260B
	10	9.8	ug/L	98	0.30	SW846 8260B
Trichloroethene	10	9.7	ug/L	97		SW846 8260B
	10	9.5	ug/L	95	2.1	SW846 8260B
Trichlorofluoromethane	10	13 a	ug/L	134		SW846 8260B
	10	13 a	ug/L	134	0.12	SW846 8260B
1,1,2-Trichloro- 1,2,2-trifluoroethane	10	15 a	ug/L	154		SW846 8260B
	10	15 a	ug/L	152	1.1	SW846 8260B
Vinyl chloride	10	10	ug/L	103		SW846 8260B
	10	10	ug/L	103	0.010	SW846 8260B
Xylenes (total)	30	29	ug/L	98		SW846 8260B
	30	29	ug/L	98	0.25	SW846 8260B

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Dibromofluoromethane	90	(73 - 122)
	88	(73 - 122)
1,2-Dichloroethane-d4	89	(61 - 128)
	89	(61 - 128)
Toluene-d8	83	(76 - 110)
	83	(76 - 110)
4-Bromofluorobenzene	100	(74 - 116)
	98	(74 - 116)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters

a Spiked analyte recovery is outside stated control limits.

LABORATORY CONTROL SAMPLE EVALUATION REPORT

GC/MS Volatiles

Client Lot #...: 9J07288 Work Order #...: LMT6Q1AC-LCS Matrix.....: WATER
 LCS Lot-Sample#: A9J190000-286 LMT6Q1AD-LCSD
 Prep Date.....: 10/16/09 Analysis Date...: 10/16/09
 Prep Batch #...: 9292286
 Dilution Factor: 1 Final Wgt/Vol...: 5 mL
 Initial Wgt/Vol: 5 mL

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD
Acetone	129	(22 - 200)			SW846 8260B
	121	(22 - 200)	6.6	(0-95)	SW846 8260B
Benzene	97	(80 - 116)			SW846 8260B
	97	(80 - 116)	0.28	(0-20)	SW846 8260B
Bromodichloromethane	110	(87 - 130)			SW846 8260B
	109	(87 - 130)	1.0	(0-30)	SW846 8260B
Bromoform	126	(76 - 150)			SW846 8260B
	128	(76 - 150)	1.6	(0-30)	SW846 8260B
Bromomethane	140 a	(64 - 129)			SW846 8260B
	138 a	(64 - 129)	2.0	(0-30)	SW846 8260B
2-Butanone	105	(28 - 237)			SW846 8260B
	102	(28 - 237)	3.8	(0-65)	SW846 8260B
Carbon disulfide	103	(73 - 139)			SW846 8260B
	102	(73 - 139)	0.71	(0-30)	SW846 8260B
Carbon tetrachloride	107	(75 - 149)			SW846 8260B
	107	(75 - 149)	0.28	(0-30)	SW846 8260B
Chlorobenzene	93	(76 - 117)			SW846 8260B
	92	(76 - 117)	0.74	(0-20)	SW846 8260B
Chloroethane	118	(66 - 126)			SW846 8260B
	124	(66 - 126)	5.2	(0-30)	SW846 8260B
Chloroform	104	(84 - 128)			SW846 8260B
	101	(84 - 128)	2.6	(0-30)	SW846 8260B
Chloromethane	92	(48 - 123)			SW846 8260B
	92	(48 - 123)	0.10	(0-30)	SW846 8260B
Cyclohexane	81	(70 - 130)			SW846 8260B
	81	(70 - 130)	0.38	(0-30)	SW846 8260B
Dibromochloromethane	110	(81 - 138)			SW846 8260B
	111	(81 - 138)	0.34	(0-30)	SW846 8260B
1,2-Dibromo-3-chloro- propane	122	(70 - 130)			SW846 8260B
	114	(70 - 130)	6.7	(0-30)	SW846 8260B
1,2-Dibromoethane	101	(70 - 130)			SW846 8260B
	101	(70 - 130)	0.55	(0-30)	SW846 8260B
1,2-Dichlorobenzene	102	(70 - 130)			SW846 8260B
	103	(70 - 130)	1.8	(0-30)	SW846 8260B
1,3-Dichlorobenzene	90	(70 - 130)			SW846 8260B
	89	(70 - 130)	0.55	(0-30)	SW846 8260B

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LABORATORY CONTROL SAMPLE EVALUATION REPORT

GC/MS Volatiles

Client Lot #...: 9J07288 Work Order #...: LMT6Q1AC-LCS Matrix.....: WATER
 LCS Lot-Sample#: A9J190000-286 LMT6Q1AD-LCSD

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD
1,4-Dichlorobenzene	89	(70 - 130)			SW846 8260B
	90	(70 - 130)	1.4	(0-30)	SW846 8260B
Dichlorodifluoromethane	109	(70 - 130)			SW846 8260B
	110	(70 - 130)	0.94	(0-30)	SW846 8260B
1,1-Dichloroethane	103	(86 - 123)			SW846 8260B
	103	(86 - 123)	0.27	(0-30)	SW846 8260B
1,2-Dichloroethane	105	(79 - 136)			SW846 8260B
	104	(79 - 136)	0.92	(0-30)	SW846 8260B
1,1-Dichloroethene	97	(63 - 130)			SW846 8260B
	98	(63 - 130)	0.56	(0-20)	SW846 8260B
cis-1,2-Dichloroethene	94	(85 - 113)			SW846 8260B
	96	(85 - 113)	1.4	(0-30)	SW846 8260B
trans-1,2-Dichloroethene	96	(80 - 120)			SW846 8260B
	95	(80 - 120)	0.73	(0-30)	SW846 8260B
1,2-Dichloropropane	98	(82 - 115)			SW846 8260B
	99	(82 - 115)	1.0	(0-30)	SW846 8260B
cis-1,3-Dichloropropene	92	(84 - 130)			SW846 8260B
	93	(84 - 130)	1.5	(0-30)	SW846 8260B
trans-1,3-Dichloropropene	87	(84 - 130)			SW846 8260B
	88	(84 - 130)	0.30	(0-30)	SW846 8260B
Ethylbenzene	93	(86 - 116)			SW846 8260B
	95	(86 - 116)	2.1	(0-30)	SW846 8260B
2-Hexanone	96	(35 - 200)			SW846 8260B
	96	(35 - 200)	0.36	(0-52)	SW846 8260B
Isopropylbenzene	96	(70 - 130)			SW846 8260B
	96	(70 - 130)	0.58	(0-30)	SW846 8260B
Methyl acetate	89	(70 - 130)			SW846 8260B
	89	(70 - 130)	0.18	(0-30)	SW846 8260B
Methylene chloride	124 a	(78 - 118)			SW846 8260B
	124 a	(78 - 118)	0.050	(0-30)	SW846 8260B
Methylcyclohexane	70	(70 - 130)			SW846 8260B
	70	(70 - 130)	0.14	(0-30)	SW846 8260B
4-Methyl-2-pentanone	98	(78 - 141)			SW846 8260B
	98	(78 - 141)	0.55	(0-32)	SW846 8260B
Methyl tert-butyl ether (MTBE)	96	(70 - 130)			SW846 8260B
	97	(70 - 130)	0.58	(0-30)	SW846 8260B
Styrene	98	(85 - 117)			SW846 8260B
	99	(85 - 117)	1.2	(0-30)	SW846 8260B
1,1,2,2-Tetrachloroethane	80 a	(85 - 118)			SW846 8260B
	79 a	(85 - 118)	0.21	(0-30)	SW846 8260B

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LABORATORY CONTROL SAMPLE EVALUATION REPORT

GC/MS Volatiles

Client Lot #...: 9J07288 Work Order #...: LMT6Q1AC-LCS Matrix.....: WATER
LCS Lot-Sample#: A9J190000-286 LMT6Q1AD-LCSD

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD
Tetrachloroethene	91	(88 - 113)			SW846 8260B
	90	(88 - 113)	0.79	(0-30)	SW846 8260B
Toluene	92	(74 - 119)			SW846 8260B
	92	(74 - 119)	0.27	(0-20)	SW846 8260B
1,2,4-Trichloro- benzene	59 a	(70 - 130)			SW846 8260B
	59 a	(70 - 130)	0.49	(0-30)	SW846 8260B
1,1,1-Trichloroethane	107	(78 - 140)			SW846 8260B
	108	(78 - 140)	0.67	(0-30)	SW846 8260B
1,1,2-Trichloroethane	98	(83 - 122)			SW846 8260B
	98	(83 - 122)	0.30	(0-30)	SW846 8260B
Trichloroethene	97	(75 - 122)			SW846 8260B
	95	(75 - 122)	2.1	(0-20)	SW846 8260B
Trichlorofluoromethane	134 a	(70 - 130)			SW846 8260B
	134 a	(70 - 130)	0.12	(0-30)	SW846 8260B
1,1,2-Trichloro- 1,2,2-trifluoroethane	154 a	(70 - 130)			SW846 8260B
	152 a	(70 - 130)	1.1	(0-30)	SW846 8260B
Vinyl chloride	103	(61 - 120)			SW846 8260B
	103	(61 - 120)	0.010	(0-30)	SW846 8260B
Xylenes (total)	98	(87 - 116)			SW846 8260B
	98	(87 - 116)	0.25	(0-30)	SW846 8260B

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Dibromofluoromethane	90	(73 - 122)
	88	(73 - 122)
1,2-Dichloroethane-d4	89	(61 - 128)
	89	(61 - 128)
Toluene-d8	83	(76 - 110)
	83	(76 - 110)
4-Bromofluorobenzene	100	(74 - 116)
	98	(74 - 116)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters

a Spiked analyte recovery is outside stated control limits.

MATRIX SPIKE SAMPLE DATA REPORT

GC/MS Volatiles

Client Lot #... 9J07288 **Work Order #...** LL5021AC-MS **Matrix.....** WG
MS Lot-Sample #: A9J070288-005 LL5021AD-MSD
Date Sampled... 10/06/09 11:00 **Date Received...** 10/07/09
Prep Date..... 10/15/09 **Analysis Date...** 10/15/09
Prep Batch #... 9288558
Dilution Factor: 1 **Initial Wgt/Vol:** 5 mL **Final Wgt/Vol...** 5 mL

PARAMETER	SAMPLE AMOUNT	SPIKE AMT	MEASRD AMOUNT	UNITS	PERCNT RECVRY	RPD	METHOD
Acetone	ND	10	7.5	ug/L	75		SW846 8260B
	ND	10	9.3	ug/L	93	20	SW846 8260B
Benzene	ND	10	9.0	ug/L	90		SW846 8260B
	ND	10	9.1	ug/L	91	1.0	SW846 8260B
Bromodichloromethane	ND	10	9.2	ug/L	92		SW846 8260B
	ND	10	9.2	ug/L	92	0.35	SW846 8260B
Bromoform	ND	10	8.8	ug/L	88		SW846 8260B
	ND	10	9.1	ug/L	91	3.0	SW846 8260B
Bromomethane	ND	10	11	ug/L	112		SW846 8260B
	ND	10	12	ug/L	119	6.4	SW846 8260B
2-Butanone	ND	10	7.9	ug/L	79		SW846 8260B
	ND	10	8.7	ug/L	87	10	SW846 8260B
Carbon disulfide	ND	10	8.9	ug/L	89		SW846 8260B
	ND	10	8.9	ug/L	89	0.34	SW846 8260B
Carbon tetrachloride	ND	10	11	ug/L	107		SW846 8260B
	ND	10	11	ug/L	107	0.06	SW846 8260B
Chlorobenzene	ND	10	9.4	ug/L	94		SW846 8260B
	ND	10	9.7	ug/L	97	3.8	SW846 8260B
Chloroethane	ND	10	9.1	ug/L	91		SW846 8260B
	ND	10	9.2	ug/L	92	1.5	SW846 8260B
Chloroform	ND	10	9.5	ug/L	95		SW846 8260B
	ND	10	9.6	ug/L	96	0.72	SW846 8260B
Chloromethane	ND	10	8.1	ug/L	81		SW846 8260B
	ND	10	8.2	ug/L	82	1.2	SW846 8260B
Cyclohexane	ND	10	7.7	ug/L	77		SW846 8260B
	ND	10	7.8	ug/L	78	1.5	SW846 8260B
Dibromochloromethane	ND	10	9.1	ug/L	91		SW846 8260B
	ND	10	9.3	ug/L	93	2.5	SW846 8260B
1,2-Dibromo-3-chloro- propane	ND	10	7.6	ug/L	76		SW846 8260B
	ND	10	8.2	ug/L	82	7.4	SW846 8260B
1,2-Dibromoethane	ND	10	8.5	ug/L	85		SW846 8260B
	ND	10	9.1	ug/L	91	7.2	SW846 8260B
1,2-Dichlorobenzene	ND	10	9.2	ug/L	92		SW846 8260B
	ND	10	9.5	ug/L	95	2.9	SW846 8260B
1,3-Dichlorobenzene	ND	10	9.2	ug/L	92		SW846 8260B
	ND	10	9.5	ug/L	95	3.9	SW846 8260B
1,4-Dichlorobenzene	ND	10	9.1	ug/L	91		SW846 8260B
	ND	10	9.4	ug/L	94	3.1	SW846 8260B

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MATRIX SPIKE SAMPLE DATA REPORT

GC/MS Volatiles

Client Lot #...: 9J07288 Work Order #...: LL5021AC-MS Matrix.....: WG
MS Lot-Sample #: A9J070288-005 LL5021AD-MSD

PARAMETER	SAMPLE AMOUNT	SPIKE AMT	MEASRD AMOUNT	UNITS	PERCNT RECVRY	RPD	METHOD
Dichlorodifluoromethane	ND	10	5.9	ug/L	59 a		SW846 8260B
	ND	10	6.1	ug/L	61 a	4.6	SW846 8260B
1,1-Dichloroethane	ND	10	9.5	ug/L	95		SW846 8260B
	ND	10	9.5	ug/L	95	0.28	SW846 8260B
1,2-Dichloroethane	ND	10	9.2	ug/L	92		SW846 8260B
	ND	10	9.4	ug/L	94	2.0	SW846 8260B
1,1-Dichloroethene	ND	10	9.0	ug/L	90		SW846 8260B
	ND	10	9.3	ug/L	93	3.5	SW846 8260B
cis-1,2-Dichloroethene	18	10	28	ug/L	93		SW846 8260B
	18	10	28	ug/L	92	0.19	SW846 8260B
trans-1,2-Dichloroethene	0.58	10	10	ug/L	95		SW846 8260B
	0.58	10	10	ug/L	95	0.06	SW846 8260B
1,2-Dichloropropane	ND	10	9.3	ug/L	93		SW846 8260B
	ND	10	9.2	ug/L	92	0.64	SW846 8260B
cis-1,3-Dichloropropene	ND	10	7.0	ug/L	70 a		SW846 8260B
	ND	10	7.3	ug/L	73 a	4.0	SW846 8260B
trans-1,3-Dichloropropene	ND	10	7.5	ug/L	75		SW846 8260B
	ND	10	8.0	ug/L	80	6.9	SW846 8260B
Ethylbenzene	ND	10	9.4	ug/L	94		SW846 8260B
	ND	10	9.8	ug/L	98	3.8	SW846 8260B
2-Hexanone	ND	10	8.1	ug/L	81		SW846 8260B
	ND	10	8.9	ug/L	89	10	SW846 8260B
Isopropylbenzene	ND	10	9.5	ug/L	95		SW846 8260B
	ND	10	9.6	ug/L	96	0.50	SW846 8260B
Methyl acetate	ND	10	6.2	ug/L	62 a		SW846 8260B
	ND	10	6.4	ug/L	64 a	2.5	SW846 8260B
Methylene chloride	ND	10	8.6	ug/L	86		SW846 8260B
	ND	10	8.3	ug/L	83	3.0	SW846 8260B
Methylcyclohexane	ND	10	7.1	ug/L	71		SW846 8260B
	ND	10	7.1	ug/L	71	0.59	SW846 8260B
4-Methyl-2-pentanone	ND	10	7.3	ug/L	73 a		SW846 8260B
	ND	10	7.9	ug/L	79 a	8.5	SW846 8260B
Methyl tert-butyl ether (MTBE)	ND	10	8.0	ug/L	80		SW846 8260B
	ND	10	8.5	ug/L	85	6.4	SW846 8260B
Styrene	ND	10	9.7	ug/L	97		SW846 8260B
	ND	10	10	ug/L	100	2.9	SW846 8260B
1,1,2,2-Tetrachloroethane	ND	10	7.4	ug/L	74 a		SW846 8260B
	ND	10	8.4	ug/L	84 a	12	SW846 8260B
Tetrachloroethene	25	10	34	ug/L	90		SW846 8260B
	25	10	34	ug/L	90	0.09	SW846 8260B

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MATRIX SPIKE SAMPLE DATA REPORT

GC/MS Volatiles

Client Lot #...: 9J07288 Work Order #...: LL5021AC-MS Matrix.....: WG
MS Lot-Sample #: A9J070288-005 LL5021AD-MSD

PARAMETER	SAMPLE AMOUNT	SPIKE AMT	MEASRD AMOUNT	UNITS	PERCNT RECVRY	RPD	METHOD
Toluene	ND	10	9.0	ug/L	90		SW846 8260B
	ND	10	9.3	ug/L	93	3.4	SW846 8260B
1,2,4-Trichloro- benzene	ND	10	8.7	ug/L	87		SW846 8260B
	ND	10	9.4	ug/L	94	8.7	SW846 8260B
1,1,1-Trichloroethane	ND	10	9.9	ug/L	99		SW846 8260B
	ND	10	9.6	ug/L	96	2.6	SW846 8260B
1,1,2-Trichloroethane	ND	10	8.3	ug/L	83 a		SW846 8260B
	ND	10	9.0	ug/L	90	8.3	SW846 8260B
Trichloroethene	5.5	10	15	ug/L	93		SW846 8260B
	5.5	10	15	ug/L	93	0.33	SW846 8260B
Trichlorofluoromethane	ND	10	15	ug/L	145 a		SW846 8260B
	ND	10	15	ug/L	145 a	0.09	SW846 8260B
1,1,2-Trichloro- 1,2,2-trifluoroethane	ND	10	14	ug/L	141 a		SW846 8260B
	ND	10	15	ug/L	146 a	3.4	SW846 8260B
Vinyl chloride	ND	10	10	ug/L	100		SW846 8260B
	ND	10	10	ug/L	100	0.74	SW846 8260B
Xylenes (total)	ND	30	29	ug/L	97		SW846 8260B
	ND	30	30	ug/L	100	3.6	SW846 8260B

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Dibromofluoromethane	94	(73 - 122)
	95	(73 - 122)
1,2-Dichloroethane-d4	90	(61 - 128)
	88	(61 - 128)
Toluene-d8	89	(76 - 110)
	92	(76 - 110)
4-Bromofluorobenzene	97	(74 - 116)
	100	(74 - 116)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters

a. Spiked analyte recovery is outside stated control limits.

MATRIX SPIKE SAMPLE EVALUATION REPORT

GC/MS Volatiles

Client Lot #...: 9J07288 Work Order #...: LL5021AC-MS Matrix.....: WG
 MS Lot-Sample #: A9J070288-005 LL5021AD-MSD
 Date Sampled...: 10/06/09 11:00 Date Received...: 10/07/09
 Prep Date.....: 10/15/09 Analysis Date...: 10/15/09
 Prep Batch #...: 9288558
 Dilution Factor: 1 Initial Wgt/Vol: 5 mL Final Wgt/Vol...: 5 mL

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD
Acetone	75	(45 - 128)			SW846 8260B
	93	(45 - 128)	20	(0-30)	SW846 8260B
Benzene	90	(78 - 118)			SW846 8260B
	91	(78 - 118)	1.0	(0-20)	SW846 8260B
Bromodichloromethane	92	(80 - 146)			SW846 8260B
	92	(80 - 146)	0.35	(0-30)	SW846 8260B
Bromoform	88	(58 - 176)			SW846 8260B
	91	(58 - 176)	3.0	(0-30)	SW846 8260B
Bromomethane	112	(55 - 145)			SW846 8260B
	119	(55 - 145)	6.4	(0-30)	SW846 8260B
2-Butanone	79	(71 - 123)			SW846 8260B
	87	(71 - 123)	10	(0-30)	SW846 8260B
Carbon disulfide	89	(69 - 138)			SW846 8260B
	89	(69 - 138)	0.34	(0-41)	SW846 8260B
Carbon tetrachloride	107	(63 - 176)			SW846 8260B
	107	(63 - 176)	0.06	(0-30)	SW846 8260B
Chlorobenzene	94	(76 - 117)			SW846 8260B
	97	(76 - 117)	3.8	(0-20)	SW846 8260B
Chloroethane	91	(59 - 142)			SW846 8260B
	92	(59 - 142)	1.5	(0-30)	SW846 8260B
Chloroform	95	(83 - 141)			SW846 8260B
	96	(83 - 141)	0.72	(0-30)	SW846 8260B
Chloromethane	81	(40 - 137)			SW846 8260B
	82	(40 - 137)	1.2	(0-39)	SW846 8260B
Cyclohexane	77	(70 - 130)			SW846 8260B
	78	(70 - 130)	1.5	(0-30)	SW846 8260B
Dibromochloromethane	91	(71 - 158)			SW846 8260B
	93	(71 - 158)	2.5	(0-30)	SW846 8260B
1,2-Dibromo-3-chloro- propane	76	(70 - 130)			SW846 8260B
	82	(70 - 130)	7.4	(0-30)	SW846 8260B
1,2-Dibromoethane	85	(70 - 130)			SW846 8260B
	91	(70 - 130)	7.2	(0-30)	SW846 8260B
1,2-Dichlorobenzene	92	(70 - 130)			SW846 8260B
	95	(70 - 130)	2.9	(0-30)	SW846 8260B
1,3-Dichlorobenzene	92	(70 - 130)			SW846 8260B
	95	(70 - 130)	3.9	(0-30)	SW846 8260B
1,4-Dichlorobenzene	91	(70 - 130)			SW846 8260B
	94	(70 - 130)	3.1	(0-30)	SW846 8260B

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MATRIX SPIKE SAMPLE EVALUATION REPORT

GC/MS Volatiles

Client Lot #...: 9J07288 Work Order #...: LL5021AC-MS Matrix.....: WG
MS Lot-Sample #: A9J070288-005 LL5021AD-MSD

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD
Dichlorodifluoromethane	59 a	(70 - 130)			SW846 8260B
	61 a	(70 - 130)	4.6	(0-30)	SW846 8260B
1,1-Dichloroethane	95	(88 - 127)			SW846 8260B
	95	(88 - 127)	0.28	(0-30)	SW846 8260B
1,2-Dichloroethane	92	(71 - 160)			SW846 8260B
	94	(71 - 160)	2.0	(0-30)	SW846 8260B
1,1-Dichloroethene	90	(62 - 130)			SW846 8260B
	93	(62 - 130)	3.5	(0-20)	SW846 8260B
cis-1,2-Dichloroethene	93	(87 - 114)			SW846 8260B
	92	(87 - 114)	0.19	(0-30)	SW846 8260B
trans-1,2-Dichloroethene	95	(85 - 116)			SW846 8260B
	95	(85 - 116)	0.06	(0-30)	SW846 8260B
1,2-Dichloropropane	93	(87 - 114)			SW846 8260B
	92	(87 - 114)	0.64	(0-30)	SW846 8260B
cis-1,3-Dichloropropene	70 a	(82 - 130)			SW846 8260B
	73 a	(82 - 130)	4.0	(0-30)	SW846 8260B
trans-1,3-Dichloropropene	75	(73 - 147)			SW846 8260B
	80	(73 - 147)	6.9	(0-30)	SW846 8260B
Ethylbenzene	94	(86 - 132)			SW846 8260B
	98	(86 - 132)	3.8	(0-30)	SW846 8260B
2-Hexanone	81	(81 - 128)			SW846 8260B
	89	(81 - 128)	10	(0-30)	SW846 8260B
Isopropylbenzene	95	(70 - 130)			SW846 8260B
	96	(70 - 130)	0.50	(0-30)	SW846 8260B
Methyl acetate	62 a	(70 - 130)			SW846 8260B
	64 a	(70 - 130)	2.5	(0-30)	SW846 8260B
Methylene chloride	86	(82 - 115)			SW846 8260B
	83	(82 - 115)	3.0	(0-30)	SW846 8260B
Methylcyclohexane	71	(70 - 130)			SW846 8260B
	71	(70 - 130)	0.59	(0-30)	SW846 8260B
4-Methyl-2-pentanone	73 a	(82 - 135)			SW846 8260B
	79 a	(82 - 135)	8.5	(0-30)	SW846 8260B
Methyl tert-butyl ether (MTBE)	80	(70 - 130)			SW846 8260B
	85	(70 - 130)	6.4	(0-30)	SW846 8260B
Styrene	97	(83 - 120)			SW846 8260B
	100	(83 - 120)	2.9	(0-30)	SW846 8260B
1,1,2,2-Tetrachloroethane	74 a	(88 - 116)			SW846 8260B
	84 a	(88 - 116)	12	(0-30)	SW846 8260B
Tetrachloroethene	90	(85 - 121)			SW846 8260B
	90	(85 - 121)	0.09	(0-30)	SW846 8260B

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MATRIX SPIKE SAMPLE EVALUATION REPORT

GC/MS Volatiles

Client Lot #...: 9J07288 Work Order #...: LL5021AC-MS Matrix.....: WG
MS Lot-Sample #: A9J070288-005 LL5021AD-MSD

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD
Toluene	90	(70 - 119)			SW846 8260B
	93	(70 - 119)	3.4	(0-20)	SW846 8260B
1,2,4-Trichloro- benzene	87	(70 - 130)			SW846 8260B
	94	(70 - 130)	8.7	(0-30)	SW846 8260B
1,1,1-Trichloroethane	99	(71 - 162)			SW846 8260B
	96	(71 - 162)	2.6	(0-30)	SW846 8260B
1,1,2-Trichloroethane	83 a	(86 - 129)			SW846 8260B
	90	(86 - 129)	8.3	(0-30)	SW846 8260B
Trichloroethene	93	(62 - 130)			SW846 8260B
	93	(62 - 130)	0.33	(0-20)	SW846 8260B
Trichlorofluoromethane	145 a	(70 - 130)			SW846 8260B
	145 a	(70 - 130)	0.09	(0-30)	SW846 8260B
1,1,2-Trichloro- 1,2,2-trifluoroethane	141 a	(70 - 130)			SW846 8260B
	146 a	(70 - 130)	3.4	(0-30)	SW846 8260B
Vinyl chloride	100	(88 - 126)			SW846 8260B
	100	(88 - 126)	0.74	(0-30)	SW846 8260B
Xylenes (total)	97	(89 - 121)			SW846 8260B
	100	(89 - 121)	3.6	(0-30)	SW846 8260B

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Dibromofluoromethane	94	(73 - 122)
	95	(73 - 122)
1,2-Dichloroethane-d4	90	(61 - 128)
	88	(61 - 128)
Toluene-d8	89	(76 - 110)
	92	(76 - 110)
4-Bromofluorobenzene	97	(74 - 116)
	100	(74 - 116)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters

a. Spiked analyte recovery is outside stated control limits.

MATRIX SPIKE SAMPLE DATA REPORT

GC/MS Volatiles

Client Lot #... 9J07288 **Work Order #...** LMAN31AC-MS **Matrix.....** WG
MS Lot-Sample #: A9J090242-019 LMAN31AD-MSD
Date Sampled... 10/08/09 10:25 **Date Received...** 10/09/09
Prep Date..... 10/16/09 **Analysis Date...** 10/16/09
Prep Batch #... 9292076
Dilution Factor: 1 **Initial Wgt/Vol:** 5 mL **Final Wgt/Vol...** 5 mL

PARAMETER	SAMPLE AMOUNT	SPIKE AMT	MEASRD AMOUNT	UNITS	PERCNT RECVRY	RPD	METHOD
Acetone	ND	10	10	ug/L	100		SW846 8260B
	ND	10	11	ug/L	106	6.3	SW846 8260B
Benzene	ND	10	9.2	ug/L	92		SW846 8260B
	ND	10	9.0	ug/L	90	2.4	SW846 8260B
Bromodichloromethane	ND	10	10	ug/L	103		SW846 8260B
	ND	10	10	ug/L	101	1.8	SW846 8260B
Bromoform	ND	10	12	ug/L	124		SW846 8260B
	ND	10	12	ug/L	124	0.24	SW846 8260B
Bromomethane	ND	10	8.7	ug/L	87		SW846 8260B
	ND	10	10	ug/L	100	15	SW846 8260B
2-Butanone	ND	10	9.6	ug/L	96		SW846 8260B
	ND	10	10	ug/L	103	6.5	SW846 8260B
Carbon disulfide	ND	10	10	ug/L	102		SW846 8260B
	ND	10	9.5	ug/L	95	7.5	SW846 8260B
Carbon tetrachloride	ND	10	10	ug/L	103		SW846 8260B
	ND	10	10	ug/L	101	2.1	SW846 8260B
Chlorobenzene	ND	10	8.7	ug/L	87		SW846 8260B
	ND	10	8.5	ug/L	85	2.0	SW846 8260B
Chloroethane	ND	10	11	ug/L	112		SW846 8260B
	ND	10	12	ug/L	117	4.9	SW846 8260B
Chloroform	0.17	10	10	ug/L	98		SW846 8260B
	0.17	10	9.8	ug/L	96	1.8	SW846 8260B
Chloromethane	ND	10	7.3	ug/L	73		SW846 8260B
	ND	10	7.6	ug/L	76	4.8	SW846 8260B
Cyclohexane	ND	10	7.1	ug/L	71		SW846 8260B
	ND	10	7.3	ug/L	73	3.4	SW846 8260B
Dibromochloromethane	ND	10	11	ug/L	106		SW846 8260B
	ND	10	10	ug/L	103	2.5	SW846 8260B
1,2-Dibromo-3-chloro- propane	ND	10	11	ug/L	106		SW846 8260B
	ND	10	12	ug/L	122	14	SW846 8260B
1,2-Dibromoethane	ND	10	9.5	ug/L	95		SW846 8260B
	ND	10	9.5	ug/L	95	0.30	SW846 8260B
1,2-Dichlorobenzene	ND	10	9.3	ug/L	93		SW846 8260B
	ND	10	9.1	ug/L	91	3.0	SW846 8260B
1,3-Dichlorobenzene	ND	10	8.1	ug/L	81		SW846 8260B
	ND	10	7.8	ug/L	78	3.5	SW846 8260B
1,4-Dichlorobenzene	ND	10	8.2	ug/L	82		SW846 8260B
	ND	10	8.2	ug/L	82	0.02	SW846 8260B

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MATRIX SPIKE SAMPLE DATA REPORT

GC/MS Volatiles

Client Lot #...: 9J07288 Work Order #...: LMAN31AC-MS Matrix.....: WG
MS Lot-Sample #: A9J090242-019 LMAN31AD-MSD

PARAMETER	SAMPLE AMOUNT	SPIKE AMT	MEASRD AMOUNT	UNITS	PERCNT RECVRY	RPD	METHOD
Dichlorodifluoromethane	ND	10	8.9	ug/L	89		SW846 8260B
	ND	10	9.4	ug/L	94	5.3	SW846 8260B
1,1-Dichloroethane	0.88	10	11	ug/L	98		SW846 8260B
	0.88	10	10	ug/L	95	2.4	SW846 8260B
1,2-Dichloroethane	ND	10	10	ug/L	102		SW846 8260B
	ND	10	9.8	ug/L	98	3.8	SW846 8260B
1,1-Dichloroethene	0.29	10	9.7	ug/L	95		SW846 8260B
	0.29	10	9.3	ug/L	90	5.2	SW846 8260B
cis-1,2-Dichloroethene	14	10	23	ug/L	89		SW846 8260B
	14	10	23	ug/L	85 a	1.4	SW846 8260B
trans-1,2-Dichloroethene	0.24	10	9.3	ug/L	90		SW846 8260B
	0.24	10	9.1	ug/L	88	1.7	SW846 8260B
1,2-Dichloropropane	ND	10	9.5	ug/L	95		SW846 8260B
	ND	10	9.1	ug/L	91	3.5	SW846 8260B
cis-1,3-Dichloropropene	ND	10	7.6	ug/L	76 a		SW846 8260B
	ND	10	7.6	ug/L	76 a	0.48	SW846 8260B
trans-1,3-Dichloropropene	ND	10	7.7	ug/L	77		SW846 8260B
	ND	10	7.5	ug/L	75	2.5	SW846 8260B
Ethylbenzene	ND	10	8.6	ug/L	86		SW846 8260B
	ND	10	8.5	ug/L	85 a	1.5	SW846 8260B
2-Hexanone	ND	10	8.7	ug/L	87		SW846 8260B
	ND	10	9.5	ug/L	95	8.9	SW846 8260B
Isopropylbenzene	ND	10	8.6	ug/L	86		SW846 8260B
	ND	10	8.5	ug/L	85	1.1	SW846 8260B
Methyl acetate	ND	10	6.7	ug/L	67 a		SW846 8260B
	ND	10	7.2	ug/L	72	7.2	SW846 8260B
Methylene chloride	ND	10	9.7	ug/L	97		SW846 8260B
	ND	10	8.9	ug/L	89	8.5	SW846 8260B
Methylcyclohexane	ND	10	6.2	ug/L	62 a		SW846 8260B
	ND	10	6.1	ug/L	61 a	1.6	SW846 8260B
4-Methyl-2-pentanone	ND	10	8.8	ug/L	88		SW846 8260B
	ND	10	9.5	ug/L	95	6.9	SW846 8260B
Methyl tert-butyl ether (MTBE)	ND	10	9.1	ug/L	91		SW846 8260B
	ND	10	9.1	ug/L	91	0.58	SW846 8260B
Styrene	ND	10	9.3	ug/L	93		SW846 8260B
	ND	10	8.8	ug/L	88	5.3	SW846 8260B
1,1,2,2-Tetrachloroethane	ND	10	7.6	ug/L	76 a		SW846 8260B
	ND	10	7.8	ug/L	78 a	2.8	SW846 8260B
Tetrachloroethene	ND	10	8.4	ug/L	84 a		SW846 8260B
	ND	10	8.3	ug/L	83 a	1.8	SW846 8260B

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MATRIX SPIKE SAMPLE DATA REPORT

GC/MS Volatiles

Client Lot #...: 9J07288 Work Order #...: LMAN31AC-MS Matrix.....: WG
MS Lot-Sample #: A9J090242-019 LMAN31AD-MSD

PARAMETER	SAMPLE AMOUNT	SPIKE AMT	MEASRD AMOUNT	UNITS	PERCNT RECVRY	RPD	METHOD
Toluene	ND	10	8.6	ug/L	86		SW846 8260B
	ND	10	8.4	ug/L	84	1.8	SW846 8260B
1,2,4-Trichloro- benzene	ND	10	4.9	ug/L	49 a		SW846 8260B
	ND	10	5.3	ug/L	53 a	6.9	SW846 8260B
1,1,1-Trichloroethane	1.4	10	12	ug/L	103		SW846 8260B
	1.4	10	11	ug/L	99	3.5	SW846 8260B
1,1,2-Trichloroethane	ND	10	9.3	ug/L	93		SW846 8260B
	ND	10	9.3	ug/L	93	0.41	SW846 8260B
Trichloroethene	35	10	39	ug/L	42 a		SW846 8260B
	35	10	40	ug/L	49 a	1.9	SW846 8260B
Trichlorofluoromethane	ND	10	12	ug/L	123		SW846 8260B
	ND	10	12	ug/L	119	2.9	SW846 8260B
1,1,2-Trichloro- 1,2,2-trifluoroethane	ND	10	13	ug/L	131 a		SW846 8260B
	ND	10	13	ug/L	134 a	2.6	SW846 8260B
Vinyl chloride	4.7	10	13	ug/L	82 a		SW846 8260B
	4.7	10	14	ug/L	90	5.8	SW846 8260B
Xylenes (total)	ND	30	27	ug/L	90		SW846 8260B
	ND	30	26	ug/L	88 a	2.2	SW846 8260B

<u>SURROGATE</u>	<u>PERCENT RECOVERY</u>	<u>RECOVERY LIMITS</u>
Dibromofluoromethane	88	(73 - 122)
	91	(73 - 122)
1,2-Dichloroethane-d4	91	(61 - 128)
	91	(61 - 128)
Toluene-d8	84	(76 - 110)
	84	(76 - 110)
4-Bromofluorobenzene	101	(74 - 116)
	101	(74 - 116)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters

a. Spiked analyte recovery is outside stated control limits.

MATRIX SPIKE SAMPLE EVALUATION REPORT

GC/MS Volatiles

Client Lot #...: 9J07288 Work Order #...: LMAN31AC-MS Matrix.....: WG
 MS Lot-Sample #: A9J090242-019 LMAN31AD-MSD
 Date Sampled...: 10/08/09 10:25 Date Received...: 10/09/09
 Prep Date.....: 10/16/09 Analysis Date...: 10/16/09
 Prep Batch #...: 9292076
 Dilution Factor: 1 Initial Wgt/Vol: 5 mL Final Wgt/Vol...: 5 mL

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD
Acetone	100	(45 - 128)			SW846 8260B
	106	(45 - 128)	6.3	(0-30)	SW846 8260B
Benzene	92	(78 - 118)			SW846 8260B
	90	(78 - 118)	2.4	(0-20)	SW846 8260B
Bromodichloromethane	103	(80 - 146)			SW846 8260B
	101	(80 - 146)	1.8	(0-30)	SW846 8260B
Bromoform	124	(58 - 176)			SW846 8260B
	124	(58 - 176)	0.24	(0-30)	SW846 8260B
Bromomethane	87	(55 - 145)			SW846 8260B
	100	(55 - 145)	15	(0-30)	SW846 8260B
2-Butanone	96	(71 - 123)			SW846 8260B
	103	(71 - 123)	6.5	(0-30)	SW846 8260B
Carbon disulfide	102	(69 - 138)			SW846 8260B
	95	(69 - 138)	7.5	(0-41)	SW846 8260B
Carbon tetrachloride	103	(63 - 176)			SW846 8260B
	101	(63 - 176)	2.1	(0-30)	SW846 8260B
Chlorobenzene	87	(76 - 117)			SW846 8260B
	85	(76 - 117)	2.0	(0-20)	SW846 8260B
Chloroethane	112	(59 - 142)			SW846 8260B
	117	(59 - 142)	4.9	(0-30)	SW846 8260B
Chloroform	98	(83 - 141)			SW846 8260B
	96	(83 - 141)	1.8	(0-30)	SW846 8260B
Chloromethane	73	(40 - 137)			SW846 8260B
	76	(40 - 137)	4.8	(0-39)	SW846 8260B
Cyclohexane	71	(70 - 130)			SW846 8260B
	73	(70 - 130)	3.4	(0-30)	SW846 8260B
Dibromochloromethane	106	(71 - 158)			SW846 8260B
	103	(71 - 158)	2.5	(0-30)	SW846 8260B
1,2-Dibromo-3-chloro- propane	106	(70 - 130)			SW846 8260B
	122	(70 - 130)	14	(0-30)	SW846 8260B
1,2-Dibromoethane	95	(70 - 130)			SW846 8260B
	95	(70 - 130)	0.30	(0-30)	SW846 8260B
1,2-Dichlorobenzene	93	(70 - 130)			SW846 8260B
	91	(70 - 130)	3.0	(0-30)	SW846 8260B
1,3-Dichlorobenzene	81	(70 - 130)			SW846 8260B
	78	(70 - 130)	3.5	(0-30)	SW846 8260B
1,4-Dichlorobenzene	82	(70 - 130)			SW846 8260B
	82	(70 - 130)	0.02	(0-30)	SW846 8260B

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MATRIX SPIKE SAMPLE EVALUATION REPORT

GC/MS Volatiles

Client Lot #...: 9J07288 Work Order #...: LMAN31AC-MS Matrix.....: WG
MS Lot-Sample #: A9J090242-019 LMAN31AD-MSD

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD
Dichlorodifluoromethane	89	(70 - 130)			SW846 8260B
	94	(70 - 130)	5.3	(0-30)	SW846 8260B
1,1-Dichloroethane	98	(88 - 127)			SW846 8260B
	95	(88 - 127)	2.4	(0-30)	SW846 8260B
1,2-Dichloroethane	102	(71 - 160)			SW846 8260B
	98	(71 - 160)	3.8	(0-30)	SW846 8260B
1,1-Dichloroethene	95	(62 - 130)			SW846 8260B
	90	(62 - 130)	5.2	(0-20)	SW846 8260B
cis-1,2-Dichloroethene	89	(87 - 114)			SW846 8260B
	85 a	(87 - 114)	1.4	(0-30)	SW846 8260B
trans-1,2-Dichloroethene	90	(85 - 116)			SW846 8260B
	88	(85 - 116)	1.7	(0-30)	SW846 8260B
1,2-Dichloropropane	95	(87 - 114)			SW846 8260B
	91	(87 - 114)	3.5	(0-30)	SW846 8260B
cis-1,3-Dichloropropene	76 a	(82 - 130)			SW846 8260B
	76 a	(82 - 130)	0.48	(0-30)	SW846 8260B
trans-1,3-Dichloropropene	77	(73 - 147)			SW846 8260B
	75	(73 - 147)	2.5	(0-30)	SW846 8260B
Ethylbenzene	86	(86 - 132)			SW846 8260B
	85 a	(86 - 132)	1.5	(0-30)	SW846 8260B
2-Hexanone	87	(81 - 128)			SW846 8260B
	95	(81 - 128)	8.9	(0-30)	SW846 8260B
Isopropylbenzene	86	(70 - 130)			SW846 8260B
	85	(70 - 130)	1.1	(0-30)	SW846 8260B
Methyl acetate	67 a	(70 - 130)			SW846 8260B
	72	(70 - 130)	7.2	(0-30)	SW846 8260B
Methylene chloride	97	(82 - 115)			SW846 8260B
	89	(82 - 115)	8.5	(0-30)	SW846 8260B
Methylcyclohexane	62 a	(70 - 130)			SW846 8260B
	61 a	(70 - 130)	1.6	(0-30)	SW846 8260B
4-Methyl-2-pentanone	88	(82 - 135)			SW846 8260B
	95	(82 - 135)	6.9	(0-30)	SW846 8260B
Methyl tert-butyl ether (MTBE)	91	(70 - 130)			SW846 8260B
	91	(70 - 130)	0.58	(0-30)	SW846 8260B
Styrene	93	(83 - 120)			SW846 8260B
	88	(83 - 120)	5.3	(0-30)	SW846 8260B
1,1,2,2-Tetrachloroethane	76 a	(88 - 116)			SW846 8260B
	78 a	(88 - 116)	2.8	(0-30)	SW846 8260B
Tetrachloroethene	84 a	(85 - 121)			SW846 8260B
	83 a	(85 - 121)	1.8	(0-30)	SW846 8260B

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MATRIX SPIKE SAMPLE EVALUATION REPORT

GC/MS Volatiles

Client Lot #...: 9J07288 Work Order #...: LMAN31AC-MS Matrix.....: WG
MS Lot-Sample #: A9J090242-019 LMAN31AD-MSD

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD
Toluene	86	(70 - 119)			SW846 8260B
	84	(70 - 119)	1.8	(0-20)	SW846 8260B
1,2,4-Trichloro- benzene	49 a	(70 - 130)			SW846 8260B
	53 a	(70 - 130)	6.9	(0-30)	SW846 8260B
1,1,1-Trichloroethane	103	(71 - 162)			SW846 8260B
	99	(71 - 162)	3.5	(0-30)	SW846 8260B
1,1,2-Trichloroethane	93	(86 - 129)			SW846 8260B
	93	(86 - 129)	0.41	(0-30)	SW846 8260B
Trichloroethene	42 a	(62 - 130)			SW846 8260B
	49 a	(62 - 130)	1.9	(0-20)	SW846 8260B
Trichlorofluoromethane	123	(70 - 130)			SW846 8260B
	119	(70 - 130)	2.9	(0-30)	SW846 8260B
1,1,2-Trichloro- 1,2,2-trifluoroethane	131 a	(70 - 130)			SW846 8260B
	134 a	(70 - 130)	2.6	(0-30)	SW846 8260B
Vinyl chloride	82 a	(88 - 126)			SW846 8260B
	90	(88 - 126)	5.8	(0-30)	SW846 8260B
Xylenes (total)	90	(89 - 121)			SW846 8260B
	88 a	(89 - 121)	2.2	(0-30)	SW846 8260B

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Dibromofluoromethane	88	(73 - 122)
	91	(73 - 122)
1,2-Dichloroethane-d4	91	(61 - 128)
	91	(61 - 128)
Toluene-d8	84	(76 - 110)
	84	(76 - 110)
4-Bromofluorobenzene	101	(74 - 116)
	101	(74 - 116)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters

a. Spiked analyte recovery is outside stated control limits.

MATRIX SPIKE SAMPLE DATA REPORT

GC/MS Volatiles

Client Lot #...: 9J07288 Work Order #...: LMAVG1AC-MS Matrix.....: WATER
 MS Lot-Sample #: A9J090253-002 LMAVG1AD-MSD
 Date Sampled...: 10/06/09 16:45 Date Received...: 10/09/09
 Prep Date.....: 10/17/09 Analysis Date...: 10/17/09
 Prep Batch #...: 9292286
 Dilution Factor: 1 Initial Wgt/Vol: 5 mL Final Wgt/Vol...: 5 mL

PARAMETER	SAMPLE AMOUNT	SPIKE AMT	MEASRD AMOUNT	UNITS	PERCNT RECVRY	RPD	METHOD
Acetone	1.8	10	13	ug/L	114		SW846 8260B
	1.8	10	15	ug/L	135 a	14	SW846 8260B
Benzene	ND	10	9.1	ug/L	91		SW846 8260B
	ND	10	9.7	ug/L	97	5.9	SW846 8260B
Bromodichloromethane	ND	10	11	ug/L	106		SW846 8260B
	ND	10	11	ug/L	110	3.9	SW846 8260B
Bromoform	ND	10	12	ug/L	123		SW846 8260B
	ND	10	13	ug/L	130	5.3	SW846 8260B
Bromomethane	ND	10	13	ug/L	133		SW846 8260B
	ND	10	15	ug/L	145	8.5	SW846 8260B
2-Butanone	ND	10	9.5	ug/L	95		SW846 8260B
	ND	10	10	ug/L	103	8.1	SW846 8260B
Carbon disulfide	ND	10	10	ug/L	103		SW846 8260B
	ND	10	11	ug/L	110	6.1	SW846 8260B
Carbon tetrachloride	ND	10	10	ug/L	104		SW846 8260B
	ND	10	11	ug/L	108	4.3	SW846 8260B
Chlorobenzene	ND	10	8.6	ug/L	86		SW846 8260B
	ND	10	9.1	ug/L	91	5.4	SW846 8260B
Chloroethane	ND	10	12	ug/L	120		SW846 8260B
	ND	10	13	ug/L	128	7.1	SW846 8260B
Chloroform	ND	10	9.7	ug/L	97		SW846 8260B
	ND	10	10	ug/L	102	5.2	SW846 8260B
Chloromethane	ND	10	8.8	ug/L	88		SW846 8260B
	ND	10	9.5	ug/L	95	7.5	SW846 8260B
Cyclohexane	ND	10	7.2	ug/L	72		SW846 8260B
	ND	10	7.8	ug/L	78	8.4	SW846 8260B
Dibromochloromethane	ND	10	11	ug/L	106		SW846 8260B
	ND	10	11	ug/L	113	6.6	SW846 8260B
1,2-Dibromo-3-chloro- propane	ND	10	11	ug/L	111		SW846 8260B
	ND	10	11	ug/L	111	0.22	SW846 8260B
1,2-Dibromoethane	ND	10	9.6	ug/L	96		SW846 8260B
	ND	10	10	ug/L	100	3.9	SW846 8260B
1,2-Dichlorobenzene	ND	10	9.4	ug/L	94		SW846 8260B
	ND	10	9.6	ug/L	96	2.2	SW846 8260B
1,3-Dichlorobenzene	ND	10	8.2	ug/L	82		SW846 8260B
	ND	10	8.4	ug/L	84	3.0	SW846 8260B
1,4-Dichlorobenzene	ND	10	8.4	ug/L	84		SW846 8260B
	ND	10	8.7	ug/L	87	3.2	SW846 8260B

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MATRIX SPIKE SAMPLE DATA REPORT

GC/MS Volatiles

Client Lot #...: 9J07288 Work Order #...: LMAVG1AC-MS Matrix.....: WATER
MS Lot-Sample #: A9J090253-002 LMAVG1AD-MSD

PARAMETER	SAMPLE AMOUNT	SPIKE AMT	MEASRD AMOUNT	UNITS	PERCNT RECVRY	RPD	METHOD
Dichlorodifluoromethane	ND	10	11	ug/L	107		SW846 8260B
	ND	10	11	ug/L	112	4.9	SW846 8260B
1,1-Dichloroethane	ND	10	9.7	ug/L	97		SW846 8260B
	ND	10	10	ug/L	103	6.2	SW846 8260B
1,2-Dichloroethane	ND	10	10	ug/L	100		SW846 8260B
	ND	10	10	ug/L	103	3.3	SW846 8260B
1,1-Dichloroethene	ND	10	9.8	ug/L	98		SW846 8260B
	ND	10	10	ug/L	104	6.4	SW846 8260B
cis-1,2-Dichloroethene	ND	10	8.8	ug/L	88		SW846 8260B
	ND	10	9.3	ug/L	93	6.5	SW846 8260B
trans-1,2-Dichloroethene	ND	10	9.1	ug/L	91		SW846 8260B
	ND	10	9.6	ug/L	96	5.7	SW846 8260B
1,2-Dichloropropane	ND	10	9.2	ug/L	92		SW846 8260B
	ND	10	9.9	ug/L	99	7.8	SW846 8260B
cis-1,3-Dichloropropene	ND	10	7.8	ug/L	78 a		SW846 8260B
	ND	10	8.5	ug/L	85	8.4	SW846 8260B
trans-1,3-Dichloropropene	ND	10	7.8	ug/L	78		SW846 8260B
	ND	10	8.6	ug/L	86	9.0	SW846 8260B
Ethylbenzene	ND	10	8.7	ug/L	87		SW846 8260B
	ND	10	9.3	ug/L	93	5.8	SW846 8260B
2-Hexanone	ND	10	8.4	ug/L	84		SW846 8260B
	ND	10	9.2	ug/L	92	8.8	SW846 8260B
Isopropylbenzene	ND	10	8.6	ug/L	86		SW846 8260B
	ND	10	9.1	ug/L	91	5.8	SW846 8260B
Methyl acetate	ND	10	6.9	ug/L	69 a		SW846 8260B
	ND	10	7.1	ug/L	71	2.8	SW846 8260B
Methylene chloride	ND	10	9.9	ug/L	99		SW846 8260B
	ND	10	11	ug/L	107	8.4	SW846 8260B
Methylcyclohexane	ND	10	6.0	ug/L	60 a		SW846 8260B
	ND	10	6.4	ug/L	64 a	7.0	SW846 8260B
4-Methyl-2-pentanone	ND	10	8.6	ug/L	86		SW846 8260B
	ND	10	9.4	ug/L	94	8.0	SW846 8260B
Methyl tert-butyl ether (MTBE)	ND	10	8.9	ug/L	89		SW846 8260B
	ND	10	9.4	ug/L	94	5.5	SW846 8260B
Styrene	ND	10	9.2	ug/L	92		SW846 8260B
	ND	10	9.6	ug/L	96	4.6	SW846 8260B
1,1,2,2-Tetrachloroethane	ND	10	7.4	ug/L	74 a		SW846 8260B
	ND	10	7.8	ug/L	78 a	5.2	SW846 8260B
Tetrachloroethene	ND	10	8.5	ug/L	85		SW846 8260B
	ND	10	8.8	ug/L	88	3.4	SW846 8260B

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MATRIX SPIKE SAMPLE DATA REPORT

GC/MS Volatiles

Client Lot #...: 9J07288 Work Order #...: LMAVG1AC-MS Matrix.....: WATER
MS Lot-Sample #: A9J090253-002 LMAVG1AD-MSD

PARAMETER	SAMPLE AMOUNT	SPIKE AMT	MEASRD AMOUNT	UNITS	PERCNT RECVRY	RPD	METHOD
Toluene	ND	10	8.7	ug/L	87		SW846 8260B
	ND	10	9.1	ug/L	91	4.4	SW846 8260B
1,2,4-Trichloro- benzene	ND	10	4.9	ug/L	49 a		SW846 8260B
	ND	10	5.2	ug/L	52 a	6.2	SW846 8260B
1,1,1-Trichloroethane	ND	10	10	ug/L	101		SW846 8260B
	ND	10	11	ug/L	109	7.4	SW846 8260B
1,1,2-Trichloroethane	ND	10	9.4	ug/L	94		SW846 8260B
	ND	10	9.6	ug/L	96	1.7	SW846 8260B
Trichloroethene	ND	10	8.9	ug/L	89		SW846 8260B
	ND	10	9.6	ug/L	96	7.4	SW846 8260B
Trichlorofluoromethane	ND	10	14	ug/L	136 a		SW846 8260B
	ND	10	15	ug/L	146 a	7.4	SW846 8260B
1,1,2-Trichloro- 1,2,2-trifluoroethane	ND	10	14	ug/L	144 a		SW846 8260B
	ND	10	15	ug/L	153 a	6.3	SW846 8260B
Vinyl chloride	ND	10	10	ug/L	101		SW846 8260B
	ND	10	11	ug/L	106	4.8	SW846 8260B
Xylenes (total)	ND	30	27	ug/L	90		SW846 8260B
	ND	30	28	ug/L	95	5.8	SW846 8260B

<u>SURROGATE</u>	<u>PERCENT RECOVERY</u>	<u>RECOVERY LIMITS</u>
Dibromofluoromethane	88	(73 - 122)
	88	(73 - 122)
1,2-Dichloroethane-d4	90	(61 - 128)
	88	(61 - 128)
Toluene-d8	85	(76 - 110)
	85	(76 - 110)
4-Bromofluorobenzene	99	(74 - 116)
	102	(74 - 116)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters

a. Spiked analyte recovery is outside stated control limits.

MATRIX SPIKE SAMPLE EVALUATION REPORT

GC/MS Volatiles

Client Lot #...: 9J07288 Work Order #...: LMAVG1AC-MS Matrix.....: WATER
MS Lot-Sample #: A9J090253-002 LMAVG1AD-MSD
Date Sampled...: 10/06/09 16:45 Date Received...: 10/09/09
Prep Date.....: 10/17/09 Analysis Date...: 10/17/09
Prep Batch #...: 9292286
Dilution Factor: 1 Initial Wgt/Vol: 5 mL Final Wgt/Vol...: 5 mL

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD
Acetone	114	(45 - 128)			SW846 8260B
	135 a	(45 - 128)	14	(0-30)	SW846 8260B
Benzene	91	(78 - 118)			SW846 8260B
	97	(78 - 118)	5.9	(0-20)	SW846 8260B
Bromodichloromethane	106	(80 - 146)			SW846 8260B
	110	(80 - 146)	3.9	(0-30)	SW846 8260B
Bromoform	123	(58 - 176)			SW846 8260B
	130	(58 - 176)	5.3	(0-30)	SW846 8260B
Bromomethane	133	(55 - 145)			SW846 8260B
	145	(55 - 145)	8.5	(0-30)	SW846 8260B
2-Butanone	95	(71 - 123)			SW846 8260B
	103	(71 - 123)	8.1	(0-30)	SW846 8260B
Carbon disulfide	103	(69 - 138)			SW846 8260B
	110	(69 - 138)	6.1	(0-41)	SW846 8260B
Carbon tetrachloride	104	(63 - 176)			SW846 8260B
	108	(63 - 176)	4.3	(0-30)	SW846 8260B
Chlorobenzene	86	(76 - 117)			SW846 8260B
	91	(76 - 117)	5.4	(0-20)	SW846 8260B
Chloroethane	120	(59 - 142)			SW846 8260B
	128	(59 - 142)	7.1	(0-30)	SW846 8260B
Chloroform	97	(83 - 141)			SW846 8260B
	102	(83 - 141)	5.2	(0-30)	SW846 8260B
Chloromethane	88	(40 - 137)			SW846 8260B
	95	(40 - 137)	7.5	(0-39)	SW846 8260B
Cyclohexane	72	(70 - 130)			SW846 8260B
	78	(70 - 130)	8.4	(0-30)	SW846 8260B
Dibromochloromethane	106	(71 - 158)			SW846 8260B
	113	(71 - 158)	6.6	(0-30)	SW846 8260B
1,2-Dibromo-3-chloro- propane	111	(70 - 130)			SW846 8260B
	111	(70 - 130)	0.22	(0-30)	SW846 8260B
1,2-Dibromoethane	96	(70 - 130)			SW846 8260B
	100	(70 - 130)	3.9	(0-30)	SW846 8260B
1,2-Dichlorobenzene	94	(70 - 130)			SW846 8260B
	96	(70 - 130)	2.2	(0-30)	SW846 8260B
1,3-Dichlorobenzene	82	(70 - 130)			SW846 8260B
	84	(70 - 130)	3.0	(0-30)	SW846 8260B
1,4-Dichlorobenzene	84	(70 - 130)			SW846 8260B
	87	(70 - 130)	3.2	(0-30)	SW846 8260B

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MATRIX SPIKE SAMPLE EVALUATION REPORT

GC/MS Volatiles

Client Lot #...: 9J07288 Work Order #...: LMAVG1AC-MS Matrix.....: WATER
MS Lot-Sample #: A9J090253-002 LMAVG1AD-MSD

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD
Dichlorodifluoromethane	107	(70 - 130)			SW846 8260B
	112	(70 - 130)	4.9	(0-30)	SW846 8260B
1,1-Dichloroethane	97	(88 - 127)			SW846 8260B
	103	(88 - 127)	6.2	(0-30)	SW846 8260B
1,2-Dichloroethane	100	(71 - 160)			SW846 8260B
	103	(71 - 160)	3.3	(0-30)	SW846 8260B
1,1-Dichloroethene	98	(62 - 130)			SW846 8260B
	104	(62 - 130)	6.4	(0-20)	SW846 8260B
cis-1,2-Dichloroethene	88	(87 - 114)			SW846 8260B
	93	(87 - 114)	6.5	(0-30)	SW846 8260B
trans-1,2-Dichloroethene	91	(85 - 116)			SW846 8260B
	96	(85 - 116)	5.7	(0-30)	SW846 8260B
1,2-Dichloropropane	92	(87 - 114)			SW846 8260B
	99	(87 - 114)	7.8	(0-30)	SW846 8260B
cis-1,3-Dichloropropene	78 a	(82 - 130)			SW846 8260B
	85	(82 - 130)	8.4	(0-30)	SW846 8260B
trans-1,3-Dichloropropene	78	(73 - 147)			SW846 8260B
	86	(73 - 147)	9.0	(0-30)	SW846 8260B
Ethylbenzene	87	(86 - 132)			SW846 8260B
	93	(86 - 132)	5.8	(0-30)	SW846 8260B
2-Hexanone	84	(81 - 128)			SW846 8260B
	92	(81 - 128)	8.8	(0-30)	SW846 8260B
Isopropylbenzene	86	(70 - 130)			SW846 8260B
	91	(70 - 130)	5.8	(0-30)	SW846 8260B
Methyl acetate	69 a	(70 - 130)			SW846 8260B
	71	(70 - 130)	2.8	(0-30)	SW846 8260B
Methylene chloride	99	(82 - 115)			SW846 8260B
	107	(82 - 115)	8.4	(0-30)	SW846 8260B
Methylcyclohexane	60 a	(70 - 130)			SW846 8260B
	64 a	(70 - 130)	7.0	(0-30)	SW846 8260B
4-Methyl-2-pentanone	86	(82 - 135)			SW846 8260B
	94	(82 - 135)	8.0	(0-30)	SW846 8260B
Methyl tert-butyl ether (MTBE)	89	(70 - 130)			SW846 8260B
	94	(70 - 130)	5.5	(0-30)	SW846 8260B
Styrene	92	(83 - 120)			SW846 8260B
	96	(83 - 120)	4.6	(0-30)	SW846 8260B
1,1,2,2-Tetrachloroethane	74 a	(88 - 116)			SW846 8260B
	78 a	(88 - 116)	5.2	(0-30)	SW846 8260B
Tetrachloroethene	85	(85 - 121)			SW846 8260B
	88	(85 - 121)	3.4	(0-30)	SW846 8260B

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MATRIX SPIKE SAMPLE EVALUATION REPORT

GC/MS Volatiles

Client Lot #...: 9J07288 Work Order #...: LMAVG1AC-MS Matrix.....: WATER
MS Lot-Sample #: A9J090253-002 LMAVG1AD-MSD

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD
Toluene	87	(70 - 119)			SW846 8260B
	91	(70 - 119)	4.4	(0-20)	SW846 8260B
1,2,4-Trichloro- benzene	49 a	(70 - 130)			SW846 8260B
	52 a	(70 - 130)	6.2	(0-30)	SW846 8260B
1,1,1-Trichloroethane	101	(71 - 162)			SW846 8260B
	109	(71 - 162)	7.4	(0-30)	SW846 8260B
1,1,2-Trichloroethane	94	(86 - 129)			SW846 8260B
	96	(86 - 129)	1.7	(0-30)	SW846 8260B
Trichloroethene	89	(62 - 130)			SW846 8260B
	96	(62 - 130)	7.4	(0-20)	SW846 8260B
Trichlorofluoromethane	136 a	(70 - 130)			SW846 8260B
	146 a	(70 - 130)	7.4	(0-30)	SW846 8260B
1,1,2-Trichloro- 1,2,2-trifluoroethane	144 a	(70 - 130)			SW846 8260B
	153 a	(70 - 130)	6.3	(0-30)	SW846 8260B
Vinyl chloride	101	(88 - 126)			SW846 8260B
	106	(88 - 126)	4.8	(0-30)	SW846 8260B
Xylenes (total)	90	(89 - 121)			SW846 8260B
	95	(89 - 121)	5.8	(0-30)	SW846 8260B

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Dibromofluoromethane	88	(73 - 122)
	88	(73 - 122)
1,2-Dichloroethane-d4	90	(61 - 128)
	88	(61 - 128)
Toluene-d8	85	(76 - 110)
	85	(76 - 110)
4-Bromofluorobenzene	99	(74 - 116)
	102	(74 - 116)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters

a. Spiked analyte recovery is outside stated control limits.

GCMS SEMIVOLATILE DATA

Conestoga-Rovers & Associates, Inc.

Client Sample ID: GW-17360-100609-DR-290

GC/MS Semivolatiles

Lot-Sample #... : A9J070288-016	Work Order #... : LL5121AC	Matrix..... : WG
Date Sampled... : 10/06/09 16:00	Date Received... : 10/07/09	
Prep Date..... : 10/08/09	Analysis Date... : 10/14/09	
Prep Batch #... : 9281060		
Dilution Factor: 1	Initial Wgt/Vol: 1000 mL	Final Wgt/Vol...: 2 mL
	Method..... : SW846 8270C	

PARAMETER	RESULT	REPORTING		
		LIMIT	UNITS	MDL
Acenaphthene	ND	5.0	ug/L	0.10
Acenaphthylene	ND	5.0	ug/L	0.10
Acetophenone	ND	5.0	ug/L	0.34
Anthracene	ND	5.0	ug/L	0.10
Atrazine	ND	5.0	ug/L	0.34
Benzo(a)anthracene	ND	1.0	ug/L	0.10
Benzo(a)pyrene	ND	2.0	ug/L	0.10
Benzo(b)fluoranthene	ND	2.0	ug/L	0.10
Benzo(ghi)perylene	ND	5.0	ug/L	0.10
Benzo(k)fluoranthene	ND	5.0	ug/L	0.10
Benzaldehyde	ND	10	ug/L	0.39
1,1'-Biphenyl	ND	10	ug/L	0.80
bis(2-Chloroethoxy) methane	ND	5.0	ug/L	0.32
bis(2-Chloroethyl)- ether	ND	4.0	ug/L	0.10
bis(2-Ethylhexyl) phthalate	1.3 J	5.0	ug/L	0.80
4-Bromophenyl phenyl ether	ND	5.0	ug/L	0.80
Butyl benzyl phthalate	ND	5.0	ug/L	0.80
Caprolactam	ND	10	ug/L	0.80
Carbazole	ND	10	ug/L	0.28
4-Chloroaniline	ND	20	ug/L	0.80
4-Chloro-3-methylphenol	ND	5.0	ug/L	0.80
2-Chloronaphthalene	ND	5.0	ug/L	0.10
2-Chlorophenol	ND	5.0	ug/L	0.29
4-Chlorophenyl phenyl ether	ND	5.0	ug/L	0.30
Chrysene	ND	5.0	ug/L	0.10
Dibenz(a,h)anthracene	ND	2.0	ug/L	0.10
Dibenzofuran	ND	5.0	ug/L	0.10
3,3'-Dichlorobenzidine	ND	4.0	ug/L	0.37
2,4-Dichlorophenol	ND	10	ug/L	0.80
Diethyl phthalate	ND	5.0	ug/L	0.60
2,4-Dimethylphenol	ND	5.0	ug/L	0.80
Dimethyl phthalate	ND	5.0	ug/L	0.29
Di-n-butyl phthalate	ND	5.0	ug/L	0.67

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Conestoga-Rovers & Associates, Inc.

Client Sample ID: GW-17360-100609-DR-290

GC/MS Semivolatiles

Lot-Sample #....: A9J070288-016 Work Order #....: LL5121AC Matrix.....: WG

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
4,6-Dinitro- 2-methylphenol	ND	20	ug/L	2.4
2,4-Dinitrophenol	ND	20	ug/L	2.4
2,4-Dinitrotoluene	ND	5.0	ug/L	0.27
2,6-Dinitrotoluene	ND	5.0	ug/L	0.80
Di-n-octyl phthalate	ND	5.0	ug/L	0.80
Fluoranthene	ND	5.0	ug/L	0.10
Fluorene	ND	5.0	ug/L	0.10
Hexachlorobenzene	ND	5.0	ug/L	0.10
Hexachlorobutadiene	ND	5.0	ug/L	0.27
Hexachlorocyclopenta- diene	ND	5.0	ug/L	0.80
Hexachloroethane	ND	5.0	ug/L	0.80
Indeno(1,2,3-cd)pyrene	ND	2.0	ug/L	0.10
Isophorone	ND	5.0	ug/L	0.27
2-Methylnaphthalene	ND	5.0	ug/L	0.10
2-Methylphenol	ND	5.0	ug/L	0.80
4-Methylphenol	ND	5.0	ug/L	0.80
Naphthalene	ND	5.0	ug/L	0.10
2-Nitroaniline	ND	20	ug/L	0.80
3-Nitroaniline	ND	20	ug/L	0.28
4-Nitroaniline	ND	20	ug/L	0.80
Nitrobenzene	ND	4.0	ug/L	0.040
2-Nitrophenol	ND	5.0	ug/L	0.28
4-Nitrophenol	ND	20	ug/L	2.4
N-Nitrosodi-n-propyl- amine	ND	5.0	ug/L	0.80
N-Nitrosodiphenylamine	ND	5.0	ug/L	0.31
2,2'-oxybis (1-Chloropropane)	ND	5.0	ug/L	0.40
Pentachlorophenol	ND	20	ug/L	2.4
Phenanthrene	ND	5.0	ug/L	0.10
Phenol	ND	5.0	ug/L	0.60
Pyrene	ND	5.0	ug/L	0.10
2,4,5-Trichloro- phenol	ND	5.0	ug/L	0.30
2,4,6-Trichloro- phenol	ND	4.0	ug/L	0.80

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Conestoga-Rovers & Associates, Inc.

Client Sample ID: GW-17360-100609-DR-290

GC/MS Semivolatiles

Lot-Sample #...: A9J070288-016 Work Order #...: LL5121AC Matrix.....: WG

<u>SURROGATE</u>	<u>PERCENT RECOVERY</u>	<u>RECOVERY LIMITS</u>
Nitrobenzene-d5	71	(27 - 111)
2-Fluorobiphenyl	59	(28 - 110)
Terphenyl-d14	77	(37 - 119)
Phenol-d5	57	(10 - 110)
2-Fluorophenol	61	(10 - 110)
2,4,6-Tribromophenol	62	(22 - 120)

NOTE(S):

J Estimated result. Result is less than RL.

Conestoga-Rovers & Associates, Inc.

Client Sample ID: GW-17360-100609-DR-291

GC/MS Semivolatiles

Lot-Sample #....: A9J070288-017 Work Order #....: LL5131AC Matrix.....: WG
 Date Sampled....: 10/06/09 16:05 Date Received...: 10/07/09
 Prep Date.....: 10/08/09 Analysis Date...: 10/14/09
 Prep Batch #....: 9281060
 Dilution Factor: 1 Initial Wgt/Vol: 1010 mL Final Wgt/Vol...: 2 mL
 Method.....: SW846 8270C

PARAMETER	RESULT	REPORTING		
		LIMIT	UNITS	MDL
Acenaphthene	ND	5.0	ug/L	0.10
Acenaphthylene	ND	5.0	ug/L	0.10
Acetophenone	ND	5.0	ug/L	0.34
Anthracene	ND	5.0	ug/L	0.10
Atrazine	ND	5.0	ug/L	0.34
Benzo(a)anthracene	ND	1.0	ug/L	0.10
Benzo(a)pyrene	ND	2.0	ug/L	0.10
Benzo(b)fluoranthene	ND	2.0	ug/L	0.10
Benzo(ghi)perylene	ND	5.0	ug/L	0.10
Benzo(k)fluoranthene	ND	5.0	ug/L	0.10
Benzaldehyde	ND	10	ug/L	0.39
1,1'-Biphenyl	ND	10	ug/L	0.80
bis(2-Chloroethoxy) methane	ND	5.0	ug/L	0.32
bis(2-Chloroethyl)- ether	ND	4.0	ug/L	0.10
bis(2-Ethylhexyl) phthalate	1.6 J	5.0	ug/L	0.80
4-Bromophenyl phenyl ether	ND	5.0	ug/L	0.80
Butyl benzyl phthalate	ND	5.0	ug/L	0.80
Caprolactam	ND	10	ug/L	0.80
Carbazole	ND	10	ug/L	0.28
4-Chloroaniline	ND	20	ug/L	0.80
4-Chloro-3-methylphenol	ND	5.0	ug/L	0.80
2-Chloronaphthalene	ND	5.0	ug/L	0.10
2-Chlorophenol	ND	5.0	ug/L	0.29
4-Chlorophenyl phenyl ether	ND	5.0	ug/L	0.30
Chrysene	ND	5.0	ug/L	0.10
Dibenz(a,h)anthracene	ND	2.0	ug/L	0.10
Dibenzofuran	ND	5.0	ug/L	0.10
3,3'-Dichlorobenzidine	ND	4.0	ug/L	0.37
2,4-Dichlorophenol	ND	10	ug/L	0.80
Diethyl phthalate	ND	5.0	ug/L	0.60
2,4-Dimethylphenol	ND	5.0	ug/L	0.80
Dimethyl phthalate	ND	5.0	ug/L	0.29
Di-n-butyl phthalate	ND	5.0	ug/L	0.67

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Conestoga-Rovers & Associates, Inc.

Client Sample ID: GW-17360-100609-DR-291

GC/MS Semivolatiles

Lot-Sample #....: A9J070288-017 Work Order #....: LL5131AC Matrix.....: WG

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
4,6-Dinitro- 2-methylphenol	ND	20	ug/L	2.4
2,4-Dinitrophenol	ND	20	ug/L	2.4
2,4-Dinitrotoluene	ND	5.0	ug/L	0.27
2,6-Dinitrotoluene	ND	5.0	ug/L	0.80
Di-n-octyl phthalate	ND	5.0	ug/L	0.80
Fluoranthene	ND	5.0	ug/L	0.10
Fluorene	ND	5.0	ug/L	0.10
Hexachlorobenzene	ND	5.0	ug/L	0.10
Hexachlorobutadiene	ND	5.0	ug/L	0.27
Hexachlorocyclopenta- diene	ND	5.0	ug/L	0.80
Hexachloroethane	ND	5.0	ug/L	0.80
Indeno(1,2,3-cd)pyrene	ND	2.0	ug/L	0.10
Isophorone	ND	5.0	ug/L	0.27
2-Methylnaphthalene	ND	5.0	ug/L	0.10
2-Methylphenol	ND	5.0	ug/L	0.80
4-Methylphenol	ND	5.0	ug/L	0.80
Naphthalene	ND	5.0	ug/L	0.10
2-Nitroaniline	ND	20	ug/L	0.80
3-Nitroaniline	ND	20	ug/L	0.28
4-Nitroaniline	ND	20	ug/L	0.80
Nitrobenzene	ND	4.0	ug/L	0.040
2-Nitrophenol	ND	5.0	ug/L	0.28
4-Nitrophenol	ND	20	ug/L	2.4
N-Nitrosodi-n-propyl- amine	ND	5.0	ug/L	0.80
N-Nitrosodiphenylamine	ND	5.0	ug/L	0.31
2,2'-oxybis (1-Chloropropane)	ND	5.0	ug/L	0.40
Pentachlorophenol	ND	20	ug/L	2.4
Phenanthrene	ND	5.0	ug/L	0.10
Phenol	ND	5.0	ug/L	0.60
Pyrene	ND	5.0	ug/L	0.10
2,4,5-Trichloro- phenol	ND	5.0	ug/L	0.30
2,4,6-Trichloro- phenol	ND	4.0	ug/L	0.80

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Conestoga-Rovers & Associates, Inc.

Client Sample ID: GW-17360-100609-DR-291

GC/MS Semivolatiles

Lot-Sample #...: A9J070288-017 Work Order #...: LL5131AC Matrix.....: WG

<u>SURROGATE</u>	<u>PERCENT RECOVERY</u>	<u>RECOVERY LIMITS</u>
Nitrobenzene-d5	66	(27 - 111)
2-Fluorobiphenyl	54	(28 - 110)
Terphenyl-d14	83	(37 - 119)
Phenol-d5	56	(10 - 110)
2-Fluorophenol	58	(10 - 110)
2,4,6-Tribromophenol	60	(22 - 120)

NOTE(S):

J Estimated result. Result is less than RL.

Conestoga-Rovers & Associates, Inc.

Client Sample ID: GW-17360-100709-DR-292

GC/MS Semivolatiles

Lot-Sample #....: A9J090242-002 Work Order #....: LMAM31AC Matrix.....: WG
 Date Sampled....: 10/07/09 08:35 Date Received...: 10/09/09
 Prep Date.....: 10/10/09 Analysis Date...: 10/14/09
 Prep Batch #....: 9283014
 Dilution Factor: 4 Initial Wgt/Vol: 1010 mL Final Wgt/Vol...: 2 mL
 Method.....: SW846 8270C

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Acenaphthene	ND	20	ug/L	0.40
Acenaphthylene	ND	20	ug/L	0.40
Acetophenone	ND	20	ug/L	1.4
Anthracene	0.89 J	20	ug/L	0.40
Atrazine	ND	20	ug/L	1.4
Benzo(a)anthracene	3.7 J	4.0	ug/L	0.40
Benzo(a)pyrene	3.8 J	8.0	ug/L	0.40
Benzo(b)fluoranthene	3.8 J	8.0	ug/L	0.40
Benzo(ghi)perylene	3.2 J	20	ug/L	0.40
Benzo(k)fluoranthene	2.8 J	20	ug/L	0.40
Benzaldehyde	ND	40	ug/L	1.6
1,1'-Biphenyl	ND	40	ug/L	3.2
bis(2-Chloroethoxy) methane	ND	20	ug/L	1.3
bis(2-Chloroethyl)- ether	ND	16	ug/L	0.40
bis(2-Ethylhexyl) phthalate	ND	20	ug/L	3.2
4-Bromophenyl phenyl ether	ND	20	ug/L	3.2
Butyl benzyl phthalate	ND	20	ug/L	3.2
Caprolactam	ND	40	ug/L	3.2
Carbazole	1.8 J	40	ug/L	1.1
4-Chloroaniline	ND	80	ug/L	3.2
4-Chloro-3-methylphenol	ND	20	ug/L	3.2
2-Chloronaphthalene	ND	20	ug/L	0.40
2-Chlorophenol	ND	20	ug/L	1.2
4-Chlorophenyl phenyl ether	ND	20	ug/L	1.2
Chrysene	4.1 J	20	ug/L	0.40
Dibenz(a,h)anthracene	ND	8.0	ug/L	0.40
Dibenzofuran	ND	20	ug/L	0.40
3,3'-Dichlorobenzidine	ND	16	ug/L	1.5
2,4-Dichlorophenol	ND	40	ug/L	3.2
Diethyl phthalate	ND	20	ug/L	2.4
2,4-Dimethylphenol	ND	20	ug/L	3.2
Dimethyl phthalate	ND	20	ug/L	1.2
Di-n-butyl phthalate	ND	20	ug/L	2.7

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Conestoga-Rovers & Associates, Inc.

Client Sample ID: GW-17360-100709-DR-292

GC/MS Semivolatiles

Lot-Sample #....: A9J090242-002 Work Order #....: LMAM31AC Matrix.....: WG

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
4,6-Dinitro- 2-methylphenol	ND	80	ug/L	9.6
2,4-Dinitrophenol	ND	80	ug/L	9.6
2,4-Dinitrotoluene	ND	20	ug/L	1.1
2,6-Dinitrotoluene	ND	20	ug/L	3.2
Di-n-octyl phthalate	ND	20	ug/L	3.2
Fluoranthene	10 J	20	ug/L	0.40
Fluorene	ND	20	ug/L	0.40
Hexachlorobenzene	ND	20	ug/L	0.40
Hexachlorobutadiene	ND	20	ug/L	1.1
Hexachlorocyclopenta- diene	ND	20	ug/L	3.2
Hexachloroethane	ND	20	ug/L	3.2
Indeno(1,2,3-cd)pyrene	2.5 J	8.0	ug/L	0.40
Isophorone	ND	20	ug/L	1.1
2-Methylnaphthalene	ND	20	ug/L	0.40
2-Methylphenol	ND	20	ug/L	3.2
4-Methylphenol	ND	20	ug/L	3.2
Naphthalene	ND	20	ug/L	0.40
2-Nitroaniline	ND	80	ug/L	3.2
3-Nitroaniline	ND	80	ug/L	1.1
4-Nitroaniline	ND	80	ug/L	3.2
Nitrobenzene	ND	16	ug/L	0.16
2-Nitrophenol	ND	20	ug/L	1.1
4-Nitrophenol	ND	80	ug/L	9.6
N-Nitrosodi-n-propyl- amine	ND	20	ug/L	3.2
N-Nitrosodiphenylamine	ND	20	ug/L	1.2
2,2'-oxybis (1-Chloropropane)	ND	20	ug/L	1.6
Pentachlorophenol	ND	80	ug/L	9.6
Phenanthrene	6.3 J	20	ug/L	0.40
Phenol	ND	20	ug/L	2.4
Pyrene	7.2 J	20	ug/L	0.40
2,4,5-Trichloro- phenol	ND	20	ug/L	1.2
2,4,6-Trichloro- phenol	ND	16	ug/L	3.2

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Conestoga-Rovers & Associates, Inc.

Client Sample ID: GW-17360-100709-DR-292

GC/MS Semivolatiles

Lot-Sample #...: A9J090242-002 Work Order #...: LMAM31AC Matrix.....: WG

<u>SURROGATE</u>	<u>PERCENT RECOVERY</u>	<u>RECOVERY LIMITS</u>
Nitrobenzene-d5	73 DIL	(27 - 111)
2-Fluorobiphenyl	68 DIL	(28 - 110)
Terphenyl-d14	84 DIL	(37 - 119)
Phenol-d5	61 DIL	(10 - 110)
2-Fluorophenol	64 DIL	(10 - 110)
2,4,6-Tribromophenol	95 DIL	(22 - 120)

NOTE(S):

DIL The concentration is estimated or not reported due to dilution or the presence of interfering analytes.

J Estimated result. Result is less than RL.

Conestoga-Rovers & Associates, Inc.

Client Sample ID: GW-17360-100709-DR-293

GC/MS Semivolatiles

Lot-Sample #....: A9J090242-003 Work Order #....: LMAM41AC Matrix.....: WG
 Date Sampled....: 10/07/09 09:10 Date Received...: 10/09/09
 Prep Date.....: 10/10/09 Analysis Date...: 10/14/09
 Prep Batch #....: 9283014
 Dilution Factor: 1 Initial Wgt/Vol: 990 mL Final Wgt/Vol...: 2 mL
 Method.....: SW846 8270C

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Acenaphthene	0.61 J	5.0	ug/L	0.10
Acenaphthylene	ND	5.0	ug/L	0.10
Acetophenone	ND	5.0	ug/L	0.34
Anthracene	ND	5.0	ug/L	0.10
Atrazine	ND	5.0	ug/L	0.34
Benzo(a)anthracene	ND	1.0	ug/L	0.10
Benzo(a)pyrene	ND	2.0	ug/L	0.10
Benzo(b)fluoranthene	ND	2.0	ug/L	0.10
Benzo(ghi)perylene	ND	5.0	ug/L	0.10
Benzo(k)fluoranthene	ND	5.0	ug/L	0.10
Benzaldehyde	ND	10	ug/L	0.39
1,1'-Biphenyl	ND	10	ug/L	0.80
bis(2-Chloroethoxy) methane	ND	5.0	ug/L	0.32
bis(2-Chloroethyl)- ether	ND	4.0	ug/L	0.10
bis(2-Ethylhexyl) phthalate	1.9 J,B	5.0	ug/L	0.80
4-Bromophenyl phenyl ether	ND	5.0	ug/L	0.80
Butyl benzyl phthalate	ND	5.0	ug/L	0.80
Caprolactam	ND	10	ug/L	0.80
Carbazole	ND	10	ug/L	0.28
4-Chloroaniline	ND	20	ug/L	0.80
4-Chloro-3-methylphenol	ND	5.0	ug/L	0.80
2-Chloronaphthalene	ND	5.0	ug/L	0.10
2-Chlorophenol	ND	5.0	ug/L	0.29
4-Chlorophenyl phenyl ether	ND	5.0	ug/L	0.30
Chrysene	ND	5.0	ug/L	0.10
Dibenz(a,h)anthracene	ND	2.0	ug/L	0.10
Dibenzofuran	0.43 J	5.0	ug/L	0.10
3,3'-Dichlorobenzidine	ND	4.0	ug/L	0.37
2,4-Dichlorophenol	ND	10	ug/L	0.80
Diethyl phthalate	ND	5.0	ug/L	0.60
2,4-Dimethylphenol	ND	5.0	ug/L	0.80
Dimethyl phthalate	ND	5.0	ug/L	0.29
Di-n-butyl phthalate	ND	5.0	ug/L	0.67

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Conestoga-Rovers & Associates, Inc.

Client Sample ID: GW-17360-100709-DR-293

GC/MS Semivolatiles

Lot-Sample #....: A9J090242-003 Work Order #....: LMAM41AC Matrix.....: WG

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
4,6-Dinitro- 2-methylphenol	ND	20	ug/L	2.4
2,4-Dinitrophenol	ND	20	ug/L	2.4
2,4-Dinitrotoluene	ND	5.0	ug/L	0.27
2,6-Dinitrotoluene	ND	5.0	ug/L	0.80
Di-n-octyl phthalate	ND	5.0	ug/L	0.80
Fluoranthene	ND	5.0	ug/L	0.10
Fluorene	0.49 J	5.0	ug/L	0.10
Hexachlorobenzene	ND	5.0	ug/L	0.10
Hexachlorobutadiene	ND	5.0	ug/L	0.27
Hexachlorocyclopenta- diene	ND	5.0	ug/L	0.80
Hexachloroethane	ND	5.0	ug/L	0.80
Indeno(1,2,3-cd)pyrene	ND	2.0	ug/L	0.10
Isophorone	ND	5.0	ug/L	0.27
2-Methylnaphthalene	ND	5.0	ug/L	0.10
2-Methylphenol	ND	5.0	ug/L	0.80
4-Methylphenol	ND	5.0	ug/L	0.80
Naphthalene	0.39 J	5.0	ug/L	0.10
2-Nitroaniline	ND	20	ug/L	0.80
3-Nitroaniline	ND	20	ug/L	0.28
4-Nitroaniline	ND	20	ug/L	0.80
Nitrobenzene	ND	4.0	ug/L	0.040
2-Nitrophenol	ND	5.0	ug/L	0.28
4-Nitrophenol	ND	20	ug/L	2.4
N-Nitrosodi-n-propyl- amine	ND	5.0	ug/L	0.80
N-Nitrosodiphenylamine	ND	5.0	ug/L	0.31
2,2'-oxybis (1-Chloropropane)	ND	5.0	ug/L	0.40
Pentachlorophenol	ND	20	ug/L	2.4
Phenanthrene	ND	5.0	ug/L	0.10
Phenol	ND	5.0	ug/L	0.60
Pyrene	ND	5.0	ug/L	0.10
2,4,5-Trichloro- phenol	ND	5.0	ug/L	0.30
2,4,6-Trichloro- phenol	ND	4.0	ug/L	0.80

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Conestoga-Rovers & Associates, Inc.

Client Sample ID: GW-17360-100709-DR-293

GC/MS Semivolatiles

Lot-Sample #...: A9J090242-003 Work Order #...: LMAM41AC Matrix.....: WG

<u>SURROGATE</u>	<u>PERCENT RECOVERY</u>	<u>RECOVERY LIMITS</u>
Nitrobenzene-d5	72	(27 - 111)
2-Fluorobiphenyl	81	(28 - 110)
Terphenyl-d14	85	(37 - 119)
Phenol-d5	62	(10 - 110)
2-Fluorophenol	63	(10 - 110)
2,4,6-Tribromophenol	100	(22 - 120)

NOTE(S):

J Estimated result. Result is less than RL.

B Method blank contamination. The associated method blank contains the target analyte at a reportable level.

Conestoga-Rovers & Associates, Inc.

Client Sample ID: GW-17360-100709-DR-294

GC/MS Semivolatiles

Lot-Sample #... : A9J090242-004	Work Order #... : LMAM51AC	Matrix..... : WG
Date Sampled... : 10/07/09 10:35	Date Received... : 10/09/09	
Prep Date..... : 10/10/09	Analysis Date... : 10/14/09	
Prep Batch #... : 9283014		
Dilution Factor: 1	Initial Wgt/Vol: 1000 mL	Final Wgt/Vol... : 2 mL
	Method..... : SW846 8270C	

PARAMETER	RESULT	REPORTING		
		LIMIT	UNITS	MDL
Acenaphthene	ND	5.0	ug/L	0.10
Acenaphthylene	ND	5.0	ug/L	0.10
Acetophenone	ND	5.0	ug/L	0.34
Anthracene	ND	5.0	ug/L	0.10
Atrazine	ND	5.0	ug/L	0.34
Benzo(a)anthracene	ND	1.0	ug/L	0.10
Benzo(a)pyrene	ND	2.0	ug/L	0.10
Benzo(b)fluoranthene	ND	2.0	ug/L	0.10
Benzo(ghi)perylene	ND	5.0	ug/L	0.10
Benzo(k)fluoranthene	ND	5.0	ug/L	0.10
Benzaldehyde	ND	10	ug/L	0.39
1,1'-Biphenyl	ND	10	ug/L	0.80
bis(2-Chloroethoxy) methane	ND	5.0	ug/L	0.32
bis(2-Chloroethyl)- ether	ND	4.0	ug/L	0.10
bis(2-Ethylhexyl) phthalate	ND	5.0	ug/L	0.80
4-Bromophenyl phenyl ether	ND	5.0	ug/L	0.80
Butyl benzyl phthalate	ND	5.0	ug/L	0.80
Caprolactam	ND	10	ug/L	0.80
Carbazole	ND	10	ug/L	0.28
4-Chloroaniline	ND	20	ug/L	0.80
4-Chloro-3-methylphenol	ND	5.0	ug/L	0.80
2-Chloronaphthalene	ND	5.0	ug/L	0.10
2-Chlorophenol	ND	5.0	ug/L	0.29
4-Chlorophenyl phenyl ether	ND	5.0	ug/L	0.30
Chrysene	ND	5.0	ug/L	0.10
Dibenz(a,h)anthracene	ND	2.0	ug/L	0.10
Dibenzofuran	ND	5.0	ug/L	0.10
3,3'-Dichlorobenzidine	ND	4.0	ug/L	0.37
2,4-Dichlorophenol	ND	10	ug/L	0.80
Diethyl phthalate	ND	5.0	ug/L	0.60
2,4-Dimethylphenol	ND	5.0	ug/L	0.80
Dimethyl phthalate	ND	5.0	ug/L	0.29
Di-n-butyl phthalate	ND	5.0	ug/L	0.67

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Conestoga-Rovers & Associates, Inc.

Client Sample ID: GW-17360-100709-DR-294

GC/MS Semivolatiles

Lot-Sample #....: A9J090242-004 Work Order #....: LMAM51AC Matrix.....: WG

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING LIMIT</u>	<u>UNITS</u>	<u>MDL</u>
4,6-Dinitro- 2-methylphenol	ND	20	ug/L	2.4
2,4-Dinitrophenol	ND	20	ug/L	2.4
2,4-Dinitrotoluene	ND	5.0	ug/L	0.27
2,6-Dinitrotoluene	ND	5.0	ug/L	0.80
Di-n-octyl phthalate	ND	5.0	ug/L	0.80
Fluoranthene	ND	5.0	ug/L	0.10
Fluorene	ND	5.0	ug/L	0.10
Hexachlorobenzene	ND	5.0	ug/L	0.10
Hexachlorobutadiene	ND	5.0	ug/L	0.27
Hexachlorocyclopenta- diene	ND	5.0	ug/L	0.80
Hexachloroethane	ND	5.0	ug/L	0.80
Indeno(1,2,3-cd)pyrene	ND	2.0	ug/L	0.10
Isophorone	ND	5.0	ug/L	0.27
2-Methylnaphthalene	ND	5.0	ug/L	0.10
2-Methylphenol	ND	5.0	ug/L	0.80
4-Methylphenol	ND	5.0	ug/L	0.80
Naphthalene	ND	5.0	ug/L	0.10
2-Nitroaniline	ND	20	ug/L	0.80
3-Nitroaniline	ND	20	ug/L	0.28
4-Nitroaniline	ND	20	ug/L	0.80
Nitrobenzene	ND	4.0	ug/L	0.040
2-Nitrophenol	ND	5.0	ug/L	0.28
4-Nitrophenol	ND	20	ug/L	2.4
N-Nitrosodi-n-propyl- amine	ND	5.0	ug/L	0.80
N-Nitrosodiphenylamine	ND	5.0	ug/L	0.31
2,2'-oxybis (1-Chloropropane)	ND	5.0	ug/L	0.40
Pentachlorophenol	ND	20	ug/L	2.4
Phenanthrene	ND	5.0	ug/L	0.10
Phenol	ND	5.0	ug/L	0.60
Pyrene	ND	5.0	ug/L	0.10
2,4,5-Trichloro- phenol	ND	5.0	ug/L	0.30
2,4,6-Trichloro- phenol	ND	4.0	ug/L	0.80

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Conestoga-Rovers & Associates, Inc.

Client Sample ID: GW-17360-100709-DR-294

GC/MS Semivolatiles

Lot-Sample #...: A9J090242-004 Work Order #...: LMAM51AC Matrix.....: WG

<u>SURROGATE</u>	<u>PERCENT RECOVERY</u>	<u>RECOVERY LIMITS</u>
Nitrobenzene-d5	61	(27 - 111)
2-Fluorobiphenyl	69	(28 - 110)
Terphenyl-d14	82	(37 - 119)
Phenol-d5	52	(10 - 110)
2-Fluorophenol	56	(10 - 110)
2,4,6-Tribromophenol	91	(22 - 120)

METHOD BLANK REPORT

GC/MS Semivolatiles

Client Lot #...: 9J07288
MB Lot-Sample #: A9J080000-060

Work Order #...: LL6N11AA

Matrix.....: WATER

Analysis Date...: 10/15/09

Prep Date.....: 10/08/09

Final Wgt/Vol...: 2 mL

Dilution Factor: 1

Prep Batch #...: 9281060

Initial Wgt/Vol: 1000 mL

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD
Acenaphthene	ND	5.0	ug/L	SW846 8270C
Acenaphthylene	ND	5.0	ug/L	SW846 8270C
Acetophenone	ND	5.0	ug/L	SW846 8270C
Anthracene	ND	5.0	ug/L	SW846 8270C
Atrazine	ND	5.0	ug/L	SW846 8270C
Benzo(a)anthracene	ND	1.0	ug/L	SW846 8270C
Benzo(a)pyrene	ND	2.0	ug/L	SW846 8270C
Benzo(b)fluoranthene	ND	2.0	ug/L	SW846 8270C
Benzo(ghi)perylene	ND	5.0	ug/L	SW846 8270C
Benzo(k)fluoranthene	ND	5.0	ug/L	SW846 8270C
Benzaldehyde	ND	10	ug/L	SW846 8270C
1,1'-Biphenyl	ND	10	ug/L	SW846 8270C
bis(2-Chloroethoxy) methane	ND	5.0	ug/L	SW846 8270C
bis(2-Chloroethyl)- ether	ND	4.0	ug/L	SW846 8270C
bis(2-Ethylhexyl) phthalate	ND	5.0	ug/L	SW846 8270C
4-Bromophenyl phenyl ether	ND	5.0	ug/L	SW846 8270C
Butyl benzyl phthalate	ND	5.0	ug/L	SW846 8270C
Caprolactam	ND	10	ug/L	SW846 8270C
Carbazole	ND	10	ug/L	SW846 8270C
4-Chloroaniline	ND	20	ug/L	SW846 8270C
4-Chloro-3-methylphenol	ND	5.0	ug/L	SW846 8270C
2-Chloronaphthalene	ND	5.0	ug/L	SW846 8270C
2-Chlorophenol	ND	5.0	ug/L	SW846 8270C
4-Chlorophenyl phenyl ether	ND	5.0	ug/L	SW846 8270C
Chrysene	ND	5.0	ug/L	SW846 8270C
Dibenz(a,h)anthracene	ND	2.0	ug/L	SW846 8270C
Dibenzofuran	ND	5.0	ug/L	SW846 8270C
3,3'-Dichlorobenzidine	ND	4.0	ug/L	SW846 8270C
2,4-Dichlorophenol	ND	10	ug/L	SW846 8270C
Diethyl phthalate	ND	5.0	ug/L	SW846 8270C
2,4-Dimethylphenol	ND	5.0	ug/L	SW846 8270C
Dimethyl phthalate	ND	5.0	ug/L	SW846 8270C
Di-n-butyl phthalate	ND	5.0	ug/L	SW846 8270C
4,6-Dinitro- 2-methylphenol	ND	20	ug/L	SW846 8270C
2,4-Dinitrophenol	ND	20	ug/L	SW846 8270C

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METHOD BLANK REPORT

GC/MS Semivolatiles

Client Lot #...: 9J07288

Work Order #...: LL6N11AA

Matrix.....: WATER

PARAMETER	RESULT	REPORTING			METHOD
		LIMIT	UNITS		
2,4-Dinitrotoluene	ND	5.0	ug/L		SW846 8270C
2,6-Dinitrotoluene	ND	5.0	ug/L		SW846 8270C
Di-n-octyl phthalate	ND	5.0	ug/L		SW846 8270C
Fluoranthene	ND	5.0	ug/L		SW846 8270C
Fluorene	ND	5.0	ug/L		SW846 8270C
Hexachlorobenzene	ND	5.0	ug/L		SW846 8270C
Hexachlorobutadiene	ND	5.0	ug/L		SW846 8270C
Hexachlorocyclopenta- diene	ND	5.0	ug/L		SW846 8270C
Hexachloroethane	ND	5.0	ug/L		SW846 8270C
Indeno(1,2,3-cd)pyrene	ND	2.0	ug/L		SW846 8270C
Isophorone	ND	5.0	ug/L		SW846 8270C
2-Methylnaphthalene	ND	5.0	ug/L		SW846 8270C
2-Methylphenol	ND	5.0	ug/L		SW846 8270C
4-Methylphenol	ND	5.0	ug/L		SW846 8270C
Naphthalene	ND	5.0	ug/L		SW846 8270C
2-Nitroaniline	ND	20	ug/L		SW846 8270C
3-Nitroaniline	ND	20	ug/L		SW846 8270C
4-Nitroaniline	ND	20	ug/L		SW846 8270C
Nitrobenzene	ND	4.0	ug/L		SW846 8270C
2-Nitrophenol	ND	5.0	ug/L		SW846 8270C
4-Nitrophenol	ND	20	ug/L		SW846 8270C
N-Nitrosodi-n-propyl- amine	ND	5.0	ug/L		SW846 8270C
N-Nitrosodiphenylamine	ND	5.0	ug/L		SW846 8270C
2,2'-oxybis (1-Chloropropane)	ND	5.0	ug/L		SW846 8270C
Pentachlorophenol	ND	20	ug/L		SW846 8270C
Phenanthrene	ND	5.0	ug/L		SW846 8270C
Phenol	ND	5.0	ug/L		SW846 8270C
Pyrene	ND	5.0	ug/L		SW846 8270C
2,4,5-Trichloro- phenol	ND	5.0	ug/L		SW846 8270C
2,4,6-Trichloro- phenol	ND	4.0	ug/L		SW846 8270C
SURROGATE	PERCENT		RECOVERY		
	RECOVERY		LIMITS		
Nitrobenzene-d5	86		(27 - 111)		
2-Fluorobiphenyl	65		(28 - 110)		
Terphenyl-d14	86		(37 - 119)		
Phenol-d5	71		(10 - 110)		
2-Fluorophenol	72		(10 - 110)		
2,4,6-Tribromophenol	68		(22 - 120)		

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METHOD BLANK REPORT

GC/MS Semivolatiles

Client Lot #...: 9J07288

Work Order #...: LL6N11AA

Matrix.....: WATER

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

METHOD BLANK REPORT

GC/MS Semivolatiles

Client Lot #...: 9J07288
MB Lot-Sample #: A9J100000-014

Work Order #...: LMC671AA

Matrix.....: WATER

Analysis Date...: 10/15/09

Prep Date.....: 10/10/09

Final Wgt/Vol...: 2 mL

Dilution Factor: 1

Prep Batch #...: 9283014

Initial Wgt/Vol: 1000 mL

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD
Acenaphthene	ND	5.0	ug/L	SW846 8270C
Acenaphthylene	ND	5.0	ug/L	SW846 8270C
Acetophenone	ND	5.0	ug/L	SW846 8270C
Anthracene	ND	5.0	ug/L	SW846 8270C
Atrazine	ND	5.0	ug/L	SW846 8270C
Benzo(a)anthracene	ND	1.0	ug/L	SW846 8270C
Benzo(a)pyrene	ND	2.0	ug/L	SW846 8270C
Benzo(b)fluoranthene	ND	2.0	ug/L	SW846 8270C
Benzo(ghi)perylene	ND	5.0	ug/L	SW846 8270C
Benzo(k)fluoranthene	ND	5.0	ug/L	SW846 8270C
Benzaldehyde	ND	10	ug/L	SW846 8270C
1,1'-Biphenyl	ND	10	ug/L	SW846 8270C
bis(2-Chloroethoxy) methane	ND	5.0	ug/L	SW846 8270C
bis(2-Chloroethyl)- ether	ND	4.0	ug/L	SW846 8270C
bis(2-Ethylhexyl) phthalate	1.5 J	5.0	ug/L	SW846 8270C
4-Bromophenyl phenyl ether	ND	5.0	ug/L	SW846 8270C
Butyl benzyl phthalate	ND	5.0	ug/L	SW846 8270C
Caprolactam	ND	10	ug/L	SW846 8270C
Carbazole	ND	10	ug/L	SW846 8270C
4-Chloroaniline	ND	20	ug/L	SW846 8270C
4-Chloro-3-methylphenol	ND	5.0	ug/L	SW846 8270C
2-Chloronaphthalene	ND	5.0	ug/L	SW846 8270C
2-Chlorophenol	ND	5.0	ug/L	SW846 8270C
4-Chlorophenyl phenyl ether	ND	5.0	ug/L	SW846 8270C
Chrysene	ND	5.0	ug/L	SW846 8270C
Dibenz(a,h)anthracene	ND	2.0	ug/L	SW846 8270C
Dibenzofuran	ND	5.0	ug/L	SW846 8270C
3,3'-Dichlorobenzidine	ND	4.0	ug/L	SW846 8270C
2,4-Dichlorophenol	ND	10	ug/L	SW846 8270C
Diethyl phthalate	ND	5.0	ug/L	SW846 8270C
2,4-Dimethylphenol	ND	5.0	ug/L	SW846 8270C
Dimethyl phthalate	ND	5.0	ug/L	SW846 8270C
Di-n-butyl phthalate	ND	5.0	ug/L	SW846 8270C
4,6-Dinitro- 2-methylphenol	ND	20	ug/L	SW846 8270C
2,4-Dinitrophenol	ND	20	ug/L	SW846 8270C

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METHOD BLANK REPORT

GC/MS Semivolatiles

Client Lot #...: 9J07288

Work Order #...: LMC671AA

Matrix.....: WATER

PARAMETER	RESULT	REPORTING			METHOD
		LIMIT	UNITS		
2,4-Dinitrotoluene	ND	5.0	ug/L		SW846 8270C
2,6-Dinitrotoluene	ND	5.0	ug/L		SW846 8270C
Di-n-octyl phthalate	ND	5.0	ug/L		SW846 8270C
Fluoranthene	ND	5.0	ug/L		SW846 8270C
Fluorene	ND	5.0	ug/L		SW846 8270C
Hexachlorobenzene	ND	5.0	ug/L		SW846 8270C
Hexachlorobutadiene	ND	5.0	ug/L		SW846 8270C
Hexachlorocyclopenta- diene	ND	5.0	ug/L		SW846 8270C
Hexachloroethane	ND	5.0	ug/L		SW846 8270C
Indeno(1,2,3-cd)pyrene	ND	2.0	ug/L		SW846 8270C
Isophorone	ND	5.0	ug/L		SW846 8270C
2-Methylnaphthalene	ND	5.0	ug/L		SW846 8270C
2-Methylphenol	ND	5.0	ug/L		SW846 8270C
4-Methylphenol	ND	5.0	ug/L		SW846 8270C
Naphthalene	ND	5.0	ug/L		SW846 8270C
2-Nitroaniline	ND	20	ug/L		SW846 8270C
3-Nitroaniline	ND	20	ug/L		SW846 8270C
4-Nitroaniline	ND	20	ug/L		SW846 8270C
Nitrobenzene	ND	4.0	ug/L		SW846 8270C
2-Nitrophenol	ND	5.0	ug/L		SW846 8270C
4-Nitrophenol	ND	20	ug/L		SW846 8270C
N-Nitrosodi-n-propyl- amine	ND	5.0	ug/L		SW846 8270C
N-Nitrosodiphenylamine	ND	5.0	ug/L		SW846 8270C
2,2'-oxybis (1-Chloropropane)	ND	5.0	ug/L		SW846 8270C
Pentachlorophenol	ND	20	ug/L		SW846 8270C
Phenanthrene	ND	5.0	ug/L		SW846 8270C
Phenol	ND	5.0	ug/L		SW846 8270C
Pyrene	ND	5.0	ug/L		SW846 8270C
2,4,5-Trichloro- phenol	ND	5.0	ug/L		SW846 8270C
2,4,6-Trichloro- phenol	ND	4.0	ug/L		SW846 8270C
SURROGATE	PERCENT		RECOVERY		
	RECOVERY		LIMITS		
Nitrobenzene-d5	85		(27 - 111)		
2-Fluorobiphenyl	75		(28 - 110)		
Terphenyl-d14	87		(37 - 119)		
Phenol-d5	72		(10 - 110)		
2-Fluorophenol	74		(10 - 110)		
2,4,6-Tribromophenol	69		(22 - 120)		

(Continued on next page)

METHOD BLANK REPORT

GC/MS Semivolatiles

Client Lot #...: 9J07288

Work Order #...: LMC671AA

Matrix.....: WATER

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

J Estimated result. Result is less than RL.

LABORATORY CONTROL SAMPLE DATA REPORT

GC/MS Semivolatiles

Client Lot #....: 9J07288 Work Order #....: LL6N11AC Matrix.....: WATER
 LCS Lot-Sample#: A9J080000-060
 Prep Date.....: 10/08/09 Analysis Date...: 10/18/09
 Prep Batch #....: 9281060
 Dilution Factor: 1 Final Wgt/Vol...: 2 mL
 Initial Wgt/Vol: 1000 mL

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCENT RECOVERY	METHOD
Acenaphthene	20	15	ug/L	76	SW846 8270C
Acenaphthylene	20	16	ug/L	80	SW846 8270C
Acetophenone	20	18	ug/L	90	SW846 8270C
Anthracene	20	18	ug/L	88	SW846 8270C
Atrazine	20	17	ug/L	84	SW846 8270C
Benzo(a)anthracene	20	16	ug/L	81	SW846 8270C
Benzo(a)pyrene	20	15	ug/L	75	SW846 8270C
Benzo(b)fluoranthene	20	19	ug/L	94	SW846 8270C
Benzo(ghi)perylene	20	18	ug/L	89	SW846 8270C
Benzo(k)fluoranthene	20	17	ug/L	85	SW846 8270C
Benzaldehyde	20	18	ug/L	92	SW846 8270C
1,1'-Biphenyl	20	16	ug/L	81	SW846 8270C
bis(2-Chloroethoxy) methane	20	18	ug/L	90	SW846 8270C
bis(2-Chloroethyl)- ether	20	18	ug/L	90	SW846 8270C
bis(2-Ethylhexyl) phthalate	20	18	ug/L	90	SW846 8270C
4-Bromophenyl phenyl ether	20	16	ug/L	82	SW846 8270C
Butyl benzyl phthalate	20	18	ug/L	90	SW846 8270C
Caprolactam	20	20	ug/L	101	SW846 8270C
Carbazole	20	17	ug/L	87	SW846 8270C
4-Chloroaniline	20	12	ug/L	58	SW846 8270C
4-Chloro-3-methylphenol	20	17	ug/L	83	SW846 8270C
2-Chloronaphthalene	20	14	ug/L	69	SW846 8270C
2-Chlorophenol	20	15	ug/L	76	SW846 8270C
4-Chlorophenyl phenyl ether	20	16	ug/L	81	SW846 8270C
Chrysene	20	16	ug/L	79	SW846 8270C
Dibenz(a,h)anthracene	20	18	ug/L	88	SW846 8270C
Dibenzofuran	20	16	ug/L	79	SW846 8270C
3,3'-Dichlorobenzidine	20	4.0	ug/L	20	SW846 8270C

(Continued on next page)

LABORATORY CONTROL SAMPLE DATA REPORT

GC/MS Semivolatiles

Client Lot #...: 9J07288
LCS Lot-Sample#: A9J080000-060

Work Order #...: LL6N11AC

Matrix.....: WATER

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCENT RECOVERY	METHOD
2,4-Dichlorophenol	20	16	ug/L	82	SW846 8270C
Diethyl phthalate	20	19	ug/L	94	SW846 8270C
2,4-Dimethylphenol	20	14	ug/L	70	SW846 8270C
Dimethyl phthalate	20	18	ug/L	90	SW846 8270C
Di-n-butyl phthalate	20	19	ug/L	97	SW846 8270C
4,6-Dinitro- 2-methylphenol	20	16	ug/L	82	SW846 8270C
2,4-Dinitrophenol	20	16	ug/L	78	SW846 8270C
2,4-Dinitrotoluene	20	19	ug/L	93	SW846 8270C
2,6-Dinitrotoluene	20	19	ug/L	97	SW846 8270C
Di-n-octyl phthalate	20	19	ug/L	93	SW846 8270C
Fluoranthene	20	19	ug/L	94	SW846 8270C
Fluorene	20	17	ug/L	85	SW846 8270C
Hexachlorobenzene	20	16	ug/L	82	SW846 8270C
Hexachlorobutadiene	20	8.5	ug/L	42	SW846 8270C
Hexachlorocyclopenta- diene	20	5.0	ug/L	25	SW846 8270C
Hexachloroethane	20	9.5	ug/L	47	SW846 8270C
Indeno(1,2,3-cd)pyrene	20	18	ug/L	88	SW846 8270C
Isophorone	20	18	ug/L	90	SW846 8270C
2-Methylnaphthalene	20	14	ug/L	70	SW846 8270C
2-Methylphenol	20	17	ug/L	84	SW846 8270C
4-Methylphenol	40	33	ug/L	83	SW846 8270C
Naphthalene	20	14	ug/L	70	SW846 8270C
2-Nitroaniline	20	18	ug/L	92	SW846 8270C
3-Nitroaniline	20	13	ug/L	66	SW846 8270C
4-Nitroaniline	20	16	ug/L	81	SW846 8270C
Nitrobenzene	20	18	ug/L	89	SW846 8270C
2-Nitrophenol	20	17	ug/L	83	SW846 8270C
4-Nitrophenol	20	17	ug/L	83	SW846 8270C
N-Nitrosodi-n-propyl- amine	20	18	ug/L	89	SW846 8270C
N-Nitrosodiphenylamine	20	16	ug/L	80	SW846 8270C
bis(2-Chloroisopropyl) ether	20	18	ug/L	90	SW846 8270C
Pentachlorophenol	20	18	ug/L	90	SW846 8270C
Phenanthrene	20	17	ug/L	86	SW846 8270C

(Continued on next page)

LABORATORY CONTROL SAMPLE DATA REPORT

GC/MS Semivolatiles

Client Lot #...: 9J07288

Work Order #...: LL6N11AC

Matrix.....: WATER

LCS Lot-Sample#: A9J080000-060

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCENT RECOVERY	METHOD
Phenol	20	16	ug/L	81	SW846 8270C
Pyrene	20	17	ug/L	83	SW846 8270C
2,4,5-Trichloro-phenol	20	16	ug/L	80	SW846 8270C
2,4,6-Trichloro-phenol	20	16	ug/L	82	SW846 8270C

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Nitrobenzene-d5	87	(27 - 111)
2-Fluorobiphenyl	68	(28 - 110)
Terphenyl-d14	91	(37 - 119)
Phenol-d5	78	(10 - 110)
2-Fluorophenol	67	(10 - 110)
2,4,6-Tribromophenol	77	(22 - 120)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters

LABORATORY CONTROL SAMPLE EVALUATION REPORT

GC/MS Semivolatiles

Client Lot #....: 9J07288 Work Order #....: LL6N11AC Matrix.....: WATER
 LCS Lot-Sample#: A9J080000-060
 Prep Date.....: 10/08/09 Analysis Date...: 10/18/09
 Prep Batch #....: 9281060
 Dilution Factor: 1 Final Wgt/Vol...: 2 mL
 Initial Wgt/Vol: 1000 mL

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	METHOD
Acenaphthene	76	(40 - 110)	SW846 8270C
Acenaphthylene	80	(43 - 110)	SW846 8270C
Acetophenone	90	(50 - 130)	SW846 8270C
Anthracene	88	(54 - 114)	SW846 8270C
Atrazine	84	(50 - 130)	SW846 8270C
Benzo(a)anthracene	81	(55 - 115)	SW846 8270C
Benzo(a)pyrene	75	(43 - 116)	SW846 8270C
Benzo(b)fluoranthene	94	(43 - 122)	SW846 8270C
Benzo(ghi)perylene	89	(45 - 120)	SW846 8270C
Benzo(k)fluoranthene	85	(43 - 124)	SW846 8270C
Benzaldehyde	92	(10 - 130)	SW846 8270C
1,1'-Biphenyl	81	(50 - 130)	SW846 8270C
bis(2-Chloroethoxy) methane	90	(39 - 110)	SW846 8270C
bis(2-Chloroethyl)- ether	90	(34 - 113)	SW846 8270C
bis(2-Ethylhexyl) phthalate	90	(36 - 163)	SW846 8270C
4-Bromophenyl phenyl ether	82	(51 - 114)	SW846 8270C
Butyl benzyl phthalate	90	(53 - 126)	SW846 8270C
Caprolactam	101	(50 - 130)	SW846 8270C
Carbazole	87	(53 - 120)	SW846 8270C
4-Chloroaniline	58	(10 - 110)	SW846 8270C
4-Chloro-3-methylphenol	83	(39 - 110)	SW846 8270C
2-Chloronaphthalene	69	(39 - 110)	SW846 8270C
2-Chlorophenol	76	(27 - 110)	SW846 8270C
4-Chlorophenyl phenyl ether	81	(50 - 115)	SW846 8270C
Chrysene	79	(55 - 115)	SW846 8270C
Dibenz(a,h)anthracene	88	(46 - 122)	SW846 8270C
Dibenzofuran	79	(46 - 111)	SW846 8270C
3,3'-Dichlorobenzidine	20	(19 - 110)	SW846 8270C

(Continued on next page)

LABORATORY CONTROL SAMPLE EVALUATION REPORT

GC/MS Semivolatiles

Client Lot #...: 9J07288
LCS Lot-Sample#: A9J080000-060

Work Order #...: LL6N11AC

Matrix.....: WATER

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	METHOD
2,4-Dichlorophenol	82	(33 - 110)	SW846 8270C
Diethyl phthalate	94	(33 - 134)	SW846 8270C
2,4-Dimethylphenol	70	(12 - 110)	SW846 8270C
Dimethyl phthalate	90	(15 - 143)	SW846 8270C
Di-n-butyl phthalate	97	(55 - 122)	SW846 8270C
4,6-Dinitro- 2-methylphenol	82	(28 - 112)	SW846 8270C
2,4-Dinitrophenol	78	(17 - 112)	SW846 8270C
2,4-Dinitrotoluene	93	(52 - 123)	SW846 8270C
2,6-Dinitrotoluene	97	(52 - 119)	SW846 8270C
Di-n-octyl phthalate	93	(44 - 128)	SW846 8270C
Fluoranthene	94	(54 - 122)	SW846 8270C
Fluorene	85	(47 - 112)	SW846 8270C
Hexachlorobenzene	82	(51 - 112)	SW846 8270C
Hexachlorobutadiene	42	(13 - 110)	SW846 8270C
Hexachlorocyclopenta- diene	25	(10 - 110)	SW846 8270C
Hexachloroethane	47	(12 - 110)	SW846 8270C
Indeno(1,2,3-cd)pyrene	88	(46 - 121)	SW846 8270C
Isophorone	90	(44 - 128)	SW846 8270C
2-Methylnaphthalene	70	(35 - 110)	SW846 8270C
2-Methylphenol	84	(30 - 110)	SW846 8270C
4-Methylphenol	83	(32 - 110)	SW846 8270C
Naphthalene	70	(31 - 110)	SW846 8270C
2-Nitroaniline	92	(43 - 130)	SW846 8270C
3-Nitroaniline	66	(45 - 116)	SW846 8270C
4-Nitroaniline	81	(45 - 120)	SW846 8270C
Nitrobenzene	89	(37 - 115)	SW846 8270C
2-Nitrophenol	83	(29 - 110)	SW846 8270C
4-Nitrophenol	83	(12 - 130)	SW846 8270C
N-Nitrosodi-n-propyl- amine	89	(37 - 121)	SW846 8270C
N-Nitrosodiphenylamine	80	(53 - 113)	SW846 8270C
bis(2-Chloroisopropyl) ether	90	(25 - 128)	SW846 8270C
Pentachlorophenol	90	(26 - 110)	SW846 8270C
Phenanthrene	86	(52 - 114)	SW846 8270C

(Continued on next page)

LABORATORY CONTROL SAMPLE EVALUATION REPORT

GC/MS Semivolatiles

Client Lot #...: 9J07288

Work Order #...: LL6N11AC

Matrix.....: WATER

LCS Lot-Sample#: A9J080000-060

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	METHOD
Phenol	81	(14 - 112)	SW846 8270C
Pyrene	83	(55 - 120)	SW846 8270C
2,4,5-Trichloro-phenol	80	(39 - 110)	SW846 8270C
2,4,6-Trichloro-phenol	82	(35 - 110)	SW846 8270C

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Nitrobenzene-d5	87	(27 - 111)
2-Fluorobiphenyl	68	(28 - 110)
Terphenyl-d14	91	(37 - 119)
Phenol-d5	78	(10 - 110)
2-Fluorophenol	67	(10 - 110)
2,4,6-Tribromophenol	77	(22 - 120)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters

LABORATORY CONTROL SAMPLE DATA REPORT

GC/MS Semivolatiles

Client Lot #....: 9J07288 Work Order #....: LMC671AC Matrix.....: WATER
 LCS Lot-Sample#: A9J100000-014
 Prep Date.....: 10/10/09 Analysis Date...: 10/15/09
 Prep Batch #....: 9283014
 Dilution Factor: 1 Final Wgt/Vol...: 2 mL
 Initial Wgt/Vol: 1000 mL

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCENT RECOVERY	METHOD
Acenaphthene	20	16	ug/L	81	SW846 8270C
Acenaphthylene	20	16	ug/L	80	SW846 8270C
Acetophenone	20	17	ug/L	85	SW846 8270C
Anthracene	20	16	ug/L	78	SW846 8270C
Atrazine	20	19	ug/L	95	SW846 8270C
Benzo(a)anthracene	20	15	ug/L	73	SW846 8270C
Benzo(a)pyrene	20	14	ug/L	71	SW846 8270C
Benzo(b)fluoranthene	20	16	ug/L	80	SW846 8270C
Benzo(ghi)perylene	20	16	ug/L	81	SW846 8270C
Benzo(k)fluoranthene	20	16	ug/L	82	SW846 8270C
Benzaldehyde	20	20	ug/L	98	SW846 8270C
1,1'-Biphenyl	20	16	ug/L	82	SW846 8270C
bis(2-Chloroethoxy) methane	20	17	ug/L	84	SW846 8270C
bis(2-Chloroethyl)- ether	20	17	ug/L	83	SW846 8270C
bis(2-Ethylhexyl) phthalate	20	17	ug/L	84	SW846 8270C
4-Bromophenyl phenyl ether	20	16	ug/L	81	SW846 8270C
Butyl benzyl phthalate	20	15	ug/L	74	SW846 8270C
Caprolactam	20	17	ug/L	84	SW846 8270C
Carbazole	20	17	ug/L	83	SW846 8270C
4-Chloroaniline	20	15	ug/L	76	SW846 8270C
4-Chloro-3-methylphenol	20	15	ug/L	76	SW846 8270C
2-Chloronaphthalene	20	16	ug/L	78	SW846 8270C
2-Chlorophenol	20	16	ug/L	78	SW846 8270C
4-Chlorophenyl phenyl ether	20	16	ug/L	81	SW846 8270C
Chrysene	20	15	ug/L	75	SW846 8270C
Dibenz(a,h)anthracene	20	16	ug/L	81	SW846 8270C
Dibenzofuran	20	16	ug/L	79	SW846 8270C
3,3'-Dichlorobenzidine	20	10	ug/L	51	SW846 8270C

(Continued on next page)

LABORATORY CONTROL SAMPLE DATA REPORT

GC/MS Semivolatiles

Client Lot #...: 9J07288
LCS Lot-Sample#: A9J100000-014

Work Order #...: LMC671AC

Matrix.....: WATER

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCENT RECOVERY	METHOD
2,4-Dichlorophenol	20	15	ug/L	73	SW846 8270C
Diethyl phthalate	20	17	ug/L	86	SW846 8270C
2,4-Dimethylphenol	20	14	ug/L	70	SW846 8270C
Dimethyl phthalate	20	16	ug/L	82	SW846 8270C
Di-n-butyl phthalate	20	17	ug/L	85	SW846 8270C
4,6-Dinitro- 2-methylphenol	20	14	ug/L	70	SW846 8270C
2,4-Dinitrophenol	20	12	ug/L	62	SW846 8270C
2,4-Dinitrotoluene	20	17	ug/L	87	SW846 8270C
2,6-Dinitrotoluene	20	17	ug/L	85	SW846 8270C
Di-n-octyl phthalate	20	16	ug/L	79	SW846 8270C
Fluoranthene	20	17	ug/L	84	SW846 8270C
Fluorene	20	16	ug/L	81	SW846 8270C
Hexachlorobenzene	20	16	ug/L	79	SW846 8270C
Hexachlorobutadiene	20	11	ug/L	57	SW846 8270C
Hexachlorocyclopenta- diene	20	10	ug/L	51	SW846 8270C
Hexachloroethane	20	12	ug/L	61	SW846 8270C
Indeno(1,2,3-cd)pyrene	20	16	ug/L	80	SW846 8270C
Isophorone	20	17	ug/L	85	SW846 8270C
2-Methylnaphthalene	20	16	ug/L	79	SW846 8270C
2-Methylphenol	20	15	ug/L	77	SW846 8270C
4-Methylphenol	40	30	ug/L	76	SW846 8270C
Naphthalene	20	15	ug/L	76	SW846 8270C
2-Nitroaniline	20	18	ug/L	88	SW846 8270C
3-Nitroaniline	20	17	ug/L	85	SW846 8270C
4-Nitroaniline	20	17	ug/L	87	SW846 8270C
Nitrobenzene	20	17	ug/L	86	SW846 8270C
2-Nitrophenol	20	15	ug/L	76	SW846 8270C
4-Nitrophenol	20	15	ug/L	77	SW846 8270C
N-Nitrosodi-n-propyl- amine	20	18	ug/L	90	SW846 8270C
N-Nitrosodiphenylamine	20	15	ug/L	77	SW846 8270C
bis(2-Chloroisopropyl) ether	20	18	ug/L	92	SW846 8270C
Pentachlorophenol	20	15	ug/L	73	SW846 8270C
Phenanthrene	20	16	ug/L	79	SW846 8270C

(Continued on next page)

LABORATORY CONTROL SAMPLE DATA REPORT

GC/MS Semivolatiles

Client Lot #...: 9J07288

Work Order #...: LMC671AC

Matrix.....: WATER

LCS Lot-Sample#: A9J100000-014

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCENT RECOVERY	METHOD
Phenol	20	16	ug/L	81	SW846 8270C
Pyrene	20	14	ug/L	71	SW846 8270C
2,4,5-Trichloro-phenol	20	16	ug/L	79	SW846 8270C
2,4,6-Trichloro-phenol	20	15	ug/L	76	SW846 8270C

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Nitrobenzene-d5	86	(27 - 111)
2-Fluorobiphenyl	77	(28 - 110)
Terphenyl-d14	83	(37 - 119)
Phenol-d5	78	(10 - 110)
2-Fluorophenol	81	(10 - 110)
2,4,6-Tribromophenol	86	(22 - 120)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters

LABORATORY CONTROL SAMPLE EVALUATION REPORT

GC/MS Semivolatiles

Client Lot #....: 9J07288 Work Order #....: LMC671AC Matrix.....: WATER
 LCS Lot-Sample#: A9J100000-014
 Prep Date.....: 10/10/09 Analysis Date...: 10/15/09
 Prep Batch #....: 9283014
 Dilution Factor: 1 Final Wgt/Vol...: 2 mL
 Initial Wgt/Vol: 1000 mL

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	METHOD
Acenaphthene	81	(40 - 110)	SW846 8270C
Acenaphthylene	80	(43 - 110)	SW846 8270C
Acetophenone	85	(50 - 130)	SW846 8270C
Anthracene	78	(54 - 114)	SW846 8270C
Atrazine	95	(50 - 130)	SW846 8270C
Benzo(a)anthracene	73	(55 - 115)	SW846 8270C
Benzo(a)pyrene	71	(43 - 116)	SW846 8270C
Benzo(b)fluoranthene	80	(43 - 122)	SW846 8270C
Benzo(ghi)perylene	81	(45 - 120)	SW846 8270C
Benzo(k)fluoranthene	82	(43 - 124)	SW846 8270C
Benzaldehyde	98	(10 - 130)	SW846 8270C
1,1'-Biphenyl	82	(50 - 130)	SW846 8270C
bis(2-Chloroethoxy) methane	84	(39 - 110)	SW846 8270C
bis(2-Chloroethyl)- ether	83	(34 - 113)	SW846 8270C
bis(2-Ethylhexyl) phthalate	84	(36 - 163)	SW846 8270C
4-Bromophenyl phenyl ether	81	(51 - 114)	SW846 8270C
Butyl benzyl phthalate	74	(53 - 126)	SW846 8270C
Caprolactam	84	(50 - 130)	SW846 8270C
Carbazole	83	(53 - 120)	SW846 8270C
4-Chloroaniline	76	(10 - 110)	SW846 8270C
4-Chloro-3-methylphenol	76	(39 - 110)	SW846 8270C
2-Chloronaphthalene	78	(39 - 110)	SW846 8270C
2-Chlorophenol	78	(27 - 110)	SW846 8270C
4-Chlorophenyl phenyl ether	81	(50 - 115)	SW846 8270C
Chrysene	75	(55 - 115)	SW846 8270C
Dibenz(a,h)anthracene	81	(46 - 122)	SW846 8270C
Dibenzofuran	79	(46 - 111)	SW846 8270C
3,3'-Dichlorobenzidine	51	(19 - 110)	SW846 8270C

(Continued on next page)

LABORATORY CONTROL SAMPLE EVALUATION REPORT

GC/MS Semivolatiles

Client Lot #...: 9J07288
LCS Lot-Sample#: A9J100000-014

Work Order #...: LMC671AC

Matrix.....: WATER

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	METHOD
2,4-Dichlorophenol	73	(33 - 110)	SW846 8270C
Diethyl phthalate	86	(33 - 134)	SW846 8270C
2,4-Dimethylphenol	70	(12 - 110)	SW846 8270C
Dimethyl phthalate	82	(15 - 143)	SW846 8270C
Di-n-butyl phthalate	85	(55 - 122)	SW846 8270C
4,6-Dinitro- 2-methylphenol	70	(28 - 112)	SW846 8270C
2,4-Dinitrophenol	62	(17 - 112)	SW846 8270C
2,4-Dinitrotoluene	87	(52 - 123)	SW846 8270C
2,6-Dinitrotoluene	85	(52 - 119)	SW846 8270C
Di-n-octyl phthalate	79	(44 - 128)	SW846 8270C
Fluoranthene	84	(54 - 122)	SW846 8270C
Fluorene	81	(47 - 112)	SW846 8270C
Hexachlorobenzene	79	(51 - 112)	SW846 8270C
Hexachlorobutadiene	57	(13 - 110)	SW846 8270C
Hexachlorocyclopenta- diene	51	(10 - 110)	SW846 8270C
Hexachloroethane	61	(12 - 110)	SW846 8270C
Indeno(1,2,3-cd)pyrene	80	(46 - 121)	SW846 8270C
Isophorone	85	(44 - 128)	SW846 8270C
2-Methylnaphthalene	79	(35 - 110)	SW846 8270C
2-Methylphenol	77	(30 - 110)	SW846 8270C
4-Methylphenol	76	(32 - 110)	SW846 8270C
Naphthalene	76	(31 - 110)	SW846 8270C
2-Nitroaniline	88	(43 - 130)	SW846 8270C
3-Nitroaniline	85	(45 - 116)	SW846 8270C
4-Nitroaniline	87	(45 - 120)	SW846 8270C
Nitrobenzene	86	(37 - 115)	SW846 8270C
2-Nitrophenol	76	(29 - 110)	SW846 8270C
4-Nitrophenol	77	(12 - 130)	SW846 8270C
N-Nitrosodi-n-propyl- amine	90	(37 - 121)	SW846 8270C
N-Nitrosodiphenylamine	77	(53 - 113)	SW846 8270C
bis(2-Chloroisopropyl) ether	92	(25 - 128)	SW846 8270C
Pentachlorophenol	73	(26 - 110)	SW846 8270C
Phenanthrene	79	(52 - 114)	SW846 8270C

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LABORATORY CONTROL SAMPLE EVALUATION REPORT

GC/MS Semivolatiles

Client Lot #...: 9J07288

Work Order #...: LMC671AC

Matrix.....: WATER

LCS Lot-Sample#: A9J100000-014

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	METHOD
Phenol	81	(14 - 112)	SW846 8270C
Pyrene	71	(55 - 120)	SW846 8270C
2,4,5-Trichloro-phenol	79	(39 - 110)	SW846 8270C
2,4,6-Trichloro-phenol	76	(35 - 110)	SW846 8270C

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Nitrobenzene-d5	86	(27 - 111)
2-Fluorobiphenyl	77	(28 - 110)
Terphenyl-d14	83	(37 - 119)
Phenol-d5	78	(10 - 110)
2-Fluorophenol	81	(10 - 110)
2,4,6-Tribromophenol	86	(22 - 120)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters

MATRIX SPIKE SAMPLE DATA REPORT

GC/MS Semivolatiles

Client Lot #...: 9J07288 **Work Order #...**: LL5NC1AC-MS **Matrix.....**: WATER
MS Lot-Sample #: A9J070258-011 LL5NC1AD-MSD
Date Sampled...: 10/06/09 12:40 **Date Received...**: 10/07/09
Prep Date.....: 10/08/09 **Analysis Date...**: 10/12/09
Prep Batch #...: 9281060
Dilution Factor: 1 **Initial Wgt/Vol:** 525 mL **Final Wgt/Vol...**: 2 mL

PARAMETER	SAMPLE AMOUNT	SPIKE AMT	MEASRD AMOUNT	UNITS	PERCNT RECVRY	RPD	METHOD
Acenaphthene	ND	38	27	ug/L	72		SW846 8270C
	ND	38	30	ug/L	79	10	SW846 8270C
Acenaphthylene	ND	38	29	ug/L	75		SW846 8270C
	ND	38	32	ug/L	83	11	SW846 8270C
Acetophenone	ND	38	31	ug/L	82		SW846 8270C
	ND	38	35	ug/L	92	11	SW846 8270C
Anthracene	ND	38	30	ug/L	78		SW846 8270C
	ND	38	34	ug/L	89	13	SW846 8270C
Atrazine	ND	38	36	ug/L	95		SW846 8270C
	ND	38	41	ug/L	107	12	SW846 8270C
Benzo(a)anthracene	ND	38	27	ug/L	70		SW846 8270C
	ND	38	31	ug/L	82	15	SW846 8270C
Benzo(a)pyrene	ND	38	25	ug/L	65		SW846 8270C
	ND	38	29	ug/L	75	14	SW846 8270C
Benzo(b)fluoranthene	ND	38	28	ug/L	74		SW846 8270C
	ND	38	33	ug/L	88	17	SW846 8270C
Benzo(ghi)perylene	ND	38	30	ug/L	79		SW846 8270C
	ND	38	34	ug/L	90	13	SW846 8270C
Benzo(k)fluoranthene	ND	38	30	ug/L	79		SW846 8270C
	ND	38	33	ug/L	88	10	SW846 8270C
Benzaldehyde	ND	38	33	ug/L	87		SW846 8270C
	ND	38	36	ug/L	93	7.6	SW846 8270C
1,1'-Biphenyl	ND	38	28	ug/L	72		SW846 8270C
	ND	38	30	ug/L	80	9.5	SW846 8270C
bis(2-Chloroethoxy) methane	ND	38	31	ug/L	80		SW846 8270C
	ND	38	33	ug/L	86	7.1	SW846 8270C
bis(2-Chloroethyl)- ether	ND	38	33	ug/L	85		SW846 8270C
	ND	38	34	ug/L	90	5.5	SW846 8270C
bis(2-Ethylhexyl) phthalate	ND	38	29	ug/L	75		SW846 8270C
	ND	38	33	ug/L	86	13	SW846 8270C
4-Bromophenyl phenyl ether	ND	38	30	ug/L	77		SW846 8270C
	ND	38	34	ug/L	90	15	SW846 8270C

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MATRIX SPIKE SAMPLE DATA REPORT

GC/MS Semivolatiles

Client Lot #...: 9J07288 Work Order #...: LL5NC1AC-MS Matrix.....: WATER
MS Lot-Sample #: A9J070258-011 LL5NC1AD-MSD

PARAMETER	SAMPLE AMOUNT	SPIKE AMT	MEASRD AMOUNT	UNITS	PERCNT RECVRY	RPD	METHOD
Butyl benzyl phthalate	ND	38	29	ug/L	75		SW846 8270C
	ND	38	34	ug/L	89	18	SW846 8270C
Caprolactam	ND	38	29	ug/L	76		SW846 8270C
	ND	38	33	ug/L	86	12	SW846 8270C
Carbazole	ND	38	28	ug/L	75		SW846 8270C
	ND	38	34	ug/L	89	18	SW846 8270C
4-Chloroaniline	ND	38	26	ug/L	68		SW846 8270C
	ND	38	28	ug/L	73	7.7	SW846 8270C
4-Chloro-3-methylphenol	ND	38	28	ug/L	74		SW846 8270C
	ND	38	30	ug/L	78	4.8	SW846 8270C
2-Chloronaphthalene	ND	38	26	ug/L	68		SW846 8270C
	ND	38	30	ug/L	78	13	SW846 8270C
2-Chlorophenol	ND	38	28	ug/L	73		SW846 8270C
	ND	38	32	ug/L	84	14	SW846 8270C
4-Chlorophenyl phenyl ether	ND	38	29	ug/L	77		SW846 8270C
	ND	38	34	ug/L	88	14	SW846 8270C
Chrysene	ND	38	27	ug/L	70		SW846 8270C
	ND	38	31	ug/L	81	15	SW846 8270C
Dibenz(a,h)anthracene	ND	38	29	ug/L	76		SW846 8270C
	ND	38	34	ug/L	90	16	SW846 8270C
Dibenzofuran	ND	38	30	ug/L	78		SW846 8270C
	ND	38	33	ug/L	87	12	SW846 8270C
3,3'-Dichlorobenzidine	ND	38	7.7	ug/L	20		SW846 8270C
	ND	38	6.7	ug/L	18	13	SW846 8270C
2,4-Dichlorophenol	ND	38	28	ug/L	73		SW846 8270C
	ND	38	30	ug/L	80	8.0	SW846 8270C
Diethyl phthalate	ND	38	32	ug/L	84		SW846 8270C
	ND	38	35	ug/L	92	9.5	SW846 8270C
2,4-Dimethylphenol	ND	38	25	ug/L	66		SW846 8270C
	ND	38	27	ug/L	72	9.2	SW846 8270C
Dimethyl phthalate	ND	38	31	ug/L	81		SW846 8270C
	ND	38	34	ug/L	90	11	SW846 8270C
Di-n-butyl phthalate	ND	38	31	ug/L	81		SW846 8270C
	ND	38	37	ug/L	97	18	SW846 8270C
4,6-Dinitro-2-methylphenol	ND	38	26	ug/L	68		SW846 8270C
	ND	38	31	ug/L	81	18	SW846 8270C
2,4-Dinitrophenol	ND	38	23	ug/L	59		SW846 8270C
	ND	38	27	ug/L	71	18	SW846 8270C

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MATRIX SPIKE SAMPLE DATA REPORT

GC/MS Semivolatiles

Client Lot #...: 9J07288 Work Order #...: LL5NC1AC-MS Matrix.....: WATER
MS Lot-Sample #: A9J070258-011 LL5NC1AD-MSD

PARAMETER	SAMPLE AMOUNT	SPIKE AMT	MEASRD AMOUNT	UNITS	PERCNT RECVRY	RPD	METHOD
2,4-Dinitrotoluene	ND	38	32	ug/L	85		SW846 8270C
	ND	38	36	ug/L	96	12	SW846 8270C
2,6-Dinitrotoluene	ND	38	31	ug/L	82		SW846 8270C
	ND	38	35	ug/L	93	13	SW846 8270C
Di-n-octyl phthalate	ND	38	27	ug/L	72		SW846 8270C
	ND	38	33	ug/L	86	17	SW846 8270C
Fluoranthene	ND	38	31	ug/L	81		SW846 8270C
	ND	38	36	ug/L	96	16	SW846 8270C
Fluorene	ND	38	29	ug/L	77		SW846 8270C
	ND	38	33	ug/L	87	13	SW846 8270C
Hexachlorobenzene	ND	38	29	ug/L	77		SW846 8270C
	ND	38	33	ug/L	86	11	SW846 8270C
Hexachlorobutadiene	ND	38	16	ug/L	43		SW846 8270C
	ND	38	16	ug/L	41	3.8	SW846 8270C
Hexachlorocyclopenta- diene	ND	38	13	ug/L	35		SW846 8270C
	ND	38	16	ug/L	42	19	SW846 8270C
Hexachloroethane	ND	38	17	ug/L	44		SW846 8270C
	ND	38	17	ug/L	45	1.9	SW846 8270C
Indeno(1,2,3-cd)pyrene	ND	38	30	ug/L	78		SW846 8270C
	ND	38	34	ug/L	90	15	SW846 8270C
Isophorone	ND	38	31	ug/L	80		SW846 8270C
	ND	38	33	ug/L	88	8.8	SW846 8270C
2-Methylnaphthalene	ND	38	28	ug/L	73		SW846 8270C
	ND	38	30	ug/L	80	8.9	SW846 8270C
2-Methylphenol	ND	38	32	ug/L	84		SW846 8270C
	ND	38	35	ug/L	93	10	SW846 8270C
4-Methylphenol	ND	76	60	ug/L	78		SW846 8270C
	ND	76	67	ug/L	88	11	SW846 8270C
Naphthalene	ND	38	26	ug/L	69		SW846 8270C
	ND	38	29	ug/L	75	7.6	SW846 8270C
2-Nitroaniline	ND	38	31	ug/L	81		SW846 8270C
	ND	38	34	ug/L	90	11	SW846 8270C
3-Nitroaniline	ND	38	27	ug/L	71		SW846 8270C
	ND	38	30	ug/L	80	12	SW846 8270C
4-Nitroaniline	ND	38	27	ug/L	70		SW846 8270C
	ND	38	30	ug/L	78	10	SW846 8270C
Nitrobenzene	ND	38	32	ug/L	85		SW846 8270C
	ND	38	35	ug/L	91	6.8	SW846 8270C
2-Nitrophenol	ND	38	27	ug/L	72		SW846 8270C
	ND	38	30	ug/L	79	10	SW846 8270C

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MATRIX SPIKE SAMPLE DATA REPORT

GC/MS Semivolatiles

Client Lot #...: 9J07288 Work Order #...: LL5NC1AC-MS Matrix.....: WATER
MS Lot-Sample #: A9J070258-011 LL5NC1AD-MSD

PARAMETER	SAMPLE AMOUNT	SPIKE AMT	MEASRD AMOUNT	UNITS	PERCNT RECVRY	RPD	METHOD
4-Nitrophenol	ND	38	26	ug/L	68		SW846 8270C
	ND	38	33	ug/L	85	22	SW846 8270C
N-Nitrosodi-n-propyl- amine	ND	38	31	ug/L	81		SW846 8270C
	ND	38	35	ug/L	93	13	SW846 8270C
N-Nitrosodiphenylamine	ND	38	28	ug/L	74		SW846 8270C
	ND	38	32	ug/L	85	14	SW846 8270C
bis(2-Chloroisopropyl) ether	ND	38	32	ug/L	83		SW846 8270C
	ND	38	36	ug/L	94	13	SW846 8270C
Pentachlorophenol	ND	38	29	ug/L	76		SW846 8270C
	ND	38	34	ug/L	90	17	SW846 8270C
Phenanthrene	ND	38	29	ug/L	75		SW846 8270C
	ND	38	34	ug/L	89	17	SW846 8270C
Phenol	ND	38	28	ug/L	73		SW846 8270C
	ND	38	33	ug/L	86	17	SW846 8270C
Pyrene	ND	38	28	ug/L	73		SW846 8270C
	ND	38	32	ug/L	85	16	SW846 8270C
2,4,5-Trichloro- phenol	ND	38	28	ug/L	73		SW846 8270C
	ND	38	30	ug/L	79	7.3	SW846 8270C
2,4,6-Trichloro- phenol	ND	38	26	ug/L	68		SW846 8270C
	ND	38	29	ug/L	77	12	SW846 8270C

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Nitrobenzene-d5	79	(27 - 111)
	81	(27 - 111)
2-Fluorobiphenyl	63	(28 - 110)
	70	(28 - 110)
Terphenyl-d14	74	(37 - 119)
	85	(37 - 119)
Phenol-d5	70	(10 - 110)
	78	(10 - 110)
2-Fluorophenol	70	(10 - 110)
	78	(10 - 110)

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MATRIX SPIKE SAMPLE DATA REPORT

GC/MS Semivolatiles

Client Lot #...: 9J07288 Work Order #...: LL5NC1AC-MS Matrix.....: WATER
MS Lot-Sample #: A9J070258-011 LL5NC1AD-MSD

<u>SURROGATE</u>	<u>PERCENT RECOVERY</u>	<u>RECOVERY LIMITS</u>
2,4,6-Tribromophenol	71	(22 - 120)
	76	(22 - 120)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters

MATRIX SPIKE SAMPLE EVALUATION REPORT

GC/MS Semivolatiles

Client Lot #...: 9J07288 Work Order #...: LL5NC1AC-MS Matrix.....: WATER
MS Lot-Sample #: A9J070258-011 LL5NC1AD-MSD
Date Sampled...: 10/06/09 12:40 Date Received...: 10/07/09
Prep Date.....: 10/08/09 Analysis Date...: 10/12/09
Prep Batch #...: 9281060
Dilution Factor: 1 Initial Wgt/Vol: 525 mL Final Wgt/Vol...: 2 mL

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD
Acenaphthene	72	(36 - 110)			SW846 8270C
	79	(36 - 110)	10	(0-30)	SW846 8270C
Acenaphthylene	75	(39 - 110)			SW846 8270C
	83	(39 - 110)	11	(0-30)	SW846 8270C
Acetophenone	82	(50 - 130)			SW846 8270C
	92	(50 - 130)	11	(0-30)	SW846 8270C
Anthracene	78	(46 - 110)			SW846 8270C
	89	(46 - 110)	13	(0-30)	SW846 8270C
Atrazine	95	(50 - 130)			SW846 8270C
	107	(50 - 130)	12	(0-30)	SW846 8270C
Benzo(a)anthracene	70	(52 - 110)			SW846 8270C
	82	(52 - 110)	15	(0-30)	SW846 8270C
Benzo(a)pyrene	65	(33 - 110)			SW846 8270C
	75	(33 - 110)	14	(0-30)	SW846 8270C
Benzo(b)fluoranthene	74	(33 - 114)			SW846 8270C
	88	(33 - 114)	17	(0-30)	SW846 8270C
Benzo(ghi)perylene	79	(34 - 116)			SW846 8270C
	90	(34 - 116)	13	(0-30)	SW846 8270C
Benzo(k)fluoranthene	79	(32 - 121)			SW846 8270C
	88	(32 - 121)	10	(0-30)	SW846 8270C
Benzaldehyde	87	(10 - 130)			SW846 8270C
	93	(10 - 130)	7.6	(0-30)	SW846 8270C
1,1'-Biphenyl	72	(50 - 130)			SW846 8270C
	80	(50 - 130)	9.5	(0-30)	SW846 8270C
bis(2-Chloroethoxy) methane	80	(35 - 110)			SW846 8270C
	86	(35 - 110)	7.1	(0-30)	SW846 8270C
bis(2-Chloroethyl)- ether	85	(27 - 110)			SW846 8270C
	90	(27 - 110)	5.5	(0-30)	SW846 8270C
bis(2-Ethylhexyl) phthalate	75	(40 - 140)			SW846 8270C
	86	(40 - 140)	13	(0-30)	SW846 8270C
4-Bromophenyl phenyl ether	77	(42 - 113)			SW846 8270C
	90	(42 - 113)	15	(0-30)	SW846 8270C

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MATRIX SPIKE SAMPLE EVALUATION REPORT

GC/MS Semivolatiles

Client Lot #...: 9J07288 Work Order #...: LL5NC1AC-MS Matrix.....: WATER
MS Lot-Sample #: A9J070258-011 LL5NC1AD-MSD

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD
Butyl benzyl phthalate	75	(51 - 121)			SW846 8270C
	89	(51 - 121)	18	(0-30)	SW846 8270C
Caprolactam	76	(50 - 130)			SW846 8270C
	86	(50 - 130)	12	(0-30)	SW846 8270C
Carbazole	75	(49 - 114)			SW846 8270C
	89	(49 - 114)	18	(0-30)	SW846 8270C
4-Chloroaniline	68	(10 - 110)			SW846 8270C
	73	(10 - 110)	7.7	(0-30)	SW846 8270C
4-Chloro-3-methylphenol	74	(33 - 110)			SW846 8270C
	78	(33 - 110)	4.8	(0-30)	SW846 8270C
2-Chloronaphthalene	68	(34 - 110)			SW846 8270C
	78	(34 - 110)	13	(0-30)	SW846 8270C
2-Chlorophenol	73	(26 - 110)			SW846 8270C
	84	(26 - 110)	14	(0-30)	SW846 8270C
4-Chlorophenyl phenyl ether	77	(43 - 113)			SW846 8270C
	88	(43 - 113)	14	(0-30)	SW846 8270C
Chrysene	70	(52 - 111)			SW846 8270C
	81	(52 - 111)	15	(0-30)	SW846 8270C
Dibenz(a,h)anthracene	76	(35 - 118)			SW846 8270C
	90	(35 - 118)	16	(0-30)	SW846 8270C
Dibenzofuran	78	(41 - 110)			SW846 8270C
	87	(41 - 110)	12	(0-30)	SW846 8270C
3,3'-Dichlorobenzidine	20	(10 - 110)			SW846 8270C
	18	(10 - 110)	13	(0-30)	SW846 8270C
2,4-Dichlorophenol	73	(30 - 110)			SW846 8270C
	80	(30 - 110)	8.0	(0-30)	SW846 8270C
Diethyl phthalate	84	(33 - 130)			SW846 8270C
	92	(33 - 130)	9.5	(0-30)	SW846 8270C
2,4-Dimethylphenol	66	(11 - 110)			SW846 8270C
	72	(11 - 110)	9.2	(0-30)	SW846 8270C
Dimethyl phthalate	81	(36 - 124)			SW846 8270C
	90	(36 - 124)	11	(0-30)	SW846 8270C
Di-n-butyl phthalate	81	(50 - 117)			SW846 8270C
	97	(50 - 117)	18	(0-30)	SW846 8270C
4,6-Dinitro- 2-methylphenol	68	(25 - 110)			SW846 8270C
	81	(25 - 110)	18	(0-30)	SW846 8270C
2,4-Dinitrophenol	59	(11 - 119)			SW846 8270C
	71	(11 - 119)	18	(0-30)	SW846 8270C

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MATRIX SPIKE SAMPLE EVALUATION REPORT

GC/MS Semivolatiles

Client Lot #...: 9J07288 Work Order #...: LL5NC1AC-MS Matrix.....: WATER
MS Lot-Sample #: A9J070258-011 LL5NC1AD-MSD

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD
2,4-Dinitrotoluene	85	(46 - 119)			SW846 8270C
	96	(46 - 119)	12	(0-30)	SW846 8270C
2,6-Dinitrotoluene	82	(48 - 115)			SW846 8270C
	93	(48 - 115)	13	(0-30)	SW846 8270C
Di-n-octyl phthalate	72	(36 - 124)			SW846 8270C
	86	(36 - 124)	17	(0-30)	SW846 8270C
Fluoranthene	81	(53 - 111)			SW846 8270C
	96	(53 - 111)	16	(0-30)	SW846 8270C
Fluorene	77	(43 - 110)			SW846 8270C
	87	(43 - 110)	13	(0-30)	SW846 8270C
Hexachlorobenzene	77	(40 - 113)			SW846 8270C
	86	(40 - 113)	11	(0-30)	SW846 8270C
Hexachlorobutadiene	43	(14 - 110)			SW846 8270C
	41	(14 - 110)	3.8	(0-30)	SW846 8270C
Hexachlorocyclopenta- diene	35	(10 - 110)			SW846 8270C
	42	(10 - 110)	19	(0-30)	SW846 8270C
Hexachloroethane	44	(10 - 110)			SW846 8270C
	45	(10 - 110)	1.9	(0-30)	SW846 8270C
Indeno(1,2,3-cd)pyrene	78	(36 - 116)			SW846 8270C
	90	(36 - 116)	15	(0-30)	SW846 8270C
Isophorone	80	(34 - 125)			SW846 8270C
	88	(34 - 125)	8.8	(0-30)	SW846 8270C
2-Methylnaphthalene	73	(35 - 110)			SW846 8270C
	80	(35 - 110)	8.9	(0-30)	SW846 8270C
2-Methylphenol	84	(26 - 110)			SW846 8270C
	93	(26 - 110)	10	(0-30)	SW846 8270C
4-Methylphenol	78	(25 - 110)			SW846 8270C
	88	(25 - 110)	11	(0-30)	SW846 8270C
Naphthalene	69	(32 - 110)			SW846 8270C
	75	(32 - 110)	7.6	(0-30)	SW846 8270C
2-Nitroaniline	81	(31 - 129)			SW846 8270C
	90	(31 - 129)	11	(0-30)	SW846 8270C
3-Nitroaniline	71	(23 - 112)			SW846 8270C
	80	(23 - 112)	12	(0-30)	SW846 8270C
4-Nitroaniline	70	(26 - 115)			SW846 8270C
	78	(26 - 115)	10	(0-30)	SW846 8270C
Nitrobenzene	85	(26 - 118)			SW846 8270C
	91	(26 - 118)	6.8	(0-30)	SW846 8270C
2-Nitrophenol	72	(30 - 110)			SW846 8270C
	79	(30 - 110)	10	(0-30)	SW846 8270C

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MATRIX SPIKE SAMPLE EVALUATION REPORT

GC/MS Semivolatiles

Client Lot #...: 9J07288 Work Order #...: LL5NC1AC-MS Matrix.....: WATER
MS Lot-Sample #: A9J070258-011 LL5NC1AD-MSD

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD
4-Nitrophenol	68	(13 - 127)			SW846 8270C
	85	(13 - 127)	22	(0-30)	SW846 8270C
N-Nitrosodi-n-propyl-amine	81	(25 - 119)			SW846 8270C
	93	(25 - 119)	13	(0-30)	SW846 8270C
N-Nitrosodiphenylamine	74	(28 - 118)			SW846 8270C
	85	(28 - 118)	14	(0-30)	SW846 8270C
bis(2-Chloroisopropyl) ether	83	(13 - 124)			SW846 8270C
	94	(13 - 124)	13	(0-30)	SW846 8270C
Pentachlorophenol	76	(23 - 110)			SW846 8270C
	90	(23 - 110)	17	(0-30)	SW846 8270C
Phenanthrene	75	(47 - 110)			SW846 8270C
	89	(47 - 110)	17	(0-30)	SW846 8270C
Phenol	73	(16 - 110)			SW846 8270C
	86	(16 - 110)	17	(0-30)	SW846 8270C
Pyrene	73	(54 - 115)			SW846 8270C
	85	(54 - 115)	16	(0-30)	SW846 8270C
2,4,5-Trichloro-phenol	73	(36 - 110)			SW846 8270C
	79	(36 - 110)	7.3	(0-30)	SW846 8270C
2,4,6-Trichloro-phenol	68	(34 - 110)			SW846 8270C
	77	(34 - 110)	12	(0-30)	SW846 8270C

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Nitrobenzene-d5	79	(27 - 111)
	81	(27 - 111)
2-Fluorobiphenyl	63	(28 - 110)
	70	(28 - 110)
Terphenyl-d14	74	(37 - 119)
	85	(37 - 119)
Phenol-d5	70	(10 - 110)
	78	(10 - 110)
2-Fluorophenol	70	(10 - 110)
	78	(10 - 110)

(Continued on next page)

MATRIX SPIKE SAMPLE EVALUATION REPORT

GC/MS Semivolatiles

Client Lot #...: 9J07288 Work Order #...: LL5NC1AC-MS Matrix.....: WATER
MS Lot-Sample #: A9J070258-011 LL5NC1AD-MSD

<u>SURROGATE</u>	<u>PERCENT RECOVERY</u>	<u>RECOVERY LIMITS</u>
2,4,6-Tribromophenol	71	(22 - 120)
	76	(22 - 120)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters

MATRIX SPIKE SAMPLE DATA REPORT

GC/MS Semivolatiles

Client Lot #...: 9J07288 Work Order #...: LMATR1AL-MS Matrix.....: WATER
 MS Lot-Sample #: A9J090247-004 LMATR1AM-MSD
 Date Sampled...: 10/08/09 10:45 Date Received...: 10/09/09
 Prep Date.....: 10/10/09 Analysis Date...: 10/15/09
 Prep Batch #...: 9283014
 Dilution Factor: 1 Initial Wgt/Vol: 480 mL Final Wgt/Vol...: 2 mL

PARAMETER	SAMPLE AMOUNT	SPIKE AMT	MEASRD AMOUNT	UNITS	PERCNT RECVRY	RPD	METHOD
Acenaphthene	ND	42	32	ug/L	77		SW846 8270C
	ND	42	34	ug/L	81	5.5	SW846 8270C
Acenaphthylene	ND	42	31	ug/L	75		SW846 8270C
	ND	42	33	ug/L	80	6.7	SW846 8270C
Acetophenone	ND	42	37	ug/L	88		SW846 8270C
	ND	42	37	ug/L	89	0.78	SW846 8270C
Anthracene	ND	42	29	ug/L	70		SW846 8270C
	ND	42	33	ug/L	79	11	SW846 8270C
Atrazine	ND	42	40	ug/L	95		SW846 8270C
	ND	42	41	ug/L	98	2.4	SW846 8270C
Benzo(a)anthracene	ND	42	25	ug/L	61		SW846 8270C
	ND	42	28	ug/L	68	11	SW846 8270C
Benzo(a)pyrene	ND	42	25	ug/L	60		SW846 8270C
	ND	42	27	ug/L	65	8.6	SW846 8270C
Benzo(b)fluoranthene	ND	42	27	ug/L	65		SW846 8270C
	ND	42	31	ug/L	75	14	SW846 8270C
Benzo(ghi)perylene	ND	42	28	ug/L	68		SW846 8270C
	ND	42	31	ug/L	74	8.7	SW846 8270C
Benzo(k)fluoranthene	ND	42	31	ug/L	75		SW846 8270C
	ND	42	32	ug/L	77	2.5	SW846 8270C
Benzaldehyde	ND	42	44	ug/L	106		SW846 8270C
	ND	42	46	ug/L	111	4.1	SW846 8270C
1,1'-Biphenyl	ND	42	34	ug/L	82		SW846 8270C
	ND	42	34	ug/L	82	0.32	SW846 8270C
bis(2-Chloroethoxy) methane	ND	42	34	ug/L	82		SW846 8270C
	ND	42	38	ug/L	91	11	SW846 8270C
bis(2-Chloroethyl)- ether	ND	42	34	ug/L	82		SW846 8270C
	ND	42	37	ug/L	90	9.3	SW846 8270C
bis(2-Ethylhexyl) phthalate	ND	42	27	ug/L	66		SW846 8270C
	ND	42	30	ug/L	71	8.3	SW846 8270C
4-Bromophenyl phenyl ether	ND	42	31	ug/L	74		SW846 8270C
	ND	42	33	ug/L	79	6.7	SW846 8270C

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MATRIX SPIKE SAMPLE DATA REPORT

GC/MS Semivolatiles

Client Lot #...: 9J07288 Work Order #...: LMATR1AL-MS Matrix.....: WATER
MS Lot-Sample #: A9J090247-004 LMATR1AM-MSD

PARAMETER	SAMPLE AMOUNT	SPIKE AMT	MEASRD AMOUNT	UNITS	PERCNT RECVRY	RPD	METHOD
Butyl benzyl phthalate	ND	42	28	ug/L	68		SW846 8270C
	ND	42	30	ug/L	72	6.4	SW846 8270C
Caprolactam	ND	42	35	ug/L	84		SW846 8270C
	ND	42	37	ug/L	88	5.2	SW846 8270C
Carbazole	ND	42	33	ug/L	80		SW846 8270C
	ND	42	35	ug/L	83	4.2	SW846 8270C
4-Chloroaniline	ND	42	29	ug/L	69		SW846 8270C
	ND	42	32	ug/L	78	12	SW846 8270C
4-Chloro-3-methylphenol	ND	42	31	ug/L	75		SW846 8270C
	ND	42	34	ug/L	82	9.0	SW846 8270C
2-Chloronaphthalene	ND	42	31	ug/L	74		SW846 8270C
	ND	42	32	ug/L	77	3.8	SW846 8270C
2-Chlorophenol	ND	42	33	ug/L	79		SW846 8270C
	ND	42	34	ug/L	81	1.9	SW846 8270C
4-Chlorophenyl phenyl ether	ND	42	31	ug/L	74		SW846 8270C
	ND	42	33	ug/L	80	7.1	SW846 8270C
Chrysene	ND	42	28	ug/L	67		SW846 8270C
	ND	42	30	ug/L	72	6.8	SW846 8270C
Dibenz(a,h)anthracene	ND	42	28	ug/L	66		SW846 8270C
	ND	42	31	ug/L	74	10	SW846 8270C
Dibenzofuran	ND	42	31	ug/L	75		SW846 8270C
	ND	42	34	ug/L	81	8.0	SW846 8270C
3,3'-Dichlorobenzidine	ND	42	20	ug/L	47		SW846 8270C
	ND	42	20	ug/L	48	1.4	SW846 8270C
2,4-Dichlorophenol	ND	42	30	ug/L	72		SW846 8270C
	ND	42	32	ug/L	77	7.0	SW846 8270C
Diethyl phthalate	ND	42	35	ug/L	83		SW846 8270C
	ND	42	36	ug/L	87	4.5	SW846 8270C
2,4-Dimethylphenol	ND	42	29	ug/L	69		SW846 8270C
	ND	42	31	ug/L	75	9.2	SW846 8270C
Dimethyl phthalate	ND	42	33	ug/L	80		SW846 8270C
	ND	42	35	ug/L	83	4.0	SW846 8270C
Di-n-butyl phthalate	ND	42	33	ug/L	78		SW846 8270C
	ND	42	35	ug/L	84	6.8	SW846 8270C
4,6-Dinitro-2-methylphenol	ND	42	25	ug/L	60		SW846 8270C
	ND	42	32	ug/L	78	25	SW846 8270C
2,4-Dinitrophenol	ND	42	16	ug/L	38		SW846 8270C
	ND	42	27	ug/L	64 p	51	SW846 8270C

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MATRIX SPIKE SAMPLE DATA REPORT

GC/MS Semivolatiles

Client Lot #...: 9J07288 Work Order #...: LMATR1AL-MS Matrix.....: WATER
MS Lot-Sample #: A9J090247-004 LMATR1AM-MSD

PARAMETER	SAMPLE AMOUNT	SPIKE AMT	MEASRD AMOUNT	UNITS	PERCNT RECVRY	RPD	METHOD
2,4-Dinitrotoluene	ND	42	36	ug/L	86		SW846 8270C
	ND	42	37	ug/L	88	2.4	SW846 8270C
2,6-Dinitrotoluene	ND	42	33	ug/L	79		SW846 8270C
	ND	42	36	ug/L	87	8.9	SW846 8270C
Di-n-octyl phthalate	ND	42	28	ug/L	67		SW846 8270C
	ND	42	30	ug/L	73	7.8	SW846 8270C
Fluoranthene	ND	42	31	ug/L	74		SW846 8270C
	ND	42	35	ug/L	83	12	SW846 8270C
Fluorene	ND	42	31	ug/L	76		SW846 8270C
	ND	42	34	ug/L	82	7.9	SW846 8270C
Hexachlorobenzene	ND	42	29	ug/L	70		SW846 8270C
	ND	42	32	ug/L	78	10	SW846 8270C
Hexachlorobutadiene	ND	42	22	ug/L	52		SW846 8270C
	ND	42	23	ug/L	54	4.4	SW846 8270C
Hexachlorocyclopenta- diene	ND	42	16	ug/L	39		SW846 8270C
	ND	42	17	ug/L	41	4.4	SW846 8270C
Hexachloroethane	ND	42	25	ug/L	59		SW846 8270C
	ND	42	26	ug/L	61	4.4	SW846 8270C
Indeno(1,2,3-cd)pyrene	ND	42	28	ug/L	67		SW846 8270C
	ND	42	31	ug/L	73	9.4	SW846 8270C
Isophorone	ND	42	35	ug/L	84		SW846 8270C
	ND	42	39	ug/L	93	10	SW846 8270C
2-Methylnaphthalene	ND	42	31	ug/L	74		SW846 8270C
	ND	42	34	ug/L	81	9.1	SW846 8270C
2-Methylphenol	ND	42	32	ug/L	78		SW846 8270C
	ND	42	34	ug/L	80	3.4	SW846 8270C
4-Methylphenol	ND	83	62	ug/L	75		SW846 8270C
	ND	83	68	ug/L	81	8.4	SW846 8270C
Naphthalene	ND	42	31	ug/L	73		SW846 8270C
	ND	42	33	ug/L	80	8.6	SW846 8270C
2-Nitroaniline	ND	42	36	ug/L	87		SW846 8270C
	ND	42	38	ug/L	92	5.6	SW846 8270C
3-Nitroaniline	ND	42	33	ug/L	79		SW846 8270C
	ND	42	35	ug/L	83	4.9	SW846 8270C
4-Nitroaniline	ND	42	35	ug/L	83		SW846 8270C
	ND	42	36	ug/L	88	5.1	SW846 8270C
Nitrobenzene	ND	42	36	ug/L	87		SW846 8270C
	ND	42	39	ug/L	95	8.2	SW846 8270C
2-Nitrophenol	ND	42	32	ug/L	76		SW846 8270C
	ND	42	34	ug/L	81	6.5	SW846 8270C

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MATRIX SPIKE SAMPLE DATA REPORT

GC/MS Semivolatiles

Client Lot #...: 9J07288 Work Order #...: LMATR1AL-MS Matrix.....: WATER
MS Lot-Sample #: A9J090247-004 LMATR1AM-MSD

PARAMETER	SAMPLE AMOUNT	SPIKE AMT	MEASRD AMOUNT	UNITS	PERCNT RECVRY	RPD	METHOD
4-Nitrophenol	ND	42	31	ug/L	73		SW846 8270C
	ND	42	33	ug/L	78	6.4	SW846 8270C
N-Nitrosodi-n-propyl- amine	ND	42	37	ug/L	89		SW846 8270C
	ND	42	41	ug/L	98	9.8	SW846 8270C
N-Nitrosodiphenylamine	ND	42	31	ug/L	73		SW846 8270C
	ND	42	32	ug/L	77	4.5	SW846 8270C
bis(2-Chloroisopropyl) ether	ND	42	39	ug/L	94		SW846 8270C
	ND	42	43	ug/L	103	9.1	SW846 8270C
Pentachlorophenol	ND	42	29	ug/L	71		SW846 8270C
	ND	42	36	ug/L	86	20	SW846 8270C
Phenanthrene	ND	42	31	ug/L	74		SW846 8270C
	ND	42	33	ug/L	80	8.4	SW846 8270C
Phenol	ND	42	33	ug/L	80		SW846 8270C
	ND	42	36	ug/L	87	8.2	SW846 8270C
Pyrene	ND	42	27	ug/L	65		SW846 8270C
	ND	42	30	ug/L	71	8.6	SW846 8270C
2,4,5-Trichloro- phenol	ND	42	33	ug/L	78		SW846 8270C
	ND	42	34	ug/L	82	4.5	SW846 8270C
2,4,6-Trichloro- phenol	ND	42	31	ug/L	75		SW846 8270C
	ND	42	33	ug/L	79	6.0	SW846 8270C

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Nitrobenzene-d5	90	(27 - 111)
	90	(27 - 111)
2-Fluorobiphenyl	77	(28 - 110)
	79	(28 - 110)
Terphenyl-d14	72	(37 - 119)
	74	(37 - 119)
Phenol-d5	78	(10 - 110)
	82	(10 - 110)
2-Fluorophenol	84	(10 - 110)
	86	(10 - 110)

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MATRIX SPIKE SAMPLE DATA REPORT

GC/MS Semivolatiles

Client Lot #...: 9J07288 Work Order #...: LMATR1AL-MS Matrix.....: WATER
MS Lot-Sample #: A9J090247-004 LMATR1AM-MSD

<u>SURROGATE</u>	<u>PERCENT RECOVERY</u>	<u>RECOVERY LIMITS</u>
2,4,6-Tribromophenol	83	(22 - 120)
	83	(22 - 120)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters

p Relative percent difference (RPD) is outside stated control limits.

MATRIX SPIKE SAMPLE EVALUATION REPORT

GC/MS Semivolatiles

Client Lot #...: 9J07288 Work Order #...: LMATR1AL-MS Matrix.....: WATER
 MS Lot-Sample #: A9J090247-004 LMATR1AM-MSD
 Date Sampled...: 10/08/09 10:45 Date Received...: 10/09/09
 Prep Date.....: 10/10/09 Analysis Date...: 10/15/09
 Prep Batch #...: 9283014
 Dilution Factor: 1 Initial Wgt/Vol: 480 mL Final Wgt/Vol...: 2 mL

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD
Acenaphthene	77	(36 - 110)			SW846 8270C
	81	(36 - 110)	5.5	(0-30)	SW846 8270C
Acenaphthylene	75	(39 - 110)			SW846 8270C
	80	(39 - 110)	6.7	(0-30)	SW846 8270C
Acetophenone	88	(50 - 130)			SW846 8270C
	89	(50 - 130)	0.78	(0-30)	SW846 8270C
Anthracene	70	(46 - 110)			SW846 8270C
	79	(46 - 110)	11	(0-30)	SW846 8270C
Atrazine	95	(50 - 130)			SW846 8270C
	98	(50 - 130)	2.4	(0-30)	SW846 8270C
Benzo(a)anthracene	61	(52 - 110)			SW846 8270C
	68	(52 - 110)	11	(0-30)	SW846 8270C
Benzo(a)pyrene	60	(33 - 110)			SW846 8270C
	65	(33 - 110)	8.6	(0-30)	SW846 8270C
Benzo(b)fluoranthene	65	(33 - 114)			SW846 8270C
	75	(33 - 114)	14	(0-30)	SW846 8270C
Benzo(ghi)perylene	68	(34 - 116)			SW846 8270C
	74	(34 - 116)	8.7	(0-30)	SW846 8270C
Benzo(k)fluoranthene	75	(32 - 121)			SW846 8270C
	77	(32 - 121)	2.5	(0-30)	SW846 8270C
Benzaldehyde	106	(10 - 130)			SW846 8270C
	111	(10 - 130)	4.1	(0-30)	SW846 8270C
1,1'-Biphenyl	82	(50 - 130)			SW846 8270C
	82	(50 - 130)	0.32	(0-30)	SW846 8270C
bis(2-Chloroethoxy) methane	82	(35 - 110)			SW846 8270C
	91	(35 - 110)	11	(0-30)	SW846 8270C
bis(2-Chloroethyl)- ether	82	(27 - 110)			SW846 8270C
	90	(27 - 110)	9.3	(0-30)	SW846 8270C
bis(2-Ethylhexyl) phthalate	66	(40 - 140)			SW846 8270C
	71	(40 - 140)	8.3	(0-30)	SW846 8270C
4-Bromophenyl phenyl ether	74	(42 - 113)			SW846 8270C
	79	(42 - 113)	6.7	(0-30)	SW846 8270C

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MATRIX SPIKE SAMPLE EVALUATION REPORT

GC/MS Semivolatiles

Client Lot #...: 9J07288 Work Order #...: LMATR1AL-MS Matrix.....: WATER
MS Lot-Sample #: A9J090247-004 LMATR1AM-MSD

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD
Butyl benzyl phthalate	68	(51 - 121)			SW846 8270C
	72	(51 - 121)	6.4	(0-30)	SW846 8270C
Caprolactam	84	(50 - 130)			SW846 8270C
	88	(50 - 130)	5.2	(0-30)	SW846 8270C
Carbazole	80	(49 - 114)			SW846 8270C
	83	(49 - 114)	4.2	(0-30)	SW846 8270C
4-Chloroaniline	69	(10 - 110)			SW846 8270C
	78	(10 - 110)	12	(0-30)	SW846 8270C
4-Chloro-3-methylphenol	75	(33 - 110)			SW846 8270C
	82	(33 - 110)	9.0	(0-30)	SW846 8270C
2-Chloronaphthalene	74	(34 - 110)			SW846 8270C
	77	(34 - 110)	3.8	(0-30)	SW846 8270C
2-Chlorophenol	79	(26 - 110)			SW846 8270C
	81	(26 - 110)	1.9	(0-30)	SW846 8270C
4-Chlorophenyl phenyl ether	74	(43 - 113)			SW846 8270C
	80	(43 - 113)	7.1	(0-30)	SW846 8270C
Chrysene	67	(52 - 111)			SW846 8270C
	72	(52 - 111)	6.8	(0-30)	SW846 8270C
Dibenz(a,h)anthracene	66	(35 - 118)			SW846 8270C
	74	(35 - 118)	10	(0-30)	SW846 8270C
Dibenzofuran	75	(41 - 110)			SW846 8270C
	81	(41 - 110)	8.0	(0-30)	SW846 8270C
3,3'-Dichlorobenzidine	47	(10 - 110)			SW846 8270C
	48	(10 - 110)	1.4	(0-30)	SW846 8270C
2,4-Dichlorophenol	72	(30 - 110)			SW846 8270C
	77	(30 - 110)	7.0	(0-30)	SW846 8270C
Diethyl phthalate	83	(33 - 130)			SW846 8270C
	87	(33 - 130)	4.5	(0-30)	SW846 8270C
2,4-Dimethylphenol	69	(11 - 110)			SW846 8270C
	75	(11 - 110)	9.2	(0-30)	SW846 8270C
Dimethyl phthalate	80	(36 - 124)			SW846 8270C
	83	(36 - 124)	4.0	(0-30)	SW846 8270C
Di-n-butyl phthalate	78	(50 - 117)			SW846 8270C
	84	(50 - 117)	6.8	(0-30)	SW846 8270C
4,6-Dinitro-2-methylphenol	60	(25 - 110)			SW846 8270C
	78	(25 - 110)	25	(0-30)	SW846 8270C
2,4-Dinitrophenol	38	(11 - 119)			SW846 8270C
	64 p	(11 - 119)	51	(0-30)	SW846 8270C

(Continued on next page)

MATRIX SPIKE SAMPLE EVALUATION REPORT

GC/MS Semivolatiles

Client Lot #...: 9J07288 Work Order #...: LMATR1AL-MS Matrix.....: WATER
MS Lot-Sample #: A9J090247-004 LMATR1AM-MSD

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD
2,4-Dinitrotoluene	86	(46 - 119)			SW846 8270C
	88	(46 - 119)	2.4	(0-30)	SW846 8270C
2,6-Dinitrotoluene	79	(48 - 115)			SW846 8270C
	87	(48 - 115)	8.9	(0-30)	SW846 8270C
Di-n-octyl phthalate	67	(36 - 124)			SW846 8270C
	73	(36 - 124)	7.8	(0-30)	SW846 8270C
Fluoranthene	74	(53 - 111)			SW846 8270C
	83	(53 - 111)	12	(0-30)	SW846 8270C
Fluorene	76	(43 - 110)			SW846 8270C
	82	(43 - 110)	7.9	(0-30)	SW846 8270C
Hexachlorobenzene	70	(40 - 113)			SW846 8270C
	78	(40 - 113)	10	(0-30)	SW846 8270C
Hexachlorobutadiene	52	(14 - 110)			SW846 8270C
	54	(14 - 110)	4.4	(0-30)	SW846 8270C
Hexachlorocyclopenta- diene	39	(10 - 110)			SW846 8270C
	41	(10 - 110)	4.4	(0-30)	SW846 8270C
Hexachloroethane	59	(10 - 110)			SW846 8270C
	61	(10 - 110)	4.4	(0-30)	SW846 8270C
Indeno(1,2,3-cd)pyrene	67	(36 - 116)			SW846 8270C
	73	(36 - 116)	9.4	(0-30)	SW846 8270C
Isophorone	84	(34 - 125)			SW846 8270C
	93	(34 - 125)	10	(0-30)	SW846 8270C
2-Methylnaphthalene	74	(35 - 110)			SW846 8270C
	81	(35 - 110)	9.1	(0-30)	SW846 8270C
2-Methylphenol	78	(26 - 110)			SW846 8270C
	80	(26 - 110)	3.4	(0-30)	SW846 8270C
4-Methylphenol	75	(25 - 110)			SW846 8270C
	81	(25 - 110)	8.4	(0-30)	SW846 8270C
Naphthalene	73	(32 - 110)			SW846 8270C
	80	(32 - 110)	8.6	(0-30)	SW846 8270C
2-Nitroaniline	87	(31 - 129)			SW846 8270C
	92	(31 - 129)	5.6	(0-30)	SW846 8270C
3-Nitroaniline	79	(23 - 112)			SW846 8270C
	83	(23 - 112)	4.9	(0-30)	SW846 8270C
4-Nitroaniline	83	(26 - 115)			SW846 8270C
	88	(26 - 115)	5.1	(0-30)	SW846 8270C
Nitrobenzene	87	(26 - 118)			SW846 8270C
	95	(26 - 118)	8.2	(0-30)	SW846 8270C
2-Nitrophenol	76	(30 - 110)			SW846 8270C
	81	(30 - 110)	6.5	(0-30)	SW846 8270C

(Continued on next page)

MATRIX SPIKE SAMPLE EVALUATION REPORT

GC/MS Semivolatiles

Client Lot #...: 9J07288 Work Order #...: LMATR1AL-MS Matrix.....: WATER
MS Lot-Sample #: A9J090247-004 LMATR1AM-MSD

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD
4-Nitrophenol	73	(13 - 127)			SW846 8270C
	78	(13 - 127)	6.4	(0-30)	SW846 8270C
N-Nitrosodi-n-propyl- amine	89	(25 - 119)			SW846 8270C
	98	(25 - 119)	9.8	(0-30)	SW846 8270C
N-Nitrosodiphenylamine	73	(28 - 118)			SW846 8270C
	77	(28 - 118)	4.5	(0-30)	SW846 8270C
bis(2-Chloroisopropyl) ether	94	(13 - 124)			SW846 8270C
	103	(13 - 124)	9.1	(0-30)	SW846 8270C
Pentachlorophenol	71	(23 - 110)			SW846 8270C
	86	(23 - 110)	20	(0-30)	SW846 8270C
Phenanthrene	74	(47 - 110)			SW846 8270C
	80	(47 - 110)	8.4	(0-30)	SW846 8270C
Phenol	80	(16 - 110)			SW846 8270C
	87	(16 - 110)	8.2	(0-30)	SW846 8270C
Pyrene	65	(54 - 115)			SW846 8270C
	71	(54 - 115)	8.6	(0-30)	SW846 8270C
2,4,5-Trichloro- phenol	78	(36 - 110)			SW846 8270C
	82	(36 - 110)	4.5	(0-30)	SW846 8270C
2,4,6-Trichloro- phenol	75	(34 - 110)			SW846 8270C
	79	(34 - 110)	6.0	(0-30)	SW846 8270C

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Nitrobenzene-d5	90	(27 - 111)
	90	(27 - 111)
2-Fluorobiphenyl	77	(28 - 110)
	79	(28 - 110)
Terphenyl-d14	72	(37 - 119)
	74	(37 - 119)
Phenol-d5	78	(10 - 110)
	82	(10 - 110)
2-Fluorophenol	84	(10 - 110)
	86	(10 - 110)

(Continued on next page)

MATRIX SPIKE SAMPLE EVALUATION REPORT

GC/MS Semivolatiles

Client Lot #...: 9J07288 Work Order #...: LMATR1AL-MS Matrix.....: WATER
MS Lot-Sample #: A9J090247-004 LMATR1AM-MSD

<u>SURROGATE</u>	<u>PERCENT RECOVERY</u>	<u>RECOVERY LIMITS</u>
2,4,6-Tribromophenol	83	(22 - 120)
	83	(22 - 120)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters

p Relative percent difference (RPD) is outside stated control limits.

END OF REPORT

ATTACHMENT B

DATA VALIDATION MEMORANDUM



**CONESTOGA-ROVERS
& ASSOCIATES**

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MEMORANDUM

TO:	Jennifer Quigley	REF. NO.:	17360
FROM:	Rawa Fleisher/tl/2/Det	DATE:	November 17, 2009
RE:	Data Quality Assessment and Full Validation Monitoring Well and Culvert Sampling – October 2009 Motors Liquidation Company Grand Rapids MFD Wyoming, Michigan	SSOW NO:	017307-030020

The following details a quality assessment and validation of the analytical data resulting from the October 6 to October 8, 2009, collection of 40 groundwater and six (6) quality control samples from the Motors Liquidation Company (MLC) Grand Rapids MFD Site in Wyoming, Michigan. The sample summary detailing sample identification, sample location, quality control samples, and analytical parameters is presented in Table 1. Sample analysis was completed at TestAmerica in North Canton, Ohio (TA) in accordance with the methodologies presented in Table 2.

The quality control criteria used to assess the data were established by the methods and the quality assurance project plan (QAPP). 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. This guideline is referred to as "NFGs" in this Memorandum.

Sample Quantitation

The laboratory reported detected concentrations of volatile organic compounds (VOC) and semi-volatile organic compounds (SVOC) below the laboratory's report limit (RL) but above the laboratory's method detection limit (MDL). The laboratory flagged these sample concentrations with a "J". These concentrations should be qualified as estimated (J) values unless qualified otherwise in this memorandum.

Sample Preservation and Holding Times

Sample holding time periods and preservation requirements are presented in Table 2.

The samples were prepared and/or analyzed within the specified holding time periods.

The samples were shipped and maintained in accordance with the sample preservation requirements.

Gas Chromatography/Mass Spectrometer (GC/MS) – Tuning and Mass Calibration (Instrument Performance Check) – Organic Analyses

To ensure adequate mass resolution, identification, and to some degree, sensitivity; the performance of each GC/MS instrument used for volatile organic compounds (VOC) and semi-volatile organic compounds (SVOC) analyses was checked at the beginning of each 12-hour period using bromofluorobenzene (BFB) and decafluorotriphenylphosphine (DFTPP), respectively. The resulting spectra must meet the criteria cited in the NFGs before initiating an analysis sequence.

Instrument performance check data were reviewed. These tuning compounds were analyzed at the required frequency throughout the VOC and SVOC analyses. The results of all instrument performance checks were within the acceptance criteria, indicating acceptable instrument performance.

Initial Calibration – Organic Analyses

Initial calibration data are used to demonstrate that each instrument is capable of generating acceptable quantitative data. A five point calibration curve containing all compounds of interest is analyzed to characterize instrument response for each over a specific concentration range.

Initial calibration criteria for organic analyses are evaluated against the following criteria:

- i. GC/MS (all compounds) – must meet a minimum mean relative response factor (RRF) of 0.05 ;
- ii. GC/MS (all compounds) – the percent relative standard deviation (RSD) values must not exceed 30.0 percent or a minimum coefficient of determination of 0.99 if quadratic equation calibration curves are used; and
- iii. GC (all compounds using an average for multi-response compounds) – the percent RSD must not exceed 20 percent or a correlation coefficient of 0.995 when linear regression calibration curves are used.

Calibration standards were analyzed at the required frequency and the results met the above criteria for linearity and sensitivity.

Continuing Calibration – Organic Analyses

To ensure that each instrument was capable of producing acceptable quantitative data over the analysis period, continuing calibration standards must be analyzed every 12 hours for GC/MS analyses. The following criteria are employed to evaluate the continuing calibration data:

- i. GC/MS (all compounds) – must meet a minimum mean RRF of 0.05 ;
- ii. GC/MS (all compounds) – the percent difference between the mean initial calibration RRF and the continuing calibration RRF must not exceed 25 percent;
- iii. GC/MS (compounds determined by quadratic curve) – the percent drift between the true value and the continuing calibration value must not exceed 25 percent;

Calibration standards were analyzed at the required frequency and the results met the above criteria for instrument sensitivity and linearity of response and sensitivity with the exception of the qualified samples presented in Table 3.

Method Blank Samples

Method blank samples are prepared from a purified sample matrix and are processed concurrently with investigative samples to assess the presence and the magnitude of sample contamination introduced during sample analysis. Method blank samples are analyzed at a minimum frequency of one per analytical batch and target analytes should be non-detect.

The samples presented in Table 4 should be qualified due to laboratory contamination. The laboratory flagged the organic concentrations with a "B" which may be disregarded. The remaining method blank samples did not contain target compounds with concentrations that impacted the investigative samples.

Surrogate Compounds – Organic Analyses

Individual sample performance for organic analyses was monitored by assessing the results of surrogate compound percent recoveries. Surrogate percent recoveries are reviewed against the laboratory developed control limits provided in the analytical report.

The surrogate recovery acceptance criteria were met for all samples.

Matrix Spike/Matrix Spike Duplicate Analyses

To assess the long term accuracy and precision of the analytical methods on various matrices, matrix spike/matrix spike duplicate (MS/MSD) percent recoveries and the relative percent difference (RPD) of the concentrations were determined. The organic MS/MSD percent recovery and RPD control limits are established by the laboratory. The inorganic control limits are defined by the methods or the laboratory and the NFG. The samples selected for MS/MSD analysis are identified in Table 1.

In some sample batches, non-Site-specific samples were utilized as MS/MSDs. Qualification of samples associated with these MS/MSDs was not performed. The samples that should be qualified due to violation of MS/MSD percent recovery criteria are outlined in Table 5. The MS/MSD percent recoveries and associated RPD acceptance criteria were met in the remaining sample analyses.

Laboratory Control Sample/Laboratory Control Duplicate Analyses

The laboratory control sample and laboratory control duplicate (LCS/LCD) analyses serve as a monitor of the overall performance in all steps of the sample analysis and are analyzed with each sample batch. The LCS/LCD percent recoveries were evaluated against method and laboratory established control limits.

The LCS/LCD percent recoveries were within the laboratory control limits or did not warrant qualification, indicating that an acceptable level of overall performance was achieved with the exception of the qualified samples presented in Table 6.

Laboratory precision was verified by the relative percent difference (RPD) of the LCS/LCD when a matrix spike/matrix spike duplicate was not analyzed.

The RPDs were within the laboratory control limits, indicating that an acceptable level of overall laboratory precision was achieved.

Internal Standard Summaries – Organic Analyses

To correct for variability in the GC/MS response and sensitivity, internal standard (IS) compounds are added to all samples. All results are calculated as a ratio of the compound and associated IS response. Overall instrument stability and performance for VOC and SVOC analyses were monitored using IS peak area and retention time (RT) data. The IS peak areas and RTs of the samples are required to meet the following criteria:

- i. IS area counts must not vary by more than a factor of two (-50 percent to +100 percent) from the associated continuing calibration standard IS area counts; and
- ii. The RT of the IS must not vary by more than plus or minus 30 seconds from the associated continuing calibration standard.

A review of the VOC and SVOC internal standard data showed that the IS area counts and retention time data were within the acceptance criteria.

Target Compound Identification

To minimize erroneous compound identification during organic analyses, qualitative criteria including compound retention time and mass spectra (if applicable) were evaluated according to identification criteria established by the methods. The samples identified in Table 1 were reviewed. The organic compounds reported adhered to the specified identification criteria.

Target Compound Quantitation

The reported quantitation results and detection limits were checked to ensure results reported were accurate. The samples identified in Table 1 were reviewed. No discrepancies were found between the raw data and the sample results reported by the laboratory.

Field Quality Assurance/Quality Control

The field quality assurance/quality control consisted of four (4) field duplicate sample sets and two (2) trip blank samples.

Field Duplicate Samples

Overall precision for the sampling event and laboratory procedures was monitored using the results of the field duplicate sample sets. The RPDs associated with these duplicate samples must be less than 50 percent. If the reported concentration in either the investigative sample or its duplicate is less than five times the RL, the evaluation criteria is one times the RL value.

The data indicates that an adequate level of precision was achieved for the sampling event.

Trip Blank Samples

To monitor potential cross-contamination of VOC during sample transportation and storage, a trip blank was submitted to the laboratory for VOC analysis with each shipping cooler containing multiple samples.

Field Quality Assurance/Quality Control (Continued)

The samples that should be qualified due to trip blank contamination are summarized in Table 7. No additional target analytes were reported as detected in the trip blank samples.

System Performance

System performance between various quality control checks was evaluated to monitor for changes that may have caused the degradation of data quality. No technical problems or chromatographic anomalies were observed which would require qualification of the data.

Overall Assessment

The data were found to exhibit acceptable levels of accuracy and precision, based on the provided information, and may be used with the qualifications noted.

TABLE 1

**SAMPLE COLLECTION AND ANALYSIS SUMMARY
MONITORING WELL AND CULVERT SAMPLING - OCTOBER 2009
GENERAL MOTORS GRAND RAPIDS MFD
WYOMING, MICHIGAN**

Analysis/Parameters							
Sample Identification	Location	Matrix	QC Samples	Collection Date (mm/dd/yyyy)	Collection Time (hr:min)	TCL VOC	
						TCL SVOC	
CRA SDG No.: 20-3							
GW-17360-100609-DR-276	C-1	water	TA-NC SDG No.: 9J07288	10/6/2009	10:30:00 AM	X	
GW-17360-100609-DR-277	C-1	water		DUP (-276)	10/6/2009	10:35:00 AM	X
GW-17360-100609-DR-278	C-2	water			10/6/2009	10:40:00 AM	X
GW-17360-100609-DR-279	C-3	water			10/6/2009	10:50:00 AM	X
GW-17360-100609-DR-280	MW17-06	water	MS/MSD	10/6/2009	11:00:00 AM	X	
GW-17360-100609-DR-281	85-7	water		10/6/2009	12:50:00 PM	X	
GW-17360-100609-DR-282	MW15-04	water		10/6/2009	1:00:00 PM	X	
GW-17360-100609-DR-283	85-2	water		10/6/2009	1:30:00 PM	X	
GW-17360-100609-DR-284	87-9	water		10/6/2009	2:00:00 PM	X	
GW-17360-100609-DR-285	MW7-03	water		10/6/2009	2:10:00 PM	X	
GW-17360-100609-DR-286	86-3	water		10/6/2009	2:20:00 PM	X	
GW-17360-100609-DR-287	87-8	water		10/6/2009	3:05:00 PM	X	
GW-17360-100609-DR-288	MW2-03	water		10/6/2009	3:10:00 PM	X	
GW-17360-100609-DR-289	MW1-03	water		10/6/2009	3:55:00 PM	X	
TB-17360-100609	Trip Blank	water	Trip Blank	10/6/2009	---	X	
GW-17360-100609-DR-290	85-6	water		10/6/2009	4:00:00 PM	X	
GW-17360-100609-DR-291	85-6	water	DUP (-290)	10/6/2009	4:05:00 PM	X	
CRA SDG No.: 20-4							
TA-NC Lot No.: A9J090242							
TB-17360-100709	Trip Blank	water	Trip Blank	10/7/2009	---	X	
GW-17360-100709-DR-292	85-5B	water		10/7/2009	8:35:00 AM	X	
GW-17360-100709-DR-293	85-3	water		10/7/2009	9:10:00 AM	X	
GW-17360-100709-DR-294	86-1	water		10/7/2009	10:35:00 AM	X	
GW-17360-100709-DR-295	MW13-04	water		10/7/2009	11:30:00 AM	X	
GW-17360-100709-DR-296	MW14-04	water		10/7/2009	8:20:00 AM	X	
GW-17360-100709-DR-297	87-5	water		10/7/2009	9:05:00 AM	X	
GW-17360-100709-DR-298	86-2	water		10/7/2009	9:30:00 AM	X	
GW-17360-100709-DR-299	87-4	water		10/7/2009	10:25:00 AM	X	
GW-17360-100709-DR-300	87-2	water		10/7/2009	11:30:00 AM	X	
GW-17360-100709-DR-301	87-1	water		10/7/2009	12:10:00 PM	X	

TABLE 1

SAMPLE COLLECTION AND ANALYSIS SUMMARY
MONITORING WELL AND CULVERT SAMPLING - OCTOBER 2009
GENERAL MOTORS GRAND RAPIDS MFD
WYOMING, MICHIGAN

CRA SDG No.: 20-4 (continued)	Sample Identification	Location	Matrix	QC Samples	Collection Date (mm/dd/yyyy)	Collection Time (hr:min)	Analysis/Parameters	
							TCL VOC	TCL SVOC
		TA-NC Lot No.: A9J090242		TA-NC SDG No.: 9J07288				
	GW-17360-100709-DR-302	MW3-03	water		10/7/2009	12:30:00 PM	X	
	GW-17360-100709-DR-303	85-1	water		10/7/2009	1:05:00 PM	X	
	GW-17360-100809-DR-304	88-2	water		10/8/2009	9:10:00 AM	X	
	GW-17360-100809-DR-305	88-3	water		10/8/2009	9:15:00 AM	X	
	GW-17360-100809-DR-306	88-3	water	DUP (-305)	10/8/2009	9:20:00 AM	X	
	GW-17360-100809-DR-307	88-4	water		10/8/2009	9:45:00 AM	X	
	GW-17360-100809-DR-308	87-10	water		10/8/2009	10:00:00 AM	X	
	GW-17360-100809-DR-309	87-11	water	MS/MSD	10/8/2009	10:25:00 AM	X	
	GW-17360-100809-DR-310	87-13	water		10/8/2009	10:30:00 AM	X	
	GW-17360-100809-DR-311	MW6-03	water		10/8/2009	11:00:00 AM	X	
	GW-17360-100809-DR-312	MW9-04	water		10/8/2009	11:15:00 AM	X	
	GW-17360-100809-DR-313	MW8-04	water		10/8/2009	11:30:00 AM	X	
	GW-17360-100809-DR-314	MW5-03	water		10/8/2009	11:45:00 AM	X	
	GW-17360-100809-DR-315	MW4-03	water		10/8/2009	1:30:00 PM	X	
	GW-17360-100809-DR-316	MW11D-04	water		10/8/2009	1:40:00 PM	X	
	GW-17360-100809-DR-317	MW11S-05	water		10/8/2009	1:55:00 PM	X	
	GW-17360-100809-DR-318	MW10-04	water		10/8/2009	2:00:00 PM	X	
	GW-17360-100809-DR-319	MW10-04	water	DUP (-318)	10/8/2009	2:05:00 PM	X	

Notes:

DUP - Field Duplicate Sample of sample in parenthesis
MS/MSD - Matrix Spike /Matrix Spike Duplicate
QC - Quality Control
SVOC - Semivolatile Organic Compounds
TCL - Target Compound List
VOC - Volatile Organic Compounds

TABLE 2

SUMMARY OF ANALYTICAL METHODS, HOLDING TIME PERIODS, AND PRESERVATIVES
MONITORING WELL AND CULVERT SAMPLING - OCTOBER 2009
GENERAL MOTORS GRAND RAPIDS MFD
WYOMING, MICHIGAN

<i>Parameter</i>	<i>Method</i> ¹	<i>Matrix</i>	<i>Holding Time</i>	<i>Preservation</i>
TCL VOC	SW-846 8260	Water	- 14 days from sample collection to completion of analysis.	pH < 2 and Iced, 4 ± 2° C
TCL SVOC	SW-846 8270C	Water	- 7 days from sample collection to extraction - 40 days from extraction to completion of analysis	Iced, 4 ± 2° C

Notes¹ Method References:

SW-846 - "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", SW-846, 3rd Edition, and Promulgated updates, November 1986

SVOC - Semivolatile Organic Compounds

TCL - Target Compound List

VOC - Volatile Organic Compounds

TABLE 3

**QUALIFIED SAMPLE RESULTS DUE TO VIOLATION OF CONTINUING CALIBRATION REQUIREMENTS
MONITORING WELL AND CULVERT SAMPLING - OCTOBER 2009
GENERAL MOTORS GRAND RAPIDS MFD
WYOMING, MICHIGAN**

<i>Parameter</i>	<i>Analyte</i>	<i>Calibration Date</i>	<i>RRF</i>	<i>%D</i>	<i>Associated Sample ID</i>	<i>Qualified Result</i>	<i>Units</i>
TCL VOC	Bromomethane	10/15/2009	---	-51.2	GW-17360-100609-DR-276	1.0 UJ	µg/L
	Trichlorofluoromethane		---	-48.6	GW-17360-100609-DR-277	1.0 UJ	µg/L
	Trifluorotrichloroethane		---	-42.1	GW-17360-100609-DR-278	1.0 UJ	µg/L
					GW-17360-100609-DR-279	1.0 UJ	µg/L
					GW-17360-100609-DR-280	1.0 UJ	µg/L
					GW-17360-100609-DR-281	1.0 UJ	µg/L
					GW-17360-100609-DR-282	1.0 UJ	µg/L
					GW-17360-100609-DR-283	1.0 UJ	µg/L
					GW-17360-100609-DR-284	1.0 UJ	µg/L
					GW-17360-100609-DR-285	1.0 UJ	µg/L
					GW-17360-100609-DR-286	1.0 UJ	µg/L
					GW-17360-100609-DR-287	1.0 UJ	µg/L
					GW-17360-100609-DR-288	1.0 UJ	µg/L
					GW-17360-100609-DR-289	17 UJ	µg/L
					GW-17360-100609-DR-290	1.0 UJ	µg/L
					GW-17360-100609-DR-291	1.0 UJ	µg/L
					TB-17360-100609	1.0 UJ	µg/L
TCL VOC	1,1,2,2-Tetrachloroethane	10/16/2009	---	25.6	GW-17360-100709-DR-292	1.0 UJ	µg/L
	Dichlorodifluoromethane		---	-40.4	GW-17360-100709-DR-293	1.0 UJ	µg/L
	Trifluorotrichloroethane		---	-50.7	GW-17360-100709-DR-294	1.0 UJ	µg/L
					GW-17360-100709-DR-295	1.0 UJ	µg/L
					GW-17360-100709-DR-296	1.0 UJ	µg/L
					GW-17360-100709-DR-297	1.0 UJ	µg/L
					GW-17360-100709-DR-298	1.0 UJ	µg/L
					GW-17360-100709-DR-299	1.0 UJ	µg/L
					GW-17360-100709-DR-300	1.0 UJ	µg/L
					GW-17360-100709-DR-301	1.0 UJ	µg/L
					GW-17360-100709-DR-302	1.0 UJ	µg/L
					GW-17360-100709-DR-303	1.0 UJ	µg/L
					GW-17360-100809-DR-304	1.0 UJ	µg/L
					GW-17360-100809-DR-305	1.0 UJ	µg/L
					GW-17360-100809-DR-306	1.0 UJ	µg/L
					GW-17360-100809-DR-307	1.0 UJ	µg/L
					GW-17360-100809-DR-308	1.0 UJ	µg/L

TABLE 3

**QUALIFIED SAMPLE RESULTS DUE TO VIOLATION OF CONTINUING CALIBRATION REQUIREMENTS
MONITORING WELL AND CULVERT SAMPLING - OCTOBER 2009
GENERAL MOTORS GRAND RAPIDS MFD
WYOMING, MICHIGAN**

<i>Parameter</i>	<i>Analyte</i>	<i>Calibration Date</i>	<i>RRF</i>	<i>%D</i>	<i>Associated Sample ID</i>	<i>Qualified Result</i>	<i>Units</i>
Continued TCL VOC	1,1,2,2-Tetrachloroethane	10/16/2009	---	25.6	GW-17360-100809-DR-309	1.0 UJ	µg/L
	Dichlorodifluoromethane			-40.4	GW-17360-100809-DR-310	1.0 UJ	µg/L
	Trifluorotrichloroethane			-50.7	TB-17360-100709	1.0 UJ	µg/L
TCL VOC	1,2,4-Trichlorobenzene	10/16/2009	---	51.0	GW-17360-100709-DR-292	5.0 UJ	µg/L
					GW-17360-100709-DR-293	5.0 UJ	µg/L
					GW-17360-100709-DR-294	5.0 UJ	µg/L
					GW-17360-100709-DR-295	5.0 UJ	µg/L
					GW-17360-100709-DR-296	5.0 UJ	µg/L
					GW-17360-100709-DR-297	5.0 UJ	µg/L
					GW-17360-100709-DR-298	5.0 UJ	µg/L
					GW-17360-100709-DR-299	5.0 UJ	µg/L
					GW-17360-100709-DR-300	5.0 UJ	µg/L
					GW-17360-100709-DR-301	5.0 UJ	µg/L
					GW-17360-100709-DR-302	5.0 UJ	µg/L
					GW-17360-100709-DR-303	5.0 UJ	µg/L
					GW-17360-100809-DR-304	5.0 UJ	µg/L
					GW-17360-100809-DR-305	5.0 UJ	µg/L
					GW-17360-100809-DR-306	5.0 UJ	µg/L
TCL VOC	1,2,4-Trichlorobenzene Methylene chloride	10/17/2009	---	48.8 25.9	GW-17360-100809-DR-307	5.0 UJ	µg/L
					GW-17360-100809-DR-308	5.0 UJ	µg/L
					GW-17360-100809-DR-309	5.0 UJ	µg/L
					GW-17360-100809-DR-310	5.0 UJ	µg/L
					TB-17360-100709	5.0 UJ	µg/L
					GW-17360-100809-DR-311	5.0 UJ	µg/L
					GW-17360-100809-DR-312	5.0 UJ	µg/L
					GW-17360-100809-DR-313	5.0 UJ	µg/L
					GW-17360-100809-DR-314	5.0 UJ	µg/L
					GW-17360-100809-DR-315	5.0 UJ	µg/L
					GW-17360-100809-DR-316	5.0 UJ	µg/L
					GW-17360-100809-DR-317	5.0 UJ	µg/L
					GW-17360-100809-DR-318	5.0 UJ	µg/L
					GW-17360-100809-DR-319	5.0 UJ	µg/L

TABLE 3

**QUALIFIED SAMPLE RESULTS DUE TO VIOLATION OF CONTINUING CALIBRATION REQUIREMENTS
MONITORING WELL AND CULVERT SAMPLING - OCTOBER 2009
GENERAL MOTORS GRAND RAPIDS MFD
WYOMING, MICHIGAN**

<i>Parameter</i>	<i>Analyte</i>	<i>Calibration Date</i>	<i>RRF</i>	<i>%D</i>	<i>Associated Sample ID</i>	<i>Qualified Result</i>	<i>Units</i>
TCL VOC	Dichlorodifluoromethane Trifluorotrichloroethane	10/17/2009	---	-40.1 -40.9	GW-17360-100809-DR-311	1.0 UJ	µg/L
					GW-17360-100809-DR-312	1.0 UJ	µg/L
					GW-17360-100809-DR-313	1.0 UJ	µg/L
					GW-17360-100809-DR-314	1.0 UJ	µg/L
					GW-17360-100809-DR-315	1.0 UJ	µg/L
					GW-17360-100809-DR-316	1.0 UJ	µg/L
					GW-17360-100809-DR-317	1.0 UJ	µg/L
					GW-17360-100809-DR-318	1.0 UJ	µg/L
					GW-17360-100809-DR-319	1.0 UJ	µg/L

Notes:

UJ - Non-detect with an Estimated Report Limit

%D - Percent Difference

RRF - Relative Response Factor

SVOC - Semivolatile Organic Compounds

TCL - Target Compound List

VOC - Volatile Organic Compounds

TABLE 4

SUMMARY OF QUALIFIED SAMPLE DATA DUE TO METHOD BLANK CONTAMINATION
MONITORING WELL AND CULVERT SAMPLING - OCTOBER 2009
GENERAL MOTORS GRAND RAPIDS MFD
WYOMING, MICHIGAN

<i>Parameter</i>	<i>Analyte</i>	<i>Analysis Date</i>	<i>Blank Result</i>	<i>Sample ID</i>	<i>Qualified Result</i>	<i>Units</i>
TCL VOC	Methylene chloride	10/15/09	0.5	GW-17360-100609-DR-289	83 U	µg/L
TCL SVOC	bis(2-Ethylhexyl)phthalate	10/10/09	1.5	GW-17360-100709-DR-293	5.0 U	µg/L

Notes:

- U - Qualified as Not Detected at the report limit
- SVOC - Semivolatile Organic Compounds
- TCL - Target Compound List
- VOC - Volatile Organic Compounds

TABLE 5

SUMMARY OF QUALIFIED SAMPLE DATA DUE TO OUTLYING
MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERIES AND/OR RELATIVE PERCENT DIFFERENCE
MONITORING WELL AND CULVERT SAMPLING - OCTOBER 2009
GENERAL MOTORS GRAND RAPIDS MFD
WYOMING, MICHIGAN

Parameter	Analyte	MS Recovery (percent)	MSD Recovery (percent)	RPD	Control Limits		Associated Sample ID	Qualified Result	Units
					Recovery (percent)	RPD (percent)			
TCL VOC	cis-1,3-Dichloropropene	70	73	4.0	82-130	30	GW-17360-100609-DR-280	1.0 UJ	µg/L
	4-Methyl-2-Pentanone	73	79	8.5	82-135	30		50 UJ	µg/L
	Dichlorodifluoromethane	59	61	4.6	70-130	30		1.0 UJ	µg/L
	Methyl acetate	62	64	2.5	70-130	30		10 UJ	µg/L
	1,1,2,2-Tetrachloroethane	74	84	12	88-116	30		1.0 UJ	µg/L
TCL VOC	cis-1,3-Dichloropropene	76	76	0.48	82-130	30	GW-17360-100809-DR-309	1.0 UJ	µg/L
	Methyl cyclohexane	62	61	1.6	70-130	30		1.0 UJ	µg/L
	1,2,4-Trichlorobenzene	49	53	6.9	70-130	30		5.0 UJ	µg/L
	Tetrachloroethene	84	83	1.8	85-121	30		1.0 UJ	µg/L
	Trichloroethene	42	49	1.9	62-130	30		35 J	µg/L
	1,1,2,2-Tetrachloroethane	76	78	2.8	88-116	30		1.0 UJ	µg/L

Notes:

- J - Estimated Concentration
- UJ - Non-detect with an Estimated Report Limit
- MS - Matrix Spike
- MSD - Matrix Spike Duplicate
- RPD - Relative Percent Difference
- TCL - Target Compound List
- VOC - Volatile Organic Compounds

TABLE 6

SUMMARY OF QUALIFIED SAMPLE RESULTS DUE TO OUTLYING
LABORATORY CONTROL SAMPLE / LABORATORY CONTROL SAMPLE DUPLICATE RESULTS
MONITORING WELL AND CULVERT SAMPLING - OCTOBER 2009
GENERAL MOTORS GRAND RAPIDS MFD
WYOMING, MICHIGAN

<i>Parameter</i>	<i>Analyte</i>	<i>LCS Date</i>	<i>LCS %Rec</i>	<i>LCD %Rec</i>	<i>RPD (percent)</i>	<i>Control Limits</i>		<i>Associated Sample ID</i>	<i>Qualified Result</i>	<i>Units</i>
						<i>%Rec</i>	<i>RPD</i>			
TCL VOC	cis-1,3-Dichloropropene	10/15/09	79	80	0.70	84-139	30	GW-17360-100609-DR-276	1.0 UJ	µg/L
	trans-1,3-Dichloropropene		78	80	2.7	84-130	30	GW-17360-100609-DR-277	1.0 UJ	µg/L
	Dichlorodifluoromethane		61	69	12	70-130	30	GW-17360-100609-DR-278	1.0 UJ	µg/L
	1,1,2,2-Tetrachloroethane		79	81	1.5	85-118	30	GW-17360-100609-DR-279	1.0 UJ	µg/L
								GW-17360-100609-DR-280	1.0 UJ	µg/L
								GW-17360-100609-DR-281	1.0 UJ	µg/L
								GW-17360-100609-DR-282	1.0 UJ	µg/L
								GW-17360-100609-DR-283	1.0 UJ	µg/L
								GW-17360-100609-DR-284	1.0 UJ	µg/L
								GW-17360-100609-DR-285	1.0 UJ	µg/L
								GW-17360-100609-DR-286	1.0 UJ	µg/L
								GW-17360-100609-DR-287	1.0 UJ	µg/L
								GW-17360-100609-DR-288	1.0 UJ	µg/L
								GW-17360-100609-DR-289	17 UJ	µg/L
TCL VOC	Methyl acetate	10/15/09	73	67	7.9	70-130	30	GW-17360-100609-DR-290	1.0 UJ	µg/L
								GW-17360-100609-DR-291	1.0 UJ	µg/L
								TB-17360-100609	1.0 UJ	µg/L
								GW-17360-100609-DR-276	10 UJ	µg/L
								GW-17360-100609-DR-277	10 UJ	µg/L
								GW-17360-100609-DR-278	10 UJ	µg/L
								GW-17360-100609-DR-279	10 UJ	µg/L
								GW-17360-100609-DR-280	10 UJ	µg/L
								GW-17360-100609-DR-281	10 UJ	µg/L
								GW-17360-100609-DR-282	10 UJ	µg/L
								GW-17360-100609-DR-283	10 UJ	µg/L
								GW-17360-100609-DR-284	10 UJ	µg/L
								GW-17360-100609-DR-285	10 UJ	µg/L
								GW-17360-100609-DR-286	10 UJ	µg/L
								GW-17360-100609-DR-287	10 UJ	µg/L
								GW-17360-100609-DR-288	10 UJ	µg/L
								GW-17360-100609-DR-289	170 UJ	µg/L
								GW-17360-100609-DR-290	10 UJ	µg/L
								GW-17360-100609-DR-291	10 UJ	µg/L
								TB-17360-100609	10 UJ	µg/L

TABLE 6

SUMMARY OF QUALIFIED SAMPLE RESULTS DUE TO OUTLYING
LABORATORY CONTROL SAMPLE / LABORATORY CONTROL SAMPLE DUPLICATE RESULTS
MONITORING WELL AND CULVERT SAMPLING - OCTOBER 2009
GENERAL MOTORS GRAND RAPIDS MFD
WYOMING, MICHIGAN

Parameter	Analyte	LCS Date	LCS %Rec	LCD %Rec	Control Limits		RPD (percent)	Associated Sample ID	Qualified Result	Units
					%Rec	RPD				
TCL VOC	Bromodichloromethane	10/15/09	87	86	87-130	30	0.92	GW-17360-100609-DR-276	1.0 UJ	µg/L
								GW-17360-100609-DR-277	1.0 UJ	µg/L
								GW-17360-100609-DR-278	1.0 UJ	µg/L
								GW-17360-100609-DR-279	1.0 UJ	µg/L
								GW-17360-100609-DR-280	1.0 UJ	µg/L
								GW-17360-100609-DR-281	1.0 UJ	µg/L
								GW-17360-100609-DR-282	1.0 UJ	µg/L
								GW-17360-100609-DR-283	1.0 UJ	µg/L
								GW-17360-100609-DR-284	1.0 UJ	µg/L
								GW-17360-100609-DR-285	0.17 J	µg/L
								GW-17360-100609-DR-286	1.0 UJ	µg/L
								GW-17360-100609-DR-287	1.0 UJ	µg/L
								GW-17360-100609-DR-288	0.49 J	µg/L
								GW-17360-100609-DR-289	17 UJ	µg/L
								GW-17360-100609-DR-290	1.0 UJ	µg/L
								GW-17360-100609-DR-291	1.0 UJ	µg/L
								TB-17360-100609	1.0 UJ	µg/L
TCL VOC	Methyl cyclohexane 1,1,2,2-Tetrachloroethane	10/15/09	68 74	67 74	70-130 85-118	30 30	0.41 0.14	GW-17360-100709-DR-292	1.0 UJ	µg/L
								GW-17360-100709-DR-293	1.0 UJ	µg/L
								GW-17360-100709-DR-294	1.0 UJ	µg/L
								GW-17360-100709-DR-295	1.0 UJ	µg/L
								GW-17360-100709-DR-296	1.0 UJ	µg/L
								GW-17360-100709-DR-297	1.0 UJ	µg/L
								GW-17360-100709-DR-298	1.0 UJ	µg/L
								GW-17360-100709-DR-299	1.0 UJ	µg/L
								GW-17360-100709-DR-300	1.0 UJ	µg/L
								GW-17360-100709-DR-301	1.0 UJ	µg/L
								GW-17360-100709-DR-302	1.0 UJ	µg/L
								GW-17360-100709-DR-303	1.0 UJ	µg/L
								GW-17360-100809-DR-304	1.0 UJ	µg/L
								GW-17360-100809-DR-305	1.0 UJ	µg/L
								GW-17360-100809-DR-306	1.0 UJ	µg/L
								GW-17360-100809-DR-307	1.0 UJ	µg/L
								GW-17360-100809-DR-308	1.0 UJ	µg/L

TABLE 6

SUMMARY OF QUALIFIED SAMPLE RESULTS DUE TO OUTLYING
LABORATORY CONTROL SAMPLE / LABORATORY CONTROL SAMPLE DUPLICATE RESULTS
MONITORING WELL AND CULVERT SAMPLING - OCTOBER 2009
GENERAL MOTORS GRAND RAPIDS MFD
WYOMING, MICHIGAN

Parameter	Analyte	LCS Date	LCS %Rec	LCD %Rec	RPD (percent)	Control Limits		Associated Sample ID	Qualified Result	Units
						%Rec	RPD			
TCL VOC	Methyl cyclohexane	10/15/09	68	67	0.41	70-130	30	GW-17360-100809-DR-309	1.0 UJ	µg/L
								GW-17360-100809-DR-310	1.0 UJ	µg/L
								TB-17360-100709	1.0 UJ	µg/L
TCL VOC	1,2,4-Trichlorobenzene	10/15/09	55	58	4.5	70-130	30	GW-17360-100709-DR-292	5.0 UJ	µg/L
								GW-17360-100709-DR-293	5.0 UJ	µg/L
								GW-17360-100709-DR-294	5.0 UJ	µg/L
								GW-17360-100709-DR-295	5.0 UJ	µg/L
								GW-17360-100709-DR-296	5.0 UJ	µg/L
								GW-17360-100709-DR-297	5.0 UJ	µg/L
								GW-17360-100709-DR-298	5.0 UJ	µg/L
								GW-17360-100709-DR-299	5.0 UJ	µg/L
								GW-17360-100709-DR-300	5.0 UJ	µg/L
								GW-17360-100709-DR-301	5.0 UJ	µg/L
								GW-17360-100709-DR-302	5.0 UJ	µg/L
								GW-17360-100709-DR-303	5.0 UJ	µg/L
								GW-17360-100809-DR-304	5.0 UJ	µg/L
								GW-17360-100809-DR-305	5.0 UJ	µg/L
								GW-17360-100809-DR-306	5.0 UJ	µg/L
TCL VOC	1,1,2,2-Tetrachloroethane	10/17/09	80	79	0.21	85-118	30	GW-17360-100809-DR-311	1.0 UJ	µg/L
								GW-17360-100809-DR-312	1.0 UJ	µg/L
								GW-17360-100809-DR-313	1.0 UJ	µg/L
								GW-17360-100809-DR-314	1.0 UJ	µg/L
								GW-17360-100809-DR-315	1.0 UJ	µg/L
								GW-17360-100809-DR-316	1.0 UJ	µg/L
								GW-17360-100809-DR-317	1.0 UJ	µg/L
								GW-17360-100809-DR-318	1.0 UJ	µg/L
								GW-17360-100809-DR-319	1.0 UJ	µg/L
								TB-17360-100709	5.0 UJ	µg/L

TABLE 6

SUMMARY OF QUALIFIED SAMPLE RESULTS DUE TO OUTLYING
LABORATORY CONTROL SAMPLE / LABORATORY CONTROL SAMPLE DUPLICATE RESULTS
MONITORING WELL AND CULVERT SAMPLING - OCTOBER 2009
GENERAL MOTORS GRAND RAPIDS MFD
WYOMING, MICHIGAN

Parameter	Analyte	LCS Date	LCS %Rec	LCD %Rec	RPD (percent)	Control Limits		Associated Sample ID	Qualified Result	Units
						%Rec	RPD			
TCL VOC	1,2,4-Trichlorobenzene	10/17/09	59	59	0.49	70-130	30	GW-17360-100809-DR-311	5.0 UJ	µg/L
								GW-17360-100809-DR-312	5.0 UJ	µg/L
								GW-17360-100809-DR-313	5.0 UJ	µg/L
								GW-17360-100809-DR-314	5.0 UJ	µg/L
								GW-17360-100809-DR-315	5.0 UJ	µg/L
								GW-17360-100809-DR-316	5.0 UJ	µg/L
								GW-17360-100809-DR-317	5.0 UJ	µg/L
								GW-17360-100809-DR-318	5.0 UJ	µg/L
								GW-17360-100809-DR-319	5.0 UJ	µg/L

Notes:

- J - Estimated Concentration
- UJ - Non-detect with an Estimated Report Limit
- LCS - Laboratory Control Spike
- LCD - Laboratory Control Spike Duplicate
- %Rec - Percent Recovery
- RPD - Relative Percent Difference
- TCL - Target Compound List
- VOC - Volatile Organic Compounds

TABLE 7

SUMMARY OF QUALIFIED SAMPLE DATA DUE TO TRIP BLANK CONTAMINATION
MONITORING WELL AND CULVERT SAMPLING - OCTOBER 2009
GENERAL MOTORS GRAND RAPIDS MFD
WYOMING, MICHIGAN

<i>Parameter</i>	<i>Analyte</i>	<i>Blank Date</i>	<i>Blank Result</i>	<i>Associated Sample ID</i>	<i>Qualified Result</i>	<i>Units</i>
TCL VOC	Acetone	10/07/09	3.1	GW-17360-100709-DR-292	25 U	µg/L

Notes:

- U - Qualified as Not Detected at the report limit
- TCL - Target Compound List
- VOC - Volatile Organic Compounds

ATTACHMENT C

HISTORICAL ANALYTICAL DATA SUMMARIES

LIST OF ENCLOSURES

Floating Oil Summary

Water Levels Summary

Vacuum Summary

Monitoring Well Data Summary / Analytical Data

85-7

86-2

86-3

87-1

87-2

87-4

87-5

87-8

87-9

87-10

87-11

87-13

93-1

X-10

PW Discharge

C-1

C-2

C-3

C-4

MW1-03

MW2-03

MW3-03

MW4-03

MW5-03

MW6-03

MW7-03

MW8-04

MW9-04

MW10-04

MW11D-04

MW11S-05

MW13-04

MW14-04

MW15-04

MW17-06

Field Blank

Trip Blank

TCE Treatment System Influent, Intermediate, and Effluent

Soil Vapor Recovery System Summary 87-3 (Air Well): Influent and Effluent

Soil Vapor Recovery System Summary / Flow Data

General Motors
Grand Rapids Metal Fabrication Plant
FLOATING OIL SUMMARY (In Feet)

1 of 4

Date	85-03	85-05B	85-06	86-01
12/21/88	0.02	none	none	--
02/17/89	0.02	none	none	none
03/16/89	trace	none	none	none
04/20/89	0.01	sheen	none	none
05/18/89	0.01	none	none	none
06/16/89	trace	none	none	none
07/18/89	0.01	none	none	none
08/22/89	0.01	none	none	none
09/22/89	0.01	none	trace	none
10/13/89	0.01	none	none	none
11/17/89	0.03	none	none	none
12/21/89	0.4	none	none	none
01/12/90	2.75	--	none	none
01/19/90	0.25	none	none	none
02/16/90	0.02	none	none	none
03/16/90	0.02	none	none	none
04/12/90	0.01	none	none	none
05/18/90	0.01	none	none	none
06/19/90	none	none	none	none
07/13/90	trace	none	none	none
08/20/90	none	--	none	none
09/14/90	trace	--	none	none
10/12/90	trace	--	none	none
11/15/90	trace	none	none	none
12/18/90	trace	--	none	none
01/15/91	none	--	--	--
02/20/91	none	--	--	--
03/11/91	none	--	none	none
04/18/91	none	--	--	--
05/16/91	none	--	--	--
06/13/91	trace	--	none	none
07/19/91	trace	--	--	--
08/19/91	0.01	--	--	--
09/12/91	0.46	--	none	none
10/16/91 *	0.3	--	--	--
11/15/91	0.19	none	none	none
12/13/91	0.16	none	none	none
01/17/92	0.06	--	--	--
02/14/92	0.47	--	--	--
03/13/92	0.22	--	none	none
04/21/92	0.14	--	--	--
05/15/92	0.14	--	--	--
06/12/92	0.09	--	none	none
07/17/92	0.15	--	--	--
08/13/92	0.16	--	--	--
09/11/92	0.26	--	none	none
10/16/92	0.46	--	--	--
11/12/92	0.34	--	--	--
12/10/92	0.15	none	none	none
01/15/93	0.04	--	--	--
02/12/93	0.08	--	--	--
03/11/93	0.14	--	none	none

-- = Not measured

* = Initiated use of keck interface probe for all product measurements.

General Motors

2 of 4

Grand Rapids Metal Fabrication Plant

FLOATING OIL SUMMARY (In Feet)

Date	85-03	85-05B	85-06	86-01
04/15/93	0.15	--	--	--
05/13/93	0.06	--	--	--
06/14/93	0.12	--	none	none
07/16/93	0.04	--	--	--
08/11/93	0.03	--	--	--
09/15/93	0.17	--	none	none
10/19/93	0.05	--	--	--
11/17/93	0.04	--	--	--
12/17/93	0.37	none	none	none
01/13/94	0.47	--	--	--
02/15/94	0.89	--	--	--
03/16/94	0.19	--	none	none
04/13/94	0.01	--	--	--
05/12/94	0.11	--	--	--
06/14/94	0.16	--	none	none
07/13/94	0.04	--	--	--
08/12/94	0.02	--	--	--
09/14/94	0.07	--	none	none
10/18/94	0.09	--	--	--
11/11/94	none	--	--	--
12/16/94	0.09	none	none	none
01/13/95	0.26	--	--	--
02/14/95	0.02	--	--	--
03/17/95	0.14	--	none	none
04/13/95	0.21	--	--	--
05/15/95	none	--	--	--
06/20/95	none	--	none	none
07/13/95	none	--	--	--
08/11/95	0.14	--	--	--
09/14/95	0.23	--	none	none
10/17/95	0.59	--	--	--
11/17/95	0.08	--	--	--
12/18/95	none	none	none	none
01/06/96	0.33	--	--	--
02/19/96	0.72	--	--	--
03/19/96	0.89	--	none	none
04/12/96	0.72	--	--	--
05/16/96	0.01	--	--	--
06/13/96	none	--	none	none
07/16/96	none	--	--	--
08/16/96	0.01	--	--	--
09/13/96	none	--	none	none
10/17/96	0.19	--	--	--
11/19/96	0.30	--	--	--
12/12/96	0.68	0.01	none	none
01/20/97	0.39	--	--	--
02/14/97	none	--	--	--
03/13/97	none	--	none	none
04/18/97	none	--	--	--
05/15/97	none	--	--	--
06/19/97	none	--	none	none

-- = Not measured

General Motors
Grand Rapids Metal Fabrication Plant
FLOATING OIL SUMMARY (In Feet)

3 of 4

Date	85-03	85-05B	85-06	86-01
07/17/97	none	--	--	--
08/14/97	none	--	--	--
09/11/97	0.05	--	none	none
10/17/97	0.15	--	--	--
11/14/97	0.24	--	--	--
12/16/97	0.93	none	none	none
01/14/98	0.53	--	--	--
02/16/98	0.04	--	--	--
03/12/98	0.02	--	none	none
04/22/98	none	--	--	--
05/20/98	0.38	--	--	--
06/16/98	0.51	--	none	none
07/16/98	none	--	--	--
08/19/98	0.51	--	--	--
09/17/98	0.78	--	none	none
10/14/98	0.77	--	--	--
11/18/98	0.84	--	--	--
12/16/98	0.96	0.02	none	none
01/12/99	0.96	--	--	--
02/16/99	0.05	--	--	--
03/10/99	0.09	--	none	none
04/12/99	0.12	--	--	--
05/18/99	none	--	--	--
06/15/99	none	--	none	none
07/21/99	none	--	--	--
08/17/99	0.02	--	--	--
09/20/99	0.15	--	none	none
10/19/99	0.52	--	--	--
11/17/99	0.45	--	--	--
12/16/99	0.47	0.03	none	none
01/11/00	0.49	--	--	--
02/15/00	0.55	--	--	--
03/16/00	0.38	--	none	none
04/19/00	0.35	--	--	--
05/15/00	none	--	--	--
06/13/00	none	--	none	none
07/25/00	none	--	--	--
08/23/00	none	--	--	--
09/22/00	0.02	--	none	none
10/23/00	none	--	--	--
11/16/00	0.02	--	--	--
12/20/00	none	0.04	none	none
01/18/01	none	--	--	--
02/21/01	none	--	--	--
03/21/01	none	--	none	none

-- = Not measured

General Motors
Grand Rapids Metal Fabrication Plant
FLOATING OIL SUMMARY (In Feet)

4 of 4

Date	85-03	85-05B	85-06	86-01
04/17/01	none	--	--	--
05/15/01	none	--	--	--
06/13/01	none	--	none	none
07/16/01	none	--	--	--
08/22/01	none	--	--	--
09/13/01	none	--	none	none
10/09/01	none	--	--	--
11/13/01	none	--	--	--
12/19/01	none	0.03	none	none
03/21/03	0.06	none	none	none
07/15/03	0.25	none	none	--
10/07/03	none	none	none	none
12/17/03	none	none	none	none
03/15/04	none	none	none	none
10/04/04	0.12	none	none	none
12/03/04	0.10	none	none	none
04/06/05	none	none	none	none
12/02/05	none	none	none	none
09/11/06	--	none	none	none
05/09/07	none	none	none	none
10/15/07	0.02	none	none	none
04/23/08	none	none	none	none
10/08/08	none	none	none	none
04/06/08	none	none	none	none

-- = Not measured

General Motors
Grand Rapids Metal Fabrication Plant
WATER LEVELS (In Feet)
SUMMARY

Start date:	12/21/1988	1/18/1989	2/17/1989	3/16/1989	4/20/1989	5/18/1989	6/16/1989	7/18/1989	8/22/1989	9/20/1989	10/13/1989	10/20/1989	11/17/1989	12/21/1989	1/12/1990
End date:	12/21/1988	1/20/1989	2/18/1989	3/17/1989	4/20/1989	5/18/1989	6/16/1989	7/18/1989	8/22/1989	9/20/1989	10/13/1989	10/20/1989	11/17/1989	12/21/1989	1/12/1990
85-1	660.08	660.01	Under water	659.85	659.80	659.76	659.93	659.86	Under water	659.91	659.60	Under water	659.66	659.53	659.42
85-2	658.54	658.47	658.54	658.37	658.30	658.35	658.42	658.45	658.84	658.47	658.27	658.39	658.37	658.14	658.10
85-3	661.23	661.06	660.58	660.43	660.68	660.55	660.78	660.74	660.63	660.38	660.11	660.11	659.55	659.92	659.33
85-5B	661.22	661.01	660.63	660.49	660.67	660.60	660.82	660.75	660.67	660.59	No access	No access	659.87	660.22	No access
85-6	661.80	661.59	661.14	661.12	661.38	661.25	661.57	661.37	661.28	661.14	660.71	660.69	660.42	660.87	660.44
85-7	659.04	658.95	658.77	658.73	658.65	658.65	658.83	658.86	659.02	658.88	658.62	658.73	658.39	658.41	658.34
86-1	Can't open	660.14	659.83	659.70	659.76	660.28	660.12	659.98	659.97	659.90	659.49	659.52	659.28	659.39	659.18
86-2	659.78	659.77	659.51	Pumping	Pumping	Pumping	658.17	657.92	Susp. data	658.01	658.26	657.67	657.76	659.59	657.51
86-3	658.26	658.17	658.00	658.00	657.81	657.93	658.13	658.07	658.22	658.01	657.86	657.99	657.67	656.40	657.45
87-1	659.74	659.66	659.43	659.40	659.43	659.43	659.51	659.50	659.53	659.43	659.20	659.30	659.10	659.17	658.97
87-2	660.84	660.48	660.29	660.31	660.48	660.41	660.44	660.33	660.34	660.27	660.05	660.11	659.96	660.14	659.84
87-4	659.68	659.66	659.42	659.40	659.37	659.38	659.47	659.46	659.51	659.43	659.19	659.29	659.17	659.11	658.98
87-5	659.48	659.56	659.36	659.33	659.30	659.33	659.44	659.44	659.45	659.30	658.86	659.25	659.14	659.07	658.95
87-8	658.42	658.33	658.10	657.92	657.75	657.86	657.97	658.24	658.31	658.24	658.99	658.10	658.90	657.75	657.66
87-9	658.13	658.06	661.65	657.93	657.75	657.86	657.97	658.00	658.23	658.00	658.99	657.92	657.75	657.55	657.49
87-10	656.65	656.51	657.75	656.19	656.03	656.32	656.56	656.31	656.88	656.63	656.45	656.63	656.41	656.11	656.07
87-11	656.24	656.19	656.88	655.60	655.82	656.07	656.18	656.19	657.09	656.30	656.19	656.40	656.19	655.61	655.87
87-13	654.07	654.02	653.95	653.99	653.80	653.85	654.25	654.26	656.10	654.79	654.85	654.89	654.04	653.81	653.78
88-1	Broken	Broken	Broken	Broken	Broken	656.03	656.26	656.38	656.97	656.54	656.41	656.64	656.32	656.10	656.08
88-2	655.03	654.92	654.89	655.07	654.50	654.77	654.99	654.98	656.04	655.37	655.43	655.46	656.23	654.80	654.69
88-3	654.29	654.23	654.16	654.27	653.94	654.08	654.45	654.42	655.64	654.97	655.00	655.24	654.54	653.27	654.01
88-4	Can't find	653.19	653.14	653.27	653.01	653.00	653.54	653.54	654.85	654.04	654.06	654.28	653.63	652.69	652.63
93-1															
MW1-03															
MW2-03															
MW3-03															
MW4-03															
MW5-03															
MW6-03															
MW7-03															
MW8-04															
MW9-04															
MW10-04															
MW11D-04															
MW11S-05															
MW13-04															
MW14-04															
MW15-04															
MW17-06															
C-1	657.75	658.04	657.46	Gauge gone	657.64	657.66	657.66	657.87	657.63	Debris	657.87	657.87	657.87	657.87	657.82
C-2	655.38	654.58	650.84	649.79	651.38	651.37	Debris	Debris	657.78	657.70	657.82	657.82	657.90	657.69	657.83
C-4			656.92	Gauge gone	657.68	657.66	657.74	657.88	659.17	659.08	658.75	658.88	658.73	658.64	658.54
X-10							659.11	659.03	657.74	Pumping	657.26	657.49	653.84	653.05	652.79
PW-DISCH															

-- = Not measured.
 * = Not installed.
 *** = City of Wyoming cleared culvert of debris, but broke the concrete elevation reference point.
 **** = Well no longer exists.
 Note: Additional monthly groundwater elevations are available in the database.

General Motors
Grand Rapids Metal Fabrication Plant
WATER LEVELS (In Feet)
SUMMARY

Start date: End date:	2/16/1990 2/16/1990	3/16/1990 3/16/1990	4/12/1990 4/12/1990	5/18/1990 5/18/1990	6/18/1990 6/19/1990	7/13/1990 7/13/1990	8/20/1990 8/20/1990	9/14/1990 9/14/1990	10/12/1990 10/12/1990	11/15/1990 11/15/1990	12/17/1990 12/18/1990	3/11/1991 3/12/1991	6/13/1991 6/13/1991	9/12/1991 9/12/1991	12/13/1991 12/13/1991
85-1	Under water	659.65	Under water	659.87	659.83	659.81	Can't open	Can't open	Can't open	660.13	660.13	659.75	659.90	659.89	660.02
85-2	658.17	658.29	658.27	658.54	658.43	658.43	658.46	658.75	658.65	658.64	659.06	658.41	658.50	658.51	658.67
85-3	659.86	660.21	660.17	660.78	660.83	660.89	660.61	660.45	660.71	661.45	661.46	660.6	661.01	659.81	660.18
85-5B	660.06	660.32	No access	660.83	660.85	660.89	No access	No access	No access	662.10	No access	661.11	661.55	660.80	661.56
85-6	660.62	661.00	661.13	661.46	661.35	661.35	661.40	661.27	661.35	662.10	662.03	661.71	661.88	660.00	659.07
85-7	658.42	658.35	658.37	658.84	658.76	658.66	658.85	658.85	659.95	660.49	660.54	659.67	660.00	659.54	660.27
86-1	659.34	659.35	659.69	660.01	660.01	659.81	659.83	659.69	659.95	660.49	660.54	659.67	660.00	659.54	660.27
86-2	657.59	657.76	Not running	657.92	657.84	657.76	657.84	657.92	658.01	658.01	658.26	657.92	657.84	657.84	659.30
86-3	657.52	657.63	657.65	657.92	657.83	657.73	657.83	657.73	658.01	658.01	658.11	657.84	657.99	657.91	658.22
87-1	659.04	659.22	659.24	659.46	659.45	659.35	659.56	659.51	659.63	659.83	659.89	659.36	659.56	659.38	659.59
87-2	659.88	660.17	660.06	660.27	660.27	660.20	660.56	660.49	660.65	660.77	660.90	660.24	660.51	660.31	660.48
87-4	659.06	659.21	659.23	659.47	659.41	659.31	659.49	659.42	659.61	659.75	659.79	659.38	659.56	659.45	659.63
87-5	659.01	659.16	659.21	659.46	659.38	659.30	659.42	659.35	659.54	659.71	659.77	659.34	659.51	659.37	659.61
87-8	657.75	657.88	657.91	658.20	658.12	658.00	658.08	657.98	658.24	658.57	658.58	658.06	658.26	658.11	658.49
87-9	657.56	657.75	657.69	657.95	657.85	657.75	657.85	657.02	658.05	658.10	658.11	658.06	657.98	657.93	658.19
87-10	656.16	656.36	656.30	656.54	656.42	656.32	656.42	656.33	656.65	656.33	656.69	656.43	656.53	656.50	656.84
87-11	655.95	656.12	656.03	656.94	656.11	656.04	656.14	656.06	656.33	656.31	656.29	656.12	656.17	656.21	656.38
88-1	653.90	653.98	653.89	654.04	653.91	653.93	654.00	654.02	654.10	654.12	654.08	653.98	654.04	654.10	654.22
88-2	656.15	656.29	656.23	656.49	656.30	656.24	656.39	656.26	656.67	656.35	656.35	655.26	654.82	655.06	655.60
88-3	654.67	654.83	654.90	655.12	654.97	654.98	655.04	654.91	657.43	655.14	655.26	655.00	654.82	654.52	654.62
88-4	654.10	654.24	654.16	654.43	654.18	654.17	654.39	654.24	654.80	654.45	654.36	654.25	654.29	654.32	654.62
90-1	653.06	653.21	653.13	653.44	653.16	653.20	653.49	653.29	653.78	653.40	653.36	653.29	653.34	653.51	653.75
MW1-03	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
MW2-03	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
MW3-03	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
MW4-03	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
MW5-03	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
MW6-03	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
MW7-03	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
MW8-04	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
MW9-04	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
MW10-04	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
MW11D-04	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
MW11S-05	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
MW13-04	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
MW14-04	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
MW15-04	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
MW17-06	657.91	657.83	657.81	657.85	657.88	657.86	657.83	657.80	657.83	657.83	657.84	657.85	657.78	657.72	657.99
C-1	***	***	***	***	***	***	***	***	***	***	***	***	651.40	651.62	651.54
C-2	657.90	657.80	657.82	657.84	657.89	657.85	657.80	657.83	657.82	657.84	657.85	657.83	657.76	657.71	657.95
X-10	658.63	658.74	658.78	659.07	658.98	658.87	659.00	658.92	659.13	659.28	659.31	658.92	659.10	659.00	659.24
PW-DISCH	652.20	652.00	651.69	652.31	651.47	651.24	650.88	650.50	651.03	650.67	650.12	649.06	648.24	647.27	647.39

-- = Not measured.
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*** = Well no longer exists.
Note: Additional monthly groundwater elevations are available in the database.

**General Motors
Grand Rapids Metal Fabrication Plant
WATER LEVELS (in Feet)
SUMMARY**

3 of 5

Start date:	3/13/1992	6/12/1992	9/11/1992	12/10/1992	3/11/1993	6/14/1993	9/15/1993	12/17/1993	3/16/1994	6/14/1994	9/14/1994	12/14/1994	3/17/1995	6/20/1995	9/14/1995	12/18/1995
End date:	3/13/1992	6/12/1992	9/11/1992	12/10/1992	3/11/1993	6/14/1993	9/15/1993	12/17/1993	3/16/1994	6/14/1994	9/14/1994	12/14/1994	3/17/1995	6/20/1995	9/14/1995	12/18/1995
85-1	659.60	659.77	659.68	659.51	659.50	659.89	659.71	659.46	659.54	659.52	659.70	659.44	659.37	659.60	659.48	659.38
85-2	658.30	658.47	658.37	658.22	658.22	658.64	658.47	658.16	658.24	658.24	658.30	658.16	658.16	658.28	658.16	658.12
85-3	660.06	660.51	659.96	659.92	660.05	660.72	659.86	659.38	660.09	659.85	660.33	659.81	659.68	660.53	659.65	659.90
85-5B	-	-	-	660.10	-	-	-	659.94	-	-	-	659.95	-	-	-	659.92
85-6	660.79	661.08	660.78	660.62	660.75	661.43	660.56	660.44	660.80	660.54	659.12	660.45	660.37	661.11	660.48	660.46
85-7	658.59	658.85	658.64	658.48	658.47	658.81	658.65	658.48	658.49	658.46	658.62	658.41	658.34	658.57	658.36	658.32
86-1	659.41	659.72	659.41	659.17	659.26	659.81	659.30	659.11	659.37	659.16	661.34	659.09	658.98	659.52	659.05	659.06
86-2	658.90	659.10	658.99	658.81	658.83	659.13	658.96	658.71	658.91	658.89	659.35	658.89	658.76	659.14	659.18	658.79
86-3	657.24	660.12	657.76	657.60	657.60	657.93	Susp data	657.52	657.66	657.58	657.69	657.57	657.43	657.69	657.52	657.47
87-1	659.17	659.37	659.26	659.16	659.13	659.45	659.11	659.01	659.10	659.03	659.30	659.02	658.93	659.25	659.02	658.99
87-2	660.10	660.21	660.28	660.09	660.13	660.43	659.99	659.96	660.01	660.01	660.27	659.96	659.93	660.25	660.04	659.95
87-4	659.21	659.39	659.28	659.14	659.12	659.43	659.23	659.03	659.13	659.08	659.33	659.04	658.95	659.21	659.04	658.99
87-5	659.17	659.37	659.23	659.07	659.05	659.38	659.18	658.98	659.12	659.05	659.27	658.99	658.90	659.17	658.97	658.95
87-8	657.96	658.22	657.98	657.82	657.81	658.15	658.04	657.75	657.92	657.77	657.95	657.74	657.62	657.92	657.72	657.64
87-9	657.75	658.02	657.77	657.63	657.62	657.99	Susp data	658.60	657.71	657.66	657.71	657.59	657.48	657.70	657.54	657.49
87-10	656.36	656.49	656.35	656.21	656.24	656.55	656.48	656.15	656.31	656.24	656.21	656.09	656.08	656.26	656.04	656.03
87-11	656.06	656.17	656.10	655.99	656.04	656.22	656.21	655.93	656.04	656.04	655.97	655.92	655.87	656.00	655.85	655.83
87-13	654.01	653.99	653.95	653.88	653.94	654.05	653.99	653.76	653.90	653.84	653.78	653.71	653.71	653.70	653.59	653.56
88-1	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***	***
88-2	655.26	655.00	655.16	655.08	655.04	655.12	655.20	654.66	654.86	654.82	654.66	654.59	654.57	654.61	654.48	654.50
88-3	654.27	654.20	654.31	654.11	654.12	654.47	654.54	654.00	654.13	654.13	653.99	653.94	653.88	653.94	653.78	653.80
88-4	653.45	653.21	653.23	653.11	653.29	653.44	653.34	652.98	653.21	653.03	652.89	652.87	652.86	652.89	652.76	652.76
93-1	-	-	-	-	-	-	653.28	653.13	653.17	653.18	653.11	653.12	653.03	653.10	653.17	653.01
NW1-03	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NW2-03	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NW3-03	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NW4-03	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NW5-03	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NW6-03	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NW7-03	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NW8-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NW9-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NW10-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NW11D-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NW11S-05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NW13-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NW14-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NW15-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NW17-06	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
C-1	657.90	657.81	657.84	657.84	657.99	657.77	657.84	657.81	657.88	657.84	657.79	657.92	657.74	657.74	657.74	Debris
C-2	651.77	-	651.47	651.94	652.12	651.73	**	**	**	**	649.07	649.82	649.22	649.07	649.17	649.02
C-4	657.84	657.65	657.83	657.85	657.87	657.70	657.73	657.80	657.86	657.75	657.75	657.86	657.73	657.75	657.65	657.58
X-10	658.79	659.00	658.74	658.69	658.66	659.01	658.82	658.60	658.72	658.67	658.82	658.62	658.52	658.69	658.57	658.55
PW-DISCH	645.15	658.13	644.56	644.75	644.56	643.97	642.87	642.33	642.25	641.17	655.00	655.19	654.43	654.57	654.17	653.89

- = Not measured.

* = Not installed.

*** = City of Wyoming cleared culvert of debris, but broke the concrete elevation reference point.

**** = Well no longer exists.

Note: Additional monthly groundwater elevations are available in the database.

General Motors
Grand Rapids Metal Fabrication Plant
WATER LEVELS (In Feet)
SUMMARY

Start date:	3/19/1996	6/13/1996	9/13/1996	12/13/1996	3/13/1997	6/19/1997	9/11/1997	12/16/1997	3/13/1998	6/16/1998	9/17/1998	12/16/1998	3/10/1999	6/15/1999	9/20/1999	12/16/1999	3/16/2000	6/13/2000	9/22/2000	12/20/2000	3/21/2001
End date:	3/19/1996	6/13/1996	9/13/1996	12/13/1996	3/13/1997	6/19/1997	9/11/1997	12/16/1997	3/13/1998	6/16/1998	9/17/1998	12/16/1998	3/10/1999	6/15/1999	9/20/1999	12/16/1999	3/16/2000	6/13/2000	9/22/2000	12/20/2000	3/21/2001
85-1	659.15	659.67	659.38	659.18	659.64	659.45	659.13	659.06	Under live	658.86	659.14	659.90	659.20	659.46	659.30	659.01	658.79	659.70	659.40	659.38	659.74
85-2	657.99	658.39	658.13	657.96	658.51	658.14	658.07	657.92	658.05	657.73	657.96	657.86	658.19	658.32	658.04	657.99	657.93	658.62	658.22	658.20	658.54
85-3	658.61	660.90	660.17	658.78	661.16	660.24	659.77	658.42	659.73	658.44	658.38	658.06	659.30	660.47	659.26	658.61	658.60	660.71	659.78	659.94	660.48
85-5B	659.30	659.30	659.30	659.30	659.30	659.30	659.30	659.30	659.30	659.30	659.30	659.30	659.30	659.30	659.30	659.30	659.30	659.30	659.30	659.30	659.30
85-6	660.05	661.45	661.19	660.08	661.66	660.79	660.44	659.94	660.29	659.73	659.93	659.46	660.11	661.69	659.97	659.64	659.51	661.22	660.31	660.45	660.99
85-7	658.13	658.69	658.35	658.13	658.72	658.39	658.27	658.06	658.23	657.65	659.11	658.09	658.20	658.46	658.21	658.85	658.80	658.40	658.40	658.41	658.79
86-1	658.67	659.83	659.15	658.65	660.01	659.29	658.96	658.53	658.76	658.11	658.11	658.26	659.69	659.33	658.69	658.36	658.24	659.80	659.04	659.17	659.56
86-2	658.55	659.72	658.84	658.66	659.21	658.97	658.86	658.61	658.76	658.03	658.63	659.40	658.83	659.24	658.67	658.25	658.10	658.24	658.24	658.28	658.88
86-3	657.32	657.80	657.35	657.27	657.93	657.38	657.40	657.21	657.40	656.91	657.29	657.13	657.37	657.38	657.32	657.23	657.09	657.90	657.55	657.55	657.93
87-1	658.73	659.14	659.00	658.77	659.45	659.08	658.93	658.82	658.82	658.35	658.43	658.32	658.80	659.00	658.72	658.51	658.35	659.26	658.98	658.97	659.46
87-2	659.63	660.25	659.98	659.71	660.26	660.07	659.91	659.56	659.68	659.39	659.62	659.08	659.62	659.79	659.48	659.17	659.14	660.02	659.86	659.87	660.48
87-4	658.73	659.29	659.01	658.79	659.35	659.07	658.93	658.69	658.81	658.71	658.71	658.71	658.71	658.71	658.71	658.71	658.71	658.71	658.71	658.71	659.36
87-5	658.68	659.28	658.96	658.75	659.31	659.00	658.89	658.63	658.81	658.71	658.69	658.45	658.77	658.94	658.70	658.53	658.34	659.27	658.93	659.01	659.36
87-8	657.47	658.05	657.76	657.44	658.21	657.78	657.36	657.35	657.55	657.15	657.43	657.25	657.53	657.76	657.49	657.34	657.18	658.04	657.60	657.61	657.84
87-9	657.31	657.81	657.38	657.33	657.84	657.60	657.43	657.26	657.45	657.10	657.35	657.22	657.11	657.60	657.38	657.34	657.18	658.04	657.60	657.61	657.84
87-10	655.88	656.32	656.00	655.84	656.52	656.08	655.90	655.76	655.96	655.40	655.85	655.72	655.92	656.14	655.92	655.95	655.79	656.67	656.14	656.18	656.37
87-11	656.01	656.01	655.81	655.70	655.71	655.76	655.72	655.62	655.76	655.71	655.69	655.60	655.74	655.93	655.78	655.95	655.40	656.05	656.05	656.08	656.19
87-13	653.55	653.66	653.45	653.43	653.73	653.49	653.42	653.42	653.52	653.41	653.41	653.30	653.32	653.62	653.57	653.74	653.61	653.96	653.57	653.55	653.74
88-1	654.80	654.66	654.38	654.40	654.67	654.45	654.46	654.31	654.50	654.44	654.38	654.25	654.42	654.62	654.51	654.64	654.46	655.20	654.61	654.66	654.66
88-2	653.70	653.91	653.68	653.70	653.98	653.72	653.70	Damaged	653.86	654.05	654.00	653.94	654.06	654.20	654.13	654.37	654.14	654.83	654.22	654.10	654.18
88-3	652.67	653.30	652.64	652.67	652.95	652.74	652.70	652.61	652.84	652.75	652.62	652.68	652.79	652.91	652.94	653.17	652.93	653.60	652.93	652.90	652.85
93-1	654.90	655.07	654.89	654.83	655.13	654.82	654.79	654.79	654.82	654.80	654.80	654.72	654.80	655.06	654.94	655.15	655.36	655.36	655.04	655.09	655.18
MW1-03	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
MW2-03	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
MW3-03	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
MW4-03	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
MW5-03	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
MW6-03	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
MW7-03	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
MW8-04	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
MW9-04	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
MW10-04	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
MW11D-04	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
MW11S-05	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
MW13-04	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
MW14-04	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
MW15-04	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
MW17-06	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
C-1	Debris	657.50	657.39	657.46	657.46	657.60	657.64	Debris	657.65	657.58	657.64	657.57	657.62	657.63	Debris	657.76	657.70	Debris	Debris	Debris	657.82
C-2	649.02	649.17	649.02	649.01	649.39	649.10	649.10	649.10	650.14	649.31	649.02	650.08	650.32	650.62	650.54	650.90	650.81	650.59	650.50	650.42	649.17
C-4	657.63	657.77	657.43	657.37	657.44	657.61	657.61	657.69	657.61	657.57	657.35	657.55	657.67	660.82	657.72	657.73	657.71	657.75	657.73	657.75	657.77
X-10	658.33	658.92	658.61	658.37	659.94	658.60	660.49	#	657.49	657.57	657.35	657.55	657.67	660.82	657.72	657.73	657.71	657.75	657.73	657.75	657.77
PW-DISCH	653.81	652.87	653.34	653.02	653.54	653.04	652.52	652.43	652.65	651.82	652.01	651.85	651.64	651.46	651.37	651.07	650.54	651.39	651.15	650.73	651.22

-- = Not measured.
* = Not installed.
*** = City of Wyoming cleared culvert
**** = Well no longer exists.
Note: Additional monthly groundwater elevations are available in the database.

-- = Not measured.
* = Not installed.
*** = City of Wyoming cleared culvert
**** = Well no longer exists.
Note: Additional monthly groundwater

General Motors
Grand Rapids Metal Fabrication Plant
WATER LEVELS (In Feet)
SUMMARY

	Start date:	6/13/2001	9/13/2001	12/19/2001	3/28/2002	6/26/2002	9/26/2002	12/9/2002	3/28/2003	7/14/2003	9/29/2003	12/17/2003	3/15/2003	10/4/2004	11/30/2004	4/4/2005	6/27/2005	12/2/2005	9/13/2006	5/9/2007	10/15/2007	4/23/2008	10/9/2008	4/9/2009	10/6/2009
	End date:	6/13/2001	9/13/2001	12/19/2001	3/28/2002	6/26/2002	9/26/2002	12/9/2002	3/28/2003	7/14/2003	9/29/2003	12/17/2003	3/15/2003	10/4/2004	11/30/2004	4/4/2005	6/27/2005	12/2/2005	9/13/2006	5/9/2007	10/15/2007	4/23/2008	10/9/2008	4/9/2009	10/6/2009
85-1	659.91	659.83	659.76	660.17	660.10	659.99	659.96	659.96	659.28	658.87	658.63	658.63	659.17	658.89	658.98	659.25	659.18	658.85	661.35	660.03	659.15	659.57	659.67	659.66	659.66
85-2	658.61	658.48	658.44	658.83	658.80	658.66	658.49	658.49	657.35	657.75	657.57	658.24	658.24	657.81	657.91	659.25	659.18	657.90	661.35	660.03	659.15	659.57	659.67	659.66	659.66
85-3	661.17	660.15	660.54	661.15	660.92	660.80	660.07	658.91	658.91	659.31	659.37	658.24	660.31	659.11	659.26	660.21	660.10	659.56	661.23	658.63	657.95	658.23	658.33	658.34	658.34
85-5B	--	--	660.57	661.08	660.85	660.71	660.71	660.71	--	659.56	659.63	--	660.18	659.33	659.45	660.26	660.10	659.36	661.23	--	659.61	661.02	661	661.15	661.15
85-6	661.75	661.04	661.08	661.95	661.68	661.24	661.34	660.07	660.07	659.80	659.40	659.94	660.57	659.73	659.97	660.67	660.66	659.64	660.77	662.01	660.00	661.59	661.52	661.65	661.65
85-7	658.97	658.77	658.68	658.93	658.83	658.62	658.44	658.44	658.27	657.57	657.36	657.72	657.82	657.50	657.67	658.02	657.93	657.63	658.01	658.70	657.86	658.36	658.45	658.48	658.48
86-1	660.20	659.65	659.60	660.26	660.04	660.07	659.97	659.97	658.50	--	658.1	--	658.21	658.32	658.49	659.19	659.04	658.32	658.99	660.35	658.70	659.88	659.86	660.01	660.01
86-2	658.50	658.70	658.88	659.14	659.21	659.29	659.03	659.03	658.60	658.45	658.18	658.35	658.31	658.47	658.54	--	658.89	658.75	660.73	658.90	658.98	658.08	659.00	659.00	659.00
86-3	658.06	657.87	657.80	658.33	658.18	658.30	657.97	657.97	--	656.85	656.69	657.16	657.01	657.12	657.97	659.06	659.02	657.09	663.76	658.00	657.79	658.08	657.92	657.90	657.90
87-1	659.59	659.41	659.36	659.60	659.33	659.67	659.05	659.05	658.68	658.56	658.38	659.62	658.71	658.57	658.71	659.06	659.02	658.64	662.16	660.87	658.91	659.53	659.62	659.62	659.62
87-2	660.48	660.44	660.24	660.52	660.46	660.41	659.96	659.96	658.46	659.40	658.95	659.28	659.21	659.43	659.43	659.92	659.88	659.41	670.39	660.87	659.81	660.41	660.53	660.50	660.50
87-4	659.58	659.39	659.35	659.32	659.10	659.06	658.97	658.97	658.49	658.68	658.42	658.68	658.91	658.71	658.71	659.05	658.94	658.56	660.22	660.02	658.90	659.56	659.68	659.68	659.68
87-5	657.54	659.34	659.31	659.33	659.10	658.91	658.82	658.82	658.72	658.40	658.15	658.63	658.60	658.37	658.37	658.87	658.78	658.49	658.52	659.66	658.71	659.23	659.33	659.37	659.37
87-8	658.33	657.98	657.86	658.06	658.00	658.05	657.75	657.75	657.62	656.49	656.88	657.76	658.30	656.96	656.96	657.68	657.54	657.28	653.88	657.16	657.88	657.96	658.05	658.05	658.05
87-9	658.05	657.90	657.86	658.06	658.00	657.74	657.67	657.67	657.50	656.69	656.70	657.00	657.03	656.81	656.81	657.30	657.00	657.03	654.16	656.25	657.64	657.81	657.73	657.73	657.73
87-10	656.68	656.58	656.51	657.18	657.03	656.84	657.07	657.07	656.54	655.57	655.48	655.66	655.53	655.53	655.78	656.02	659.02	655.54	654.16	655.68	656.37	656.25	656.25	656.25	656.25
87-11	656.37	656.29	656.58	656.79	656.67	656.54	656.39	656.39	656.33	655.52	655.43	655.52	655.62	655.39	655.71	655.77	655.53	655.33	655.4	655.87	656.2	655.87	655.35	655.35	655.35
87-13	653.69	653.76	653.69	653.47	653.49	653.47	653.69	653.48	653.48	652.81	652.75	652.79	652.83	652.68	653.37	653.70	652.85	652.41	653.14	653.08	652.83	653.12	653.35	653.19	653.19
88-1	651.80	651.74	651.69	651.77	651.74	651.77	651.74	651.74	651.54	--	651.76	651.7	651.99	651.72	651.54	651.40	651.87	651.87	650.15	651.10	653.85	651.15	651.4	651.26	651.26
88-2	654.80	654.74	654.70	654.72	654.72	654.70	654.74	654.74	654.54	--	651.04	651.12	651.27	652.99	651.12	651.96	651.16	651.27	652.85	653.38	653.13	653.43	653.65	653.49	653.49
88-3	653.01	652.96	652.87	652.93	652.88	652.72	652.61	652.61	652.72	--	652.25	652.55	652.55	652.21	651.06	653.34	652.38	652.57	650.43	--	652.63	652.84	652.82	652.82	652.82
88-4	653.30	653.28	653.28	653.28	653.28	653.28	653.28	653.28	653.46	--	651.20	651.46	651.36	652.21	651.06	653.34	652.38	652.57	650.43	--	652.63	652.84	652.82	652.82	652.82
MW1-03	--	--	--	--	--	--	--	--	655.46	660.56	660.11	660.38	660.29	660.40	661.70	660.76	662.16	660.58	662.52	661.74	660.59	661.47	661.38	661.40	661.40
MW2-03	--	--	--	--	--	--	--	--	655.46	660.04	659.72	660.09	660.11	660.07	660.47	660.72	661.00	659.88	661.35	662.10	660.51	661.73	661.65	661.65	661.65
MW3-03	--	--	--	--	--	--	--	--	655.46	660.15	660.92	661.24	661.15	661.34	661.71	661.78	662.13	661.26	662.25	663.05	662.05	662.86	662.5	662.57	662.57
MW4-03	--	--	--	--	--	--	--	--	655.46	656.17	656.11	656.26	656.42	656.09	656.30	656.67	656.46	656.28	656.14	657.11	656.38	656.91	657.01	657.02	657.02
MW5-03	--	--	--	--	--	--	--	--	655.46	656.17	656.11	656.26	656.42	656.09	656.30	656.67	656.46	656.28	656.14	657.11	656.38	656.91	657.01	657.02	657.02
MW6-03	--	--	--	--	--	--	--	--	655.46	656.17	656.11	656.26	656.42	656.09	656.30	656.67	656.46	656.28	656.14	657.11	656.38	656.91	657.01	657.02	657.02
MW7-03	--	--	--	--	--	--	--	--	655.46	656.17	656.11	656.26	656.42	656.09	656.30	656.67	656.46	656.28	656.14	657.11	656.38	656.91	657.01	657.02	657.02
MW8-04	--	--	--	--	--	--	--	--	655.46	656.17	656.11	656.26	656.42	656.09	656.30	656.67	656.46	656.28	656.14	657.11	656.38	656.91	657.01	657.02	657.02
MW9-04	--	--	--	--	--	--	--	--	655.46	656.17	656.11	656.26	656.42	656.09	656.30	656.67	656.46	656.28	656.14	657.11	656.38	656.91	657.01	657.02	657.02
MW10-04	--	--	--	--	--	--	--	--	655.46	656.17	656.11	656.26	656.42	656.09	656.30	656.67	656.46	656.28	656.14	657.11	656.38	656.91	657.01	657.02	657.02
MW11D-04	--	--	--	--	--	--	--	--	655.46	656.17	656.11	656.26	656.42	656.09	656.30	656.67	656.46	656.28	656.14	657.11	656.38	656.91	657.01	657.02	657.02
MW11S-05	--	--	--	--	--	--	--	--	655.46	656.17	656.11	656.26	656.42	656.09	656.30	656.67	656.46	656.28	656.14	657.11	656.38	656.91	657.01	657.02	657.02
MW13-04	--	--	--	--	--	--	--	--	655.46	656.17	656.11	656.26	656.42	656.09	656.30	656.67	656.46	656.28	656.14	657.11	656.38	656.91	657.01	657.02	657.02
MW14-04	--	--	--	--	--	--	--	--	655.46	656.17	656.11	656.26	656.42	656.09	656.30	656.67	656.46	656.28	656.14	657.11	656.38	656.91	657.01	657.02	657.02
MW15-04	--	--	--	--	--	--	--	--	655.46	656.17	656.11	656.26	656.42	656.09	656.30	656.67	656.46	656.28	656.14	657.11	656.38	656.91	657.01	657.02	657.02
MW17-06	--	--	--	--	--	--	--	--	655.46	656.17	656.11	656.26	656.42	656.09	656.30	656.67	656.46	656.28	656.14	657.11	656.38	656.91	657.01	657.02	657.02
C-1	657.80	657.70	658.42	--	--	--	--	--	--	657.26	657.42	657.55	657.25	657.21	657.26	657.16	657.09	656.99	650.82	--	657.11	662.61	658.06	657.41	657.41
C-2	649.10	649.09	649.72	--	--	--	--	--	--	650.46	650.55	650.67	650.84	650.98	--	653.41	650.78	652.21	650.82	--	650.83	652.12	650.96	650.96	650.96
C-4	657.79	657.73	658.18	--	--	--	--	--	--	650.46	650.55	650.67	650.84	650.98	--	653.41	650.78	652.21	650.82	--	650.83	652.12	650.96	650.96	650.96
X-10	657.79	657.73	658.18	--	--	--	--	--	--	650.46	650.55	650.67	650.84	650.98	--	653.41	650.78	652.21	650.82	--	650.83	652.12	650.96	650.96	650.96
PW-DISCH	651.43	650.64	649.96	--	--	--	--	--	--	649.67	649.18	649.99	650.00	--	--	657.47	657.45	--	669.39	657.31	657.79	657.95	657.93	657.93	657.93

vert of debris, but broke the concrete elevation reference point.

water elevations are available in the database.

**General Motors
Grand Rapids Metal Fabrication Plants
VACUUM SUMMARY
(Pressure in Inches)**

Date: 4/20/1989 5/18/1989 6/16/1989 7/18/1989 8/22/1989 9/20/1989 10/13/1989 10/20/1989 11/17/1989 12/21/1989 1/12/1990 2/16/1990 3/16/1990

<u>Site</u>												
87-3	75.00	76.00	76.00	75.00	75.00	77.00	76.00	75.00	75.00	76.00	76.00	76.00
P1	0.28	0.30	0.30	0.30	0.31	0.32	0.31	0.26	0.27	0.29	0.30	0.29
P3	0.42	0.44	0.44	0.46	0.44	0.46	0.45	0.43	0.45	0.42	0.46	0.44
P4	0.63	0.67	0.67	0.65	0.68	0.68	0.69	0.62	0.62	0.66	0.67	0.62
P5	0.26	0.28	0.29	0.29	0.30	0.30	0.29	0.25	0.25	0.26	0.26	0.29

Date: 4/12/1990 5/18/1990 6/19/1990 7/13/1990 8/20/1990 9/14/1990 10/12/1990 11/15/1990 12/18/1990 3/11/1991 4/18/1991 5/16/1991 6/13/1991

<u>Site</u>												
87-3	76.00	77.00	77.00	77.00	76.00	76.00	76.00	78.00	75.00	77.00	78.00	80.00
P1	0.28	0.30	0.29	0.31	0.30	0.26	0.28	0.30	0.18	0.25	0.31	0.31
P3	0.44	0.46	0.46	0.47	0.49	0.45	0.43	0.47	0.36	0.42	0.48	0.49
P4	0.63	0.68	0.65	0.69	0.68	0.61	0.64	0.67	0.56	0.62	0.68	0.68
P5	0.25	0.27	0.26	0.29	0.29	0.24	0.25	0.28	0.17	0.26	0.28	0.28

General Motors
Grand Rapids Metal Fabrication Plants
VACUUM SUMMARY
(Pressure in Inches)

Date: 7/19/1991 8/19/1991 9/12/1991 10/16/1991 11/15/1991 12/13/1991 1/17/1992 2/14/1992 3/13/1992 4/21/1992 5/15/1992 6/12/1992 7/17/1992 8/13/1992

<u>Site</u>													
87-3	79.00	80.00	80.00	80.00	79.00	80.00	80.00	80.00	80.00	80.00	80.00	80.00	80.00
P1	0.33	0.32	0.29	0.30	0.30	0.29	0.33	0.36	0.42	0.36	0.36	0.36	0.37
P3	0.50	0.48	0.49	0.45	0.48	0.48	0.45	0.46	0.50	0.47	0.48	0.58	0.48
P4	0.70	0.68	0.66	0.68	0.67	0.65	0.62	0.66	0.73	0.66	0.67	0.68	0.68
P5	0.30	0.28	0.27	0.26	0.27	0.26	0.25	0.26	0.31	0.27	0.28	0.28	0.28

Date: 9/11/1992 10/16/1992 11/12/1992 12/10/1992 1/15/1993 2/12/1993 3/11/1993 4/15/1993 5/13/1993 6/14/1993 7/16/1993 8/11/1993 9/15/1993 10/19/1993

<u>Site</u>													
87-3	78.00	80.00	75.00	85.00	83.00	85.00	86.00	86.00	85.00	86.00	88.00	90.00	85.00
P1	0.38	0.37	0.26	0.23	0.34	0.22	0.36	0.30	0.36	0.37	0.38	0.40	0.35
P3	0.46	0.47	0.38	0.45	0.46	0.44	0.48	0.44	0.50	0.51	0.50	0.54	0.48
P4	0.69	0.68	0.53	0.65	0.63	0.61	0.68	0.59	0.67	0.68	0.69	0.73	0.66
P5	0.28	0.24	0.18	0.24	0.25	0.23	0.26	0.19	0.26	0.29	0.28	0.31	0.25

**General Motors
Grand Rapids Metal Fabrication Plants
VACUUM SUMMARY
(Pressure in Inches)**

Date: ##### 12/17/1993 1/13/1994 2/15/1994 3/16/1994 4/13/1994 5/12/1994 6/14/1994 7/13/1994 8/12/1994 9/14/1994 10/18/1994 11/11/1994 12/16/1994

<u>Site</u>	89.00	89.00	88.00	88.00	86.00	86.00	85.00	90.00	90.00	90.00	88.00	89.00	90.00	90.00	85.00
87-3	0.36	0.36	0.34	0.36	0.35	0.36	0.38	0.39	0.39	0.40	0.40	0.40	0.40	0.40	0.35
P1	0.48	0.50	0.46	0.49	0.48	0.48	0.50	0.51	0.53	0.51	0.52	0.50	0.51	0.52	0.48
P3	0.68	0.68	0.65	0.68	0.66	0.68	0.70	0.71	0.71	0.72	0.73	0.72	0.72	0.73	0.66
P4	0.26	0.26	0.25	0.26	0.25	0.26	0.27	0.30	0.30	0.31	0.31	0.31	0.31	0.31	0.25
P5															

Date: 1/13/1995 2/14/1995 3/17/1995 4/13/1995 5/15/1995 6/20/1995 7/13/1995 8/11/1995 9/14/1995 10/17/1995 11/17/1995 12/18/1995 1/16/1996 2/19/1996

<u>Site</u>	88.00	90.00	90.00	90.00	90.00	88.00	9.00	7.50	83.00	8.50	1.50	85.00	83.00	82.00
87-3	0.42	0.37	0.35	0.32	0.36	0.40	0.40	0.38	0.36	0.36	0.05	0.33	0.32	0.33
P1	0.52	0.48	0.48	0.48	0.50	0.50	0.52	0.52	0.47	0.43	0.10	0.45	0.62	0.24
P3	0.74	0.66	0.66	0.66	0.68	0.70	0.72	0.66	0.67	0.68	0.24	0.63	0.60	0.60
P4	0.32	0.26	0.25	0.24	0.26	0.30	0.30	0.28	0.28	0.28	0.10	0.24	0.24	0.45
P5														

**General Motors
Grand Rapids Metal Fabrication Plants
VACUUM SUMMARY
(Pressure in Inches)**

Date: 3/19/1996 4/12/1996 5/16/1996 6/13/1996 7/16/1996 8/16/1996 9/13/1996 10/17/1996 11/19/1996 12/12/1996 1/20/1997 2/14/1997 3/13/1997 4/18/1997

<u>Site</u>													
87-3	82.00	84.00	85.00	85.00	85.00	75.00	85.00	85.00	88.00	88.00	86.00	90.00	90.00
P1	0.34	0.36	0.39	0.39	0.36	0.38	0.40	0.36	0.36	0.35	0.34	0.36	0.35
P3	0.45	0.50	0.49	0.30	0.48	0.50	0.50	0.48	0.48	0.46	0.45	0.47	0.49
P4	0.65	0.66	0.70	0.71	0.66	0.70	0.73	0.66	0.68	0.66	0.64	0.58	0.66
P5	0.26	0.26	0.30	0.50	0.26	0.30	0.30	0.28	0.26	0.25	0.25	0.20	0.25

Date: 5/15/1997 6/19/1997 7/17/1997 8/14/1997 9/19/1997 10/17/1997 11/14/1997 12/16/1997 1/14/1998 2/16/1998 3/12/1998 4/22/1998 5/20/1998 6/16/1998

<u>Site</u>													
87-3	90.00	90.00	90.00	90.00	85.00	85.00	85.00	88.00	86.00	85.00	90.00	88.00	90.00
P1	0.35	0.38	0.38	0.38	0.36	0.38	0.36	0.36	0.36	0.28	0.36	0.38	0.36
P3	0.50	0.51	0.50	0.52	0.50	0.52	0.50	0.48	0.46	0.40	0.46	0.52	0.51
P4	0.68	0.70	0.70	0.70	0.66	0.70	0.66	0.66	0.66	0.58	0.66	0.68	0.68
P5	0.26	0.29	0.28	0.28	0.26	0.30	0.26	0.25	0.27	0.20	0.25	0.27	0.29

**General Motors
Grand Rapids Metal Fabrication Plants
VACUUM SUMMARY
(Pressure in Inches)**

Date: 7/16/1998 8/19/1998 9/17/1998 10/14/1998 11/18/1998 12/16/1998 1/12/1999 2/16/1999 3/18/1999 4/12/1999 5/18/1999 6/15/1999 7/21/1999

<u>Site</u>												
87-3	90.00	90.00	85.00	80.00	60.00	85.00	85.00	85.00	90.00	85.00	90.00	90.00
P1	0.40	0.42	0.38	0.34	0.28	0.32	0.36	0.36	0.35	0.35	0.38	0.38
P3	0.52	0.52	0.29	0.46	0.36	0.42	0.46	0.46	0.46	0.46	0.51	0.53
P4	0.70	0.75	0.70	0.64	0.55	0.63	0.66	0.66	0.63	0.66	0.68	0.70
P5	0.30	0.32	0.54	0.26	0.22	0.23	0.26	0.26	0.34	0.25	0.28	0.30

Date: 8/17/1999 9/20/1999 10/19/1999 11/17/1999 12/16/1999 1/11/2000 2/15/2000 3/16/2000 4/19/2000 5/15/2000 6/13/2000 7/25/2000 8/23/2000

<u>Site</u>												
87-3	80.00	90.00	90.00	90.00	88.00	82.00	70.00	90.00	90.00	90.00	90.00	90.00
P1	0.40	0.36	0.36	0.24	0.36	0.35	0.32	0.34	0.40	0.37	0.40	0.38
P3	0.52	0.50	0.48	0.45	0.50	0.47	0.44	0.46	0.54	0.48	0.52	0.56
P4	0.72	0.68	0.66	0.62	0.68	0.65	0.58	0.64	0.72	0.26	0.70	0.70
P5	0.30	0.28	0.25	0.24	0.25	0.25	0.24	0.24	0.30	0.71	0.28	0.28

**General Motors
Grand Rapids Metal Fabrication Plants
VACUUM SUMMARY
(Pressure in Inches)**

6 of 7

Date: 9/22/2000 10/23/2000 11/16/2000 12/20/2000 1/18/2001 2/21/2001 3/21/2001 6/13/2001 8/22/2001 9/13/2001 10/9/2001 11/13/2001 12/19/2001 1/4/2002

<u>Site</u>													
87-3	90.00	90.00	17.00	90.00	90.00	90.00	92.00	90.00	90.00	92.00	94.00	92.00	15
P1	0.38	0.38	0.00	0.36	0.36	0.35	0.38	No Access	0.40	No Access	0.36	0.35	0.32
P3	0.52	0.51	0.10	0.60	0.50	0.50	0.48	0.56	0.55	0.48	0.48	0.46	0.49
P4	0.72	0.68	0.21	0.68	0.68	0.66	0.68	0.55	0.72	0.68	0.68	0.64	0.68
P5	0.29	0.28	0.07	0.25	0.26	0.24	0.27	0.15	0.30	0.26	0.26	0.22	0.22

Date: 2/6/2002 3/27/2002 4/3/2002 5/11/2002 6/12/2002 7/3/2002 8/14/2002 9/9/02 10/16/2002 11/27/2002 12/18/2002 1/29/2003 2/12/2003 3/19/2003

<u>Site</u>													
87-3	No Access	14	14	9	9.00	1.75	SD	SD	9.50	SD	9.00	9.50	SD
P1	0.39	0.38	0.40	0.31	0.40	No Access	SD	SD	0.34	SD	0.41	0.24	SD
P3	0.50	0.45	0.50	0.45	0.55	0.12	SD	SD	0.13	SD	0.11	0.11	SD
P4	0.70	0.69	0.70	0.15	0.70	0.24	SD	SD	No Access	SD	0.68	0.60	SD
P5	28 H ₂ O"	0.28	0.28	0.30	0.30	0.10	SD	SD	0.24	SD	0.22	0.20	SD

Notes:
SD-System Down

General Motors
Grand Rapids Metal Fabrication Plants
VACUUM SUMMARY
(Pressure in Inches)

Date: 7/14/2003 9/30/2003 12/17/2003 3/15/2004 10/4/2004 12/3/2004									
<u>Site</u>									
87-3	SD	SD	SD	SD	SD	SD	SD	SD	SD
P1	SD	SD	SD	SD	SD	SD	SD	SD	SD
P3	SD	SD	SD	SD	SD	SD	SD	SD	SD
P4	SD	SD	SD	SD	SD	SD	SD	SD	SD
P5	SD	SD	SD	SD	SD	SD	SD	SD	SD

Date:									
<u>Site</u>									
87-3									
P1									
P3									
P4									
P5									

Notes:
SD-System Down

General Motors
Grand Rapids Metal Fabrication Plant
Monitoring Well Data Summary/Analytical Data

1 of 2

SITE: 85-7
REVISION: 1/5/2010
UNITS: ug/L

ELEVATION: top of casing - 678.69
DEPTH: screen - 20.6 to 25.6

Date	Sample	PCE	TCE	1,2-DCE	1,1-DCE	cis-1,2-DCE	trans-1,2-DCE	Vinyl Chloride
12/06/85	E58330	2 U	84	4	<2	--	--	<10
05/05/86	E62226	2 U	240	10	<2	--	--	<10
01/21/87	E70821	2 U	150	4	<2	--	--	<10
12/21/88	E11590	--	97	<2	--	--	--	--
03/17/89	E15517	--	70	1.2	--	--	--	--
06/15/89	E21115	--	45	<1	--	--	--	--
09/20/89	E25594	--	40	<1	--	--	--	--
12/21/89	E30989	--	29	<1	--	--	--	--
03/16/90	E35816	--	23	<1	--	--	--	--
06/18/90	E42010	--	21	<1	--	--	--	--
09/14/90	E48214	--	35	<1	--	--	--	--
12/17/90	E54814	--	21	<2	--	--	--	--
03/11/91	E59922	--	22	<1	--	--	--	--
06/13/91	E67558	--	34	<1	--	--	--	--
09/12/91	E72976	--	25	1	--	--	--	--
12/13/91	E07643	--	22	2	--	--	--	--
03/13/92	E15380	--	37	3	--	--	--	--
06/12/92	E23259	--	38	1.6	--	--	--	--
09/11/92	E31913	--	38	1.1	--	--	--	--
12/10/92	E40326	--	33	<1	--	--	--	--
03/11/93	E47623	--	23	<1	--	--	--	--
06/14/93	E56589	--	17	<1	--	--	--	--
09/15/93	E66025	--	21	<1	--	--	--	--
12/17/93	E75745	--	13	<1	--	--	--	--
03/16/94	E81239	--	12	<1	--	--	--	--
06/14/94	E89391	--	11	<1	--	--	--	--
09/14/94	E97442	--	12	<1	--	--	--	--
12/16/94	E106399	--	7	<1	--	--	--	--
03/17/95	E112947	--	6.8	<2	--	--	--	--
06/20/95	E120791	--	4.4	<2	--	--	--	--
09/14/95	E127380	--	3.1	<2	--	--	--	--
12/18/95	E134966	--	1.7	<1	--	--	--	--
03/19/96	E139837	--	1.8	<1	--	--	--	--
06/13/96	E146841	--	1.5	<1	--	--	--	--
09/13/96	E154124	--	2	<1	--	--	--	--
12/12/96	E161523	--	1.7	<1	--	--	--	--
03/13/97	E166207	--	<1	<1	--	--	--	--
06/19/97	E172379	--	<1	<1	--	--	--	--
09/11/97	E177742	--	1.4	<1	--	--	--	--
12/16/97	E184901	--	1.4	<1	--	--	--	--
03/12/98	E190814	--	<1	<1	--	--	--	--
06/16/98	82953-3397	--	<1	<2	--	--	--	--
09/17/98	84367-8364	--	<1	<1	--	--	--	--
12/16/98	85755-2520	--	<1	<1	--	--	--	--
03/10/99	90995-6091	--	<1	<1	--	--	--	--
06/15/99	3990294012	--	1.3	<2	--	--	--	--
09/20/99	3991971006	--	1.7	<1	--	--	--	--
12/16/99	3993622012	--	1.1	<1	--	--	--	--

-- = Not analyzed/measured

DCE = Dichloroethene

General Motors
Grand Rapids Metal Fabrication Plant
Monitoring Well Data Summary/Analytical Data

2 of 2

SITE: 85-7 **ELEVATION:** top of casing - 678.69
REVISION: 1/5/2010 **DEPTH:** screen - 20.6 to 25.6
UNITS: ug/L

Date	Sample	PCE	TCE	1,2-DCE	1,1-DCE	cis-1,2-DCE	trans-1,2-DCE	Vinyl Chloride
03/16/00	3001152009	--	<1	<1	--	--	--	--
06/13/00	3002633009	--	<1	<1	--	--	--	--
09/22/00	E261225	--	1.2	<1	--	--	--	--
12/20/00	E268212	--	1.5	<1	--	--	--	--
03/21/01	E274380	--	<1	<1	--	--	--	--
06/13/01	E281016	--	<1	<1	--	--	--	--
09/13/01	E287756	--	SS<1	SS<1	--	--	--	--
12/19/01	E295708	--	1.1	<1	--	--	--	--
03/28/02	⁽¹⁾ -032802-TJ-007	--	<1	<1	--	--	--	--
06/26/02	⁽¹⁾ -062602-JB-023	--	<1	<1	--	--	--	--
*6/26/02	⁽¹⁾ -062602-JB-024	--	<1	<1	--	--	--	--
09/26/02	⁽¹⁾ -092602-JB-054	--	<1	<1	--	--	--	--
12/09/02	⁽¹⁾ -120902-JB-074	--	<1	<1	--	--	--	--
*12/9/2002	⁽¹⁾ -120902-JB-075	--	<1	<1	<1	--	--	<1
03/21/03	⁽¹⁾ -032103-JB-095	--	1.1	--	--	<1	<1	--
07/15/03	⁽¹⁾ -071503-SP-055	1.0 U	0.79	--	<1	<1	<1	<1
*7/15/2003	⁽¹⁾ -071503-SP-056	1.0 U	0.88	--	<1	<1	<1	<1
10/02/03	⁽¹⁾ -100203-JB-086	1.0 U	0.93	--	<1	<1	<1	<1
*10/02/03	⁽¹⁾ -100203-JB-087	1.0 U	0.90	--	<1	<1	<1	<1
12/17/03	⁽¹⁾ -121703-JB-100	1.0 U	0.81	--	<1	<1	<1	<1
03/16/04	⁽¹⁾ -031604-BW-143	1.0 U	0.72	--	<1	<1	<1	<1
10/05/04	⁽¹⁾ -100504-DCR-257	1.0 U	0.77	--	<1	<1	<1	<1
12/01/04	⁽¹⁾ -120104-DCR-301	1.0 U	0.81	--	<1	<1	<1	<1
04/06/05	⁽¹⁾ -040605-DCR-353	1.0 U	0.78 J	--	<1	<1	<1	<1
06/28/05	⁽¹⁾ -062805-DCR-382	1.0 U	0.70 J	--	1.0 U	1.0 U	1.0 U	1.0 U
12/06/05	⁽¹⁾ -120605-DCR-571	1.0 U	0.50 J	--	1.0 U	1.0 UJ	1.0 U	1.0 U
12/06/05	⁽¹⁾ -120605-DCR-572	1.0 U	0.54 J	--	1.0 U	1.0 UJ	1.0 U	1.0 U
09/12/06	⁽¹⁾ -091206-JY-032	1.0 UJ	0.48 J	--	1.0 U	1.0 U	1.0 U	1.0 U
05/09/07	⁽¹⁾ -050907-JY-076	1.0 U	0.35 J	1 U	1 U	1 U	1 U	1 U
10/16/07	⁽¹⁾ -101607-DR-120	1.0 U	0.51 J	1 U	1 U	1 U	1 U	1 U
04/22/08	⁽¹⁾ -042208-DR-161	1.0 U	0.58 J	1 U	1 U	1 U	1 U	1 U
10/07/08	⁽¹⁾ -100708-DR-210	1 U	1	--	1 U	1 U	1 U	1 U
04/06/09	⁽¹⁾ -040609-DR-240	1 U	1.3	--	1 U	--	--	--
10/06/09	⁽¹⁾ -100609-DR-281	1 U	2.5	--	1 U	2.7	0.38J	1 U

DCE = Dichloroethene

-- = Not analyzed/measured

SS = Surrogate spike result had a percent recovery outside the upper control limit.

This result must be considered estimated.

⁽¹⁾ Full sample number includes GW-17360

* Duplicate

General Motors
Grand Rapids Metal Fabrication Plant
Monitoring Well Data Summary/Analytical Data

1 of 5

SITE: 86-2
REVISION: 1/5/2010
UNITS: ug/L

Date	Sample	TCE	1,2-DCE	1,1-DCE	Vinyl Chloride
05/05/86	E62228	55000	12	4	<10
01/23/87	E70823	90000	<200	<200	<1000
12/21/88	E11591	100000	<100	--	--

Note: Converted to purge well, see Aquazorb Carbon System Summary below for Influent results (03/15/89 to 06/30/92) and flow data.

SITE: 86-2
REVISION: 1/5/2010
UNITS: ug/L

Date	Sample	Influent TCE	Total Flow Gallons
03/15/89	A02041	5400	262
03/20/89	A02136	9540	28824
03/30/89	--	--	48610
04/06/89	A02678	3040	93544
04/14/89	--	--	147039
04/21/89	A03274	2110	194249
05/05/89	A03702	2210	276839
05/22/89	A04239	1700	392315
06/09/89	A04811	1370	517629
06/23/89	--	--	614267
07/10/89	A05856	305	730872
07/28/89	--	--	857772
08/11/89	A07209	400	957223
08/22/89	--	--	1034854
09/14/89	A08208	1270	2324518
10/02/89	--	--	1422045
10/12/89	A9897	1460	--
10/25/89	--	--	1515795
11/08/89	A1455	500	161907
12/05/89	--	--	1846287
12/15/89	A2721	340	--
01/05/90	A3240	530	2690842
02/09/90	A4264	780	2925077
03/07/90	A4994	1600	3096307
03/07/90	--	--	3096307
04/04/90	A6115	1100	3298682
05/03/90	A7185	900	3422570
06/04/90	A8773	700	3637224
07/05/90	A09823	1000	3637639
08/03/90	--	--	4276027
08/08/90	A01183	1300	4309227
09/11/90	A02894	1000	4334802
10/02/90	H3932	1300	4678358

-- = Not analyzed/measured

DCE = Dichloroethene

TCE = Trichloroethene

General Motors
Grand Rapids Metal Fabrication Plant
Monitoring Well Data Summary/Analytical Data

2 of 5

SITE: 86-2
REVISION: 1/5/2010
UNITS: ug/L

Date	Sample	Influent TCE	Total Flow Gallons
11/09/90	H5793	1000	4687251
12/03/90	H6984	740	4838633
12/07/90	--	--	4861635
01/14/91	A0571	70	5049924
03/05/91	A2696	890	5340851
03/26/91	--	--	5460294
06/06/91	A6491	930	5849972
09/03/91	A9014	1000	6322915
09/26/91	--	--	6521221
12/02/91	--	--	7357351
01/06/92	A0210	660	8067437
03/10/92	A04437	410	9034727
06/30/92	A00262	184	--

Note: In July, 1993, the Aquazorb Carbon System was removed and groundwater began to be discharged to the city sanitary sewer. In July, 1994, purge well 86-2 was connected to a carbon treatment system which discharges to the storm drain via a NPDES permit.

Date	Sample	PCE	TCE	1,2-DCE	cis-1,2-DCE	trans-1,2-DCE	Total Gallons Pumped #
07/17/92	E26666	--	600	--	--	--	--
08/13/92	E29155	--	500	--	--	--	427800
09/11/92	E31912	--	470	<1	--	--	362300
10/16/92	E35368	--	650	--	--	--	548500
11/12/92	E37805	--	360	--	--	--	480800
12/10/92	E40325	--	410	<5	--	--	379800
01/15/93	E43370	--	500	--	--	--	379800
02/12/93	E45487	--	420	--	--	--	409500
03/11/93	E47622	--	320	<10	--	--	593000
04/15/93	E50676	--	360	--	--	--	477600
05/13/93	E53156	--	300	--	--	--	575700
06/14/93	E57771	--	210	<10	--	--	532600
07/16/93	E60030	--	240	--	--	--	503000
08/11/93	E62711	--	200	--	--	--	616500
09/15/93	E66022	--	180	<10	--	--	478400
10/19/93	E69404	--	210	--	--	--	485300
11/17/93	E72554	--	180	--	--	--	569000
12/17/93	E75744	--	130	<5	--	--	458700
01/13/94	E77457	--	150	--	--	--	595000
03/16/94	E81235	--	120	<10	--	--	471900
04/13/94	E83746	--	95	--	--	--	586300
05/06/94	E86251	--	79	--	--	--	555600
06/14/94	E89387	--	70	<2	--	--	253600
08/10/94	--	--	--	--	--	--	594300

-- = Not analyzed/measured DCE = Dichloroethene TCE = Trichloroethene
= Date reflects sampling day; whereas total gallonage covers entire month.

General Motors
Grand Rapids Metal Fabrication Plant
Monitoring Well Data Summary/Analytical Data

3 of 5

SITE: 86-2
REVISION: 1/5/2010
UNITS: ug/L

Date	Sample	PCE	TCE	1,2-DCE	cis-1,2-DCE	trans-1,2-DCE	Total Gallons Pumped #
09/07/94	--	--	--	--	--	--	343500
09/15/94	E97618	--	68	<5	--	--	--
10/05/94	--	--	--	--	--	--	263200
11/09/94	--	--	--	--	--	--	510300
12/07/94	--	--	--	--	--	--	387700
12/16/94	E106395	--	27	<1	--	--	--
01/04/95	--	--	--	--	--	--	231200
02/08/95	--	--	--	--	--	--	518100
03/08/95	--	--	--	--	--	--	429500
03/17/95	E112955	--	17	<2	--	--	--
04/05/95	--	--	--	--	--	--	455100
05/03/95	--	--	--	--	--	--	407600
06/07/95	--	--	--	--	--	--	580100
06/20/95	E120800	--	13	<2	--	--	--
07/05/95	--	--	--	--	--	--	397900
08/03/95	--	--	--	--	--	--	482600
09/07/95	--	--	--	--	--	--	584800
09/14/95	E127379	--	6.6	<2	--	--	--
10/04/95	--	--	--	--	--	--	449400
11/01/95	--	--	--	--	--	--	461500
12/06/95	--	--	--	--	--	--	555800
12/19/95	E134974	--	7.3	<1	--	--	--
01/03/96	--	--	--	--	--	--	452600
02/07/96	--	--	--	--	--	--	480600
03/06/96	--	--	--	--	--	--	356500
03/19/96	E139842	--	8.5	<1	--	--	--
04/03/96	--	--	--	--	--	--	368500
05/01/96	--	--	--	--	--	--	396900
06/05/96	--	--	--	--	--	--	443300
06/13/96	E146839	--	9.3	<1	--	--	--
06/26/96	--	--	--	--	--	--	399300
07/31/96	--	--	--	--	--	--	504900
09/04/96	--	--	--	--	--	--	486900
09/13/96	E154122	--	8.1	<1	--	--	--
10/02/96	--	--	--	--	--	--	386500
10/30/96	--	--	--	--	--	--	396800
12/04/96	--	--	--	--	--	--	357100
12/12/96	E161520	--	8.4	<1	--	--	--
12/31/96	--	--	--	--	--	--	268800
01/29/97	--	--	--	--	--	--	357900
02/26/97	--	--	--	--	--	--	332400
03/13/97	E166216	--	5.2	<1	--	--	--
03/26/97	--	--	--	--	--	--	317200
04/30/97	--	--	--	--	--	--	326200
05/28/97	--	--	--	--	--	--	280200

-- = Not analyzed/measured DCE = Dichloroethene TCE = Trichloroethene
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General Motors
Grand Rapids Metal Fabrication Plant
Monitoring Well Data Summary/Analytical Data

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SITE: 86-2
REVISION: 1/5/2010
UNITS: ug/L

Date	Sample	PCE	TCE	1,2-DCE	cis-1,2-DCE	trans-1,2-DCE	Total Gallons Pumped #
06/19/97	E172377	--	6	<1	--	--	--
07/02/97	--	--	--	--	--	--	360300
08/06/97	--	--	--	--	--	--	372000
09/04/97	--	--	--	--	--	--	295900
09/11/97	E177739	--	5.6	<1	--	--	--
10/01/97	--	--	--	--	--	--	227100
11/05/97	--	--	--	--	--	--	167900
12/03/97	--	--	--	--	--	--	171200
12/16/97	E184899	--	5.2	<1	--	--	--
12/31/97	--	--	--	--	--	--	176000
01/28/98	--	--	--	--	--	--	108080
02/25/98	--	--	--	--	--	--	149600
03/12/98	E190827	--	3.4	<1	--	--	--
03/26/98	--	--	--	--	--	--	148500
04/29/98	--	--	--	--	--	--	139400
05/27/98	--	--	--	--	--	--	143750
06/16/98	82953-3395	--	5	<2	--	--	--
07/01/98	--	--	--	--	--	--	277150
07/29/98	--	--	--	--	--	--	181300
09/02/98	--	--	--	--	--	--	316800
09/17/98	84367-8358	--	4	<1	--	--	--
09/30/98	--	--	--	--	--	--	213000
10/28/98	--	--	--	--	--	--	211800
12/02/98	--	--	--	--	--	--	224900
12/16/98	85755-2516	--	5	<1	--	--	--
12/31/98	--	--	--	--	--	--	206100
01/27/99	--	--	--	--	--	--	105900
02/24/99	--	--	--	--	--	--	0
03/18/99	91113-6522	--	5	<1	--	--	--
03/24/99	--	--	--	--	--	--	138600
04/29/99	--	--	--	--	--	--	586700
06/01/99	--	--	--	--	--	--	547000
06/15/99	3990294008	--	8.1	<2	--	--	--
06/30/99	--	--	--	--	--	--	590800
07/28/99	--	--	--	--	--	--	568700
09/01/99	--	--	--	--	--	--	703400
09/20/99	3991971004	--	9.8	<1	--	--	--
09/29/99	--	--	--	--	--	--	569700
11/03/99	--	--	--	--	--	--	692800
12/01/99	--	--	--	--	--	--	482200
12/16/99	3993622008	--	7.4	<1	--	--	692800
12/29/99	--	--	--	--	--	--	300500
02/02/00	--	--	--	--	--	--	568500
03/01/00	--	--	--	--	--	--	563600
03/16/00	3001152004	--	7.8	<1	--	--	--
03/29/00	--	--	--	--	--	--	546900

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General Motors
Grand Rapids Metal Fabrication Plant
Monitoring Well Data Summary/Analytical Data

5 of 5

SITE: 86-2
REVISION: 1/5/2010
UNITS: ug/L

Date	Sample	PCE	TCE	1,2-DCE	cis-1,2-DCE	trans-1,2-DCE	Total Gallons Pumped #
04/25/00	--	--	--	--	--	--	535800
05/31/00	--	--	--	--	--	--	699000
06/13/00	3002633007	--	6	<1	--	--	--
06/28/00	--	--	--	--	--	--	562100
07/26/00	--	--	--	--	--	--	571400
08/30/00	--	--	--	--	--	--	695600
09/22/00	E261218	--	8.4	<1	--	--	--
11/01/00	--	--	--	--	--	--	261900
11/29/00	--	--	--	--	--	--	19300
12/20/00	E268210	--	10	<1	--	--	--
01/03/01	--	--	--	--	--	--	433400
02/26/01	--	--	--	--	--	--	400300
03/21/01	E274374	--	7.4	<1	--	--	--
03/28/01	--	--	--	--	--	--	457100
04/24/01	--	--	--	--	--	--	421200
05/30/01	--	--	--	--	--	--	206700
06/13/01	E281014	--	6.6	<1	--	--	--
06/25/01	--	--	--	--	--	--	327930
07/16/01	--	--	--	--	--	--	517670
08/22/01	--	--	--	--	--	--	417700
09/13/01	E287754	--	6.6	<1	--	--	410900
10/09/01	--	--	--	--	--	--	212300
11/13/01	--	--	--	--	--	--	394600
12/19/01	E295715	--	3.4	<1	--	--	388100
03/28/02	^W -032802-TJ-004	--	5.5	<1	--	--	--
06/27/02	^W -062702-JB-041	--	3.1	<1	--	--	--
09/26/02	^W -092602-JB-050	--	3.8	<1	--	--	--
12/09/02	^W -120902-JB-069	--	4.1	<1	--	--	--
03/21/03	^W -032103-JB-094	--	3.9	--	<1	<1	--
07/15/03	^W -071503-SP-063	1.0 U	3.3	--	<1	<1	--
10/07/03	^W -100703-JB-095	1.0 U	3.8	--	<1	<1	--
12/17/03	^W -121703-JB-094	1.0 U	4.7	--	0.36	<1	--
03/16/04	^W -031604-BW-142	1.0 U	3.1	--	<1	<1	--
10/06/04	^W -100604-DCR-272	1.0 U	4.1	--	<1	<1	--
12/02/04	^W -120204-DCR-314	1.0 U	4.2	--	<1	<1	--
06/29/05	^W -062905-DCR-402	1.0 U	10	--	1.0 U	1.0 U	--
12/05/05	^W -091306-DR-047	1.0 UJ	2.7	--	1.0 U	1.0 U	--
09/13/06	^W -120505-DCR-568	1.0 UJ	2.8	--	1.0 U	1.0 U	--
05/10/07	⁽¹⁾ -051007-JY-091	1.0 UJ	4.4	1.0 U	0.28 J	1.0 U	--
10/17/07	⁽¹⁾ -101707-DR-133	1.0 U	4.5	1.0 U	0.37 J	1.0 U	--
04/22/08	⁽¹⁾ -042208-DR-168	1.0 U	4.8	1.0 U	1.0 U	1.0 U	--
10/07/08	⁽¹⁾ -100708-DR-215	1.0 U	5.8	--	1.0 U	1.0 U	--
04/08/09	⁽¹⁾ -040809-DR-264	1.0 U	6.4	--	1.0 U	1.0 U	--
10/07/09	⁽¹⁾ -100709-DR-298	1U	1U	--	1.0 U	1.0 U	--

-- = Not analyzed/measured

DCE = Dichloroethene

= Date reflects sampling day; whereas total gallonage covers entire month.

⁽¹⁾ Full sample number includes GW-17360

General Motors
Grand Rapids Metal Fabrication Plant
Monitoring Well Data Summary Analytical Data

1 of 2

SITE: 86-3
 REVISION: 1/5/2010
 UNITS: ug/L

ELEVATION: top of casing - 676.51
 DEPTH: screen - 41.5 to 46.5

Date	Sample	PCE	TCE	1,2-DCE	1,1-DCE	cis-1,2-DCE	trans-1,2-DCE	Vinyl Chloride
05/05/86	E62229	10 U	1400	10	<10	--	--	<50
01/21/87	E70824	2 U	340	4	<2	--	--	<10
06/08/88	E91243	2 U	170	10	<2	--	--	<10
12/21/88	E11592	--	630	<20	--	--	--	--
03/16/89	E15518	--	380	<10	--	--	--	--
06/15/89	E21116	--	150	<1	--	--	--	--
09/20/89	E25595	--	130	7	--	--	--	--
12/21/89	E30997	--	430	15	<10	--	--	<10
03/16/90	E35817	--	440	<10	--	--	--	--
06/18/90	E42011	--	240	<10	--	--	--	--
09/14/90	E48215	--	210	4	--	--	--	--
12/17/90	E54822	--	150	4	<4	--	--	<20
03/11/91	E59923	--	94	<2	--	--	--	--
06/13/91	E67555	--	56	2	--	--	--	--
09/13/91	E72977	--	58	11	--	--	--	--
12/13/91	E07651	--	73	13	<2	--	--	<2
03/13/92	E15388	--	99	19	--	--	--	--
06/12/92	E23261	--	140	8.6	--	--	--	--
09/11/92	E31916	--	88	6.4	--	--	--	--
12/10/92	E40332	--	110	3	<1	--	--	<1
03/11/93	E47625	--	72	<2	--	--	--	--
06/15/93	E56583	--	70	3	--	--	--	--
09/15/93	E66047	--	**	**	--	--	--	--
10/19/93	E69399	--	40	1.8	--	--	--	--
12/17/93	E75751	--	46	9.1	<2	--	--	<2
03/16/94	E81241	--	57	3.4	--	--	--	--
06/14/94	E89393	--	53	2.1	--	--	--	--
09/14/94	E97440	--	44	1.0	--	--	--	--
12/16/94	E106407	--	32	<1	<1	--	--	<1
03/17/95	E112959	--	27	2.4	--	--	--	--
06/20/95	E120795	--	31	<2	--	--	--	--
09/14/95	E127390	--	24	<2	--	--	--	--
12/18/95	E134976	--	16	<1	<1	--	--	<1
03/19/96	E139846	--	10	<1	--	--	--	--
06/13/96	E146843	--	15	<1	--	--	--	--
09/13/96	E154127	--	21	<1	--	--	--	--
12/13/96	E161534	--	10	<1	<1	--	--	<1
03/13/97	E166219	--	11	<1	--	--	--	--
06/19/97	E172385	--	16	<1	--	--	--	--
09/11/97	E177752	--	14	<1	--	--	--	--
12/16/97	E184905	--	11	1.2	<1	--	--	<1
03/12/98	E190817	--	5.2	<1	--	--	--	--
06/16/98	82953-3400	--	9	<2	--	--	--	--
09/17/98	84367-8370	--	4	<1	--	--	--	--
12/16/98	85755-2525	--	4	<1	<1	--	--	<1
03/10/99	90995-6095	--	4	<1	--	--	--	--
06/15/99	3990294016	--	4.6	<2	--	--	--	--
09/20/99	3991971012	--	4.8	<1	--	--	--	--
12/16/99	3993622010	--	3	<1	<1	--	--	<1

-- = Not analyzed/measured

DCE = Dichloroethene

** = Suspected that samples were labeled incorrectly in the field. Resampled 10/19/93.

General Motors
Grand Rapids Metal Fabrication Plant
Monitoring Well Data Summary Analytical Data

2 of 2

SITE: 86-3 **ELEVATION:** top of casing - 676.51
REVISION: 1/5/2010 **DEPTH:** screen - 41.5 to 46.5
UNITS: ug/L

Date	Sample	PCE	TCE	1,2-DCE	1,1-DCE	cis-1,2-DCE	trans-1,2-DCE	Vinyl Chloride
03/16/00	3001152013	--	2.4	<1	--	--	--	--
06/13/00	3002633014	--	1.7	<1	--	--	--	--
09/22/00	E261233	--	3.4	<1	--	--	--	--
12/20/00	E268215	--	3.9	<1	<1	--	--	<1
03/21/01	E274391	--	3.9	<1	--	--	--	--
06/14/01	E281021	--	5.2	<1	--	--	--	--
09/13/01	E287759	--	5.7	<1	--	--	--	--
12/19/01	E295712	--	5.3	<1	<1	--	--	<1
03/28/02	⁽¹⁾ -032802-TJ-013	--	8.7	1.8	--	--	--	--
06/26/02	⁽¹⁾ -062602-JB-026	--	1.2	<1	--	--	--	--
09/27/02	⁽¹⁾ -092702-JB-059	--	1.9	<1	--	--	--	--
01/06/03	⁽¹⁾ -010603-JB-088	--	5.2	<1	<1	--	--	<1
03/21/03	⁽¹⁾ -032103-JB-097	--	4.7	--	--	<1	<1	--
07/14/03	⁽¹⁾ -071403-SP-053	1.0 U	4.3	--	<1	<1	<1	<1
09/30/03	⁽¹⁾ -093003-JB-073	1.0 U	2.2	--	<1	<1	<1	<1
12/18/03	⁽¹⁾ -121803-JB-104	1.0 U	2.1	--	<1	<1	<1	<1
03/15/04	⁽¹⁾ -031504-BW-132	1.0 U	1.4	--	<1	<1	<1	<1
10/05/04	⁽¹⁾ -100504-DCR-253	1.0 U	2.0	--	<1	<1	<1	<1
12/01/04	⁽¹⁾ -120104-DCR-298	1.0 U	1.0	--	<1	<1	<1	<1
04/05/05	⁽¹⁾ -040505-DCR-341	1.0 U	0.89 J	--	<1	<1	<1	<1
06/28/05	⁽¹⁾ -062805-DCR-378	1.0 U	1.1	--	1.0 U	1.0 U	1.0 U	1.0 U
12/03/05	⁽¹⁾ -120305-DCR-554	1.0 U	0.68 J	--	1.0 U	1.0 U	1.0 UJ	1.0 U
09/12/06	⁽¹⁾ -091206-JY-028	1.0 UJ	1.8	--	1.0 U	1.0 U	1.0 U	1.0 U
05/09/07	⁽¹⁾ -050907-JY-074	1.0 U	4.6	1.0 U	1.0 U	0.72 J	0.25 J	1.0 U
10/16/07	⁽¹⁾ -101607-DR-115	1.0 U	5.4	1.0 U	0.23 J	1.1	0.35 J	1.0 U
04/23/08	⁽¹⁾ -042308-DR-182	1.0 U	3.6	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
10/07/08	⁽¹⁾ -100708-DR-206	1.0 U	3.9	--	1.0 U	0.76 J	0.2 J	1.0 U
04/07/09	⁽¹⁾ -040709-DR-255	1.0 U	4.5	--	1.0 U	2.5	0.38 J	0.25 J
10/06/09	⁽¹⁾ -100609-DR-286	1.0U	4.3	--	1.0U	0.68J	1.0U	1.0U

-- = Not analyzed/measured

DCE = Dichloroethene

** = Suspected that samples were labeled incorrectly in the field. Resampled 10/19/93.

⁽¹⁾ Full sample number includes GW-17360

General Motors
Grand Rapids Metal Fabrication Plant
Monitoring Well Data Summary/Analytical Data

1 of 2

SITE: 87-1 **ELEVATION:** top of casing - 681.15
REVISION: 1/5/2010 **DEPTH:** screen - 24.0 to 29.0
UNITS: ug/L **8.5 to 19.5**

Date	Sample	PCE	TCE	1,2-DCE	1,1-DCE	cis-1,2-DCE	trans-1,2-DCE	Vinyl Chloride
01/23/87	E70825	10 U	1200	16	<10	--	--	<50
12/21/88	E11593	--	540	8	--	--	--	--
03/16/89	E15519	--	380	14	--	--	--	--
06/16/89	E21117	--	140	15	--	--	--	--
09/20/89	E25596	--	180	15	--	--	--	--
12/21/89	E30990	--	170	22	--	--	--	--
03/16/90	E35818	--	230	66	--	--	--	--
06/18/90	E42012	--	370	60	--	--	--	--
09/14/90	E48216	--	300	58	--	--	--	--
12/18/90	E54815	--	260	47	--	--	--	--
03/11/91	E59925	--	200	<10	--	--	--	--
06/13/91	E67553	--	180	43	--	--	--	--
09/12/91	E72978	--	170	55	--	--	--	--
12/13/91	E07644	--	180	40	--	--	--	--
03/13/92	E15381	--	230	50	--	--	--	--
06/12/92	E23255	--	200	37	--	--	--	--
09/11/92	E31911	--	190	36	--	--	--	--
12/10/92	E40323	--	200	21	--	--	--	--
03/11/93	E47621	--	140	20	--	--	--	--
06/14/93	E56588	--	130	22	--	--	--	--
09/15/93	E66023	--	170	24	--	--	--	--
12/17/93	E75742	--	140	23	--	--	--	--
03/16/94	E81234	--	200	23	--	--	--	--
06/14/94	E89386	--	200	25	--	--	--	--
09/14/94	E97443	--	190	15	--	--	--	--
12/16/94	E106394	--	170	22	--	--	--	--
03/17/95	E112954	--	180	21	--	--	--	--
06/20/95	E120786	--	230	<20	--	--	--	--
09/14/95	E127382	--	170	17	--	--	--	--
12/19/95	E134972	--	170	17	--	--	--	--
03/19/96	E139838	--	180	19	--	--	--	--
06/13/96	E146838	--	170	23	--	--	--	--
09/13/96	E154120	--	170	27	--	--	--	--
12/12/96	E161522	--	150	36	--	--	--	--
03/13/97	E166218	--	170	52	--	--	--	--
06/19/97	E172376	--	170	50	--	--	--	--
09/11/97	E177736	--	180	55	--	--	--	--
12/16/97	E184898	--	170	55	--	--	--	--
03/12/98	E190812	--	200	46	--	--	--	--
06/16/98	82953-3391	--	29	<2	--	--	--	--
09/17/98	84367-8353	--	D42	1	--	--	--	--
12/16/98	85755-2515	--	D56	D<5	--	--	--	--
03/10/99	90995-6089	--	D75	D<5	--	--	--	--
06/15/99	3990294006	--	D68	D<10	--	--	--	--
09/20/99	3991971003	--	D72	D15	--	--	--	--
12/16/99	3993622014	--	72	D17	--	--	--	--

-- = Not analyzed DCE = Dichloroethene
D = Compound identified in an analysis at a secondary dilution factor.

General Motors
Grand Rapids Metal Fabrication Plant
Monitoring Well Data Summary/Analytical Data

2 of 2

SITE: 87-1 **ELEVATION:** top of casing - 681.15
REVISION: 1/5/2010 **DEPTH:** screen - 24.0 to 29.0
UNITS: ug/L 8.5 to 19.5

Date	Sample	PCE	TCE	1,2-DCE	1,1-DCE	cis-1,2-DCE	trans-1,2-DCE	Vinyl Chloride
03/16/00	3001152005	--	D79	D27	--	--	--	--
06/13/00	3002633006	--	D60	D31	--	--	--	--
09/22/00	E261217	--	78	43	--	--	--	--
12/20/00	E268205	--	100	58	--	--	--	--
03/21/01	E274378	--	120	65	--	--	--	--
06/13/01	E281013	--	140	52	--	--	--	--
09/13/01	E287753	--	140	41	--	--	--	--
12/19/01	E295706	--	110	78	--	--	--	--
03/28/02	⁽¹⁾ -032802-TJ-006	--	120	73.9	--	--	--	--
06/27/02	⁽¹⁾ -062702-JB-040	--	110	95.5	--	--	--	--
09/26/02	⁽¹⁾ -092602-JB-051	--	82	85.7	--	--	--	--
*9/26/02	⁽¹⁾ -092602-JB-052	--	78	85.7	--	--	--	--
12/09/02	⁽¹⁾ -120902-JB-068	--	93	69.9	--	--	--	--
03/21/03	⁽¹⁾ -032103-JB-091	--	40	--	--	57	3.2	--
07/15/03	⁽¹⁾ -071503-SP-061	2.5 U	55	--	2.4	50	3.3	7.2
10/02/03	⁽¹⁾ -100203-JB-083	3.3 U	1.9	--	3.4	100	8.3	5.1
12/17/03	⁽¹⁾ -121703-JB-093	2.5 U	76	--	3.0	40	6.7	5.2
03/16/04	⁽¹⁾ -031604-BW-139	2.0 U	30	--	2.2	52	5.3	7.9
10/06/04	⁽¹⁾ -100604-DCR-269	2.0 U	27	--	2.7	56	6.8	12
12/02/04	⁽¹⁾ -120204-DCR-310	1.4 U	39	--	2.1	39	5.7	5.5
04/06/05	⁽¹⁾ -040605-DCR-359	1.4 U	47	--	2.5	<1	7.3	9.0
06/29/05	⁽¹⁾ -062905-DCR-403	1.7 U	28	--	1.9	49	7.3	12 J
12/05/05	⁽¹⁾ -120505-DCR-565	1.0 UJ	37	--	2.1	37 J	7.8	14
09/13/06	⁽¹⁾ -091306-DR-045	1.0 UJ	30	--	1.2	30	3.8	13
05/10/07	⁽¹⁾ -051007-JY-093	1.0 UJ	15	1.0 U	1.0 U	16	0.66 J	16
10/17/07	⁽¹⁾ -101707-DR-136	1.0 UJ	1.2	1.0 U	1.5	19	1.2	17
04/22/08	⁽¹⁾ -042208-DR-169	1.0 UJ	1.4	1.0 U	1.1	30	7	15
10/07/08	⁽¹⁾ -100708-DR-219	1.0 U	17	--	0.78 J	21	3.8	15
04/08/09	⁽¹⁾ -040809-DR-266	1.0 U	12	--	0.5 J	15	2.4	16
* 04/08/09	⁽¹⁾ -040809-DR-267	1.0 U	12	--	0.55 J	15	2.5	17
10/07/09	⁽¹⁾ -100709-DR-2301	1.0U	21	--	0.92J	19	3.4	10

-- = Not analyzed DCE = Dichloroethene

D = Compound identified in an analysis at a secondary dilution factor.

⁽¹⁾ Full sample number includes GW-17360

* Duplicate

General Motors
Grand Rapids Metal Fabrication Plant
Monitoring Well Data Summary/Analytical Data

1 of 2

SITE: 87-2 **ELEVATION:** top of casing - 681.16
REVISION: 1/5/2010 **DEPTH:** screen - 33.2 to 38.2
UNITS: ug/L 7.5 to 18.5

Date	Sample	PCE	TCE	1,2-DCE	1,1-DCE	cis-1,2-DCE	trans-1,2-DCE	Vinyl Chloride
01/23/87	E70826	2.0 U	65	12	<2	--	--	<10
12/21/88	E11594	--	72	15	--	--	--	--
03/16/89	E15520	--	50	16	--	--	--	--
06/15/89	E21118	--	51	15	--	--	--	--
09/20/89	E25597	--	57	15	--	--	--	--
12/21/89	E30991	--	37	10	--	--	--	--
03/16/90	E35819	--	63	17	--	--	--	--
06/18/90	E42013	--	65	17	--	--	--	--
09/14/90	E48217	--	71	18	--	--	--	--
12/17/90	E54816	--	49	13	--	--	--	--
03/11/91	E59926	--	45	1	--	--	--	--
06/13/91	E67554	--	44	11	--	--	--	--
09/12/91	E72979	--	42	13	--	--	--	--
12/13/91	E07645	--	37	6	--	--	--	--
03/13/92	E15382	--	39	10	--	--	--	--
06/12/92	E23257	--	35	6.7	--	--	--	--
09/11/92	E31909	--	33	19	--	--	--	--
12/10/92	E40321	--	36	6	--	--	--	--
03/11/93	E47620	--	37	8.7	--	--	--	--
06/14/93	E56585	--	39	14	--	--	--	--
09/15/93	E66020	--	57	19	--	--	--	--
12/17/93	E75740	--	42	11	--	--	--	--
03/16/94	E81237	--	45	15	--	--	--	--
06/14/94	E89388	--	50	16	--	--	--	--
09/14/94	E97444	--	37	12	--	--	--	--
12/16/94	E106396	--	46	15	--	--	--	--
03/17/95	E112952	--	54	19	--	--	--	--
06/20/95	E120789	--	36	16	--	--	--	--
09/14/95	E127394	--	41	21.7	--	--	--	--
12/19/95	E134971	--	39	22	--	--	--	--
03/19/96	E139840	--	46	27	--	--	--	--
06/13/96	E146836	--	52	29	--	--	--	--
09/13/96	E154121	--	52	30	--	--	--	--
12/12/96	E161519	--	48	30	--	--	--	--
03/13/97	E166214	--	45	27	--	--	--	--
06/19/97	E172374	--	55	31	--	--	--	--
09/11/97	E177737	--	52	27	--	--	--	--
12/16/97	E184897	--	51	27	--	--	--	--
03/12/98	E190811	--	61	31	--	--	--	--
06/16/98	82953-3390	--	30	12	--	--	--	--
09/17/98	84367-8354	--	D41	D10	--	--	--	--
12/16/98	85755-2513	--	D44	D12	--	--	--	--
03/10/99	90995-6087	--	D49	D11	--	--	--	--
06/15/99	3990294002	--	D57	D13	--	--	--	--
09/20/99	3991971002	--	D64	D13	--	--	--	--
12/16/99	3993622003	--	51	D15	--	--	--	--

-- = Not analyzed

DCE = Dichloroethene

D = Compound identified in an analysis at a secondary dilution factor.

General Motors
Grand Rapids Metal Fabrication Plant
Monitoring Well Data Summary/Analytical Data

2 of 2

SITE: 87-2 ELEVATION: top of casing - 681.16
 REVISION: 1/5/2010 DEPTH: screen - 33.2 to 38.2
 UNITS: ug/L 7.5 to 18.5

Date	Sample	PCE	TCE	1,2-DCE	1,1-DCE	cis-1,2-DCE	trans-1,2-DCE	Vinyl Chloride
03/16/00	3001152002	--	D53	D12	--	--	--	--
06/13/00	3002633002	--	D42	D16	--	--	--	--
09/22/00	E261219	--	49	19	--	--	--	--
12/20/00	E268206	--	56	22	--	--	--	--
03/21/01	E274373	--	46	18	--	--	--	--
06/13/01	E281012	--	42	17	--	--	--	--
09/13/01	E287752	--	SS 48	SS 12	--	--	--	--
12/19/01	E295705	--	38	16	--	--	--	--
03/28/02	⁽¹⁾ -032802-TJ-002	--	42	28.7	--	--	--	--
*3/28/2002	⁽¹⁾ -032802-TJ-003	--	41	28.6	--	--	--	--
06/27/02	⁽¹⁾ -062702-JB-039	--	15	39.1	--	--	--	--
*6/27/02	⁽¹⁾ -062702-JB-038	--	14	40.1	--	--	--	--
09/26/02	⁽¹⁾ -092602-JB-053	--	43	21.2	--	--	--	--
12/09/02	⁽¹⁾ -120902-JB-070	--	41	28.2	--	--	--	--
03/21/03	⁽¹⁾ -032103-JB-092	--	35	--	--	23	3.5	--
07/15/03	⁽¹⁾ -071503-SP-062	1.0 U	26	--	<1	23	2.4	<1
10/02/03	⁽¹⁾ -100203-JB-085	1.4 U	8.5	--	<1.4	41	2.6	<1.4
12/17/03	⁽¹⁾ -121703-JB-095	1.0 U	35	--	<1.0	23	3.1	<1.0
*12/17/03	⁽¹⁾ -121703-JB-097	1.0 U	33	--	<1.0	23	2.9	<1.0
03/16/04	⁽¹⁾ -031604-BW-141	1.0 U	25	--	<1.0	21	2.7	<1.0
10/06/04	⁽¹⁾ -100604-DCR-273	1.4 U	7.7	--	<1.0	33	2.3	1.9
12/02/04	⁽¹⁾ -120204-DCR-313	1.0 U	24	--	<1.0	21	2.4	1.2
04/06/05	⁽¹⁾ -040605-DCR-363	1.0 U	29	--	<1.0	22	2.8	2.6
06/29/05	⁽¹⁾ -062905-DCR-404	1.0 U	2.3	--	1.0 U	33	2.7	9.7 J
12/05/05	⁽¹⁾ -120505-DCR-569	1.0 UJ	13	--	1.0 U	24	2.7	7.6
09/13/06	⁽¹⁾ -091306-DR-048	1.0 UJ	20	--	1.0 U	21	3.6	7.8
05/10/07	⁽¹⁾ -051007-JY-092	1.0 UJ	22	1.0 U	1.0 U	20	3.7	7.9
10/17/07	⁽¹⁾ -101707-DR-135	1.0 U	5.7	1.0 U	1.0 U	19	3.1	19
04/22/08	⁽¹⁾ -042208-DR-170	1.0 U	13	1.0 U	1.0 U	17	3.7	14
10/07/08	⁽¹⁾ -100708-DR-214	1.0 U	12	--	1.0 U	20	3.9	14
04/08/09	⁽¹⁾ -040809-DR-265	1.0 U	14	--	1.0 U	17	3.8	12
10/07/09	⁽¹⁾ -100709-DR-300	1.0 U	11	--	1.0 U	16	3.3	15

-- = Not analyzed

DCE = Dichloroethene

D = Compound identified in an analysis at a secondary dilution factor.

SS = Surrogate spike result had a percent recovery outside the upper control limit.

This result must be considered estimated.

⁽¹⁾ Full sample number includes GW-17360

* Duplicate

General Motors
Grand Rapids Metal Fabrication Plant
Monitoring Well Data Summary/Analytical Data

1 of 2

SITE: 87-4
 REVISION: 1/5/2010
 UNITS: ug/L

ELEVATION: top of casing - 681.11
 DEPTH: screen - 8.5 to 19.5
 24.0 to 27.0

Date	Sample	PCE	TCE	1,2-DCE	1,1-DCE	cis-1,2-DCE	trans-1,2-DCE	Vinyl Chloride
01/23/87	E70827	2.0 U	87	<2	<2	--	--	<10
12/21/88	E11595	--	42	<2	--	--	--	--
03/17/89	E15521	--	32	<1	--	--	--	--
06/15/89	E21119	--	20	<1	--	--	--	--
09/20/89	E25598	--	21	<1	--	--	--	--
12/21/89	E30992	--	19	<1	--	--	--	--
03/16/90	E35820	--	18	<1	--	--	--	--
06/18/90	E42014	--	17	<1	--	--	--	--
09/14/90	E48218	--	9	<1	--	--	--	--
12/17/90	E54817	--	4	<2	--	--	--	--
03/11/91	E59927	--	3	<1	--	--	--	--
06/13/91	E67556	--	2	<1	--	--	--	--
09/12/91	E72980	--	2	<1	--	--	--	--
12/13/91	E07646	--	1	<1	--	--	--	--
03/13/92	E15384	--	2	<1	--	--	--	--
06/12/92	E23258	--	1.1	<1	--	--	--	--
09/11/92	E31910	--	1	7.7	--	--	--	--
12/10/92	E40322	--	<1	<1	--	--	--	--
03/11/93	E47619	--	<1	<1	--	--	--	--
06/14/93	E56586	--	1.1	<1	--	--	--	--
09/15/93	E66021	--	<1	<1	--	--	--	--
12/17/93	E75741	--	<1	<1	--	--	--	--
03/16/94	E81238	--	<1	<1	--	--	--	--
06/14/94	E89389	--	<1	<1	--	--	--	--
09/14/94	E97445	--	<1	<1	--	--	--	--
12/16/94	E106397	--	<1	<1	--	--	--	--
03/17/95	E112953	--	<1	<2	--	--	--	--
06/20/95	E120790	--	<1	<2	--	--	--	--
09/14/95	E127378	--	<1	<2	--	--	--	--
12/19/95	E134970	--	<1	<1	--	--	--	--
03/19/96	E139841	--	<1	<1	--	--	--	--
06/13/96	E146835	--	<1	<1	--	--	--	--
09/13/96	E154119	--	1.2	<1	--	--	--	--
12/12/96	E161518	--	<1	<1	--	--	--	--
03/13/97	E166213	--	<1	<1	--	--	--	--
06/19/97	E172373	--	<1	<1	--	--	--	--
09/11/97	E177738	--	1	<1	--	--	--	--
12/16/97	E184896	--	<1	<1	--	--	--	--
03/12/98	E190810	--	<1	<1	--	--	--	--
06/16/98	82953-3389	--	<1	<2	--	--	--	--
09/17/98	84367-8360	--	<1	<1	--	--	--	--
12/16/98	85755-2512	--	<1	<1	--	--	--	--
03/10/99	90995-6088	--	<1	<1	--	--	--	--
06/15/99	3990294001	--	<1	<2	--	--	--	--
09/20/99	3991971001	--	1.1	<1	--	--	--	--
12/16/99	3993622002	--	<1	<1	--	--	--	--

-- = Not analyzed

DCE = Dichloroethene

General Motors
Grand Rapids Metal Fabrication Plant
Monitoring Well Data Summary/Analytical Data

2 of 2

SITE: 87-4
 REVISION: 1/5/2010
 UNITS: ug/L

ELEVATION: top of casing - 681.11
 DEPTH: screen - 8.5 to 19.5
 24.0 to 27.0

Date	Sample	PCE	TCE	1,2-DCE	1,1-DCE	cis-1,2-DCE	trans-1,2-DCE	Vinyl Chloride
03/16/00	3001152001	--	<1	<1	--	--	--	--
06/13/00	3002633001	--	<1	<1	--	--	--	--
09/22/00	E261220	--	<1	<1	--	--	--	--
12/20/00	E268204	--	<1	<1	--	--	--	--
03/21/01	E274372	--	<1	<1	--	--	--	--
06/13/01	E281011	--	<1	<1	--	--	--	--
09/13/01	E287751	--	SS<1	SS<1	--	--	--	--
12/19/01	E295704	--	SS<1	SS<1	--	--	--	--
03/28/02	(1)-032802-TJ-001	--	<1	<1	--	--	--	--
06/27/02	(1)-062702-JB-036	--	<1	<1	--	--	--	--
09/26/02	(1)-092602-JB-049	--	<1	<1	--	--	--	--
12/09/02	(1)-120902-JB-066	--	<1	<1	--	--	--	--
03/21/03	(1)-032103-JB-090	--	<1	--	--	<1	<1	--
07/15/03	(1)-071503-SP-059	1.0 U	<1	--	<1	<1	<1	<1
10/07/03	(1)-100703-JB-094	1.0 U	3.7	--	<1	<1	<1	<1
12/17/03	(1)-121703-JB-091	1.0 U	0.41	--	<1	<1	<1	<1
03/16/04	(1)-031604-BW-137	1.0 U	<1	--	<1	<1	<1	<1
*03/16/04	(1)-031604-BW-138	1.0 U	<1	--	<1	<1	<1	<1
10/06/04	(1)-100604-DCR-270	1.0 U	0.41	--	<1	<1	<1	<1
12/02/04	(1)-120204-DCR-307	1.0 U	0.35	--	<1	<1	<1	<1
04/06/05	(1)-040605-DCR-358	1.0 U	0.68 J	--	<1	<1	<1	<1
06/29/05	(1)-062905-DCR-401	1.0 U	1.1	--	1.0 U	1.0 U	1.0 U	1.0 UJ
12/05/05	(1)-120505-DCR-566	1.0 UJ	2.4	--	1.0 U	1.0 U	1.0 U	1.0 U
09/13/06	(1)-091306-DR-046	1.0 UJ	5.6	--	1.0 U	1.0 U	1.0 U	1.0 U
05/10/07	(1)-051007-JY-089	1.0 UJ	5.5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
10/17/07	(1)-101707-DR-134	1.0 U	7.2	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
04/22/08	(1)-042208-DR-165	1.0 U	4.8	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
10/07/08	(1)-100708-DR-213	1.0 U	4.9	--	1.0 U	1.0 U	1.0 U	1.0 U
04/08/09	(1)-040809-DR-262	1.0 U	5.8	--	1.0 U	1.0 U	1.0 U	1.0 U
10/07/09	(1)-100709-DR-299	1.0 U	5.7	--	1.0 U	1.0 U	1.0 U	1.0 U

-- = Not analyzed

DCE = Dichloroethene

SS = Surrogate spike result had a percent recovery outside the upper control limit.

This result must be considered estimated.

(1) Full sample number includes GW-17360

General Motors
Grand Rapids Metal Fabrication Plant
Monitoring Well Data Summary/Analytical Data

1 of 2

SITE: 87-5
REVISION: 1/5/2010
UNITS: ug/L

ELEVATION: top of casing - 680.77
DEPTH: screen - 8.5 to 19.5
 39.5 to 50.5

Date	Sample	PCE	TCE	1,2-DCE	1,1-DCE	cis-1,2-DCE	trans-1,2-DCE	Vinyl Chloride
01/30/87	E70828	2.0 U	70	<2	<2	--	--	<10
03/17/89	E15526	--	190	11	--	--	--	--
06/15/89	E21120	--	230	27	--	--	--	--
09/20/89	E25599	--	170	23	--	--	--	--
12/21/89	E30993	--	87	21	--	--	--	--
03/16/90	E35821	--	93	24	--	--	--	--
06/18/90	E42015	--	130	33	--	--	--	--
09/14/90	E48219	--	130	26	--	--	--	--
12/18/90	E54818	--	94	29	--	--	--	--
03/12/91	E59928	--	340	13	--	--	--	--
06/13/91	E67557	--	120	49	--	--	--	--
09/12/91	E72981	--	70	120	--	--	--	--
12/13/91	E07647	--	16	110	--	--	--	--
03/13/92	E15383	--	14	150	--	--	--	--
06/12/92	E23256	--	45	110	--	--	--	--
09/11/92	E31908	--	16	95	--	--	--	--
12/10/92	E40324	--	63	110	--	--	--	--
03/11/93	E47618	--	6.6	110	--	--	--	--
06/14/93	E56587	--	<10	140	--	--	--	--
09/15/93	E66024	--	<10	130	--	--	--	--
12/17/93	E75743	--	9.1	99	--	--	--	--
03/16/94	E81236	--	<5	140	--	--	--	--
06/14/94	E89390	--	25	110	--	--	--	--
09/14/94	E97438	--	33	67	--	--	--	--
12/16/94	E106398	--	14	99	--	--	--	--
03/17/95	E112956	--	10	72.6	--	--	--	--
06/20/95	E120787	--	11	62.6	--	--	--	--
09/14/95	E127381	--	4	61.2	--	--	--	--
12/19/95	E134973	--	4.4	53	--	--	--	--
03/19/96	E139839	--	3.8	42	--	--	--	--
06/13/96	E146837	--	5.3	38	--	--	--	--
09/13/96	E154123	--	20	110	--	--	--	--
12/12/96	E161521	--	6.9	77	--	--	--	--
03/13/97	E166217	--	3.8	52	--	--	--	--
06/19/97	E172378	--	17	78	--	--	--	--
09/11/97	E177740	--	29	57	--	--	--	--
12/16/97	E184900	--	29	47	--	--	--	--
03/12/98	E190813	--	34	50	--	--	--	--
06/16/98	82953-3396	--	2	4	--	--	--	--
09/17/98	84367-8359	--	D<5	D52	--	--	--	--
12/16/98	85755-2514	--	3	22	--	--	--	--
03/10/99	90995-6090	--	6	14	--	--	--	--
06/15/99	3990294007	--	3.9	9.8	--	--	--	--
09/20/99	3991971005	--	3.9	9	--	--	--	--
12/16/99	3993622004	--	3.9	9.1	--	--	--	--

-- = Not analyzed

DCE = Dichloroethene

D = Compound identified in an analysis at a secondary dilution factor.

General Motors
Grand Rapids Metal Fabrication Plant
Monitoring Well Data Summary/Analytical Data

2 of 2

SITE: 87-5
REVISION: 1/5/2010
UNITS: ug/L

ELEVATION: top of casing - 680.77
DEPTH: screen - 8.5 to 19.5
 39.5 to 50.5

Date	Sample	PCE	TCE	1,2-DCE	1,1-DCE	cis-1,2-DCE	trans-1,2-DCE	Vinyl Chloride
03/16/00	3001152003	--	3.5	9.2	--	--	--	--
06/13/00	3002633008	--	1.8	14	--	--	--	--
09/22/00	E261221	--	2.1	11	--	--	--	--
12/20/00	E268211	--	2.8	14	--	--	--	--
03/21/01	E274379	--	1.8	4.5	--	--	--	--
06/13/01	E281015	--	29	33	--	--	--	--
09/13/01	E287755	--	SS 100	SS 36	--	--	--	--
12/19/01	E295707	--	2.7	20	--	--	--	--
03/28/02	⁽¹⁾ -032802-TJ-005	--	215	<5	--	--	--	--
06/27/02	⁽¹⁾ -062702-JB-037	--	<1	68	--	--	--	--
09/26/02	⁽¹⁾ -092602-JB-048	--	<2	115	--	--	--	--
12/09/02	⁽¹⁾ -120902-JB-067	--	<2	78	--	--	--	--
03/21/03	⁽¹⁾ -032103-JB-089	--	<1	--	--	1.6	3.6	--
07/15/03	⁽¹⁾ -071503-SP-060	4.0 U	<4	--	<4	33	13	130
10/02/03	⁽¹⁾ -100203-JB-084	2.5 U	<2.5	--	<2.5	3	2.1	92
12/17/03	⁽¹⁾ -121703-JB-092	3.3 U	<3.3	--	<3.3	23	12	120
03/16/04	⁽¹⁾ -031604-BW-140	4.0 U	3.1	--	<4	11	10	120
10/06/04	⁽¹⁾ -100604-DCR-271	4.2 U	<4.2	--	<4.2	1.4	5.2	91
12/02/04	⁽¹⁾ -120204-DCR-308	3.3 U	1.1	--	<3.3	28	16	90
04/06/05	⁽¹⁾ -040605-DCR-362	5.0 U	<5	--	<5	3.7 J	11	150
06/29/05	⁽¹⁾ -062905-DCR-405	1.2 U	0.73 J	--	1.2 U	1.4	1.4	31
12/05/05	⁽¹⁾ -120505-DCR-568	2.5 U	2.5 U	--	2.5 U	0.57 J	3	60 J
09/13/06	⁽¹⁾ -091306-DR-049	2.5 UJ	2.5 U	--	2.5 U	1.3 J	6.1	59
05/10/07	⁽¹⁾ -051007-JY-090	3.3 UJ	3.3 U	3.3 U	3.3 U	18	22	96
10/17/07	⁽¹⁾ -101707-DR-131	3.3 U	3.3 U	3.3 U	4.1	5.9	15	94
04/22/08	⁽¹⁾ -042208-DR-167	3.3 U	3.3 U	3.3 U	3.3 U	8.7	18	84
10/07/08	⁽¹⁾ -100708-DR-216	1.0 U	0.3 J	--	1.0 U	0.32 J	7.5	29
*10/7/2008	⁽¹⁾ -100708-DR-217	1.0 U	0.33 J	--	1.0 U	0.45 J	8.1	37
04/08/09	⁽¹⁾ -040809-DR-263	1.0 U	0.44 J	--	1.0 U	1.0 U	4	25
10/07/09	⁽¹⁾ -100709-DR-297	1.0 U	0.43 J	--	1.0 U	1.0 U	3.9	35

-- = Not analyzed

DCE = Dichloroethene

D = Compound identified in an analysis at a secondary dilution factor.

SS = Surrogate spike result had a percent recovery outside the upper control limit.

This result must be considered estimated.

⁽¹⁾ Full sample number includes GW-17360

*Duplicate

General Motors
Grand Rapids Metal Fabrication Plant
Monitoring Well Data Summary/Analytical Data

1 of 2

SITE: 87-8
REVISION: 1/5/2010
UNITS: ug/L

ELEVATION: top of casing - 677.47
DEPTH: screen - 19.7 to 22.7

Date	Sample	PCE	TCE	1,2-DCE	1,1-DCE	cis-1,2-DCE	trans-1,2-DCE	Vinyl Chloride
01/21/87	E70829	2 U	9	<2	<2	--	--	<10
06/08/88	E91244	2 U	6	<2	<2	--	--	<10
12/21/88	E11597	--	6	<2	--	--	--	--
03/16/89	E15527	--	4.7	<1	--	--	--	--
06/16/89	E21121	--	2.3	<1	--	--	--	--
09/20/89	E25600	--	3	<1	--	--	--	--
12/21/89	E30998	--	3	<1	<1	--	--	<1
03/16/90	E35822	--	2	<1	--	--	--	--
06/18/90	E42016	--	4	<1	--	--	--	--
09/14/90	E48220	--	4	<1	--	--	--	--
12/17/90	E54823	--	6	<2	<2	--	--	<10
03/11/91	E59929	--	5	<1	--	--	--	--
06/13/91	E67559	--	4	<1	--	--	--	--
09/13/91	E72982	--	3	<1	--	--	--	--
12/13/91	E07652	--	2	<1	<1	--	--	<1
03/13/92	E15385	--	4	<1	--	--	--	--
06/12/92	E23260	--	3.1	<1	--	--	--	--
09/11/92	E31914	--	2.1	<1	--	2.1	--	--
12/10/92	E40331	--	1	<1	<1	--	--	<1
03/11/93	E47637	--	1.6	<1	--	--	--	--
06/14/93	E56575	--	1.9	<1	--	--	--	--
09/15/93	E66027	--	1.9	<1	--	1.9	--	--
12/17/93	E75752	--	2.2	<1	<1	--	--	<1
03/16/94	E81240	--	1.2	<1	--	--	--	--
06/14/94	E89392	--	1.3	<1	--	--	--	--
09/14/94	E97439	--	<1	<1	--	--	--	--
12/16/94	E106404	--	1.3	<1	<1	--	--	<1
03/17/95	E112958	--	1.4	<2	--	--	--	--
06/20/95	E120794	--	1.1	<2	--	--	--	--
09/14/95	E127383	--	<1	<2	--	--	--	--
12/18/95	E134975	--	<1	<1	<1	--	--	<1
03/19/96	E139845	--	<1	<1	--	--	--	--
06/13/96	E146842	--	1	<1	--	--	--	--
09/13/96	E154126	--	1.1	<1	--	--	--	--
12/13/96	E161532	--	1.4	<1	<1	--	--	<1
03/13/97	E166212	--	<1	<1	--	--	--	--
06/19/97	E172380	--	<1	<1	--	--	--	--
09/11/97	E177751	--	1.1	<1	--	--	--	--
12/16/97	E184904	--	1.3	<1	<1	--	--	<1
03/12/98	E190815	--	<1	<1	--	--	--	--
06/16/98	82953-3399	--	<1	<2	--	--	--	--
09/17/98	84367-8368	--	<1	<1	--	--	--	--
12/16/98	85755-2523	--	2	<1	<1	--	--	<1
03/10/99	90995-6093	--	4	<1	--	--	--	--
06/15/99	3990294015	--	1.6	<2	--	--	--	--
09/20/99	3991971011	--	1.5	<1	--	--	--	--
12/16/99	3993622009	--	2	<1	<1	--	--	<1

-- = Not analyzed

DCE = Dichloroethene

General Motors
Grand Rapids Metal Fabrication Plant
Monitoring Well Data Summary/Analytical Data

2 of 2

SITE: 87-8
REVISION: 1/5/2010
UNITS: ug/L

ELEVATION: top of casing - 677.47
DEPTH: screen - 19.7 to 22.7

Date	Sample	PCE	TCE	1,2-DCE	1,1-DCE	cis-1,2-DCE	trans-1,2-DCE	Vinyl Chloride
03/16/00	3001152012	--	2.6	<1	--	--	--	--
06/13/00	3002633010	--	1.4	<1	--	--	--	--
09/22/00	E261231	--	1.2	<1	--	--	--	--
12/20/00	E268213	--	2.7	<1	<1	--	--	<1
03/21/01	E274390	--	1.3	<1	--	--	--	--
06/14/01	E281020	--	<1	<1	--	--	--	--
09/13/01	E287758	--	1	<1	--	--	--	--
12/19/01	E295711	--	1.2	<1	<1	--	--	<1
03/28/02	⁽¹⁾ -032802-TJ-014	--	<1	<1	--	--	--	--
06/26/02	⁽¹⁾ -062602-JB-027	--	<1	<1	--	--	--	--
09/27/02	⁽¹⁾ -092702-JB-061	--	<1	<1	--	--	--	--
12/09/02	⁽¹⁾ -120902-JB-077	--	<1	<1	<1	--	--	<1
03/21/03	⁽¹⁾ -032103-JB-099	--	<1	--	--	<1	<1	--
08/06/03	⁽¹⁾ -080603-JB-068	1.0 U	<1	--	<1	<1	<1	<1
*8/6/2003	⁽¹⁾ -080603-JB-069	1.0 U	<1	--	<1	<1	<1	<1
09/30/03	⁽¹⁾ -093003-JB-074	1.0 U	0.33	--	<1	<1	<1	<1
12/18/03	⁽¹⁾ -121803-JB-105	0.25 J	0.53	--	<1	<1	<1	<1
03/15/04	⁽¹⁾ -031504-BW-133	0.20 J	0.52	--	<1	<1	<1	<1
10/05/04	⁽¹⁾ -100504-DCR-252	1.0 U	0.52	--	<1	<1	<1	<1
12/01/04	⁽¹⁾ -120104-DCR-300	0.39 J	0.90	--	<1	0.28	<1	<1
04/06/05		--	--	--	--	--	--	--
06/29/05		--	--	--	--	--	--	--
04/23/08	⁽¹⁾ -042308-DR-179	4.1 J	0.32 J	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
10/07/08	⁽¹⁾ -100708-DR-204	1.0 UJ	1.0 U	--	1.0 U	1.0 U	1.0 U	1.0 U
04/07/09	⁽¹⁾ -040709-DR-256	1.0 U	.038 J	--	1.0 U	1.0 U	1.0 U	1.0 U
10/06/09	⁽¹⁾ -100609-DR-287	0.29 J	1.0 U	--	1.0 U	1.0 U	1.0 U	1.0 U

-- = Not analyzed

DCE = Dichloroethene

⁽¹⁾ Full sample number includes GW-17360

* Duplicate

General Motors
Grand Rapids Metal Fabrication Plant
Monitoring Well Data Summary/Analytical Data

1 of 2

SITE: 87-9
 REVISION: 1/5/2010
 UNITS: ug/L

ELEVATION: top of casing - 673.88
 DEPTH: screen - 50.5 to 53.5

Date	Sample	PCE	TCE	1,2-DCE	1,1-DCE	cis-1,2-DCE	trans-1,2-DCE	Vinyl Chloride
01/21/87	E70830	2 U	62	<2	<2	--	--	<10
06/08/88	E91245	2 U	21	<2	<2	--	--	<10
12/21/88	E11598	--	18	<2	--	--	--	--
03/16/89	E15522	--	12	<1	--	--	--	--
06/15/89	E21122	--	7.9	<1	--	--	--	--
09/20/89	E25601	--	6	<1	--	--	--	--
12/21/89	E30999	--	5	<1	<1	--	--	<1
03/16/90	E35823	--	4	<1	--	--	--	--
06/19/90	E42017	--	3	<1	--	--	--	--
09/14/90	E48221	--	3	<1	--	--	--	--
12/17/90	E54824	--	2	<2	<2	--	--	<10
03/11/91	E59930	--	2	<1	--	--	--	--
06/13/91	E67561	--	2	<1	--	--	--	--
09/13/91	E72983	--	1	<1	--	--	--	--
12/13/91	E07653	--	1	<1	<1	--	--	<1
03/13/92	E15387	--	1	<1	--	--	--	--
06/12/92	E23262	--	1.6	3.5	--	--	--	--
09/11/92	E31917	--	1.4	<1	--	--	--	--
12/10/92	E40334	--	2	<1	<1	--	--	<1
03/11/93	E47627	--	<1	<1	--	--	--	--
06/14/93	E56576	--	<1	<1	--	--	--	--
09/15/93	E66028	--	**	**	--	--	--	--
10/19/93	E69400	--	1.4	<1	--	--	--	--
12/17/93	E75753	--	<1	<1	<1	--	--	<1
03/16/94	E81244	--	<1	<1	--	--	--	--
06/14/94	E89396	--	<1	<1	--	--	--	--
09/14/94	E97446	--	<1	<1	--	--	--	--
12/16/94	E106408	--	<1	<1	<1	--	--	<1
03/17/95	E112961	--	<1	<2	--	--	--	--
06/20/95	E120796	--	<1	<2	--	--	--	--
09/14/95	E127391	--	<1	<2	--	--	--	--
12/18/95	E134978	--	<1	<1	<1	--	--	<1
03/19/96	E139847	--	<1	<1	--	--	--	--
06/13/96	E146845	--	<1	<1	--	--	--	--
09/13/96	E154128	--	<1	<1	--	--	--	--
12/13/96	E161535	--	<1	<1	<1	--	--	<1
03/13/97	E166220	--	<1	<1	--	--	--	--
06/19/97	E172386	--	<1	<1	--	--	--	--
09/11/97	E177754	--	1	<1	--	--	--	--
12/16/97	E184907	--	<1	<1	<1	--	--	<1
03/12/98	E190819	--	<1	<1	--	--	--	--
06/16/98	82953-3403	--	<1	<2	--	--	--	--
09/17/98	84367-8372	--	<1	<1	--	--	--	--
12/16/98	85755-2527	--	<1	<1	<1	--	--	<1
03/10/99	90995-6096	--	<1	<1	--	--	--	--
06/15/99	3990294018	--	<1	<2	--	--	--	--
09/20/99	3991971014	--	<1	<1	--	--	--	--
12/16/99	3993622011	--	<1	<1	<1	--	--	<1

-- = Not analyzed

DCE = Dichloroethene

** = Suspected that samples were labeled incorrectly in the field. Resampled 10/19/93.

General Motors
Grand Rapids Metal Fabrication Plant
Monitoring Well Data Summary/Analytical Data

2 of 2

SITE: 87-9 **ELEVATION:** top of casing - 673.88
REVISION: 1/5/2010 **DEPTH:** screen - 50.5 to 53.5
UNITS: ug/L

Date	Sample	PCE	TCE	1,2-DCE	1,1-DCE	cis-1,2-DCE	trans-1,2-DCE	Vinyl Chloride
03/16/00	3001152014	--	<1	<1	--	--	--	--
06/13/00	3002633017	--	<1	<1	--	--	--	--
09/22/00	E261234	--	<1	<1	--	--	--	--
12/20/00	E268218	--	<1	<1	<1	--	--	<1
03/21/01	E274392	--	<1	<1	--	--	--	--
06/14/01	E281022	--	<1	<1	--	--	--	--
09/13/01	E287743	--	<1	<1	--	--	--	--
12/19/01	E295713	--	SS<1	SS<1	SS<1	--	--	SS<1
03/28/02	⁽¹⁾ -032802-TJ-012	--	<1	<1	--	--	--	--
06/26/02	⁽¹⁾ -062602-JB-025	--	<1	<1	--	--	--	--
09/27/02	⁽¹⁾ -092702-JB-060	--	1.9	<1	--	--	--	--
12/09/02	⁽¹⁾ -120902-JB-076	--	9.7	3.8	<1	--	--	<1
03/21/03	⁽¹⁾ -032103-JB-096	--	<1	--	--	<1	<1	--
08/06/03	⁽¹⁾ -080603-JB-067	1.0 U	<1	--	<1	<1	<1	<1
09/30/03	⁽¹⁾ -093003-JB-070	1.0 U	0.3	--	<1	<1	<1	<1
12/18/03	⁽¹⁾ -121803-JB-103	1.0 UJ	0.38	--	0.7	<1	<1	<1
03/15/04	⁽¹⁾ -031504-BW-129	1.0 U	<1	--	<1	<1	<1	<1
10/05/04	⁽¹⁾ -100504-DCR-255	1.0 U	<1	--	<1	<1	<1	<1
12/01/04	⁽¹⁾ -120104-DCR-299	1.0 U	0.31	--	<1	<1	<1	<1
04/05/05	⁽¹⁾ -040505-DCR-340	1.0 UJ	<1	--	<1	<1	<1	<1
06/28/05	⁽¹⁾ -062805-DCR-379	1.0 U	0.28 J	--	1.0 U	1.0 U	1.0 U	1.0 U
12/04/05	⁽¹⁾ -120405-DCR-555	1.0 UJ	0.38 J	--	1.0 U	1.0 UJ	1.0 U	1.0 U
09/12/06	⁽¹⁾ -091206-DR-026	1.0 UJ	0.45 J	--	1.0 U	1.0 U	1.0 U	1.0 U
05/09/07	⁽¹⁾ -050907-JY-073	1.0 U	0.39 J	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
10/16/07	⁽¹⁾ -101607-DR-116	1.0 U	0.42 J	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
04/23/08	⁽¹⁾ -042308-DR-178	1.0 U	0.477 J	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
10/07/08	⁽¹⁾ -100708-DR-207	1.0 U	0.51 J	--	1.0 U	1.0 U	1.0 U	1.0 U
04/07/09	⁽¹⁾ -040709-DR-253	1.0 U	0.8 J	--	1.0 U	1.0 U	1.0 U	1.0 U
10/06/09	⁽¹⁾ -100609-DR-284	1.0 U	1.6	--	1.0 U	0.26 J	1.0 U	1.0 U

-- = Not analyzed

DCE = Dichloroethene

SS = Surrogate spike result had a percent recovery outside the upper control limit.

This result must be considered estimated.

** = Suspected that samples were labeled incorrectly in the field. Resampled 10/19/93.

⁽¹⁾ Full sample number includes GW-17360

General Motors
Grand Rapids Metal Fabrication Plant
Monitoring Well Data Summary/Analytical Data

1 of 2

SITE: 87-10
REVISION: 1/5/2010
UNITS: ug/L

ELEVATION: top of casing - 668.83
DEPTH: screen - 29 to 32

Date	Sample	PCE	TCE	1,2-DCE	1,1-DCE	cis-1,2-DCE	trans-1,2-DCE	Vinyl Chloride
06/08/88	E91246	2 U	46	8	<2	--	--	<10
12/21/88	E11599	--	58	10	--	--	--	--
03/16/89	E15523	--	48	14	--	--	--	--
06/16/89	E21123	--	42	10	--	--	--	--
09/20/89	E25602	--	50	7	--	--	--	--
12/21/89	E31000	--	63	8	<1	--	--	<1
03/16/90	E35824	--	79	10	--	--	--	--
06/19/90	E42018	--	83	8	--	--	--	--
09/14/90	E48222	--	110	11	--	--	--	--
12/17/90	E54825	--	89	7	<2	--	--	<10
03/11/91	E59931	--	70	<1	--	--	--	--
06/13/91	E67562	--	66	3	--	--	--	--
09/12/91	E72984	--	50	3	--	--	--	--
12/13/91	E07654	--	55	2	<1	--	--	<1
03/13/92	E15393	--	51	2	--	--	--	--
06/12/92	E23267	--	47	<1	--	--	--	--
09/11/92	E31921	--	35	<1	--	--	--	--
12/11/92	E40336	--	55	1	<1	--	--	<1
03/11/93	E47631	--	46	1.3	--	--	--	--
06/15/93	E56578	--	47	1.2	--	--	--	--
09/15/93	E66049	--	49	<2	--	--	--	--
12/17/93	E75755	--	47	<2	<2	--	--	<2
03/16/94	E81247	--	55	<1	--	--	--	--
06/14/94	E89399	--	130 *	40 *	--	--	--	--
09/14/94	E97451	--	52	<5	--	--	--	--
12/16/94	E106406	--	58	<1	<1	--	--	<1
03/17/95	E112951	--	55	1.2	--	--	--	--
06/20/95	E120804	--	69	2	--	--	--	--
09/14/95	E127389	--	65	<4	--	--	--	--
12/18/95	E134982	--	62	<2	<2	--	--	<2
03/19/96	E139853	--	51	1.7	--	--	--	--
06/13/96	E146850	--	67	3	--	--	--	--
09/13/96	E154134	--	80	4.2	--	--	--	--
12/12/96	E161527	--	64	4.7	<1	--	--	<1
03/13/97	E166224	--	62	6.3	--	--	--	--
06/19/97	E172390	--	68	7.5	--	--	--	--
09/11/97	E177748	--	52	7.7	--	--	--	--
12/16/97	E184910	--	53	8.8	1.8	--	--	1.6
03/13/98	E190823	--	53	4.8	--	--	--	--
06/16/98	82953-3407	--	30	4	--	--	--	--
09/17/98	84367-8376	--	32	3	--	--	--	--
12/16/98	85755-2531	--	32	3	<1	--	--	<1
03/10/99	90995-6105	--	33	2	--	--	--	--
06/15/99	3990294020	--	33	3.1	--	--	--	--
09/20/99	3991971015	--	35	2.2	--	--	--	--
12/16/99	3993622017	--	52	D<5	<5	--	--	<5

-- = Not analyzed

DCE = Dichloroethene

* = It is believed that this sample was inadvertently switched during the field event with the sample from monitoring well 87-11.

D = Compound identified in an analysis at a secondary dilution factor.

General Motors
Grand Rapids Metal Fabrication Plant
Monitoring Well Data Summary/Analytical Data

2 of 2

SITE: 87-10
REVISION: 1/5/2010
UNITS: ug/L

ELEVATION: top of casing - 668.83
DEPTH: screen - 29 to 32

Date	Sample	PCE	TCE	1,2-DCE	1,1-DCE	cis-1,2-DCE	trans-1,2-DCE	Vinyl Chloride
03/16/00	3001152017	--	D65	D<5	--	--	--	--
06/13/00	3002633020	--	D41	D<2	--	--	--	--
09/22/00	E261235	--	97	2	--	--	--	--
12/20/00	E268220	--	80	2.6	<1	--	--	<1
03/21/01	E274386	--	64	1.1	--	--	--	--
06/14/01	E281024	--	72	<1	--	--	--	--
09/13/01	E287745	--	76	<1	--	--	--	--
12/19/01	E295717	--	46	1.2	<1	--	--	<1
03/28/02	⁽¹⁾ -032802-TJ-021	--	72	2.3	--	--	--	--
06/27/02	⁽¹⁾ -062702-JB-032	--	33	<1	--	--	--	--
09/27/02	⁽¹⁾ -092702-JB-063	--	54	1.5	--	--	--	--
12/09/02	⁽¹⁾ -120902-JB-083	--	48	1.6	<1	--	--	<1
03/21/03	⁽¹⁾ -032103-JB-104	--	41	--	--	1.8	<1	--
07/14/03	⁽¹⁾ -071403-SP-046	1.0 U	27	--	0.51	1.6	<1	<1
10/01/03	⁽¹⁾ -100103-JB-076	2.0 U	44	--	<2	1.4	<2	<2
12/18/03	⁽¹⁾ -100103-JB-114	0.34 J	44	--	<1.7	1.1	<1.7	<1.7
03/15/04	⁽¹⁾ -031504-BW-124	2.0 U	47	--	<2	1.2	<2	<2
10/04/04	⁽¹⁾ -100404-DCR-246	1.7 U	39	--	<1.7	0.78	<1.7	<1.7
12/01/04	⁽¹⁾ -120104-DCR-295	0.50 J	45	--	<1.4	0.95	<1.4	<1.4
04/05/05	⁽¹⁾ -040505-DCR-345	0.51 J	28	--	0.34 J	0.90 J	0.19 J	<1
06/29/05	⁽¹⁾ -062905-DCR-393	0.46 J	25	--	0.32 J	0.77 J	0.20 J	1.0 UJ
12/06/05	⁽¹⁾ -120605-DCR-576	0.44 J	26	--	0.24 J	0.76 J	1.0 U	1.0 U
09/11/06	⁽¹⁾ -091106-DR-017	0.34 J	17	--	0.21 J	0.92 J	0.2 J	1.0 U
05/09/07	⁽¹⁾ -050907-JY-065	0.36 J	13	1.0 U	1.0 U	0.95 J	1.0 U	1.0 U
10/15/07	⁽¹⁾ -101507-DR-107	0.46 J	14	1.0 U	0.41 J	0.85 J	0.2 J	1.0 U
04/21/08	⁽¹⁾ -042108-DR-141	0.37 J	10	1.0 U	1.0 U	0.69 J	1.0 U	1.0 U
10/06/08	⁽¹⁾ -100608-DR-193	0.34 J	11	--	1.0 U	0.66 J	0.19 J	1.0 U
04/07/09	⁽¹⁾ -040709-DR-246	0.31 J	11	--	0.29 J	1.6	0.4 J	1.0 U
10/08/09	⁽¹⁾ -100809-DR-308	0.38 J	10	--	0.3 J	1.5	1.0 U	1.0 U

-- = Not analyzed

DCE = Dichloroethene

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D = Compound identified in an analysis at a secondary dilution factor.

⁽¹⁾ Full sample number includes GW-17360

General Motors
Grand Rapids Metal Fabrication Plant
Monitoring Well Data Summary/Analytical Data

1 of 2

SITE: 87-11
REVISION: 1/5/2010
UNITS: ug/L

ELEVATION: top of casing - 667.17
DEPTH: screen - 30 to 33

Date	Sample	PCE	TCE	1,2-DCE	1,1-DCE	cis-1,2-DCE	trans-1,2-DCE	Vinyl Chloride
06/08/88	E91247	2 U	320	76	<2	--	--	<10
12/21/88	E11600	--	500	69	--	--	--	--
03/16/89	E15524	--	330	55	--	--	--	--
06/16/89	E21124	--	190	70	--	--	--	--
09/20/89	E25603	--	220	44	--	--	--	--
12/21/89	E31001	--	150	40	<5	--	--	<5
03/16/90	E35825	--	230	69	--	--	--	--
06/19/90	E42019	--	200	120	--	--	--	--
09/14/90	E48223	--	220	64	--	--	--	--
12/17/90	E54826	--	48	15	<2	--	--	<10
03/11/91	E59932	--	240	<5	--	--	--	--
06/13/91	E67563	--	220	46	--	--	--	--
09/12/91	E72985	--	160	25	--	--	--	--
12/13/91	E07655	--	150	92	<5	--	--	<5
03/13/92	E15394	--	180	38	--	--	--	--
06/12/92	E23266	--	160	39	--	--	--	--
09/11/92	E31922	--	140	25	--	--	--	--
12/11/92	E40337	--	200	38	<5	--	--	<5
03/11/93	E47632	--	110	20	--	--	--	--
06/15/93	E56579	--	99	21	--	--	--	--
09/15/93	E66050	--	97	14	--	--	--	--
12/17/93	E75754	--	90	17	<5	--	--	<5
03/16/94	E81246	--	99	36	--	--	--	--
06/14/94	E89400	--	58 *	<5 *	--	--	--	--
09/14/94	E97448	--	88	24	--	--	--	--
12/16/94	E106409	--	110	38	<5	--	--	<5
03/17/95	E112950	--	130	30	--	--	--	--
06/20/95	E120805	--	140	53	--	--	--	--
09/14/95	E127388	--	130	58	--	--	--	--
12/18/95	E134981	--	120	34	<5	--	--	<5
03/19/96	E139851	--	160	26	--	--	--	--
06/13/96	E146851	--	150	78	--	--	--	--
09/13/96	E154135	--	210	63	--	--	--	--
12/12/96	E161528	--	180	39	<5	--	--	<5
03/13/97	E166225	--	170	110	--	--	--	--
06/19/97	E172391	--	210	71	--	--	--	--
09/11/97	E177749	--	190	34	--	--	--	--
12/16/97	E184911	--	190	34	<5	--	--	<5
03/13/98	E190824	--	200	48	--	--	--	--
06/16/98	82953-3408	--	D110	D16	--	--	--	--
09/17/98	84367-8377	--	D140	14	--	--	--	--
12/16/98	85755-2532	--	D120	D49	D<5	--	--	D<5
03/10/99	90995-6106	--	D120	D28	--	--	--	--
06/15/99	3990294021	--	D110	32	--	--	--	--
09/20/99	3991971017	--	D160	D29	--	--	--	--
12/16/99	3993622020	--	120	D55	<10	--	--	<10
03/16/00	3001152019	--	D110	D130	--	--	--	--
06/13/00	3002633021	--	D74	D75	--	--	--	--

-- = Not analyzed

DCE = Dichloroethene

D = Compound identified in an analysis at a secondary dilution factor.

* = It is believed that this sample was inadvertently switched during the field event with the sample from monitoring well 87-10.

General Motors
Grand Rapids Metal Fabrication Plant
Monitoring Well Data Summary/Analytical Data

SITE: 87-11
REVISION: 1/5/2010
UNITS: ug/L

ELEVATION: top of casing - 667.17
DEPTH: screen - 30 to 33

Date	Sample	PCE	TCE	1,2-DCE	1,1-DCE	cis-1,2-DCE	trans-1,2-DCE	Vinyl Chloride
09/22/00	E261236	--	64	110	--	--	--	--
12/20/00	E268222	--	89	110	<1	--	--	1.1
03/21/01	E274387	--	84	73	--	--	--	--
06/14/01	E281027	--	72	56	--	--	--	--
09/13/01	E287746	--	89	34	--	--	--	--
12/19/01	E295718	--	17	99	<1	--	--	4.7
03/28/02	⁽¹⁾ -032802-TJ-020	--	63	92	--	--	--	--
06/27/02	⁽¹⁾ -062702-JB-031	--	17	-67.5	--	--	--	--
09/27/02	⁽¹⁾ -092702-JB-062	--	44	-120	--	--	--	--
12/09/02	⁽¹⁾ -120902-JB-084	--	46	-120	--	--	--	--
03/21/03	⁽¹⁾ -032103-JB-103	--	34	--	--	110	1.5	--
07/14/03	⁽¹⁾ -071403-SP-047	2.0 U	28	--	<2	42	<2	3.7
10/01/03	⁽¹⁾ -100103-JB-075	5.0 U	34	--	<5	130	1.5	5
12/18/03	⁽¹⁾ -121803-JB-113	4.0 U	11	--	<4	130	1.5	1.3
03/15/04	⁽¹⁾ -031504-BW-126	4.0 U	5.7	--	<4	97	1.5	8.3
10/04/04	⁽¹⁾ -100404-DCR-247	2.5 U	23	--	<2.5	56	2.7	9.1
12/01/04	⁽¹⁾ -120104-DCR-296	2.5 U	24	--	<2.5	66	0.85	4.3
04/05/05	⁽¹⁾ -040505-DCR-346	2.5 UJ	31	--	<2.5	56	1.7 J	1.2 J
06/29/05	⁽¹⁾ -062905-DCR-392	1.7 U	32	--	1.7 U	23	1.7	3.6 J
12/06/05	⁽¹⁾ -120605-DCR-575	1.0 U	40	--	0.39 J	51 J	0.94 J	2.5
09/11/06	⁽¹⁾ -091106-DR-016	1.7 UJ	42	--	1.7 U	15	0.74 J	2.7
05/09/07	⁽¹⁾ -050907-JY-067	1.4 U	50	1.4 U	1.4 U	14	1.4 U	2.6
10/15/07	⁽¹⁾ -101507-DR-105	1.0 U	38	1.0 U	0.75 J	19	0.19 J	4.1
04/21/08	⁽¹⁾ -042108-DR-138	1.0 UJ	27	1.0 U	0.65 J	25	0.49 J	4.1
10/06/08	⁽¹⁾ -100608-DR-194	1.0 UJ	34	--	0.33 J	13	1.0 U	4.5
*10/6/2008	⁽¹⁾ -100608-DR-195	1.0 UJ	36	--	0.34 J	13	0.21 J	4.8
04/07/09	⁽¹⁾ -040709-DR-243	1.7 U	43	--	1.7 U	15	1.7 U	2.3
10/08/09	⁽¹⁾ -100809-DR-309	1.0 UJ	35 J	--	0.29 J	14	0.24 J	4.7

-- = Not analyzed

DCE = Dichloroethene

⁽¹⁾ Full sample number includes GW-17360

*Duplicate

General Motors
Grand Rapids Metal Fabrication Plant
Monitoring Well Data Summary/Analytical Data

1 of 2

SITE: 87-13
REVISION: 1/5/2010
UNITS: ug/L

ELEVATION: top of casing - 664.24
DEPTH: screen - 40 to 43

Date	Sample	PCE	TCE	1,2-DCE	1,1-DCE	cis-1,2-DCE	trans-1,2-DCE	Vinyl Chloride
06/08/88	E91248	2 U	10	<2	<2	--	--	<10
12/21/88	E11601	--	7	<2	--	--	--	--
03/16/89	E15525	--	9	<1	--	--	--	--
06/16/89	E21125	--	7.6	<1	--	--	--	--
09/20/89	E25604	--	5	<1	--	--	--	--
12/21/89	E31002	--	3	<1	<1	--	--	<1
03/16/90	E35826	--	6	<1	--	--	--	--
06/19/90	E42020	--	7	<1	--	--	--	--
09/14/90	E48224	--	7	<1	--	--	--	--
12/17/90	E54827	--	6	<2	<2	--	--	<10
03/11/91	E59933	--	6	<1	--	--	--	--
06/13/91	E67564	--	5	<1	--	--	--	--
09/12/91	E72986	--	3	<1	--	--	--	--
12/13/91	E07656	--	3	<1	<1	--	--	<1
03/13/92	E15391	--	5	<1	--	--	--	--
06/12/92	E23265	--	4.4	<1	--	--	--	--
09/11/92	E31920	--	3.1	<1	--	--	--	--
12/10/92	E40335	--	3	<1	<1	--	--	<1
03/11/93	E47630	--	2.8	<1	--	--	--	--
06/15/93	E56581	--	3.3	<1	--	--	--	--
09/15/93	E66052	--	3.5	<1	--	--	--	--
12/17/93	E75756	--	3	<1	<1	--	--	<1
03/16/94	E81250	--	2.7	<1	--	--	--	--
06/14/94	E89398	--	2.7	<1	--	--	--	--
09/14/94	E97450	--	2.4	<1	--	--	--	--
12/16/94	E106410	--	2.6	<1	<1	--	--	<1
03/17/95	E112948	--	3.2	<2	--	--	--	--
06/20/95	E120806	--	3.8	<2	--	--	--	--
09/14/95	E127393	--	2.4	<2	--	--	--	--
12/18/95	E134980	--	2.2	<1	<1	--	--	<1
03/19/96	E139852	--	2	<1	--	--	--	--
06/13/96	E146848	--	2.7	<1	--	--	--	--
09/13/96	E154131	--	1.9	<1	--	--	--	--
12/12/96	E162064	--	1.7	<1	<1	--	--	<1
03/13/97	E166222	--	2.1	<1	--	--	--	--
06/19/97	E172387	--	1.6	<1	--	--	--	--
09/11/97	E177746	--	2.1	<1	--	--	--	--
12/16/97	E184909	--	1.8	<1	<1	--	--	<1
03/13/98	E190822	--	<1	<1	--	--	--	--
06/16/98	82953-3406	--	2	<2	--	--	--	--
09/17/98	84367-8373	--	<1	<1	--	--	--	--
12/16/98	85755-2528	--	2	<1	<1	--	--	<1
03/10/99	90995-6098	--	2	<1	--	--	--	--
06/15/99	3990294022	--	2	<2	--	--	--	--
09/20/99	3991971016	--	2.3	<1	--	--	--	--
12/16/99	3993622018	--	2.1	<1	<1	--	--	<1

-- = Not analyzed

DCE = Dichloroethene

General Motors
Grand Rapids Metal Fabrication Plant
Monitoring Well Data Summary/Analytical Data

2 of 2

SITE: 87-13
REVISION: 1/5/2010
UNITS: ug/L

ELEVATION: top of casing - 664.24
DEPTH: screen - 40 to 43

Date	Sample	PCE	TCE	1,2-DCE	1,1-DCE	cis-1,2-DCE	trans-1,2-DCE	Vinyl Chloride
03/16/00	3001152016	--	1.8	<1	--	--	--	--
06/13/00	3002633018	--	1.3	<1	--	--	--	--
09/22/00	E261238	--	1.9	<1	--	--	--	--
12/20/00	E268221	--	2.7	<1	<1	--	--	<1
03/21/01	E274385	--	1.8	<1	--	--	--	--
06/14/01	E281028	--	1.7	<1	--	--	--	--
09/13/01	E287749	--	1.8	<1	--	--	--	--
12/19/01	E295721	--	1.5	<1	<1	--	--	<1
03/28/02	⁽¹⁾ -032802-TJ-018	--	1.6	<1	--	--	--	--
*3/28/2002	⁽¹⁾ -032802-TJ-019	--	1.6	<1	--	--	--	--
06/26/02	⁽¹⁾ -062602-JB-028	--	1.0	<1	--	--	--	--
09/27/02	⁽¹⁾ -092702-JB-065	--	1.6	<1	--	--	--	--
12/09/02	⁽¹⁾ -120902-JB-082	--	1.7	<1	<1	--	--	<1
03/21/03	⁽¹⁾ -032103-JB-100	--	1.7	--	--	<1	<1	--
07/14/03	⁽¹⁾ -071403-SP-049	1.0 U	1.6	--	<1	<1	<1	<1
10/01/03	⁽¹⁾ -100103-JB-077	1.0 U	2.0	--	<1	<1	<1	<1
*10/1/2003	⁽¹⁾ -100103-JB-078	1.0 U	1.8	--	<1	<1	<1	<1
12/18/03	⁽¹⁾ -121803-JB-112	1.0 U	1.5	--	<1	<1	<1	<1
03/15/04	⁽¹⁾ -031504-BW-122	1.0 U	1.7	--	<1	<1	<1	<1
10/04/04	⁽¹⁾ -100404-DCR-241	1.0 U	1.9	--	<1	<1	<1	<1
*10/04/04	⁽¹⁾ -100404-DCR-242	1.0 U	1.8	--	<1	<1	<1	<1
11/30/04	⁽¹⁾ -113004-DCR-284	1.0 U	2.0	--	<1	<1	<1	<1
04/04/05	⁽¹⁾ -040405-DCR-333	1.0 U	2.1	--	<1	<1	<1	<1
06/27/05	⁽¹⁾ -062705-DCR-371	1.0 U	1.5	--	1.0 U	1.0 U	1.0 U	1.0 U
12/02/05	⁽¹⁾ -120205-DCR-506	1.0 UJ	1.4	--	1.0 U	0.28 J	1.0 U	1.0 U
12/02/05	⁽¹⁾ -120205-DCR-507	1.0 UJ	1.3	--	1.0 U	0.41 J	1.0 U	1.0 U
09/11/06	⁽¹⁾ -091106-DR-014	1.0 UJ	0.94 J	--	1.0 U	1.0 U	1.0 U	1.0 U
05/08/07	⁽¹⁾ -050807-JY-060	1.0 U	0.76 J	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
10/15/07	⁽¹⁾ -101507-DR-103	1.0 U	1.2	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
04/21/08	⁽¹⁾ -042108-DR-144	1.0 UJ	0.29 J	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
10/06/08	⁽¹⁾ -100608-DR-188	1.0 UJ	0.91	--	1.0 U	1.0 U	1.0 U	1.0 U
04/07/09	⁽¹⁾ -040709-DR-241	1.0 UJ	0.94	--	1.0 U	1.0 U	1.0 U	1.0 U
10/08/09	⁽¹⁾ -100809-DR-310	1.0 U	1.1	--	1.0 U	1.0 U	1.0 U	1.0 U

-- = Not analyzed

DCE = Dichloroethene

⁽¹⁾ Full sample number includes GW-17360

* Duplicate

General Motors
Grand Rapids Metal Fabrication Plant
Monitoring Well Data Summary/Analytical Data

1 of 1

SITE: 93-1
REVISION: 1/5/2010
UNITS: ug/L

ELEVATION: top of casing - 657.21
DEPTH: screen - 8.2

Date	Sample	PCE	TCE	1,2-DCE	1,1-DCE	cis-1,2-DCE	trans-1,2-DCE	Vinyl Chloride
08/20/93	E63615	--	2.6	2.4	--	--	--	<1
12/17/93	E75757	--	2.7	3.1	--	--	--	<1
03/16/94	E81249	--	2.2	2.3	--	--	--	--
06/14/94	E89402	--	2.6	2.9	--	--	--	--
09/14/94	E97452	--	1.9	1.9	--	--	--	--
12/16/94	E106411	--	1.8	1.8	--	--	--	<1
03/17/95	E112949	--	2.8	2.3	--	--	--	--
06/20/95	E120807	--	3.3	3.3	--	--	--	--
09/14/95	E127392	--	1.2	1.6	--	--	--	--
12/18/95	E134983	--	1.1	1.4	--	--	--	<1
03/19/96	E139849	--	1.9	2.4	--	--	--	--
06/13/96	E146849	--	2.6	3.1	--	--	--	--
09/13/96	E154132	--	1.6	2.3	--	--	--	--
12/12/96	E161530	--	1.9	2.3	--	--	--	<1
03/13/97	E166226	--	2.3	1.8	--	--	--	--
06/19/97	E172388	--	2.4	3.1	--	--	--	--
09/11/97	E177747	--	2.1	2.6	--	--	--	--
12/16/97	E184913	--	1.7	3.1	--	--	--	1.3
03/13/98	E190826	--	<1	<1	--	--	--	--
06/16/98	82953-3410	--	1	J1	--	--	--	--
09/17/98	84367-8374	--	<1	<1	--	--	--	--
12/16/98	85755-2529	--	1	<1	--	--	--	<1
03/10/99	90995-6108	--	1	1	--	--	--	--
06/15/99	3990294024	--	2.3	2.3	--	--	--	--
09/20/99	3991971018	--	1.3	1.4	--	--	--	--
12/16/99	3993622019	--	<1	1.8	--	--	--	<1
03/16/00	3001152021	--	1	1.3	--	--	--	--
06/13/00	3002633022	--	<1	1.3	--	--	--	--
09/22/00	E261237	--	1	<1	--	--	--	--
12/20/00	E268225	--	2.2	5	--	--	--	<1
03/21/01	E274389	--	SI 2.2	SI 4	--	--	--	--
06/14/01	E281026	--	1.5	3.4	--	--	--	--
09/13/01	E287748	--	2.7	2.4	--	--	--	--
12/19/01	E295720	--	2.7	4.2	--	--	--	<1
03/28/02	⁽¹⁾ -032802-TJ-022	--	2.4	4.8	--	--	--	--
06/27/02	⁽¹⁾ -062702-JB-033	--	2.0	4.2	--	--	--	--
09/01/02	⁽¹⁾ -092702-JB-064	--	<1	<1	--	--	--	--
12/9/2002	⁽¹⁾ -120902-JB-080	--	2.0	~4.1	--	--	--	<1
3/21/2003	⁽¹⁾ -03/21/03-JB-101	--	1.8	--	--	3.2	<1	--
7/14/2003	⁽¹⁾ -07/14/03-SP-048	2.9	1.9	--	<1	4.2	<1	0.43
10/1/2003	⁽¹⁾ -100103-JB-079	1.9	1.4	--	<1	5.2	<1	0.60
12/18/2003	⁽¹⁾ -121803-JB-116	1.0 J	1.1	--	<1	3.1	<1	<1
3/15/2004	⁽¹⁾ -031504-BW-125	1.2	1.1	--	<1	1.5	<1	<1

-- = Not analyzed

J = Indicates an estimated value.

⁽¹⁾ Full sample number includes GW-17360

DCE = Dichloroethene

SI = Sample integrity suspect upon arrival, positive results should be considered estimated.

General Motors
Grand Rapids Metal Fabrication Plant
Monitoring Well Data Summary/Analytical Data

SITE: X-10
REVISION: 1/5/2010
UNITS: ug/L

ELEVATION: top of casing - 681.10
DEPTH: screen - 35 to 45

Date	Sample	Trichloroethene	1,2-Dichloroethene	1,1,1-Trichloroethane
08/22/89	E24442	1	--	--
09/20/89	E25605	<1	<1	40
10/13/89	E26924	<1	--	31
11/17/89	E29147	<1	--	33
12/21/89	E30988	<1	--	25
01/12/90	E31894	<1	--	--
02/16/90	E33917	<1	--	39
03/16/90	E35830	<1	--	22
04/12/90	E37257	<1	--	31
05/18/90	E39757	<1	--	31
06/18/90	E42006	<1	--	37
07/13/90	E44004	<1	--	41
08/20/90	E46573	<1	--	24
09/14/90	E48210	<1	--	30
10/12/90	E50163	<1	--	36
11/15/90	E52798	<1	--	17
12/17/90	E54830	<2	--	32
03/12/91	E59921	<1	<1	--
06/13/91	E67565	<1	--	<1
09/12/91	E72987	<1	--	<1
12/13/91	E07658	<1	--	<1
03/13/92	E15379	<1	--	5
06/12/92	E23269	<1	--	<1
09/11/92	E31907	<1	--	<1
12/10/92	E40330	<1	--	2
03/11/93	E47617	<1	--	<1
06/14/93	E57772	<1	--	<1
09/15/93	E66057	<1	--	3.6
12/17/93	E75748	<1	--	<1
03/16/94	E81251	<1	--	<1
06/14/94	E89405	<1	--	9
09/14/94	E97453	<1	--	<1
12/16/94	E106403	<1	--	<1
03/17/95	E112962	<1	--	<1
06/20/95	E120788	<1	--	3.8
09/14/95	E127395	<1	--	<1
12/19/95	E134984	<1	--	<1
03/19/96	E139854	<1	--	<1
06/13/96	E146834	<1	--	<1
09/13/96	E154136	1.2	--	<1
12/12/96	E161517	<1	--	<1
03/13/97	E166215	<1	--	<1
06/19/97	E172375	<1	--	3.7
09/11/97	E177741	1	--	<1
12/16/97	***	***	***	***
03/13/98	****	****	****	****

-- = Not analyzed

*** = Unable to sample due to construction interference.

**** = Well no longer exists.

General Motors
Grand Rapids Metal Fabrication Plant
Monitoring Well Data Summary/Analytical Data

1 of 5

SITE: REVISION: UNITS:		PW DISCH 1/5/2010 ug/L	ELEVATION: DEPTH:		top of casing - 678.47 screen - 45 to 55					Gallons Pumped #
Date	Sample	PCE	TCE	1,2-DCE	1,1-DCE	cis-1,2-DCE	trans-1,2-DCE	Vinyl Chloride		
09/20/89	E25566	--	110	4	<1	--	--	<1	--	--
09/22/89	E25679	--	140	--	--	--	--	--	--	--
10/13/89	E26925	--	150	5	--	--	--	--	--	--
11/17/89	E29148	--	85	6	--	--	--	--	--	--
12/21/89	E31003	--	100	5	<1	--	--	1	--	--
01/12/90	E31895	--	110	<5	--	--	--	--	--	--
02/16/90	E33918	--	110	3	--	--	--	--	--	--
03/16/90	E35831	--	120	4	--	--	--	--	--	--
04/12/90	E37258	--	130	<5	--	--	--	--	--	--
05/18/90	E39758	--	180	1	--	--	--	--	--	--
06/18/90	E42007	--	170	<10	--	--	--	--	--	--
07/13/90	E44005	--	130	3	--	--	--	--	--	1820000
08/20/90	E46574	--	23	<1	--	--	--	--	--	1825000
09/14/90	E48211	--	130	4	--	--	--	--	--	1823000
10/12/90	E50164	--	160	<2	--	--	--	--	--	1650000
11/15/90	E52799	--	93	<1	--	--	--	--	--	1797000
12/17/90	E54828	--	140	5	<2	--	--	<10	--	2570000
01/15/91	--	--	--	--	--	--	--	--	--	1819000
02/20/91	--	--	--	--	--	--	--	--	--	1693000
03/11/91	E59920	--	86	<2	--	--	--	--	--	1922000
04/30/91	--	--	--	--	--	--	--	--	--	1713000
05/30/91	--	--	--	--	--	--	--	--	--	2096000
06/13/91	E67569	--	100	<5	--	--	--	--	--	1437000
07/31/91	--	--	--	--	--	--	--	--	--	2032000
08/31/91	--	--	--	--	--	--	--	--	--	1729000
09/12/91	E72988	--	86	6	--	--	--	--	--	1656000
10/31/91	--	--	--	--	--	--	--	--	--	1857000
11/30/91	--	--	--	--	--	--	--	--	--	1857000
12/13/91	E07657	--	75	4	<2	--	--	<2	--	1874000
01/31/92	--	--	--	--	--	--	--	--	--	1934000
02/28/92	--	--	--	--	--	--	--	--	--	1795000
03/13/92	E15386	--	73	4	--	--	--	--	--	2008000
04/30/92	--	--	--	--	--	--	--	--	--	++
05/31/92	--	--	--	--	--	--	--	--	--	++
06/30/92	--	--	--	--	--	--	--	--	--	++
07/31/92	--	--	--	--	--	--	--	--	--	3679000
08/13/92	E29153	--	63	3.7	--	--	--	--	--	2004000
09/11/92	E31915	--	62	3.3	--	--	--	--	--	2212000
10/31/92	--	--	--	--	--	--	--	--	--	1996000
11/30/92	--	--	--	--	--	--	--	--	--	2041000
12/10/92	E40333	--	61	2	<1	--	--	<1	--	1952000
01/31/93	--	--	--	--	--	--	--	--	--	1952000
02/28/93	--	--	--	--	--	--	--	--	--	1866000

-- = Not analyzed/measured DCE = Dichloroethene
 ++ = Recorded total gallons for April 1992 through July 1992 (2 weeks).
 # = Date reflects sampling day or last day of month; whereas total gallonage covers entire month.

General Motors
Grand Rapids Metal Fabrication Plant
Monitoring Well Data Summary/Analytical Data

2 of 5

SITE: PW DISCH
REVISION: 1/5/2010
UNITS: ug/L

ELEVATION:
DEPTH:

top of casing - 678.47
screen - 45 to 55

Date	Sample	PCE	TCE	1,2-DCE	1,1-DCE	cis-1,2-DCE	trans-1,2-DCE	Vinyl Chloride	Gallons Pumped #
03/11/93	E47624	--	40	2.2	--	--	--	--	2208000
04/30/93	--	--	--	--	--	--	--	--	2050000
05/31/93	--	--	--	--	--	--	--	--	2125000
06/14/93	E56577	--	44	3.6	--	--	--	--	1997000
07/31/93	--	--	--	--	--	--	--	--	1847000
08/31/93	--	--	--	--	--	--	--	--	2307000
09/15/93	E66026	--	47	2.8	--	--	--	--	1853000
10/31/93	--	--	--	--	--	--	--	--	1851000
11/30/93	--	--	--	--	--	--	--	--	2423000
12/17/93	E75750	--	32	2.8	<2	--	--	<2	1856000
03/11/93	E47624	--	40	2.2	--	--	--	--	2208000
04/30/93	--	--	--	--	--	--	--	--	2050000
05/31/93	--	--	--	--	--	--	--	--	2125000
06/14/93	E56577	--	44	3.6	--	--	--	--	1997000
07/31/93	--	--	--	--	--	--	--	--	1847000
08/31/93	--	--	--	--	--	--	--	--	2307000
09/15/93	E66026	--	47	2.8	--	--	--	--	1853000
10/31/93	--	--	--	--	--	--	--	--	1851000
11/30/93	--	--	--	--	--	--	--	--	2423000
12/17/93	E75750	--	32	2.8	<2	--	--	<2	1856000
03/16/94	E81242	--	42	2	--	--	--	--	2168000
04/11/94	--	--	--	--	--	--	--	--	1987000
05/11/94	--	--	--	--	--	--	--	--	2324000
06/14/94	E89394	--	39	1.7	--	--	--	--	1391000
07/13/94	E91965	--	32	--	--	--	--	--	1863000
09/07/94	--	--	--	--	--	--	--	--	1810000
09/14/94	E97437	--	29	1.3	--	--	--	--	--
10/05/94	--	--	--	--	--	--	--	--	1657000
11/09/94	--	--	--	--	--	--	--	--	1759000
12/07/94	--	--	--	--	--	--	--	--	1630000
12/16/94	E106405	--	28	2	<1	--	--	<1	--
01/04/95	--	--	--	--	--	--	--	--	1673000
02/08/95	--	--	--	--	--	--	--	--	2154000
03/08/95	--	--	--	--	--	--	--	--	1809000
03/17/95	E112960	--	24	1.3	--	--	--	--	--
04/05/95	--	--	--	--	--	--	--	--	1773000
05/03/95	--	--	--	--	--	--	--	--	1760000
06/07/95	--	--	--	--	--	--	--	--	2152000
06/20/95	E120792	--	23	<2	--	--	--	--	--
07/05/95	--	--	--	--	--	--	--	--	1521000
08/03/95	--	--	--	--	--	--	--	--	1770000
09/07/95	--	--	--	--	--	--	--	--	2138000
09/14/95	E127384	--	16	<2	--	--	--	--	--
10/04/95	--	--	--	--	--	--	--	--	1609000

-- = Not analyzed/measured

DCE = Dichloroethene

= Date reflects sampling day or last day of month; whereas total gallonage covers entire month.

General Motors
Grand Rapids Metal Fabrication Plant
Monitoring Well Data Summary/Analytical Data

3 of 5

SITE: PW DISCH
 REVISION: 1/5/2010
 UNITS: ug/L

ELEVATION:
 DEPTH:

top of casing - 678.47
 screen - 45 to 55

Date	Sample	PCE	TCE	1,2-DCE	1,1-DCE	cis-1,2-DCE	trans-1,2-DCE	Vinyl Chloride	Gallons Pumped #
11/01/95	--	--	--	--	--	--	--	--	1658000
12/06/95	--	--	--	--	--	--	--	--	2703000
12/18/95	E134977	--	13	<1	<1	--	--	<1	--
01/03/96	--	--	--	--	--	--	--	--	1565000
02/07/96	--	--	--	--	--	--	--	--	2084000
03/06/96	--	--	--	--	--	--	--	--	1648000
03/19/96	E139843	--	12	<1	--	--	--	--	--
04/03/96	--	--	--	--	--	--	--	--	1596000
05/01/96	--	--	--	--	--	--	--	--	1656000
06/05/96	--	--	--	--	--	--	--	--	2131000
06/13/96	E146844	--	14	<1	--	--	--	--	--
06/26/96	--	--	--	--	--	--	--	--	1716000
07/31/96	--	--	--	--	--	--	--	--	2068000
09/04/96	--	--	--	--	--	--	--	--	2071000
09/13/96	E154125	--	15	<1	--	--	--	--	--
10/02/96	--	--	--	--	--	--	--	--	1665000
10/30/96	--	--	--	--	--	--	--	--	1614000
12/04/96	--	--	--	--	--	--	--	--	2027000
12/13/96	E161533	--	13	<1	<1	--	--	<1	--
12/31/96	--	--	--	--	--	--	--	--	1568000
01/29/97	--	--	--	--	--	--	--	--	1493000
02/26/97	--	--	--	--	--	--	--	--	1639000
03/13/97	E166210	--	9.3	<1	--	--	--	--	--
03/26/97	--	--	--	--	--	--	--	--	1636000
04/30/97	--	--	--	--	--	--	--	--	1704000
05/28/97	--	--	--	--	--	--	--	--	1596000
06/19/97	E172382	--	11	<1	--	--	--	--	--
07/02/97	--	--	--	--	--	--	--	--	2037000
08/06/97	--	--	--	--	--	--	--	--	1967000
09/04/97	--	--	--	--	--	--	--	--	1633000
09/11/97	E177753	--	9.4	<1	--	--	--	--	--
10/01/97	--	--	--	--	--	--	--	--	1541000
11/05/97	--	--	--	--	--	--	--	--	1690000
12/03/97	--	--	--	--	--	--	--	--	1458000
12/16/97	E184906	--	7.2	<1	<1	--	--	<1	--
12/31/97	--	--	--	--	--	--	--	--	1512000
01/28/98	--	--	--	--	--	--	--	--	1514000
02/25/98	--	--	--	--	--	--	--	--	1483000
03/12/98	E190818	--	5.9	<1	--	--	--	--	--
03/26/98	--	--	--	--	--	--	--	--	1544000
04/29/98	--	--	--	--	--	--	--	--	1744000
05/27/98	--	--	--	--	--	--	--	--	1497000
06/16/98	82953-3401	--	7	<2	--	--	--	--	--
07/01/98	--	--	--	--	--	--	--	--	1908000

-- = Not analyzed/measured DCE = Dichloroethene
 # = Date reflects sampling day or last day of month; whereas total gallonage covers entire month.

General Motors
Grand Rapids Metal Fabrication Plant
Monitoring Well Data Summary/Analytical Data

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SITE: PW DISCH **ELEVATION:** top of casing - 678.47
REVISION: 1/5/2010 **DEPTH:** screen - 45 to 55
UNITS: ug/L

Date	Sample	PCE	TCE	1,2-DCE	1,1-DCE	cis-1,2-DCE	trans-1,2-DCE	Vinyl Chloride	Gallons Pumped #
07/29/98	--	--	--	--	--	--	--	--	1512000
09/02/98	--	--	--	--	--	--	--	--	1896000
09/17/98	84367-8367	--	5	<1	--	--	--	--	--
09/30/98	--	--	--	--	--	--	--	--	1515000
10/28/98	--	--	--	--	--	--	--	--	1419000
12/02/98	--	--	--	--	--	--	--	--	1661000
12/16/98	85755-2522	--	4	<1	<1	--	--	<1	--
12/31/98	--	--	--	--	--	--	--	--	1235000
01/27/99	--	--	--	--	--	--	--	--	1416000
02/24/99	--	--	--	--	--	--	--	--	1379000
03/18/99	911113-5423	--	4	<1	--	--	--	--	--
03/24/99	--	--	--	--	--	--	--	--	1180000
04/29/99	--	--	--	--	--	--	--	--	1778000
06/01/99	--	--	--	--	--	--	--	--	1705000
06/15/99	3990294017	--	4.7	<2	--	--	--	--	--
06/30/99	--	--	--	--	--	--	--	--	1736000
07/28/99	--	--	--	--	--	--	--	--	1741000
09/01/99	--	--	--	--	--	--	--	--	2049000
09/20/99	3991971008	--	4.5	<1	--	--	--	--	--
09/29/99	--	--	--	--	--	--	--	--	1636000
11/03/99	--	--	--	--	--	--	--	--	2017000
12/01/99	--	--	--	--	--	--	--	--	1624000
12/16/99	3993622015	--	3.5	<1	<1	--	--	<1	--
12/29/99	--	--	--	--	--	--	--	--	1634000
02/02/00	--	--	--	--	--	--	--	--	1958000
03/01/00	--	--	--	--	--	--	--	--	1581000
03/16/00	3001152011	--	2.7	<1	--	--	--	--	--
03/29/00	--	--	--	--	--	--	--	--	1602000
04/25/00	--	--	--	--	--	--	--	--	1576000
05/31/00	--	--	--	--	--	--	--	--	2052000
06/13/00	3002633015	--	2.1	<1	--	--	--	--	--
06/28/00	--	--	--	--	--	--	--	--	1619000
07/26/00	--	--	--	--	--	--	--	--	1605000
08/30/00	--	--	--	--	--	--	--	--	1968000
09/22/00	E261227	--	3.1	<1	--	--	--	--	--
11/01/00	--	--	--	--	--	--	--	--	1819000
11/29/00	--	--	--	--	--	--	--	--	1475000
12/20/00	E268217	--	4.8	<1	<1	--	--	<1	--
01/03/01	--	--	--	--	--	--	--	--	2127000
02/26/01	--	--	--	--	--	--	--	--	1515000
03/21/01	E274382	--	3.2	<1	--	--	--	--	--
03/28/01	--	--	--	--	--	--	--	--	2063000
04/24/01	--	--	--	--	--	--	--	--	1637000
05/30/01	--	--	--	--	--	--	--	--	1987000

-- = Not analyzed/measured

DCE = Dichloroethene

= Date reflects sampling day or last day of month; whereas total gallonage covers entire month.

General Motors
Grand Rapids Metal Fabrication Plant
Monitoring Well Data Summary/Analytical Data

SITE:	PW DISCH	ELEVATION:				top of casing - 678.47			
REVISION:	1/5/2010	DEPTH:				screen - 45 to 55			
UNITS:	ug/L								
Date	Sample	PCE	TCE	1,2-DCE	1,1-DCE	cis-1,2-DCE	trans-1,2-DCE	Vinyl Chloride	Gallons Pumped #
06/13/01	E281018	--	4.3	<1	--	--	--	--	--
06/25/01	--	--	--	--	--	--	--	--	1475000
07/16/01	--	--	--	--	--	--	--	--	1359000
08/22/01	--	--	--	--	--	--	--	--	673000
09/13/01	E287742	--	4.5	<1	--	--	--	--	1605000
10/09/01	--	--	--	--	--	--	--	--	1379000
11/13/01	--	--	--	--	--	--	--	--	2219000
12/19/01	E295710	--	5.6	<1	<1	--	--	<1	1558000
03/28/02	⁽¹⁾ -032802-TJ-011	--	5.8	<1	--	--	--	--	--
06/27/02	--	--	--	--	--	--	--	--	--
09/26/02	⁽¹⁾ -092602-JB-055	--	6.1	<1	--	--	--	--	--
12/09/02	⁽¹⁾ -120902-JB-078	--	5.9	<1.1	<1	--	--	<1	--
03/21/03	⁽¹⁾ -032103-JB-098	--	3.7	--	--	<1	<1	--	--
07/15/03	⁽¹⁾ -071503-SP-058	1.0 U	3	--	<1	<1	<1	<1	--
09/30/03	⁽¹⁾ -093003-JB-072	1.0 U	2.1	--	<1	<1	<1	<1	--
12/18/03	⁽¹⁾ -121803-JB-110	0.14 J	1.7	--	<1	<1	<1	<1	--
03/15/04	⁽¹⁾ -031504-BW-131	1.0 U	1.6	--	<1	<1	<1	<1	--
10/06/04	⁽¹⁾ -100604-DCR-268	1.0 U	1.5	--	<1	<1	<1	<1	--
12/01/04	⁽¹⁾ -120104-DCR-297	1.0 U	1.6	--	<1	<1	<1	<1	--
04/04/05	--	--	--	--	--	--	--	--	--

-- = Not analyzed/measured

DCE = Dichloroethene

= Date reflects sampling day or last day of month; whereas total gallonage covers entire month.

⁽¹⁾ Full sample number includes GW-17360

**General Motors
Grand Rapids Metal Fabrication Plant
Monitoring Well Data Summary**

1 of 2

SITE: C-1
REVISION: 1/5/2010
UNITS: ug/L

ELEVATION:

top of culvert - 663.20

Date	Sample	PCE	TCE	1,2-DCE	cis-1,2-DCE	trans-1,2-DCE	Total Copper	Total Hardness
12/21/88	E11604	--	3	<2	--	--	--	--
03/17/89	E15514	--	2.4	<1	--	--	--	--
06/15/89	E21126	--	<1	<1	--	--	--	--
09/22/89	E25727	--	1	<1	--	--	--	--
12/21/89	E30994	--	<1	<1	--	--	--	--
03/16/90	E35827	--	2	<1	--	--	--	--
06/19/90	E42021	--	1	<1	--	--	--	--
09/14/90	E48225	--	<1	<1	--	--	--	--
12/17/90	E54819	--	4	<2	--	--	--	--
03/11/91	E59917	--	5	<1	--	--	--	--
06/13/91	E67566	--	4	<1	--	--	--	--
09/12/91	E72973	--	4	<1	--	--	--	--
12/13/91	E07648	--	5	<1	--	--	--	--
03/13/92	E15389	--	4	<1	--	--	--	--
06/12/92	E23263	--	2.6	<1	--	--	--	--
09/11/92	E31918	--	1.7	<1	--	--	--	--
12/10/92	E40327	--	2	<1	--	--	--	--
03/11/93	E47628	--	2.1	<1	--	--	--	--
06/15/93	E56590	--	2.1	<1	--	--	--	--
09/15/93	E66029	--	2	<1	--	--	--	--
12/17/93	E75746	--	1.7	<1	--	--	--	--
03/16/94	E81243	--	2.1	<1	--	--	--	--
06/14/94	E89395	--	1.1	<1	--	--	--	--
09/14/94	E97441	--	<1	<1	--	--	--	--
12/16/94	E106400	--	1.4	<1	--	--	--	--
03/17/95	E112944	--	1.8	<2	--	--	--	--
06/20/95	E120793	--	1.1	<2	--	--	--	--
09/14/95	E127385	--	<1	<2	--	--	--	--
12/18/95	E134967	--	<1	<1	--	--	--	--
03/19/96	E139844	--	<1	<1	--	--	--	--
06/13/96	E146846	--	1.3	<1	--	--	--	--
09/13/96	E154130	--	<1	<1	--	--	--	--
12/12/96	E161524	--	<1	<1	--	--	--	--
03/13/97	E166211	--	1.6	<1	--	--	--	--
06/19/97	E172383	--	<1	<1	--	--	--	--
09/11/97	E177743	--	<1	<1	--	--	--	--
12/16/97	E184902	--	<1	<1	--	--	--	--
03/12/98	E190821	--	<1	<1	--	--	--	--
06/16/98	82953-3398	--	<1	<2	--	--	--	--
09/17/98	84367-8365	--	<1	<1	--	--	--	--
12/16/98	85755-2521	--	<1	<1	--	--	--	--
03/10/99	90995-6092	--	<1	<1	--	--	--	--
06/15/99	3990294013	--	<1	<2	--	--	--	--
09/20/99	3991971007	--	<1	<1	--	--	--	--
12/16/99	3993622013	--	<1	<1	--	--	--	--

-- Not analyzed

DCE = Dichloroethene

**General Motors
Grand Rapids Metal Fabrication Plant
Monitoring Well Data Summary**

2 of 2

SITE: C-1
REVISION: 1/5/2010
UNITS: ug/L

ELEVATION:

top of culvert - 663.20

Date	Sample	PCE	TCE	1,2-DCE	cis-1,2-DCE	trans-1,2-DCE	Total Copper	Total Hardness
03/16/00	3001152010	--	<1	<1	--	--	--	--
06/13/00	3002633012	--	<1	1.2	--	--	--	--
09/22/00	E261226	--	<1	<1	--	--	--	--
12/20/00	E268216	--	<1	<1	--	--	--	--
03/21/01	E274381	--	1.4	<1	--	--	--	--
06/13/01	E281017	--	2.3	2.5	--	--	--	--
09/13/01	E287741	--	1.3	<1	--	--	<20	292000
12/19/01	E295709	--	<1	<1	--	--	<20	DL 104000
03/28/02	⁽¹⁾ -032802-TJ-015	--	1.9	1.8	--	--	--	--
06/27/02	⁽¹⁾ -062702-JB-034	--	1.1	<1	--	--	--	--
09/26/02	⁽¹⁾ -092602-JB-056	--	<1	<1	--	--	--	--
12/09/02	⁽¹⁾ -120902-JB-086	--	<1	<1	--	--	--	--
*12/9/2002	⁽¹⁾ -120902-JB-087	--	<1	<1	--	--	<1	<1
03/21/03	⁽¹⁾ -032103-JB-106	--	<1	--	<1	<1	--	--
07/14/03	⁽¹⁾ -071403-SP-050	1.0 U	<1	--	<1	<1	--	--
10/01/03	⁽¹⁾ -100103-JB-080	2.0	1.4	--	5.2	<1	--	--
12/18/03	⁽¹⁾ -121803-JB-108	0.63 J	<1	--	<1	<1	--	--
03/15/04	⁽¹⁾ -031504-BW-134	2.8	<1	--	<1	<1	--	--
10/06/04	⁽¹⁾ -100604-DCR-278	0.59 J	<1	--	<1	<1	--	--
12/02/04	⁽¹⁾ -120204-DCR-318	0.66 J	<2	--	<1	<1	--	--
04/05/05	⁽¹⁾ -040505-DCR-342	9.8 J	1.4	--	1.4	<1	<1	<1
06/28/05	⁽¹⁾ -062805-DCR-388	2.8	0.61 J	--	1.0 U	0.58 J	1.0 U	1.0 U
12/06/05	⁽¹⁾ -120605-DCR-388	0.99 J	1.9	--	3.1 J	1.0 U	--	--
09/12/06	⁽¹⁾ -091206-DR-038	1.0 J	0.5 J	--	0.33 J	1.0 U	--	--
05/08/07	⁽¹⁾ -050807-JY-052	1.5	2.7	1.0 U	4.5	1.0 U	--	--
10/15/07	⁽¹⁾ -101507-DR-095	1.4	0.47 J	1.0 U	0.43 J	1.0 U	--	--
04/21/08	⁽¹⁾ -042108-DR-150	9.1 J	1.5	1.0 U	1.0 U	1.0 U	--	--
10/06/08	⁽¹⁾ -100608-DR-198	7.6 J	1.5	--	2.2	1.0 U	--	--
10/06/08	⁽¹⁾ -100608-DR-199	7.7 J	1.5	--	2.1	1.0 U	--	--
04/06/09	⁽¹⁾ -040609-DR-235	8.2	1.3	--	1.9	1.0 U	--	--
10/06/09	⁽¹⁾ -100609-DR-276	4.1	0.9 J	--	1.1	1.0 U	--	--
*10/6/2009	⁽¹⁾ -100609-DR-277	4.3	1	1.0 U	1.1	1.0 U	--	--

DL = The detection limit for this sample and corresponding analysis were elevated due to insufficient sample volume received.

-- Not analyzed

DCE = Dichloroethene

⁽¹⁾ Full sample number includes GW-17360

* Duplicate

General Motors
Grand Rapids Metal Fabrication Plant
Monitoring Well Data Summary/Analytical Data

ELEVATION: top of culvert - 657.02

SITE: C-2
REVISION: 1/5/2010
UNITS: ug/L

Date	Sample	PCE	TCE	1,2-DCE	1,1-DCE	cis-1,2-DCE	trans-1,2-DCE	Vinyl Chloride
12/21/88	E11602	--	4	4	--	--	--	--
03/17/89	E15515	--	3.9	3.8	--	--	--	--
06/15/89	E21127	--	3	3.7	--	--	--	--
09/22/89	E25728	--	3	4	--	--	--	--
12/21/89	E30995	--	2	4	--	--	--	--
03/16/90	E35828	--	3	5	--	--	--	--
06/19/90	E42022	--	3	4	--	--	--	--
09/14/90	E48226	--	3	5	--	--	--	--
12/17/90	E54820	--	4	5	--	--	--	--
03/11/91	E59918	--	4	<1	--	--	--	--
06/13/91	E67567	--	4	6	--	--	--	--
09/12/91	E72974	--	3	4	--	--	--	--
12/13/91	E07649	--	3	4	--	--	--	--
03/13/92	E15390	--	4	5	--	--	--	--
06/12/92	E23268	--	3.9	8.6	--	--	--	--
09/11/92	E31923	--	3.3	6.8	--	--	--	--
12/10/92	E40328	--	3	3	--	--	--	--
03/11/93	E47629	--	1.8	1.1	--	--	--	--
06/15/93	E56582	--	3.2	4.5	--	--	--	--
09/15/93	E66051	--	4.6	9.8	--	--	--	--
12/17/93	E75749	--	2.8	4.4	--	--	--	--
03/16/94	E81248	--	4.1	7.7	--	--	--	--
06/14/94	E89401	--	1.9	1.9	--	--	--	--
09/14/94	E97449	--	2.3	3.8	--	--	--	--
12/16/94	E106402	--	2.4	3.4	--	--	--	--
03/17/95	E112945	--	3	4.4	--	--	--	--
06/20/95	E120797	--	2.3	3.6	--	--	--	--
09/14/95	E127387	--	1.5	2.7	--	--	--	--
12/18/95	E134968	--	1.9	3.6	--	--	--	--
03/19/96	E139848	--	<1	<1	--	--	--	--
06/13/96	E146847	--	2.8	4.7	--	--	--	--
09/13/96	E154129	--	2.5	4.8	--	--	--	--
12/12/96	E161525	--	2.5	4.2	--	--	--	--
03/13/97	E166221	--	3.1	4.5	--	--	--	--
06/19/97	E172384	--	1.6	4.1	--	--	--	--
09/11/97	E177744	--	2.3	4.2	--	--	--	--
12/16/97	E184908	--	2.1	4.4	--	--	--	--
03/12/98	E190820	--	<1	2.7	--	--	--	--
06/16/98	82953-3405	--	1	2	--	--	--	--

DCE = Dichloroethene

-- = Not analyzed

General Motors
Grand Rapids Metal Fabrication Plant
Monitoring Well Data Summary/Analytical Data

ELEVATION: top of culvert - 657.02

SITE: C-2
REVISION: 1/5/2010
UNITS: ug/L

Date	Sample	PCE	TCE	1,2-DCE	1,1-DCE	cis-1,2-DCE	trans-1,2-DCE	Vinyl Chloride
09/17/98	84367-8371	--	<1	1	--	--	--	--
12/16/98	85755-2558	--	2	2	--	--	--	--
03/10/99	90995-6097	--	1	2	--	--	--	--
06/15/99	3990294019	--	1.9	2.4	--	--	--	--
09/20/99	3991971013	--	2	2.3	--	--	--	--
12/16/99	3993622016	--	1.8	2.4	--	--	--	--
03/16/00	3001152015	--	1.7	2.4	--	--	--	--
06/13/00	3002633016	--	2	4.2	--	--	--	--
09/22/00	E261228	--	2.5	8.9	--	--	--	--
12/20/00	E268219	--	3.2	7.3	--	--	--	--
03/21/01	E274383	--	2	4.8	--	--	--	--
06/14/01	E281023	--	2.5	5.2	--	--	--	--
09/13/01	E287744	--	2.8	2.8	--	--	--	--
12/19/01	E295716	--	<1	<1	--	--	--	--
03/28/02	(1)-032802-TJ-017	--	2.4	5.2	--	--	--	--
06/27/02	(1)-062702-JB-030	--	1.9	3.9	--	--	--	--
09/26/02	(1)-092602-JB-057	--	2.2	3.8	--	--	--	--
12/09/02	(1)-120902-JB-081	--	2.0	4.0	--	--	--	--
03/21/03	(1)-032103-JB-102	--	2.1	--	--	--	--	--
07/14/03	(1)-071403-SP-051	0.89 J	1.6	--	<1	4.5	<1	<1
10/01/03	(1)-100103-JB-081	1.9	1.4	--	<1	3.5	<1	<1
12/18/03	(1)-121803-JB-109	0.61 J	<1	--	<1	5.2	<1	0.70
03/15/04	(1)-031504-BW-130	1.6	1.5	--	<1	4	<1	<1
10/06/04	(1)-100604-DCR-279	1.2	1.6	--	<1	3	<1	0.42
12/02/04	(1)-120104-DCR-319	1.7	1.9	--	<1	4.7	<1	0.35
04/05/05	(1)-040505-DCR-343	4.4 J	2.5	--	<1	6.8	0.18 J	0.61 J
06/28/05	(1)-062805-DCR-389	1.3	1.5	--	1.0 U	3.4	1.0 U	0.29 J
12/06/05	(1)-120605-DCR-583	0.26 J	0.30 J	--	1.0 U	1.0 UJ	1.0 U	1.0 U
09/12/06	(1)-091206-DR-039	1.1 J	1.3	--	1.0 U	2.8 J	1.0 U	0.44 J
05/08/07	(1)-050807-JY-053	3.9	1.7	1.0 U	1.0 U	4	1.0 U	0.37 J
10/15/07	(1)-101507-DR-096	1.4	1.4	1.0 U	1.0 U	2.2	1.0 U	0.27 J
04/21/08	(1)-042108-DR-145	1.0 UJ	0.92 J	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
10/06/08	(1)-100608-DR-187	3.5 J	1.2	--	1.0 U	2.3	1.0 U	0.22 J
04/06/09	(1)-040609-DR-236	2.7	0.96 J	--	1.0 U	2	1.0 U	0.29 J
10/06/09	(1)-100609-DR-278	1.7	1.1	--	1.0 U	1.6	1.0 U	0.24 J

DCE = Dichloroethene

-- = Not analyzed

(1) Full sample number includes GW-17360

General Motors
Grand Rapids Metal Fabrication Plant
Monitoring Well Data Summary/Analytical Data

1 of 2

SITE: C-3
REVISION: 1/5/2010
UNITS: ug/L

Date	Sample	PCE	TCE	1,2-DCE	1,1-DCE	cis-1,2-DCE	trans-1,2-DCE	Vinyl Chloride
12/21/88	E11603	--	5	11	--	--	--	--
03/16/89	E15516	--	9.1	16	--	--	--	--
06/15/89	E21128	--	2.6	3.7	--	--	--	--
09/22/89	E25729	--	3	4	--	--	--	--
12/21/89	E30996	--	3	4	--	--	--	--
03/16/90	E35829	--	2	8	--	--	--	--
06/19/90	E42023	--	2	6	--	--	--	--
09/14/90	E48227	--	2	4	--	--	--	--
12/17/90	E54821	--	5	9	--	--	--	--
03/11/91	E59919	--	5	<1	--	--	--	--
06/13/91	E67568	--	4	4	--	--	--	--
09/12/91	E72975	--	4	6	--	--	--	--
12/13/91	E07650	--	3	11	--	--	--	--
03/13/92	E15392	--	3	6	--	--	--	--
06/12/92	E23264	--	3.2	4.6	--	--	--	--
09/11/92	E31919	--	3	3.3	--	--	--	--
12/11/92	E40329	--	3	4	--	--	--	--
03/11/93	E47633	--	1.8	1.3	--	--	--	--
06/15/93	E56580	--	2.9	12	--	--	--	--
09/15/93	E66048	--	3.7	4.1	--	--	--	--
12/17/93	E75747	--	3	5.2	--	--	--	--
03/16/94	E81245	--	3.3	4.4	--	--	--	--
06/14/94	E89397	--	1.7	2.3	--	--	--	--
09/14/94	E97447	--	1.5	2.8	--	--	--	--
12/16/94	E106401	--	2	2.1	--	--	--	--
03/17/95	E112946	--	3.3	6.3	--	--	--	--
06/20/95	E120799	--	2.9	4.4	--	--	--	--
09/14/95	E127386	--	1.8	2.4	--	--	--	--
12/18/95	E134969	--	2.8	4.2	--	--	--	--
03/19/96	E139850	--	2.8	4.8	--	--	--	--
06/13/96	E146852	--	3.9	8.3	--	--	--	--
09/13/96	E154133	--	3.5	5.5	--	--	--	--
12/12/96	E161529	--	4.2	4.3	--	--	--	--
03/13/97	E166223	--	4.1	7.5	--	--	--	--
06/19/97	E172389	--	2.1	5.7	--	--	--	--
09/11/97	E177750	--	3	4.9	--	--	--	--
12/16/97	E184912	--	2.8	4.3	--	--	--	--
03/13/98	E190825	--	2.4	6	--	--	--	--
06/16/98	82953-3409	--	1	2	--	--	--	--
09/17/98	84367-8375	--	1	2	--	--	--	--
12/16/98	85755-2530	--	2	2	--	--	--	--
03/10/99	90995-6107	--	3	3	--	--	--	--
06/15/99	3990294023	--	2.1	3.3	--	--	--	--
09/20/99	3991971019	--	1.8	2.6	--	--	--	--
12/16/99	3993622021	--	1.1	1.6	--	--	--	--

-- = Not analyzed

DCE = Dichloroethene

General Motors
Grand Rapids Metal Fabrication Plant
Monitoring Well Data Summary/Analytical Data

2 of 2

SITE: C-3
REVISION: 1/5/2010
UNITS: ug/L

Date	Sample	PCE	TCE	1,2-DCE	1,1-DCE	cis-1,2-DCE	trans-1,2-DCE	Vinyl Chloride
03/16/00	3001152018	--	1.2	1.8	--	--	--	--
06/13/00	3002633019	--	2.4	5	--	--	--	--
09/22/00	E261229	--	2.6	7.8	--	--	--	--
12/20/00	E268223	--	4	11	--	--	--	--
03/21/01	E274388	--	2.9	9.7	--	--	--	--
06/14/01	E281025	--	3.9	9.5	--	--	--	--
09/13/01	E287747	--	4.2	5.2	--	--	--	--
12/19/01	E295719	--	<1	<1	--	--	--	--
03/28/02	⁽¹⁾ -032802-TJ-016	--	3.8	9.8	--	--	--	--
06/27/02	⁽¹⁾ -062702-JB-029	--	2.3	6.2	--	--	--	--
09/26/02	⁽¹⁾ -092602-JB-058	--	2.8	-6.5	--	--	--	--
12/9/2002	⁽¹⁾ -120902-JB-085	--	2.4	-6.6	--	--	--	--
3/21/2003	⁽¹⁾ -032103-JB-105	--	2.5	--	--	7.9	<1	--
7/14/2003	⁽¹⁾ -071403-SP-052	2.3	1.6	--	<1	7.4	<1	1.1
10/1/2003	⁽¹⁾ -100103-JB-082	1.9	1.5	--	<1	5.3	<1	0.79
12/18/2003	⁽¹⁾ -121803-JB-107	0.60 J	<1	--	<1	<1	<1	<1
3/15/2004	⁽¹⁾ -031504-BW-128	1.0 U	<1	--	<1	<1	<1	<1
10/6/2004	⁽¹⁾ -100604-DCR-280	2.3	1.3	--	<1	4.2	<1	1.0
12/2/2004	⁽¹⁾ -120204-DCR-320	3.0	1.8	--	<1	6.3	<1	0.58
04/05/05	⁽¹⁾ -040505-DCR-344	7.2 J	2.4	--	<1	9.4	0.23 J	0.99 J
06/29/05	⁽¹⁾ -062905-DCR-391	3.4	2	--	1.0 U	7.4	0.17 J	0.94 J
12/06/05	⁽¹⁾ -120605-DCR-578	2.7	1.8	--	1.0 U	4.4 J	1.0 U	0.55 J
09/12/06	⁽¹⁾ -091206-DR-040	2.6 J	1.6	--	1.0 U	4.6 J	1.0 U	1
5/8/2007	⁽¹⁾ -050807-JY-054	8.6	2.5	1.0 U	1.0 U	7	1.0 U	0.92 J
10/15/2007	⁽¹⁾ -101507-DR-097	3.7	1.6	1.0 U	1.0 U	3.5	1.0 U	0.57 J
4/21/2008	⁽¹⁾ -042108-DR-140	4.5 J	1.1	1.0 U	1.0 U	3	1.0 U	0.46 J
10/6/2008	⁽¹⁾ -100608-DR-192	7.2 J	2	--	1.0 U	4.3	1.0 U	0.53 J
4/6/2009	⁽¹⁾ -040609-DR-237	6.1	1.3	--	1.0 U	3.4	1.0 U	0.57 J
10/6/2009	⁽¹⁾ -100609-DR-2279	4.6	1.3	--	1.0 U	2.6	1.0 U	0.62 J

-- = Not analyzed

DCE = Dichloroethene

⁽¹⁾ Full sample number includes GW-17360

General Motors
Grand Rapids Metal Fabrication Plant
Monitoring Well Data Summary/Analytical Data

1 of 1

SITE: MW1-03
REVISION: 1/5/2010
UNITS: ug/L

ELEVATION: top of casing -
DEPTH: screen - 30 to 35

Date	Sample	PCE	TCE	1,2-DCE	1,1-DCE	cis-1,2-DCE	trans-1,2-DCE	Vinyl Chloride
07/14/03	⁽¹⁾ -071403-SP-045	72	1.6	--	<2	2.7	<2	<2
10/03/03	⁽¹⁾ -100303-JB-091	83	1.7	--	<3.3	2.6	<3.3	<3.3
12/18/03	⁽¹⁾ -121803-JB-118	86	1.4	--	<3.3	0.91	<3.3	<3.3
03/16/04	⁽¹⁾ -031604-BW-145	110	1.1	--	<4	<4	<4	<4
10/05/04	⁽¹⁾ -100504-DCR-260	190	<8.3	--	<8.3	<8.3	<8.3	<8.3
12/03/04	⁽¹⁾ -120304-DCR-324	110	1.9	--	<5.0	3.0	<5.0	<5.0
04/06/05	⁽¹⁾ -040605-DCR-364	140	3.5 J	--	<5.0	<5.0	<5.0	<5.0
06/28/05	⁽¹⁾ -062805-DCR-383	68	1.2 J	--	3.3 U	3.3 U	3.3 U	3.3 U
12/04/05	⁽¹⁾ -120405-DCR-560	180	2.7 J	--	6.7 U	5.8 J	6.7 U	6.7 U
09/12/06	⁽¹⁾ -091206-DR-034	62 J	3.3	--	2.0 U	3.9 J	2.0 U	2.0 U
05/09/07	⁽¹⁾ -050907-JY-082	280	5.8 J	8.7 U	8.7 U	13	8.7 U	8.7 U
10/16/07	⁽¹⁾ -101607-DR-123	320	7.1 J	10 U	10 U	15	10 U	10 U
04/22/08	⁽¹⁾ -042208-DR-172	310 J	7.6 J	10 U	10 U	3.7 J	10 U	10 U
10/08/08	⁽¹⁾ -100808-DR-228	340	7.0 J	--	10 U	7.1 J	10 U	10 U
04/07/09	⁽¹⁾ -040709-DR-259	380 J	7.3 J	--	11 U	3 J	11 U	11 U
10/06/09	⁽¹⁾ -100609-DR-289	480	7 J	--	17 U	17 U	17 U	17 U

-- = Not analyzed

DCE = Dichloroethene

⁽¹⁾ Full sample number includes GW-17360

General Motors
Grand Rapids Metal Fabrication Plant
Monitoring Well Data Summary/Analytical Data

1 of 1

SITE: MW2-03
REVISION: 1/5/2010
UNITS: ug/L

ELEVATION: top of casing -
DEPTH: screen - 22 to 27

Date	Sample	PCE	TCE	1,2-DCE	1,1-DCE	cis-1,2-DCE	trans-1,2-DCE	Vinyl Chloride
07/14/03	⁽¹⁾ -071403-SP-044	14	<1	--	<1	<1	<1	<1
10/03/03	⁽¹⁾ -100303-JB-092	13	<1	--	<1	<1	<1	<1
12/18/03	⁽¹⁾ -121803-JB-117	7.2	<1	--	<1	<1	<1	<1
03/16/04	⁽¹⁾ -031604-BW-146	8.8	<2	--	<1	<1	<1	<1
10/05/04	⁽¹⁾ -100504-DCR-261	11	0.65	--	<1	1.2	<1	<1
12/03/04	⁽¹⁾ -120304-DCR-323	13	1.2	--	<1	0.74	<1	<1
04/07/05	⁽¹⁾ -040705-DCR-368	12	<1	--	<1	<1	<1	<1
06/29/05	⁽¹⁾ -062905-DCR-399	16	0.46 J	--	1.0 U	0.21 J	1.0 U	1.0 UJ
12/06/05	⁽¹⁾ -120605-DCR-573	15	1.4 J	--	1.0 U	0.85 J	1.0 U	1.0 UJ
09/12/06	⁽¹⁾ -091206-JY-033	10 J	0.49 J	--	1.0 U	1.0 U	1.0 U	1.0 U
05/09/07	⁽¹⁾ -050907-JY-080	10	0.34 J	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
10/16/07	⁽¹⁾ -101607-DR-124	8.2	0.28 J	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
04/22/08	⁽¹⁾ -042208-DR-171	7.3	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
10/08/08	⁽¹⁾ -100808-DR-226	8.6	0.44 J	--	1.0 U	1.0 U	1.0 U	1.0 U
*10/8/2008	⁽¹⁾ -100808-DR-227	8	0.42 J	--	1.0 U	1.0 U	1.0 U	1.0 U
04/08/09	⁽¹⁾⁻⁰⁴ 0809-DR-274	9.1	0.29 J	--	1.0 U	1.0 U	1.0 U	1.0 U
10/06/09	⁽¹⁾⁻¹⁰⁰⁶ 09-DR-288	9.3	1.0 U	--	1.0 U	1.0 U	1.0 U	1.0 U

-- = Not analyzed

DCE = Dichloroethene

⁽¹⁾ Full sample number includes GW-17360

*Duplicate

General Motors
Grand Rapids Metal Fabrication Plant
Monitoring Well Data Summary/Analytical Data

1 of 1

SITE: MW3-03
REVISION: 1/5/2010
UNITS: ug/L

ELEVATION: top of casing -
DEPTH: screen - 25 to 30

Date	Sample	PCE	TCE	1,2-DCE	1,1-DCE	cis-1,2-DCE	trans-1,2-DCE	Vinyl Chloride
07/15/03	⁽¹⁾ -071503-SP-065	0.85 J	<1	--	<1	<1	<1	<1
10/03/03	⁽¹⁾ -100303-JB-093	0.90 J	<1	--	<1	<1	<1	<1
12/18/03	⁽¹⁾ -121803-JB-119	0.78 J	<1	--	<1	<1	<1	<1
03/16/04	⁽¹⁾ -031604-BW-144	0.87 J	<2	--	<1	<1	<1	<1
10/05/04	⁽¹⁾ -100504-DCR-262	1.0	<1	--	<1	<1	<1	<1
12/03/04	⁽¹⁾ -120304-DCR-325	1.2	<1	--	<1	<1	<1	<1
04/07/05	⁽¹⁾ -040705-DCR-369	1.1	<1	--	<1	<1	<1	<1
06/29/05	⁽¹⁾ -062905-DCR-397	1.0	1.0 U	--	1.0 U	1.0 U	1.0 U	1.0 UJ
06/29/05	⁽¹⁾ -062905-DCR-398	0.96 J	1.0 U	--	1.0 U	1.0 U	1.0 U	1.0 UJ
12/06/05	⁽¹⁾ -120605-DCR-579	0.84J	1.0 U	--	1.0 U	1.0 UJ	1.0 U	1.0 U
09/12/06	⁽¹⁾ -091206-JY-035	0.75 J	1.0 U	--	1.0 U	1.0 U	1.0 U	1.0 U
05/09/07	⁽¹⁾ -050907-JY-083	0.73 J	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
10/16/07	⁽¹⁾ -101607-DR-119	0.73 J	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
04/22/08	⁽¹⁾ -042208-DR-162	0.76 J	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
10/07/08	⁽¹⁾ -100708-DR-212	0.74 J	1.0 U	--	1.0 U	1.0 U	1.0 U	1.0 U
04/07/09	⁽¹⁾ -040709-DR-258	1	1.0 U	--	1.0 U	1.0 U	1.0 U	1.0 U
10/07/09	⁽¹⁾ -100709-DR-302	1.2	1.0 U	--	1.0 U	1.0 U	1.0 U	1.0 U

-- = Not analyzed

DCE = Dichloroethene

⁽¹⁾ Full sample number includes GW-17360

General Motors
Grand Rapids Metal Fabrication Plant
Monitoring Well Data Summary/Analytical Data

1 of 1

SITE: MW4-03
REVISION: 1/5/2010
UNITS: ug/L

ELEVATION: top of casing -
DEPTH: screen - 52 to 57

Date	Sample	PCE	TCE	1,2-DCE	1,1-DCE	cis-1,2-DCE	trans-1,2-DCE	Vinyl Chloride
07/14/03	⁽¹⁾ -071403-SP-043	0.58 J	2	--	<1	<1	<1	<1
10/09/03	⁽¹⁾ -100903-JB-089	1.0 U	0.28	--	<1	<1	<1	<1
12/18/03	⁽¹⁾ -121803-JB-106	0.78 J	1.2	--	<1	<1	<1	<1
03/15/04	⁽¹⁾ -031504-BW-127	0.84 J	1.1	--	<1	<1	<1	<1
10/05/04	⁽¹⁾ -100504-DCR-251	0.89 J	2.4	--	0.48	1.1	0.42	<1
12/01/04	⁽¹⁾ -120104-DCR-287	1.1	5.7	--	0.81	2.6	0.42	<2
04/05/05	⁽¹⁾ -040505-DCR-337	1.2 J	3.9	--	0.50 J	1.3	0.55 J	0.27 J
06/27/05	⁽¹⁾ -062705-DCR-375	0.99 J	4.9	--	0.55 J	1.4	0.58 J	1.0 U
12/03/05	⁽¹⁾ -120305-DCR-552	0.89 J	14	--	0.84 J	2.0 J	1.0	0.26 J
09/12/06	⁽¹⁾ -091206-JY-025	0.95 J	13	--	0.4 J	0.56 J	0.35 J	1.0 UJ
05/09/07	⁽¹⁾ -050907-JY-071	0.91 J	14	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
10/16/07	⁽¹⁾ -101607-DR-110	0.78 J	6.9	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
04/22/08	⁽¹⁾ -042208-DR-153	0.83 J	7.2	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
10/07/08	⁽¹⁾ -100708-DR-200	0.61 J	2.5	--	1.0 U	1.0 U	1.0 U	1.0 U
04/07/09	⁽¹⁾ -040709-DR-249	0.62 J	0.96 J	--	1.0 U	1.0 U	1.0 U	1.0 U
10/08/09	⁽¹⁾ -100809-DR-315	0.62 J	0.56 J	--	1.0 U	1.0 U	1.0 U	1.0 U

-- = Not analyzed

DCE = Dichloroethene

⁽¹⁾ Full sample number includes GW-17360

General Motors
Grand Rapids Metal Fabrication Plant
Monitoring Well Data Summary/Analytical Data

1 of 1

SITE: MW5-03
REVISION: 1/5/2010
UNITS: ug/L

ELEVATION: top of casing -
DEPTH: screen - 30 to 35

Date	Sample	PCE	TCE	1,2-DCE	1,1-DCE	cis-1,2-DCE	trans-1,2-DCE	Vinyl Chloride
07/14/03	(1)-071403-SP-042	0.55 J	7.4	--	<1	<1	<1	<1
10/09/03	(1)-100903-JB-090	0.38 J	6.2	--	<1	<1	<1	<1
12/18/03	(1)-121803-JB-115	0.70 J	9.8	--	<1	0.41	<1	<1
03/15/04	(1)-031504-BW-123	0.60 J	6.8	--	<1	<1	<1	<1
10/04/04	(1)-100404-DCR-245	0.50 J	5.7	--	<1	0.22	<1	<1
11/30/04	(1)-113004-DCR-286	0.62 J	6.5	--	<1	0.4	<1	<1
04/04/05	(1)-040405-DCR-335	0.70 J	6.9	--	0.24 J	1.2	0.36 J	<1
06/29/05	(1)-062905-DCR-394	0.49 J	4.8	--	1.0 U	0.61 J	0.16 J	1.0 UJ
12/06/05	(1)-120605-DCR-577	0.61 J	5.9	--	1.0 U	0.57 J	0.17 J	1.0 U
09/11/06	(1)-091106-JY-018	0.55 J	3.6	--	1.0 U	0.78 J	0.23 J	1.0 U
05/08/07	(1)-050807-JY-63	0.48 J	3.3	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
10/15/07	(1)-101507-DR-108	0.6 J	3.1	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
04/21/08	(1)-042108-DR-142	0.61 J	2.7	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
10/06/08	(1)-100608-DR-191	0.5 J	1.6	--	1.0 U	1.0 U	1.0 U	1.0 U
04/07/09	(1)-040709-DR-245	0.6 J	1.7	--	1.0 U	1.0 U	1.0 U	1.0 U
10/08/09	(1)-100809-DR-314	0.49 J	1.2	--	1.0 U	1.0 U	1.0 U	1.0 U

-- = Not analyzed

DCE = Dichloroethene

(1) Full sample number includes GW-17360

General Motors
Grand Rapids Metal Fabrication Plant
Monitoring Well Data Summary/Analytical Data

1 of 1

SITE: MW6-03
REVISION: 1/5/2010
UNITS: ug/L

ELEVATION: top of casing -
DEPTH: screen - 13 to 18

Date	Sample	PCE	TCE	1,2-DCE	1,1-DCE	cis-1,2-DCE	trans-1,2-DCE	Vinyl Chloride
07/14/03	⁽¹⁾ -071403-SP-041	1.0 U	<1	--	<1	<1	<1	<1
10/02/03	⁽¹⁾ -100203-JB-088	0.41 J	<1	--	<1	<1	<1	<1
12/18/03	⁽¹⁾ -121803-JB-111	0.16 J	1.2	--	<1	<1	<1	<1
03/15/04	⁽¹⁾ -031504-BW-121	1.0 U	<1	--	<1	<1	<1	<1
10/04/04	⁽¹⁾ -100404-DCR-243	1.0 U	0.5	--	<1	<1	<1	<1
11/30/04	⁽¹⁾ -113004-DCR-282	1.0 U	0.58	--	<1	<1	<1	<1
*11/30/04	⁽¹⁾ -113004-DCR-282	1.0 U	0.59	--	<1	<1	<1	<1
04/04/05	⁽¹⁾ -040405-DCR-332	1.0 U	0.57 J	--	<1	<1	<1	<1
06/27/05	⁽¹⁾ -062705-DCR-372	1.0 U	0.42 J	--	1.0 U	1.0 U	1.0 U	1.0 U
06/27/05	⁽¹⁾ -062705-DCR-373	1.0 U	0.45 J	--	1.0 U	1.0 U	1.0 U	1.0 U
12/02/05	⁽¹⁾ -120205-DCR-505	1.0 UJ	0.34 J	--	1.0 U	1.0 UJ	1.0 U	1.0 U
09/11/06	⁽¹⁾ -091106-JY-015	1.0 UJ	0.38 J	--	1.0 U	1.0 U	1.0 U	1.0 U
05/08/07	⁽¹⁾ -050807-JY-061	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
10/15/07	⁽¹⁾ -101507-DR-104	1.0 U	0.31 J	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
10/06/08	⁽¹⁾ -100608-DR-189	1.0 UJ	1.0 U	--	1.0 U	1.0 U	1.0 U	1.0 U
04/07/09	⁽¹⁾ -040709-DR-242	1.0 U	1.0 U	--	1.0 U	1.0 U	1.0 U	1.0 U
10/08/09	⁽¹⁾ -100809-DR-311	1.0 U	1.0 U	--	1.0 U	1.0 U	1.0 U	1.0 U

-- = Not analyzed

DCE = Dichloroethene

⁽¹⁾ Full sample number includes GW-17360

General Motors
Grand Rapids Metal Fabrication Plant
Monitoring Well Data Summary/Analytical Data

1 of 1

SITE: MW7-03
 REVISION: 1/5/2010
 UNITS: ug/L

ELEVATION: top of casing -
 DEPTH: screen - 36 to 41

Date	Sample	PCE	TCE	1,2-DCE	1,1-DCE	cis-1,2-DCE	trans-1,2-DCE	Vinyl Chloride
07/15/03	⁽¹⁾ -071503-SP-041	1.0 U	0.54	--	<1	<1	<1	<1
09/30/03	⁽¹⁾ -093003-JB-071	1.0 U	0.37	--	<1	<1	<1	<1
12/17/03	⁽¹⁾ -121703-JB-102	1.0 U	0.9	--	<1	<1	<1	<1
03/16/04	⁽¹⁾ -031604-BW-135	1.0 U	<1	--	<1	<1	<1	<1
*03/16/04	⁽¹⁾ -031604-BW-136	1.0 U	<1	--	<1	<1	<1	<1
10/05/04	⁽¹⁾ -100504-DCR-254	1.0 U	0.74	--	<1	<1	<1	<1
12/01/04	⁽¹⁾ -120104-DCR-302	1.0 U	0.78	--	<1	<1	<1	<1
04/05/05	⁽¹⁾ -040505-DCR-339	1.0 UJ	0.75 J	--	0.19 J	0.80 J	<1	<1
06/28/05	⁽¹⁾ -062805-DCR-377	1.0 U	0.75 J	--	1.0 U	1.0 U	1.0 U	1.0 U
12/04/05	⁽¹⁾ -120405-DCR-556	1.0 UJ	0.60 J	--	1.0 U	1.0 UJ	1.0 U	1.0 U
09/12/06	⁽¹⁾ -091206-JY-027	1.0 UJ	0.79 J	--	1.0 U	1.0 U	1.0 U	1.0 U
05/09/07	⁽¹⁾ -050907-JY-075	1.0 U	0.71 J	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
10/16/07	⁽¹⁾ -101607-DR-125	1.0 U	0.68 J	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
04/23/08	⁽¹⁾ -042308-DR-181	1.0 U	1.1	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
10/07/08	⁽¹⁾ -100708-DR-205	1.0 U	0.88 J	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
04/07/09	⁽¹⁾ -040709-DR-254	1.0 U	0.92 J	--	1.0 U	1.0 U	1.0 U	1.0 U
10/06/09	⁽¹⁾ -100609-DR-285	1.0 U	0.66 J	--	1.0 U	1.0 U	1.0 U	1.0 U

-- = Not analyzed

DCE = Dichloroethene

⁽¹⁾ Full sample number includes GW-17360

General Motors
Grand Rapids Metal Fabrication Plant
Monitoring Well Data Summary/Analytical Data

1 of 1

SITE: MW8-04
REVISION: 1/5/2010
UNITS: ug/L

ELEVATION: top of casing -
DEPTH: screen - 30 to 35

Date	Sample	PCE	TCE	1,2-DCE	1,1-DCE	cis-1,2-DCE	trans-1,2-DCE	Vinyl Chloride
10/04/04	⁽¹⁾ -100404-DCR-244	0.33 J	2.9	--	<1	0.22	<1	<1
11/30/04	⁽¹⁾ -113004-DCR-285	0.45 J	3.1	--	<1	0.52	<1	<1
04/04/05	⁽¹⁾ -040405-DCR-334	0.42 J	2.9	--	<1	0.80 J	0.19 J	<1
06/27/05	⁽¹⁾ -062705-DCR-374	0.39 J	1.8	--	1.0 U	0.30 J	1.0 U	1.0 U
12/03/05	⁽¹⁾ -120305-DCR-551	0.35 J	1.6	--	1.0 U	0.26 J	1.0 U	1.0 U
09/11/06	⁽¹⁾ -091106-JY-019	0.42 J	1.6	--	1.0 U	1.0 U	1.0 U	1.0 U
05/08/07	⁽¹⁾ -050807-JY-062	0.27 J	0.89 J	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
10/15/07	⁽¹⁾ -101507-DR-106	0.39 J	0.91 J	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
04/21/08	⁽¹⁾ -042108-DR-143	0.34 J	0.64 J	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
10/06/08	⁽¹⁾ -100608-DR-190	1.0 UJ	0.55 J	--	1.0 U	1.0 U	1.0 U	1.0 U
04/07/09	⁽¹⁾ -040709-DR-244	1.0 U	0.55 J	--	1.0 U	1.0 U	1.0 U	1.0 U
10/08/09	⁽¹⁾ -100809-DR-313	1.0 U	0.39 J	--	1.0 U	1.0 U	1.0 U	1.0 U

-- = Not analyzed

DCE = Dichloroethene

⁽¹⁾ Full sample number includes GW-17360

General Motors
Grand Rapids Metal Fabrication Plant
Monitoring Well Data Summary/Analytical Data

1 of 1

SITE: MW9-04
REVISION: 1/5/2010
UNITS: ug/L

ELEVATION: top of casing -
DEPTH: screen - 43 to 48

Date	Sample	PCE	TCE	1,2-DCE	1,1-DCE	cis-1,2-DCE	trans-1,2-DCE	Vinyl Chloride
10/05/04	⁽¹⁾ -100504-DCR-250	0.49 J	2.4	--	0.30	0.88	0.20	<1
12/01/04	⁽¹⁾ -120104-DCR-294	0.69 J	4	--	0.36	1.6	0.48	<1
04/05/05	⁽¹⁾ -040505-DCR-347	0.65 J	3.1	--	<1	0.23 J	<1	<1
06/29/05	⁽¹⁾ -062905-DCR-395	0.54 J	1.8	--	1.0 U	1.0 U	1.0 U	1.0 UJ
12/06/05	⁽¹⁾ -120605-DCR-574	0.60 J	2.8	--	0.33 J	1.4 J	0.41 J	1.0 U
09/12/06	⁽¹⁾ -091206-DR-024	0.52 J	2.8	--	1.0 U	1.0 U	1.0 U	1.0 U
05/09/07	⁽¹⁾ -050907-JY-072	0.47 J	0.72 J	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
10/16/07	⁽¹⁾ -101607-DR-109	0.58 J	0.97 J	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
04/22/08	⁽¹⁾ -042208-DR-152	0.52 J	1.4	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
10/06/08	⁽¹⁾ -100608-DR-196	0.44 J	0.73 J	--	1.0 U	1.0 U	1.0 U	1.0 U
04/07/09	⁽¹⁾ -040709-DR-247	0.48 J	0.63 J	--	1.0 U	1.0 U	1.0 U	1.0 U
*4/7/2009	⁽¹⁾ -040709-DR-248	0.46 J	0.62 J	--	1.0 U	1.0 U	1.0 U	1.0 U
10/08/09	⁽¹⁾ -100809-DR-312	0.38 J	0.41 J	--	1.0 U	1.0 U	1.0 U	1.0 U

-- = Not analyzed

DCE = Dichloroethene

*Dupliate

⁽¹⁾ Full sample number includes GW-17360

General Motors
Grand Rapids Metal Fabrication Plant
Monitoring Well Data Summary/Analytical Data

1 of 1

SITE: MW10-04
REVISION: 1/5/2010
UNITS: ug/L

ELEVATION: top of casing -
DEPTH: screen - 33 to 38

Date	Sample	PCE	TCE	1,2-DCE	1,1-DCE	cis-1,2-DCE	trans-1,2-DCE	Vinyl Chloride
10/05/04	⁽¹⁾ -100504-DCR-249	1.0 U	12	--	0.59	<1	<1	<1
12/01/04	⁽¹⁾ -120104-DCR-289	1.0 U	12	--	0.39	<1	<1	<1
04/05/05	⁽¹⁾ -040505-DCR-338	1.0 UJ	7.9	--	0.58 J	<1	<1	<1
06/28/05	⁽¹⁾ -062805-DCR-376	1.0 U	6.3	--	0.46 J	1.0 U	1.0 U	1.0 U
12/03/05	⁽¹⁾ -120305-DCR-553	1.0 UJ	4.7	--	0.39 J	1.0 UJ	1.0 U	1.0 U
09/12/06	⁽¹⁾ -091206-JY-021	1.0 UJ	5.1	--	0.25 J	1.0 U	1.0 U	1.0 U
05/09/07	⁽¹⁾ -050907-JY-070	1.0 U	1.2	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
10/16/07	⁽¹⁾ -101607-DR-111	1.0 U	1.5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
04/22/08	⁽¹⁾ -042208-DR-156	1.0 UJ	1.3	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
10/07/08	⁽¹⁾ -100708-DR-201	1.0 UJ	1.4	--	1.0 U	1.0 U	1.0 U	1.0 U
04/07/08	⁽¹⁾ -040709-DR-250	1.0 U	1.3	--	1.0 U	1.0 U	1.0 U	1.0 U
10/08/09	⁽¹⁾ -100809-DR-318	1.0 U	1.5	--	1.0 U	1.0 U	1.0 U	1.0 U
*10/8/09	⁽¹⁾ -100809-DR-319	1.0 U	1.5	--	1.0 U	1.0 U	1.0 U	1.0 U

-- = Not analyzed

DCE = Dichloroethene

⁽¹⁾ Full sample number includes GW-17360

General Motors
Grand Rapids Metal Fabrication Plant
Monitoring Well Data Summary/Analytical Data

1 of 1

SITE: MW11D-04
REVISION: 1/5/2010
UNITS: ug/L

ELEVATION: top of casing -
DEPTH: screen - 40 to 45

Date	Sample	PCE	TCE	1,2-DCE	1,1-DCE	cis-1,2-DCE	trans-1,2-DCE	Vinyl Chloride
10/05/04	⁽¹⁾ -100504-DCR-248	28	43	--	<1	70	6.2	<1
12/01/04	⁽¹⁾ -120104-DCR-291	34	39	--	<5	150	6.8	<5
*12/01/04	⁽¹⁾ -120104-DCR-293	34	37	--	<5	150	6.5	<5
04/05/05	⁽¹⁾ -040505-DCR-348	15 J	25	--	<1	23	3	<1
06/29/05	⁽¹⁾ -062905-DCR-396	9.8	12	--	1.0 U	4.7	0.70 J	1.0 UJ
12/06/05	⁽¹⁾ -120605-DCR-580	18	32	--	1.0 U	78 J	4.6	1.0 U
09/12/06	⁽¹⁾ -091206-JY-023	7.3 J	7.4	--	1.0 U	2	0.28 J	1.0 U
05/09/07	⁽¹⁾ -050907-JY-068	1.2	2.8	1.0 U	1.0 U	0.28 J	1.0 U	1.0 U
10/16/07	⁽¹⁾ -101607-DR-113	1.2	4.1	1.0 U	1.0 U	0.34 J	1.0 U	1.0 U
04/22/08	⁽¹⁾ -042208-DR-154	1.8 J	2.7	1.0 U	1.0 U	2.4	0.35 J	1.0 U
10/07/08	⁽¹⁾ -100708-DR-203	0.79 J	1.9	--	1.0 U	1.0 U	1.0 U	1.0 U
04/07/09	⁽¹⁾ -040709-DR-252	0.54 J	2.4	--	1.0 U	1.0 U	1.0 U	1.0 U
10/08/09	⁽¹⁾ -100809-DR-316	0.48 J	2.1	--	1.0 U	1.0 U	1.0 U	1.0 U

-- = Not analyzed

DCE = Dichloroethene

⁽¹⁾ Full sample number includes GW-17360

SITE: MW11S-05
REVISION: 1/5/2010
UNITS: ug/L

ELEVATION: top of casing -
DEPTH: screen -

Date	Sample	PCE	TCE	1,2-DCE	1,1-DCE	cis-1,2-DCE	trans-1,2-DCE	Vinyl Chloride
09/12/06	⁽¹⁾ -091206-JY-022	1.0 UJ	0.47 J	--	1.0 U	1.0 U	1.0 U	1.0 U
05/09/07	⁽¹⁾ -050907-JY-069	1.0 U	0.29 J	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
10/16/07	⁽¹⁾ -101607-DR-114	1.0 U	0.45 J	1.0 U	0.21 J	1.0 U	1.0 U	1.0 U
04/22/08	⁽¹⁾ -042208-DR-155	1.0 UJ	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
10/07/08	⁽¹⁾ -100708-DR-202	1.0 UJ	0.36 J	--	1.0 U	1.0 U	1.0 U	1.0 U
04/07/09	⁽¹⁾ -040709-DR-251	1.0 U	0.58 J	--	1.0 U	1.0 U	1.0 U	1.0 U
10/08/09	⁽¹⁾ -100809-DR-317	1.0 U	049 J	--	1.0 U	1.0 U	1.0 U	1.0 U

-- = Not analyzed

DCE = Dichloroethene

⁽¹⁾ Full sample number includes GW-17360

General Motors
Grand Rapids Metal Fabrication Plant
Monitoring Well Data Summary/Analytical Data

1 of 1

SITE: MW13-04
REVISION: 1/5/2010
UNITS: ug/L

ELEVATION: top of casing -
DEPTH: screen - 25 to 30

Date	Sample	PCE	TCE	1,2-DCE	1,1-DCE	cis-1,2-DCE	trans-1,2-DCE	Vinyl Chloride
10/05/04	⁽¹⁾ -100504-DCR-264	1.0 U	<1	--	<1	<1	<1	<1
12/02/04	⁽¹⁾ -120204-DCR-315	1.0 U	<1	--	<1	<1	<1	<1
04/06/05	⁽¹⁾ -040605-DCR-356	1.0 U	<1	--	<1	<1	<1	<1
06/28/05	⁽¹⁾ -062805-DCR-386	1.0 U	1.0 U	--	1.0 U	1.0 U	1.0 U	1.0 U
12/05/05	⁽¹⁾ -120505-DCR-564	1.0 UJ	1.0 U	--	1.0 UJ	1.0 U	1.0 U	1.0 U
09/12/06	⁽¹⁾ -091206-JY-037	1.0 UJ	1.0 U	--	1.0 U	1.0 UJ	1.0 U	1.0 U
05/10/07	⁽¹⁾ -051007-JY-084	1.0 UJ	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
10/06/07	⁽¹⁾ -101607-DR-127	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
04/23/08	⁽¹⁾ -042308-DR-173	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
10/08/08	⁽¹⁾ -100808-DR-224	1.0 U	1.0 U	--	1.0 U	1.0 U	1.0 U	1.0 U
04/08/09	⁽¹⁾ -040809-DR-268	1.0 U	1.0 U	--	1.0 U	1.0 U	1.0 U	1.0 U
10/07/09	⁽¹⁾ -100709-DR-295	1.0 U	1.0 U	--	1.0 U	1.0 U	1.0 U	1.0 U

-- = Not analyzed

DCE = Dichloroethene

⁽¹⁾ Full sample number includes GW-17360

General Motors
Grand Rapids Metal Fabrication Plant
Monitoring Well Data Summary/Analytical Data

1 of 1

SITE: MW14-04
REVISION: 1/5/2010
UNITS: ug/L

ELEVATION: top of casing -
DEPTH: screen - 45 to 50

Date	Sample	PCE	TCE	1,2-DCE	1,1-DCE	cis-1,2-DCE	trans-1,2-DCE	Vinyl Chloride
10/06/04	⁽¹⁾ -100604-DCR-274	1.0 U	0.34	--	<1	<1	<1	<1
*10/06/04	⁽¹⁾ -100604-DCR-275	1.0 U	0.31	--	0.25	<1	<1	<1
12/02/04	⁽¹⁾ -120204-DCR-309	1.0 U	0.30	--	<1	<1	<1	<1
04/06/05	⁽¹⁾ -040605-DCR-360	1.0 U	0.40 J	--	<1	<1	<1	<1
06/28/05	⁽¹⁾ -062805-DCR-385	1.0 U	0.31 J	--	1.0 U	1.0 U	1.0 U	1.0 U
12/04/05	⁽¹⁾ -120405-DCR-561	1.0 UJ	0.34 J	--	1.0 U	1.0 UJ	1.0 U	1.0 U
09/12/06	⁽¹⁾ -091206-DR-050	1.0 UJ	0.37 J	--	1.0 U	1.0 UJ	1.0 U	1.0 UJ
05/10/07	⁽¹⁾ -051007-JY-088	1.0 UJ	0.3 J	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
10/07/07	⁽¹⁾ -101707-DR-130	1.0 U	0.36 J	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
04/22/08	⁽¹⁾ -042208-DR-164	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
10/07/08	⁽¹⁾ -100708-DR-218	1.0 U	0.67 J	--	1.0 U	1.0 U	1.0 U	1.0 U
04/08/08	⁽¹⁾ -040809-DR-261	1.0 U	1.6	--	1.0 U	1.0 U	1.0 U	1.0 U
10/07/09	⁽¹⁾ -100709-DR-296	1.0 U	2.8	--	1.0 U	1.0 U	1.0 U	1.0 U

-- = Not analyzed

DCE = Dichloroethene

⁽¹⁾ Full sample number includes GW-17360

General Motors
Grand Rapids Metal Fabrication Plant
Monitoring Well Data Summary/Analytical Data

1 of 1

SITE: MW15-04
REVISION: 1/5/2010
UNITS: ug/L

ELEVATION: top of casing -
DEPTH: screen - 25 to 30

Date	Sample	PCE	TCE	1,2-DCE	1,1-DCE	cis-1,2-DCE	trans-1,2-DCE	Vinyl Chloride
10/05/04	⁽¹⁾ -100504-DCR-258	1.0 U	2.3	--	0.99	<1	<1	<1
12/01/04	⁽¹⁾ -120104-DCR-303	1.0 U	2.2	--	0.71	<1	<1	<1
*12/01/04	⁽¹⁾ -120104-DCR-304	1.0 U	2.3	--	0.77	<1	<1	<1
04/05/05	⁽¹⁾ -040655-DCR-349	1.0 UJ	2.0	--	<1	<1	<1	<1
*4/5/2005	⁽¹⁾ -040655-DCR-350	1.0 UJ	2.0	--	1.3	<1	<1	<1
06/28/05	⁽¹⁾ -062805-DCR-380	1.0 U	2.4	--	1.1	1.0 U	1.0 U	1.0 U
12/04/05	⁽¹⁾ -120405-DCR-558	1.0 UJ	1.5	--	0.61 J	1.0 UJ	1.0 U	1.0 U
09/12/06	⁽¹⁾ -091206-DR-029	1.0 UJ	0.46 J	--	1.0 U	1.0 U	1.0 U	1.0 U
05/09/07	⁽¹⁾ -050907-JY-078	1.0 U	3.2	1.0 U	1.5	0.22 J	1.0 U	1.0 U
10/16/07	⁽¹⁾ -101607-DR-118	1.0 U	3.5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
04/22/08	⁽¹⁾ -042208-DR-158	1.0 UJ	1.8	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
10/07/08	⁽¹⁾ -100708-DR-208	1.0 U	2.4	--	0.41 J	1.0 U	1.0 U	1.0 U
04/06/09	⁽¹⁾ -040609-DR-239	1.0 U	1.5	--	0.25 J	1.0 U	1.0 U	1.0 U
106/09	⁽¹⁾ -100609-DR-282	1.0 U	1.7	--	0.28 J	1.0 U	1.0 U	1.0 U

-- = Not analyzed

DCE = Dichloroethene

⁽¹⁾ Full sample number includes GW-17360

SITE: MW17-06
REVISION: 1/5/2010
UNITS: ug/L

ELEVATION: top of casing -
DEPTH: screen -

Date	Sample	PCE	TCE	1,2-DCE	1,1-DCE	cis-1,2-DCE	trans-1,2-DCE	Vinyl Chloride
09/12/06	(1)-091106-DR-009	23 J	16	--	4.0 U	140 J	4	4.0 U
05/08/07	(1)-050807-JY-056	17	9.5	2.0 U	2.0 U	61	1.4 J	2.0 U
10/15/07	(1)-101507-DR-098	25	11	3.3 U	3.3 U	84	1.8 J	3.3 U
04/22/08	(1)-042208-DR-157	18	7	1.4 U	1.4 U	48	1.4	1.4 U
10/06/08	(1)-100608-DR-197	20	7.7	--	1.7 U	52	1.2 J	1.7 U
04/06/09	(1)-040609-DR-234	24	6.6	--	1.0 U	31	0.97 J	1.0 U
10/06/09	(1)-100609-DR-280	25	5.5	--	1.0 U	18	0.58 J	1.0 U

-- = Not analyzed

DCE = Dichloroethene

(1) Full sample number includes GW-17360

General Motors
Grand Rapids Metal Fabrication Plant
Monitoring Well Data Summary/Analytical Data

1 of 2

SITE: Field-Blk

REVISION: 1/5/2010

UNITS: ug/L

Date	Sample	TCE	1,2-DCE	1,1-DCE	Vinyl Chloride	1,1,1-TCA
12/21/88	E11605	3	<2	--	--	--
03/17/89	E15528	<1	<1	--	--	--
06/15/89	U00160	E	E	--	--	E
08/22/89	E24444	<1	--	--	--	--
09/20/89	E25607	<1	<1	--	--	--
10/13/89	E26927	<1	<1	--	--	--
11/17/89	E29150	<1	<1	--	--	--
12/21/89	E31004	<1	<1	<1	<1	--
01/12/90	E31897	<1	<1	--	--	--
02/16/90	E33920	<1	<1	--	--	<1
03/16/90	E35833	<1	<1	--	--	<1
04/12/90	E37260	<1	<1	--	--	<1
05/18/90	E39760	<1	<1	--	--	<1
06/18/90	E42009	<1	<1	--	--	<1
07/13/90	E44007	<1	<1	--	--	<1
08/20/90	E46576	1	<1	--	--	<1
09/14/90	E48213	<1	<1	--	--	<1
10/12/90	E50166	<1	<1	--	--	<1
11/15/90	E52801	<1	<1	--	--	<1
12/17/90	E54829	<2	<2	<2	<10	--
03/11/91	E59924	<1	<1	--	--	--
06/13/91	E67560	<1	<1	--	--	<1
09/12/91	E72990	<1	<1	--	--	<1
12/13/91	E07659	<1	--	<1	<1	<1
03/13/92	E15395	<1	<1	--	--	<1
06/12/92	E23270	<1	<1	--	--	<1
09/11/92	E31924	<1	<1	--	--	<1
12/10/92	E40338	<1	--	<1	<1	<1
03/11/93	E47626	1.1	<1	--	--	<1
06/14/93	E56592	<1	<1	--	--	<1
09/15/93	E66054	HT<1	HT<1	--	--	HT<1
12/17/93	E75758	<1	<1	<1	<1	<1
03/16/94	E81252	<1	<1	--	--	<1
06/14/94	E89404	<1	<1	--	--	<1
09/14/94	E97454	<1	<1	--	--	<1
12/16/94	E106393	<1	<1	<1	<1	<1
03/17/95	E112957	<1	<2	--	--	<1
06/20/95	E120798	<1	<2	--	--	<1
09/14/95	E127377	<1	<2	--	--	<1
12/18/95	E134979	<1	<1	<1	<1	--

-- = Not analyzed

E = Lab Error

TCE = Trichloroethene

DCE = Dichloroethene

TCA = Trichloroethane

HT = Analysis performed beyond EPA established maximum allowable holding time.

General Motors
Grand Rapids Metal Fabrication Plant
Monitoring Well Data Summary/Analytical Data

SITE: Field-Blk

REVISION: 1/5/2010

UNITS: ug/L

Date	Sample	TCE	1,2-DCE	1,1-DCE	Vinyl Chloride	1,1,1-TCA
03/19/96	E139855	<1	<1	--	--	<1
06/13/96	E147338	<1	<1	--	--	<1
09/13/96	E154137	<1	<1	--	--	<1
12/13/96	E161531	<1	<1	<1	<1	<1
03/13/97	E166209	<1	<1	--	--	<1
06/19/97	E172381	<1	<1	--	--	<1
09/11/97	E177745	<1	<1	--	--	<1
12/16/97	E184903	<1	<1	<1	<1	--
03/12/98	E190816	<1	<1	--	--	--
06/16/98	82953-3402	<1	<2	--	--	--
09/17/98	84367-8369	<1	<1	--	--	--
12/16/98	85755-2524	<1	<1	<1	<1	--
03/10/99	90995-6094	<1	<1	--	--	--
06/15/99	3990294014	<1	<2	--	--	--
09/20/99	3991971010	<1	<1	--	--	--
12/16/99	3993622001	<1	<1	<1	<1	--
06/13/00	3002633011	<1	<1	--	--	--
09/22/00	E261232	<1	<1	--	--	--
12/20/00	E268214	<1	<1	<1	<1	--
03/21/01	E274384	<1	<1	--	--	--
06/14/01	E281019	<1	<1	--	--	--
09/13/01	E287757	<1	<1	--	--	--
12/19/01	E287757	SS<1	SS<1	SS<1	SS<1	--

-- = Not analyzed

TCE = Trichloroethene

DCE = Dichloroethene

TCA = Trichloroethane

SS = Surrogate spike result had a percent recovery outside the upper control limit.

This result must be considered estimated.

General Motors
Grand Rapids Metal Fabrication Plant
Monitoring Well Data Summary/Analytical Data

1 of 4

SITE: Trip-Blk
REVISION: 1/5/2010
UNITS: ug/L

Date	Sample	TCE	1,2-DCE	1,1-DCE	cis-1,2-DCE	trans-1,2-DCE	Vinyl Chloride	1,1,1-TCA
03/16/89	E15529	<1	<1	--	--	--	--	--
06/15/89	U00161	LE	LE	--	--	--	--	LE
08/22/89	E24443	2.9	--	--	--	--	--	--
10/13/89	E26926	<1	<1	--	--	--	--	--
11/17/89	E29149	<1	<1	--	--	--	--	--
01/12/90	E31896	<1	<1	--	--	--	--	--
02/16/90	E33919	<1	<1	--	--	--	--	<1
03/16/90	E35832	<1	<1	--	--	--	--	<1
04/12/90	E37259	<1	<1	--	--	--	--	<1
04/25/90	E39759	<1	<1	--	--	--	--	<1
06/18/90	E42008	<1	<1	--	--	--	--	<1
07/12/90	E44006	2	<1	--	--	--	--	<1
08/20/90	E46575	B	B	--	--	--	--	B
09/14/90	E48212	<1	<1	--	--	--	--	<1
10/02/90	H3935	<5	--	--	--	--	<5	<5
10/12/90	E50165	<1	<1	--	--	--	--	<1
11/15/90	E52800	<1	<1	--	--	--	--	<1
12/18/90	E54831	<2	<2	<2	--	--	<10	--
03/11/91	U00162	LE	LE	--	--	--	--	--
06/13/91	E67570	<1	<1	--	--	--	--	<1
09/12/91	E72989	<1	<1	--	--	--	--	<1
11/20/91	E07660	<1	--	<1	--	--	<1	<1
03/13/92	E15396	<1	<1	--	--	--	--	<1
06/12/92	E23271	<1	<1	--	--	--	--	<1
08/13/92	E29154	<1	<1	--	--	--	--	--
09/11/92	E31906	<1	<1	--	--	--	--	<1
10/16/92	E35369	<1	--	--	--	--	--	--
11/12/92	E37806	<1	--	--	--	--	--	--
12/10/92	E40339	<1	--	<1	--	--	<1	<1
02/12/93	E45485	<1	--	--	--	--	--	--
03/11/93	E47616	<1	<1	--	--	--	--	<1
04/15/93	E50684	<1	--	--	--	--	--	--
05/13/93	E53157	<1	--	--	--	--	--	--
06/14/93	E56593	<1	<1	--	--	--	--	<1
07/16/93	E60031	<1	--	--	--	--	--	--
08/11/93	E62712	<1	--	--	--	--	--	--
09/15/93	E66053	<1	<1	--	--	--	--	<1
10/19/93	E69403	<1	--	--	--	--	--	--

-- = Not Analyzed
 LE = Lab Error

TCE = Trichloroethene
 B = Vials Broken

DCE = Dichloroethene

TCA = Trichloroethane

General Motors
Grand Rapids Metal Fabrication Plant
Monitoring Well Data Summary/Analytical Data

2 of 4

SITE: Trip-Blk
REVISION: 1/5/2010
UNITS: ug/L

Date	Sample	TCE	1,2-DCE	1,1-DCE	cis-1,2-DCE	trans-1,2-DCE	Vinyl Chloride	1,1,1-TCA
11/17/93	E72555	<1	--	--	--	--	--	--
12/17/93	E75759	<1	<1	<1	--	--	<1	<1
01/13/94	E77458	<1	--	--	--	--	--	--
03/16/94	E81253	<1	<1	--	--	--	--	<1
04/13/94	E83747	<1	--	--	--	--	--	--
05/06/94	E86250	<1	--	--	--	--	--	--
06/14/94	E89403	<1	<1	--	--	--	--	<1
07/13/94	E91966	<1	--	--	--	--	--	--
08/12/94	E94709	<1	--	--	--	--	--	--
09/14/94	E97455	<1	<1	--	--	--	--	<1
10/18/94	E100418	<1	--	--	--	--	--	--
11/11/94	E103081	<1	--	--	--	--	--	--
12/16/94	E106392	<1	<1	<1	--	--	<1	<1
01/13/95	E108555	<1	--	--	--	--	--	--
01/20/95	E109181	<1	--	--	--	--	--	--
02/14/95	E110634	<1	--	--	--	--	--	--
03/17/95	E112963	<1	<2	--	--	--	--	<1
04/14/95	E114840	<1	--	--	--	--	--	--
05/05/95	E116689	<1	--	<1	--	--	<1	<1
05/15/95	E117757	<1	--	--	--	--	--	--
06/20/95	E120785	<1	<2	--	--	--	--	<1
07/13/95	E122760	<1	--	--	--	--	--	--
08/14/95	E124915	<1	--	--	--	--	--	--
09/13/95	E127376	<1	<2	--	--	--	--	<1
12/18/95	E134965	<1	<1	<1	--	--	<1	<1
01/02/96	E136051	<1	--	--	--	--	--	--
02/15/96	E137784	<1	--	--	--	--	--	--
03/04/96	E140367	<1	--	--	--	--	--	--
04/04/96	E141882	<1	--	--	--	--	--	--
04/25/96	E143102	<1	--	--	--	--	--	--
05/16/96	E144471	<1	--	--	--	--	--	--
06/12/96	E146830	<1	--	--	--	--	--	--
06/19/96	E149320	<1	--	<1	--	--	--	--
07/31/96	E150439	<1	--	--	--	--	--	--
08/01/96	E151798	<1	--	--	--	--	--	--
09/05/96	E154110	<1	--	--	--	--	--	--
10/15/96	E156831	<1	--	--	--	--	--	--
11/18/96	E159731	<1	--	--	--	--	--	--
12/11/96	E161506	<1	--	--	--	--	--	--
12/11/96	E162083	<1	<1	<1	--	--	<1	<1

-- = Not Analyzed
 LE = Lab Error

TCE = Trichloroethene
 B = Vials Broken

DCE = Dichloroethene

TCA = Trichloroethane

General Motors
Grand Rapids Metal Fabrication Plant
Monitoring Well Data Summary/Analytical Data

3 of 4

SITE: Trip-Blk
REVISION: 1/5/2010
UNITS: ug/L

Date	Sample	TCE	1,2-DCE	1,1-DCE	cis-1,2-DCE	trans-1,2-DCE	Vinyl Chloride	1,1,1-TCA
01/20/97	E163653	<1	--	--	--	--	--	--
02/11/97	E164986	<1	--	--	--	--	--	--
03/12/97	E166208	<1	<1	--	--	--	--	<1
03/31/97	E168313	<1	--	--	--	--	--	--
05/02/97	E170415	<1	--	--	--	--	--	--
06/04/97	E174139	<1	--	--	--	--	--	--
06/09/97	E172366	<1	--	--	--	--	--	--
07/20/97	E175817	<1	--	--	--	--	--	--
09/04/97	E177690	<1	--	--	--	--	--	--
10/13/97	E180330	<1	--	--	--	--	--	--
10/30/97	E182372	<1	--	--	--	--	--	--
12/16/97	E184895	<1	<1	<1	--	--	<1	--
12/26/97	E186120	<1	--	--	--	--	--	--
01/29/98	E188477	<1	--	--	--	--	--	--
03/10/98	E190687	<1	--	--	--	--	--	--
04/01/98	81905-9816	<1	<2	<1	--	--	<1	<1
04/29/98	82314-1285	<1	<2	--	--	--	<1	--
05/21/98	82953-3404	<1	<2	--	--	--	--	--
07/16/98	83403-4900	<1	--	--	--	--	--	--
07/24/98	83716-6295	<1	--	<1	--	--	<1	<1
08/19/98	83939-7016	<1	--	--	--	--	--	--
09/03/98	84367-8366	<1	<1	--	--	--	--	--
10/09/98	85278-1077	<1	--	--	--	--	--	--
11/20/98	90043-3143	<1	--	--	--	--	--	--
11/20/98	85858-2931	<1	--	<1	--	--	<1	<1
12/16/98	85755-2526	<1	<1	<1	--	--	<1	--
12/23/98	90148-3372	<1	--	--	--	--	--	--
02/15/99	91113-6518	<1	--	--	--	--	--	--
02/16/99	90635-4884	<1	--	--	--	--	--	--
03/03/99	90995-6099	<1	<1	--	--	--	--	--
03/24/99	91468-7712	<1	--	--	--	--	--	--
04/29/99	92011-9427	<1	--	--	--	--	--	--
05/19/99	3990294025	<1	<2	--	--	--	--	--
06/25/99	3990884001	<1	--	--	--	--	--	--
07/28/99	3991393001	<1	--	--	--	--	--	--
09/18/99	3991971009	<1	<1	--	--	--	--	--
10/18/99	3993099001	<1	--	--	--	--	--	--
10/19/99	3992560004	<1	--	--	--	--	--	--
12/16/99	3993622022	<1	<1	<1	--	--	<1	--
01/11/00	3000138001	<1	--	--	--	--	--	--
02/15/00	3000620001	<1	--	--	--	--	--	--
03/16/00	3001152020	<1	<1	--	--	--	--	--
06/13/00	3002633023	<1	<1	--	--	--	--	--
09/22/00	E261230	<1	<1	--	--	--	--	--
10/23/00	E263866	<1	--	--	--	--	--	--

-- = Not Analyzed
 LE = Lab Error

TCE = Trichloroethene
 B = Vials Broken

DCE = Dichloroethene

TCA = Trichloroethane

General Motors
Grand Rapids Metal Fabrication Plant
Monitoring Well Data Summary/Analytical Data

4 of 4

SITE: Trip-Blk
REVISION: 1/5/2010
UNITS: ug/L

Date	Sample	TCE	1,2-DCE	1,1-DCE	cis-1,2-DCE	trans-1,2-DCE	Vinyl Chloride	1,1,1-TCA
11/13/00	E265857	<1	--	--	--	--	--	--
12/20/00	E268224	<1	<1	<1	--	--	<1	--
01/12/01	E269743	<1	--	--	--	--	--	--
01/31/01	E272135	<1	--	--	--	--	--	--
03/07/01	E274393	<1	<1	--	--	--	--	--
06/01/01	E281029	<1	<1	--	--	--	--	--
09/07/01	E287750	<1	<1	--	--	--	--	--
11/26/01	E295703	SS<1	SS<1	SS<1	--	--	SS<1	SS<1
03/28/02	Trip Blank	<1	<1	--	--	--	--	--
06/27/02	Trip Blank	<1	<1	--	--	--	--	--
09/27/02	Trip Blank	<1	<1	--	--	--	--	--
12/09/02	Trip Blank	<1	<1	<1	--	--	<1	--
03/21/03	Trip Blank	<1	--	--	<1	<1	--	--
07/14/03	Trip Blank	<1	--	<1	<1	<1	<1	<1
07/15/03	Trip Blank	<1	--	<1	<1	<1	<1	<1
10/15/03	Trip Blank	<1	--	<1	<1	<1	<1	<1
12/18/03	Trip Blank	<1	--	<1	<1	<1	<1	<1
03/16/04	Trip Blank	<2	--	<1	<1	<1	<1	<1
10/05/04	Trip Blank	<1	--	0.83	<1	<1	<1	<1
12/03/04	Trip Blank	<1	--	<1	<1	<1	<1	<1
04/05/05	Trip Blank	<1	--	<1	<1	<1	<1	<1
04/06/05	Trip Blank	<1	--	<1	<1	<1	<1	<1
04/07/05	Trip Blank	<1	--	<1	<1	<1	<1	<1
06/28/05	(U)-062805-DCR-390	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
06/29/05	(U)-062905-DCR-408	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
12/05/05	(U)-120505-DCR-570	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
12/06/05	(U)-120605-DCR-584	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
09/11/06	(U)-091106-DR-020	1.0 U	--	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
09/13/06	(U)-091306-DR-051	1.0 U	--	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
05/08/07	(U)-050807-JY-064	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
05/10/07	(U)-051007-JY-094	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
10/16/07	(U)-101607-DR-129	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
10/17/07	(U)-101707-DR-137	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
04/21/08	(U)-042108-DR-151	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
04/23/08	(U)-042308-DR-183	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
10/08/08	(U)-100808-DR-220	1.0 U	--	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
10/08/08	(U)-100808-DR-229	1.0 U	--	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
04/07/09	(U)-040709-DR-260	1.0 U	--	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
04/08/09	(U)-040809-DR-275	1.0 U	--	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
10/06/09	(U)-100609	1.0 U	--	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
10/07/09	(U)-100709	1.0 U	--	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U

SS = Surrogate spike result had a percent recovery outside the upper control limit.

This result must be considered estimated.

-- = Not Analyzed

TCE = Trichloroethene

DCE = Dichloroethene

TCA = Trichloroethane

LE = Lab Error

B = Vials Broken

(U) Full sample number includes TB-17360

**General Motors
Grand Rapids Metal Fabrication Plant
TCE Treatment System
Influent, Intermediate, and Effluent**

1 of 16

SITE: NPDES Discharge
REVISION: 1/5/2010

Sample Date:	7/13/1994	8/12/1994	9/14/1994	10/18/1994	11/11/1994	12/16/1994	1/13/1995	1/20/1995	2/14/1995
Sample Id:	*	E94707	E97434	E100374	E103082	E106412	E108556	E109178	E110635
	Influent	Influent	Influent	Influent	Influent	Influent	Influent	Influent	Influent

Trichloroethene, ug/L	*	38	33	28	29	25	26	24	24
1,1-Dichloroethane, ug/L	--	--	--	--	--	--	<1	<1	<1

Sample Date:	7/13/1994	8/12/1994	9/14/1994	10/18/1994	11/11/1994	12/16/1994	1/13/1995	1/20/1995	2/14/1995
Sample Id:	E91964	E94706	E97435	E100375	E103083	E106413	E108557	E109179	E110636
	Intermediate	Intermediate	Intermediate	Intermediate	Intermediate	Intermediate	Intermediate	Intermediate	Intermediate

Trichloroethene, ug/L	<1	<1	<1	CR3.4	5.4	10	14	<1	3.2
1,1-Dichloroethane, ug/L	--	--	--	--	--	--	<1	<1	<1

Sample Date:	7/13/1994	8/12/1994	9/14/1994	10/18/1994	11/11/1994	12/16/1994	1/13/1995	1/20/1995	2/14/1995
Sample Id:	E91963	E94708	E97436	E100376	E103084	E106414	E108558	E109180	E110637
	Effluent	Effluent	Effluent	Effluent	Effluent	Effluent	Effluent	Effluent	Effluent

Trichloroethene, ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,1-Dichloroethane, ug/L	--	--	--	--	--	--	<1	<1	<1

* = Sample port not yet installed.

CR = Positive results confirmed by replicate measurement.

-- = Not analyzed.

**General Motors
Grand Rapids Metal Fabrication Plant
TCE Treatment System
Influent, Intermediate, and Effluent**

2 of 16

SITE: NPDES Discharge
REVISION: 1/5/2010

Sample Date:	3/17/1995	4/13/1995	5/15/1995	6/20/1995	7/13/1995	8/11/1995	9/14/1995	10/17/1995	11/17/1995
Sample Id:	E112938	E114837	E117758	E120801	E122761	E124916	E127396	E129772	E132427
	Influent	Influent	Influent	Influent	Influent	Influent	Influent	Influent	Influent

Trichloroethene, ug/L 23
1,1-Dichloroethane, ug/L <1

Sample Date:	3/17/1995	4/13/1995	5/15/1995	6/20/1995	7/13/1995	8/11/1995	9/14/1995	10/17/1995	11/17/1995
Sample Id:	E112939	E114839	E117760	E120802	E122762	E124917	E127397	E129773	E132428
	Influent	Influent	Influent	Influent	Influent	Influent	Influent	Influent	Influent

Trichloroethene, ug/L 6.5
1,1-Dichloroethane, ug/L <1

Sample Date:	3/17/1995	4/13/1995	5/15/1995	6/20/1995	7/13/1995	8/11/1995	9/14/1995	10/17/1995	11/17/1995
Sample Id:	E112940	E114838	E117759	E120803	E122763	E124918	E127398	E129774	E132429
	Influent	Influent	Influent	Influent	Influent	Influent	Influent	Influent	Influent

Trichloroethene, ug/L <1
1,1-Dichloroethane, ug/L <1

-- = Not analyzed.

**General Motors
Grand Rapids Metal Fabrication Plant
TCE Treatment System
Influent, Intermediate, and Effluent**

3 of 16

SITE: NPDES Discharge
REVISION: 1/5/2010

Sample Date:	12/19/1995	1/16/1996	2/19/1996	3/19/1996	4/12/1996	4/26/1996	5/16/1996	6/13/1996	7/16/1996
Sample Id:	E134898	E136052	E137785	E139823	E141883	E143103	E144472	E146831	E149321
	Influent	Influent	Influent	Influent	Influent	Influent	Influent	Influent	Influent

Trichloroethene, ug/L
1,1-Dichloroethane, ug/L

	13	11	11	12	9.9	9.5	8.8	9.6	8.3
	--	--	--	--	--	--	--	--	--

Sample Date:	12/19/1995	1/16/1996	2/19/1996	3/19/1996	4/12/1996	4/26/1996	5/16/1996	6/13/1996	7/16/1996
Sample Id:	E134899	E136053	E137786	E139824	E141884	E143104	E144473	E146832	E149322
	Intermediate	Intermediate	Intermediate	Intermediate	Intermediate	Intermediate	Intermediate	Intermediate	Intermediate

Trichloroethene, ug/L
1,1-Dichloroethane, ug/L

	6	6.8	8.4	9.3	<1**	<1	2.5	2.9	<1
	--	--	--	--	--	--	--	--	--

Sample Date:	12/19/1995	1/16/1996	2/19/1996	3/19/1996	4/12/1996	4/26/1996	5/16/1996	6/13/1996	7/16/1996
Sample Id:	E134900	E136054	E137787	E139825	E141885	E143105	E144474	E146833	E149323
	Effluent	Effluent	Effluent	Effluent	Effluent	Effluent	Effluent	Effluent	Effluent

Trichloroethene, ug/L
1,1-Dichloroethane, ug/L

	<1	<1	<1	1.2	10**	<1	<1	<1	2.9
	--	--	--	--	--	--	--	--	--

-- = Not analyzed.

** = Suspected that samples were labeled incorrectly in the field. Resampled 4/26/96.

** = Suspected that samples were labeled incorrectly in the field. Resampled 4/26/96.

* = Sample port not yet installed.

CR = Positive results confirmed by replicate measurement.

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SITE: NPDES Discharge
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Sample Date:	8/1/1996	8/16/1996	9/13/1996	10/17/1996	11/19/1996	12/12/1996	1/20/1997	2/14/1997	3/13/1997
Sample Id:	E150442	E151801	E154113	E156834	E159734	E161507	E163656	E164989	E166229
	Influent	Influent	Influent	Influent	Influent	Influent	Influent	Influent	Influent

Trichloroethene, ug/L
1,1-Dichloroethane, ug/L

15	14	11	12	11	11	9.9	8.9	9.1	8.1
--	--	--	--	--	--	--	--	--	--

Sample Date:	8/1/1996	8/16/1996	9/13/1996	10/17/1996	11/19/1996	12/12/1996	1/20/1997	2/14/1997	3/13/1997
Sample Id:	E150441	E151800	E154112	E156833	E159733	E161508	E163655	E164988	E166228
	Intermediate	Intermediate	Intermediate	Intermediate	Intermediate	Intermediate	Intermediate	Intermediate	Intermediate

Trichloroethene, ug/L
1,1-Dichloroethane, ug/L

7.7	9.1	6.9	9.6	4.2	5	4.5	6.2	6.1
--	--	--	--	--	--	--	--	--

Sample Date:	8/1/1996	8/16/1996	9/13/1996	10/17/1996	11/19/1996	12/12/1996	1/20/1997	2/14/1997	3/13/1997
Sample Id:	E150440	E151799	E154111	E156832	E159732	E161509	E163654	E164987	E166227
	Effluent	Effluent	Effluent	Effluent	Effluent	Effluent	Effluent	Effluent	Effluent

Trichloroethene, ug/L
1,1-Dichloroethane, ug/L

<1	<1	<1	2.9	<1	<1	<1	<1	<1	1.4
--	--	--	--	--	--	--	--	--	--

-- = Not analyzed.

* = Sample port not yet installed.

CR = Positive results confirmed by replicate measurement.

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SITE: NPDES Discharge
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Sample Date:	4/18/1997	5/15/1997	6/19/1997	7/17/1997	8/14/1997	9/11/1997	10/17/1997	11/14/1997	12/16/1997
Sample Id:	E168316	E170418	E172369	E174142	E175814	E177693	E180333	E182375	E184894
	Influent	Influent	Influent	Influent	Influent	Influent	Influent	Influent	Influent

Trichloroethene, ug/L
1,1-Dichloroethane, ug/L

	9.7	9	8.8	10	10	9	9	9.3	8
	--	--	--	--	--	--	--	--	--

Sample Date:	4/18/1997	5/15/1997	6/19/1997	7/17/1997	8/14/1997	9/11/1997	10/17/1997	11/14/1997	12/16/1997
Sample Id:	E168315	E170417	E172368	E174141	E175815	E177692	E180332	E182374	E184893
	Intermediate	Intermediate	Intermediate	Intermediate	Intermediate	Intermediate	Intermediate	Intermediate	Intermediate

Trichloroethene, ug/L
1,1-Dichloroethane, ug/L

	2.9	4.8	6	7.9	9.4	10	3.7	4.9	5.4
	--	--	--	--	--	--	--	--	--

Sample Date:	4/18/1997	5/15/1997	6/19/1997	7/17/1997	8/14/1997	9/11/1997	10/17/1997	11/14/1997	12/16/1997
Sample Id:	E168314	E170416	E172367	E174140	E175816	E177691	E180331	E182373	E184892
	Effluent	Effluent	Effluent	Effluent	Effluent	Effluent	Effluent	Effluent	Effluent

Trichloroethene, ug/L
1,1-Dichloroethane, ug/L

	<1	<1	<1	<1	<1	2.3	<1	<1	<1
	--	--	--	--	--	--	--	--	--

-- = Not analyzed.

**General Motors
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SITE: NPDES Discharge
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Sample Date:	1/14/1998	2/16/1998	3/12/1998	4/22/1998	5/20/1998	6/16/1998	7/16/1998	8/19/1998	9/17/1998
Sample Id:	E186123	E188480	E190690	81962-0007	82447-1683	82953-3394	83403-4904	83939-7019	84367-8357
	Influent	Influent	Influent	Influent	Influent	Influent	Influent	Influent	Influent

Trichloroethene, ug/L
1,1-Dichloroethane, ug/L

6	5.6	5.9	5	6	6	5	5	5	5
--	--	--	--	--	--	--	--	--	--

Sample Date:	1/14/1998	2/16/1998	3/12/1998	4/22/1998	5/20/1998	6/16/1998	7/16/1998	8/19/1998	9/17/1998
Sample Id:	E186122	E188479	E190689	81962-0008	82447-1682	82953-3393	83403-4903	83939-7018	84367-8356
	Influent	Intermediate	Intermediate	Intermediate	Intermediate	Intermediate	Intermediate	Intermediate	Intermediate

Trichloroethene, ug/L
1,1-Dichloroethane, ug/L

4.6	5.2	5.3	5	3	3	3	3	3	4
--	--	--	--	--	--	--	--	--	--

Sample Date:	1/14/1998	2/16/1998	3/12/1998	4/22/1998	5/20/1998	6/16/1998	7/16/1998	8/19/1998	9/17/1998
Sample Id:	E186121	E188478	E190688	81962-0009	82447-1681	82953-3392	83403-4901	83939-7017	84367-8355
	Effluent	Effluent	Effluent	Effluent	Effluent	Effluent	Effluent	Effluent	Effluent

Trichloroethene, ug/L
1,1-Dichloroethane, ug/L

<1	<1	<1	1	<1	<1	<1	<1	<1	<1
--	--	--	--	--	--	--	--	--	--

-- = Not analyzed.

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TCE Treatment System
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SITE: NPDES Discharge
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Sample Date:	10/14/1998	11/18/1998	12/16/1998	1/12/1999	2/16/1999	3/18/1999	4/12/1999	5/18/1999
Sample Id:	84778-9599	85278-1080	85755-2517	90148-3375	90635-4887	91113-6519	91468-7715	92011-9430

Trichloroethene, ug/L	Influent	Influent	Influent	Influent	Influent	Influent	Influent	Influent
1,1-Dichloroethane, ug/L	4	4	4	4	4	5	6	5
	--	--	--	--	--	--	--	--

Sample Date:	10/14/1998	11/18/1998	12/16/1998	1/12/1999	2/16/1999	3/18/1999	4/12/1999	5/18/1999
Sample Id:	84778-9598	85278-1079	85755-2518	90148-3374	90635-4886	91113-6520	91468-7714	92011-9429

Trichloroethene, ug/L	Intermediate	Intermediate	Intermediate	Intermediate	Intermediate	Intermediate	Intermediate	Intermediate
1,1-Dichloroethane, ug/L	3	4	4	4	4	5	6	5
	--	--	--	--	--	--	--	--

Sample Date:	10/14/1998	11/18/1998	12/16/1998	1/12/1999	2/16/1999	3/19/1999	4/12/1999	5/18/1999
Sample Id:	84778-9597	85278-1078	85755-2519	90148-3373	90635-4485	91113-6521	91468-7713	92011-9428

Trichloroethene, ug/L	Effluent	Effluent	Effluent	Effluent	Effluent	Effluent	Effluent	Effluent
1,1-Dichloroethane, ug/L	<1	<1	<1	<1	<1	2	<1	<1
	--	--	--	--	--	--	--	--

-- = Not analyzed.

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Grand Rapids Metal Fabrication Plant

TCE Treatment System

Influent, Intermediate, and Effluent

SITE: NPDES Discharge

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Sample Date:	6/15/1999	7/21/1999	8/17/1999	9/20/1999	10/19/1999	11/17/1999	12/16/1999	1/11/2000	2/15/2000
Sample Id:	3990294005	3990884004	3991393004	3991972003	3992560001	3993099004	3993622007	3000138004	3000620004
	Influent	Influent	Influent	Influent	Influent	Influent	Influent	Influent	Influent

Trichloroethene, ug/L

1,1-Dichloroethane, ug/L	6	5.57	5.3	5.7	5.6	4.6	4.5	4.4	4.4
	--	--	--	--	--	--	--	--	--

Sample Date:

Sample Id:	6/15/1999	7/21/1999	8/17/1999	9/20/1999	10/19/1999	11/17/1999	12/16/1999	1/11/2000	2/15/2000
	3990294004	3990884003	3991393003	3991972002	3992560002	3993099003	3993622006	3000138003	3000620003
	Intermediate	Intermediate	Intermediate	Intermediate	Intermediate	Intermediate	Intermediate	Intermediate	Intermediate

Trichloroethene, ug/L

1,1-Dichloroethane, ug/L	<1	<1	<1	1.4	2.3	2.4	2.7	2.9	3.3
	--	--	--	--	--	--	--	--	--

Sample Date:

Sample Id:	6/15/1999	7/21/1999	8/17/1999	9/20/1999	10/19/1999	11/17/1999	12/16/1999	1/11/2000	2/15/2000
	3990294003	3990884002	3991393002	3991972001	3992560003	3993099002	3993622005	3000138002	3000620002
	Effluent	Effluent	Effluent	Effluent	Effluent	Effluent	Effluent	Effluent	Effluent

Trichloroethene, ug/L

1,1-Dichloroethane, ug/L	<1	<1	<1	<1	<1	<1	<1	<1	1.2
	--	--	--	--	--	--	--	--	--

-- = Not analyzed.

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SITE: NPDES Discharge
REVISION: 1/5/2010

Sample Date:	3/16/2000	4/19/2000	5/15/2000	6/13/2000	7/25/2000	8/23/2000	9/22/2000	10/23/2000
Sample Id:	3001152008	3001725004	3002122004	3002633005	3003504002	E258488	E261224	E263869

Trichloroethene, ug/L	4.2	3.2	3.2	3.3	3.8	3.8	4.7	2.9
1,1-Dichloroethane, ug/L	--	--	--	--	--	--	--	--

Sample Date:	3/16/2000	4/19/2000	5/15/2000	6/13/2000	7/25/2000	8/23/2000	9/22/2000	10/23/2000
Sample Id:	3001152007	3001725003	3002122003	3002633004	3003504003	E258487	E261223	E263868

Trichloroethene, ug/L	1.8	2	2	2.4	2.9	2.9	4.4	<1
1,1-Dichloroethane, ug/L	--	--	--	--	--	--	--	--

Sample Date:	3/16/2000	4/19/2000	5/15/2000	6/13/2000	7/25/2000	8/23/2000	9/22/2000	10/23/2000
Sample Id:	3001152006	3001725002	3002122002	3002633003	3003504004	E258486	E261222	E263867

Trichloroethene, ug/L	<1	<1	<1	<1	<1	<1	1.3	<1
1,1-Dichloroethane, ug/L	--	--	--	--	--	--	--	--

-- = Not analyzed.

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SITE: NPDES Discharge
REVISION: 1/5/2010

Sample Date:	11/14/2000	12/20/2000	1/18/2001	2/21/2001	3/21/2001	4/17/2001	5/24/2001	6/13/2001
Sample Id:	E265860	E268209	E269746	E272138	E274377	E276265	E279439	E281032
	Influent	Influent	Influent	Influent	Influent	Influent	Influent	Influent

Trichloroethene, ug/L
1,1-Dichloroethane, ug/L

3	6.1	4.6	4.2	4.5	3.7	3.5	4.1
--	--	--	--	--	--	--	--

Sample Date:	11/14/2000	12/20/2000	1/18/2001	2/21/2001	3/21/2001	4/17/2001	5/24/2001	6/13/2001
Sample Id:	E265859	E268208	E269745	E272137	E274376	E276264	E279438	E281031
	Intermediate	Intermediate	Intermediate	Intermediate	Intermediate	Intermediate	Intermediate	Intermediate

Trichloroethene, ug/L
1,1-Dichloroethane, ug/L

<1	<1	<1	<1	<1	<1	<1	<1	1
--	--	--	--	--	--	--	--	--

Sample Date:	11/14/2000	12/20/2000	1/18/2001	2/21/2001	3/21/2001	4/17/2001	5/24/2001	6/13/2001
Sample Id:	E265858	E268207	E269744	E272136	E274375	E276263	E279437	E281030
	Effluent	Effluent	Effluent	Effluent	Effluent	Effluent	Effluent	Effluent

Trichloroethene, ug/L
1,1-Dichloroethane, ug/L

<1	<1	<1	<1	<1	<1	<1	<1	<1
--	--	--	--	--	--	--	--	--

-- = Not analyzed.

MS=Matrix spike duplicate RPD for this sample, fell outside laboratory control limits.

The corresponding result must be considered estimated.

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SITE: NPDES Discharge
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Sample Date:	7/16/2001	8/22/2001	9/13/2001	10/9/2001	11/13/2001	12/19/2001	1/9/2002
Sample Id:	E283305	E285981	E287740	E289883	E292886	E295702	INF-3
	Influent	Influent	Influent	Influent	Influent	Influent	Influent

Trichloroethene, ug/L
1,1-Dichloroethane, ug/L

	5.2	3	4.8	4.9	4.3	4.9	4.9
	--	--	--	--	--	--	--

Sample Date:	7/16/2001	8/22/2001	9/13/2001	10/9/2001	11/13/2001	12/19/2001	1/9/2002
Sample Id:	E283304	E285980	E287739	E289882	E292885	E295701	MID-2
	Intermediate	Intermediate	Intermediate	Intermediate	Intermediate	Intermediate	Intermediate

Trichloroethene, ug/L
1,1-Dichloroethane, ug/L

	3.1	<1	1	1.6	<1	<1	<1
	--	--	--	--	--	--	--

Sample Date:	7/16/2001	8/22/2001	9/13/2001	10/9/2001	11/13/2001	12/19/2001	1/9/2002
Sample Id:	E283303	E285979	E287738	E289881	E292884	E295700	EFF-1
	Effluent	Effluent	Effluent	Effluent	Effluent	Effluent	Effluent

Trichloroethene, ug/L
1,1-Dichloroethane, ug/L

	<1	<1	<1	MS <1	<1	<1	<1
	--	--	--	--	--	--	--

-- = Not analyzed.

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SITE: NPDES Discharge
REVISION: 1/5/2010

Sample Date:	2/6/2002	3/6/2002	4/10/2002	5/1/2002	6/5/2002
Sample Id:	IN-17360-JB-2602-03	IN-17360-JB-030602-003	IN-17360-JB-041002-003	IN-17360-050102-JB-03	IN-17360-060502-JB-03
	Influent	Influent	Influent	Influent	Influent
Trichloroethene, ug/L	3.0	4.3	1.9 ⁽¹⁾	5.3	6.3
1,1-Dichloroethane, ug/L	--	--	--	--	--
Sample Date:	2/6/2002	3/6/2002	4/10/2002	5/1/2002	6/5/2002
Sample Id:	IT-17360-JB-2602-02	IT-17360-JB-030602-002	IT-17360-JB-041002-002	IT-17360-050102-JB-02	MD-17360-060502-JB-02
	Intermediate	Intermediate	Intermediate	Intermediate	Intermediate
Trichloroethene, ug/L	<1	1.0	<1	<1	<1
1,1-Dichloroethane, ug/L	--	--	--	--	--
Sample Date:	2/6/2002	3/6/2002	4/10/2002	5/1/2002	6/5/2002
Sample Id:	EF-17360-JB-2602-01	EF-17360-JB-030602-001	EF-17360-JB-041002-001	EF-17360-050102-JB-01	EF-17360-060502-JB-01
	Effluent	Effluent	Effluent	Effluent	Effluent
Trichloroethene, ug/L	<1	<1	<1	<1	<1
1,1-Dichloroethane, ug/L	--	--	--	--	--

-- = Not analyzed.

⁽¹⁾Based on a detection of 4.9 ug/L in the trip blank, the results for effluent detection of 1.9 ug/L would qualify as non-detect at 4.9 ug/L

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SITE: NPDES Discharge
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Sample Date:	7/17/2002	7/26/2002	8/14/2002	9/4/2002	10/9/2002
Sample Id:	IN-17360-071702-JB-003	IN-17360-072602-JB-003	IN-17360-081402-JB-003	IN-17360-090402-JB-003	IF-17360-100902-JB-068
Trichloroethene, ug/L	5.7	6.5	5.0		4.7
1,1-Dichloroethane, ug/L	--	--	--		--
Sample Date:	7/17/2002	7/26/2002	8/14/2002	9/4/2002	10/9/2002
Sample Id:	IT-17360-071702-JB-002	IT-17360-072602-JB-002	MD-17360-081402-JB-002	MD-17360-090402-JB-002	MD-17360-100902-JB-067
	Intermediate	Intermediate	Intermediate	Intermediate	Intermediate
Trichloroethene, ug/L	1.7	<1	<1	<1	<1
1,1-Dichloroethane, ug/L	--	--	--	--	--
Sample Date:	7/17/2002	7/26/2002	8/14/2002	9/4/2002	10/9/2002
Sample Id:	EF-17360-071702-JB-001	EF-17360-072602-JB-01	EF-17360-081402-JB-001	EF-17360-090402-JB-001	EF-17360-100902-JB-066
	Effluent	Effluent	Effluent	Effluent	Effluent
Trichloroethene, ug/L	<1	<1	<1	<1	<1
1,1-Dichloroethane, ug/L	--	--	--	--	--

-- = Not analyzed.

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SITE: NPDES Discharge
REVISION: 1/5/2010

Sample Date:	11/7/2002	12/13/2002	1/15/2003	2/17/2003	3/5/2003
Sample Id:	IN-17360-110702-JB-072	IN-17360-121302-JB-003	IN-17360-011503-JB-083	IN-17360-021703-JB-003	IN-17360-030503-JB-003

Trichloroethene, ug/L	4.6	4.7	4.9	3.9	4.2
1,1-Dichloroethane, ug/L	--	--	--	--	--

Sample Date:	11/7/2002	12/13/2002	1/15/2003	2/17/2003	3/5/2003
Sample Id:	MD-17360-110702-JB-071	MD-17360-121302-JB-002	MD-17360-011503-JB-082	MD-17360-021703-JB-002	MD-17360-030503-JB-002

Trichloroethene, ug/L	<1	<2	2	4	1.3
1,1-Dichloroethane, ug/L	--	--	--	--	--

Sample Date:	11/7/2002	12/13/2002	1/15/2003	2/17/2003	3/5/2003
Sample Id:	EF-17360-110702-JB-070	EF-17360-121302-JB-001	EF-17360-011503-JB-081	EF-17360-021703-JB-001	EF-17360-030503-JB-001

Trichloroethene, ug/L	<1	<2	<1	<2	<1
1,1-Dichloroethane, ug/L	--	--	--	--	--

-- = Not analyzed.

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SITE: NPDES Discharge

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Sample Date: 4/17/2003 5/14/2003 9/10/2003 12/17/2003 3/3/2004
Sample Id: IN-17360-041703-JB-064 IN-17360-051403-JB-003 IN-17360-091003-JB-003 IN-17360-121703-JB-003 IN-17360-030304-JB-003

Trichloroethene, ug/L 2.6 3.6 3.3 2.3 2.4
1,1-Dichloroethane, ug/L -- -- -- -- --

Sample Date: 4/17/2003 5/14/2003 9/10/2003 12/17/2003 3/3/2004
Sample Id: MD-17360-041703-JB-063 MD-17360-051403-JB-002 MD-17360-091003-JB-002 MD-17360-121703-JB-002 MD-17360-121703-JB-002

Trichloroethene, ug/L <1 <1 <1 <1 <1
1,1-Dichloroethane, ug/L -- -- -- -- --

Sample Date: 4/17/2003 5/14/2003 9/10/2003 12/17/2003 3/3/2004
Sample Id: EF-17360-041703-JB-062 EF-17360-051403-JB-001 EF-17360-091003-JB-001 EF-17360-121703-JB-001 EF-17360-121703-JB-001

Trichloroethene, ug/L <1 <1 <1 <1 <1
1,1-Dichloroethane, ug/L -- -- -- -- --

-- = Not analyzed.

**General Motors
Grand Rapids Metal Fabrication Plant
TCE Treatment System
Influent, Intermediate, and Effluent**

16 of 16

SITE: NPDES Discharge
REVISION: 1/5/2010

Sample Date:	9/8/2004	12/8/2004	1/5/2005	2/15/2005
Sample Id:	IN-17360-090804-JB-003	IN-17360-120804-JB-003	INF-17360-010505-JB-003	INF-17360-021505-JB-003
	Influent	Influent	Influent	Influent

Trichloroethene, ug/L	1.8	2.2	2.2	2.5
1,1-Dichloroethane, ug/L	--	--	--	--

Sample Date:	9/8/2004	12/8/2004	1/5/2005	2/15/2005
Sample Id:	MD-17360-090804-JB-002	MD-17360-120804-JB-002	MD-17360-010505-JB-002	MD-17360-021505-JB-002
	Intermediate	Intermediate	Intermediate	Intermediate

Trichloroethene, ug/L	1.0	<1	<1	<1
1,1-Dichloroethane, ug/L	--	--	--	--

Sample Date:	9/8/2004	12/8/2004	1/5/2005	2/15/2005
Sample Id:	EF-17360-090804-JB-001	EF-17360-0120804-JB-001	EF-17360-010505-JB-001	EF-17360-021505-JB-001
	Effluent	Effluent	Effluent	Effluent

Trichloroethene, ug/L	<1	<1	<1	<1
1,1-Dichloroethane, ug/L	--	--	--	--

**General Motors
Grand Rapids Metal Fabrication Plant
Soil Vapor Recovery System Summary/Analytical Data**

SITE: 87-3
REVISION: 1/5/2010

Sample Date: 2/21/1989 3/30/1989 5/5/1989 6/9/1989 7/10/1989 8/11/1989 9/14/1989 10/12/1989 11/8/1989 12/15/1989 1/5/1990 2/9/1990 3/7/1990
Sample Id: A01371 A02417 A03698 A04804 A05852 A07215 A08211 A09893 A01432 A02717 A03243 A04267 A04990

	Influent	Influent	Influent	Influent	Influent	Influent	Influent	Influent	Influent	Influent	Influent	Influent
Trichloroethene, mg/m3	138	114	61.3	51.9	71.9	18.1	26	11	16	16.7	18	22
Barometric Pressure, mm/Hg	760	--	760	754	768	743	743	743	--	--	766	756
Temperature, Deg C.	43	--	43	43	43	24	24	24	--	--	--	38

	A01372	A02418	A03700	A04806	A05854	A07217	A08213	A09895	A01434	A02719	A03245	A04269	A04992
Trichloroethene, mg/m3	<2.4	<5.87	<8.6	<8.6	<8.8	<5.3	<5	<5.3	<5	<1	10	<1.2	<1
Barometric Pressure, mm/Hg	760	--	760	754	768	743	743	743	--	--	766	756	759
Temperature, Deg C.	24	--	43	43	43	24	24	24	--	--	--	38	38

-- = Not Analyzed

General Motors

Grand Rapids Metal Fabrication Plant

Soil Vapor Recovery System Summary/Analytical Data

SITE: 87-3
REVISION: 1/5/2010

Sample Date:	4/4/1990	5/3/1990	6/4/1990	7/5/1990	8/8/1990	9/11/1990	10/2/1990	11/9/1990	12/3/1990	1/14/1991	3/5/1991	6/6/1991	9/3/1991
Sample Id:	A06111	A07192	A08769	A09819	A01186	A02890	H3925	H5796	H7001	A0522	A2685	A6486	A0911
	Influent	Influent	Influent	Influent	Influent	Influent	Influent	Influent	Influent	Influent	Influent	Influent	Influent
Trichloroethene, mg/m3	6	7	9	11	2	1	1	1	2	3	1	6	6
Barometric Pressure, mm/Hg	--	--	763	761	766	--	765	760	750	758	754	--	763.19
Temperature, Deg C.	--	--	28	35	30	25	40	35	30	35	40	--	33

Sample Id:	A06113	A07194	A08771	A09821	A01188	A02892	H3927	H5798	H7003	A0524	A2687	A6488	A0913
	Effluent	Effluent	Effluent	Effluent	Effluent	Effluent	Effluent	Effluent	Effluent	Effluent	Effluent	Effluent	Effluent
Trichloroethene, mg/m3	<1	<1	<1	2	<1	<.7	<.7	<1	<1	<1	<1	<1	<1
Barometric Pressure, mm/Hg	--	--	763	761	766	--	765	760	750	758	754	--	763.19
Temperature, Deg C.	--	--	28	35	30	25	40	35	30	35	40	--	33

-- = Not Analyzed

* = Sample broken, resampling not done due to system being down.

General Motors
Grand Rapids Metal Fabrication Plant
Soil Vapor Recovery System Summary/Analytical Data

3 of 6

SITE: 87-3
REVISION: 1/5/2010

Sample Date:	12/3/1991	1/27/1992	3/10/1992	6/30/1992	12/11/1992	2/12/1993	3/11/1993	6/14/1993	9/15/1993	12/17/1993	3/16/1994	6/14/1994	9/14/1994
Sample Id:	--	A01551	A04442	A00266	E40346	E45474	E47634	E56573	E66018	E75737	E81231	E89637	E97431
	Influent	Influent	Influent	Influent	Influent	Influent	Influent	Influent	Influent	Influent	Influent	Influent	Influent
Trichloroethene, mg/m3	*	7	3	<1	44.7	7.9	7.74	4.8	4.8	3.2	5.3	6.3	5.5
Barometric Pressure, mm/Hg	*	744.22	730.50	--	--	--	--	--	--	--	--	--	--
Temperature, Deg C.	*	--	--	--	--	--	--	--	--	--	--	--	--

Sample Id:	--	A05367	A04444	A00268	E40344	E47636	E47636	E56571	E66017	E75739	E81233	E89984	E97433
	Effluent	Effluent	Effluent	Effluent	Effluent	Effluent	Effluent	Effluent	Effluent	Effluent	Effluent	Effluent	Effluent
Trichloroethene, mg/m3	*	<1	4	6	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
Barometric Pressure, mm/Hg	*	744.22	730.50	--	--	--	--	--	--	--	--	--	--
Temperature, Deg C.	*	--	--	--	--	--	--	--	--	--	--	--	--

-- = Not Analyzed

* Airzorb carbon units replaced with GM-assembled carbon units.

**General Motors
Grand Rapids Metal Fabrication Plant
Soil Vapor Recovery System Summary/Analytical Data**

4 of 6

SITE: 87-3
REVISION: 1/5/2010

Sample Date:	12/16/1994	3/17/1995	6/20/1995	9/14/1995	12/19/1995	3/19/1996	6/13/1996	9/13/1996	12/13/1996	3/13/1997	6/19/1997	9/19/1997	12/17/1997
Sample Id:	E106389	E112941	E120782	E127399	E134901	E139799	E146827	E154105	E161514	E166232	E178326	E178326	E184888
	Influent	Influent	Influent	Influent	Influent	Influent	Influent	Influent	Influent	Influent	Influent	Influent	Influent
Trichloroethene, mg/m3	5.9	3	3.9	<0.4	3.8	3.8	2.8	4.0	3.2	2.8	2.7	3.9	2.3
Barometric Pressure, mm/Hg	--	--	--	--	--	--	--	--	--	--	--	--	--
Temperature, Deg C.	--	--	--	--	--	--	--	--	--	--	--	--	--

Sample Id:	E106391	E112943	E120784	E127401	E134903	E139801	E146829	E154107	E161516	E166234	E172372	E178328	E184890
	Effluent	Effluent	Effluent	Effluent	Effluent	Effluent	Effluent	Effluent	Effluent	Effluent	Effluent	Effluent	Effluent
Trichloroethene, mg/m3	3.0	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	0.79	3.0#	<0.4	<0.4
Barometric Pressure, mm/Hg	--	--	--	--	--	--	--	--	--	--	--	--	--
Temperature, Deg C.	--	--	--	--	--	--	--	--	--	--	--	--	--

-- = Not Analyzed

-- = Not Analyzed

= Sample label was likely switched in the field with the intermediate sample label.

General Motors
Grand Rapids Metal Fabrication Plant
Soil Vapor Recovery System Summary/Analytical Data

5 of 6

SITE: 87-3
REVISION: 1/5/2010

Sample Date:	3/12/1998	6/17/1998	9/17/1998	12/16/1998	3/11/1999	6/15/1999	9/20/1999	12/16/1999	3/16/2000	6/13/2000	9/22/2000
Sample Id:	E190709	82954-3411	84367-8361	85755-2509	90995-6100	92195-0021	3991972004	3993622023	3001157001	3002633024	E261212
	Influent	Influent	Influent	Influent	Influent	Influent	Influent	Influent	Influent	Influent	Influent
Trichloroethene, mg/m3	1.6	4	2	2.9	3	4	3	4	3	1	1.7
Barometric Pressure, mm/Hg	--	--	--	--	--	--	--	--	--	--	--
Temperature, Deg C.	--	--	--	--	--	--	--	--	--	--	--

Sample Id:	E190711	82954-3413	84367-8363	85755-2511	90995-6102	92195-0023	3991972006	3993622024	3001157002	E261214
	Effluent	Effluent	Effluent	Effluent	Effluent	Effluent	Effluent	Effluent	Effluent	Effluent
Trichloroethene, mg/m3	1.3	<1	<1	<1	<1	<1	2	<1	<1	<0.4
Barometric Pressure, mm/Hg	--	--	--	--	--	--	--	--	--	--
Temperature, Deg C.	--	--	--	--	--	--	--	--	--	--

-- = Not analyzed.

(1) Full sample number includes AR-17360

**General Motors
Grand Rapids Metal Fabrication Plant
Soil Vapor Recovery System Summary/Analytical Data**

SITE: 87-3
REVISION: 1/5/2010

Sample Date:	12/20/2000	3/21/2001	6/13/2001	9/13/2001	12/19/2001	4/2/2003
Sample Id:	E268246	E274369	E281008	E287735	E295696	(1)-040203-JB-003
	Influent	Influent	Influent	Influent	Influent	Influent

Trichloroethene, mg/m3	1.3	0.6	1.3	1.5	1.2	2.7
Barometric Pressure, mm/Hg	--	--	--	--	--	--
Temperature, Deg C.	--	--	--	--	--	--

Sample Id:	E268248	E274370	E281010	E287737	E295698	(1)-040203-JB-001
	Effluent	Effluent	Effluent	Effluent	Effluent	Effluent

Trichloroethene, mg/m3	0.51	<0.4	<0.4	<0.4	<0.4	0.7
Barometric Pressure, mm/Hg	--	--	--	--	--	--
Temperature, Deg C.	--	--	--	--	--	--

Grand Rapids Metal Fabrication Plant

Soil Vapor Recovery System Summary/Flow Data

SITE: 87-3
 REVISION: 1/5/2010

Date	Flow Meter Reading (%)	Air Flow Rate (ACFM)
02/21/89	100	NA
03/02/89	103	180
03/15/89	102	102359
03/20/89	102	289099
03/30/89	101	741130
04/06/89	102	979200
04/14/89	102	577020
04/21/89	102	NA
05/05/89	100	152
05/22/89	101	NA
06/09/89	101	NA
06/23/89	101	NA
07/10/89	101	NA
07/28/89	102	NA
08/11/89	105	NA
08/22/89	101	NA
09/14/89	100	NA
10/13/89	NA	NA
11/08/89	102	NA
12/15/89	103	NA
01/05/90	104	NA
02/09/90	103	NA
03/07/90	103	NA
04/04/90	103	NA
05/03/90	105	NA
06/04/90	104	NA
07/05/90	104	NA
07/20/90	104	NA
08/08/90	104	NA
09/11/90	105	NA
10/02/90	104	NA
11/09/90	105	NA
12/03/90	130	NA
01/14/91	105	NA
03/05/91	NA	NA
03/26/91	105	NA
06/06/91	105	NA
09/03/91	105	NA
09/26/91	105	NA
09/26/91	105	NA
12/02/91	103	NA
01/06/92	NA	NA
01/27/92	105	NA
03/10/92	105	NA
06/30/92	100	NA
12/11/92	73	85.9
02/12/93	74	87.2

NA = Not Available

Note: Airzorb carbon units replaced with GM-assembled carbon units in December of 1991.

Grand Rapids Metal Fabrication Plant

Soil Vapor Recovery System Summary/Flow Data

SITE: 87-3
 REVISION: 1/5/2010

Date	Flow Meter Reading (%)	Air Flow Rate (ACFM)
03/11/93	74	87.2
06/12/93	75	88.5
09/15/93	76	89.8
12/17/93	75	88.5
03/16/94	75	88.5
06/14/94	75	88.5
09/14/94	75	88.5
12/16/94	75	88.5
03/17/95	75	88.5
06/20/95	60	70.0
09/14/95	74	87.2
12/19/95	74	87.2
03/19/96	75	88.5
06/13/96	75	88.5
09/13/96	74	87.2
12/13/96	74	87.2
03/13/97	72	84.6
06/19/97	75	88.5
09/19/97	72	84.6
12/17/97	70	82.0
03/12/98	70	82.0
06/17/98	70	82.0
09/17/98	86	102.8
12/16/98	70	80.0
03/11/99	70	82.0
06/15/99	68	79.4
09/20/99	69	80.7
12/16/99	68	79.4
03/16/00	74	87.2
06/13/00	70	82.0
09/22/00	75	88.5
12/20/00	72	84.6
03/21/01	63	72.9
06/13/01	72	84.6
09/13/01	72	84.6
12/19/01	70	82.0

Note: Airzorb carbon units replaced with GM-assembled carbon units in December of 1991.
 SVE system shutdown in May 2003

**GM CPC
OFF-SITE
GROUND WATER PURGE
EVALUATION
GRAND RAPIDS METALS FABRICATION
GRAND RAPIDS, MICHIGAN**

Prepared for

**GM CPC
300 36TH STREET
GRAND RAPIDS, MICHIGAN**

Prepared by

**WW ENGINEERING & SCIENCE
5555 GLENWOOD HILLS PARKWAY
GRAND RAPIDS, MICHIGAN 49588-0874**

APRIL 1993

PROJECT 22579



WW Engineering & Science
A Summit Company

**GM CPC
OFF-SITE
GROUND WATER PURGE
EVALUATION
GRAND RAPIDS METALS FABRICATION
GRAND RAPIDS, MICHIGAN**

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**GM CPC
300 36TH STREET
GRAND RAPIDS, MICHIGAN**

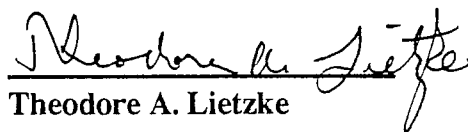
Prepared by

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APRIL 1993

PROJECT 22579

Reviewed by:


Theodore A. Lietzke
Project Manager

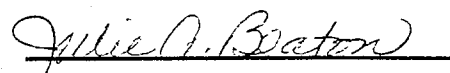

Julie A. Beaton
Director, Project Management

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1	Ground Water Flow Model Calibration Form
2	Summary of Off-Site TCE Distributions
3	Cost Estimate for Off-Site Ground Water Remediation System

FIGURES

- 1 Model Water Table Contours Calibration to December 1992
- 2 Modeled Water Table Contours Modeled MPW at 10 GPM
- 3 Modeled Water Table Contours Modeled MPW at 40 GPM
- 4 Initial TCE Concentrations September 20, 1989
- 5 Modeled TCE Concentrations Calibration to December 1992
- 6 Modeled TCE Concentrations for December 1997
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- 9 Modeled TCE Concentrations for December 1997 with MPW Pumping at 10 GPM Starting December 1993
- 10 Modeled TCE Concentrations for December 2002 with MPW Pumping at 10 GPM Starting December 1993
- 11 Modeled TCE Concentrations for December 2007 with MPW Pumping at 10 GPM Starting December 1993
- 12 Modeled TCE Concentrations for December 1997 with MPW Pumping at 40 GPM Starting December 1993
- 13 Modeled TCE Concentrations for December 2002 with MPW Pumping at 40 GPM Starting December 1993
- 14 Modeled TCE Concentrations for December 2007 with MPW Pumping at 40 GPM Starting December 1993
- 15 Summary of Total TCE in Off-Site Area For Each Modeling Scenario Through Time

APPENDICES

- A Volumetric and Mass Budget for Entire Modeled Area

MEETING AGENDA

GM CPC Grand Rapids Metal Fabrication Plant

May 10, 1993

MDNR Offices Grand Rapids

INTRODUCTIONS

BACKGROUND

MDNR REQUEST FOR EVALUATION OF OFF-SITE PURGE WELLS(S)

MODEL ASSUMPTIONS/CONSTRAINTS

EXISTING SYSTEM

OFF-SITE WELLS

MODEL PROCESS

1ST STEP WATER FLOW

2ND STEP CONTAMINANT CONCENTRATIONS

SCENARIOS

COST ANALYSIS/ENGINEERING CONSIDERATIONS

RESULTS

PROPOSAL

RISK EVALUATION AND/OR RESTRICTIVE AGREEMENT

MDNR APPROVAL

DISCUSSION

1.0 INTRODUCTION

GM CPC has previously investigated and begun remediation of a TCE plume emanating from beneath the facility. The remedial system consists of a purge well (installed in 1989) and soil vapor recovery system in the plant and an additional purge well in the north parking lot (PW-DISCH installed in 1989). The ground water from the purge wells is sent to the City of Wyoming for treatment.

The plume beyond PW-DISCH has been discharging by natural means to Cole Drain in the vicinity of MW-11. Cole Drain has been monitored since 1988 as documented in the ongoing monitor program. No adverse impact to the drain water quality from the ground water discharge is evident from the monitoring program.

At the request of MDNR, in a letter of February 17, 1993 to GM CPC, an assessment has been prepared for off-site purging to supplement the existing plume capture system. This report presents the ground water modeling and engineering evaluation of that assessment.

In order to evaluate the capture and effectiveness of off-site purging, a ground water flow and contaminant transport model was developed. The ground water flow and contaminant transport modeling section summarizes the methods and results of the evaluation of the current on-site ground water capture and effectiveness for off-site purging relative to the current system. The model was calibrated to match the existing conditions and then used to predict future changes in the plume. Predictions were completed for scenarios using the current ground water capture system and for scenarios with additional purging off-site.

The model was used to assess the effectiveness of:

- The current purging scenario;
- Purging off-site near Cole drain and MW-11 in the City of Wyoming Hillcraft Park at 10 gallons per minute (gpm); and
- Purging off-site near Cole drain and MW-11 at 40 gpm.

An additional purge well located midway between PW-DISCH and MW-11 was also considered for evaluation.

On the basis of the ground water modeling a cost analysis has been prepared for the 10 gpm scenario. In addition, engineering, site access, and treatment options are discussed.

GM CPC's objective with the remedial system has been to reach a Type B closure for the entire site. The effectiveness of the existing and requested systems to attain that objective are evaluated.

2.0 GROUND WATER FLOW AND CONTAMINANT TRANSPORT MODELING

A contaminant transport model was developed to simulate the contaminant migration. The contaminant transport model was developed using modeling software entitled "A Modular Three-Dimensional Transport Model for Simulation of Advection, Dispersion, and Chemical Reactions of Contaminants in Ground Water System "(MT3D) developed by S.S. Papadopoulos & Associate, Inc.

As the basis of MT3D simulations, a ground water flow model was developed using modeling software developed by M. G. McDonald and A. W. Harbough of the U.S. Geological Survey entitled "A Modular Three-Dimensional Finite Difference Ground Water Flow Model" (MODFLOW). The ground water flow model results are used as input into the contaminant transport model.

2.1 GROUND WATER FLOW MODEL SIMULATIONS

The ground water flow system was modeled as a single layer, water table aquifer.

The modular design of MODFLOW allows the assignment of modules of computer code call packages to simulate the different aspects of the hydrogeologic system. Of these packages, the Basic Input, Block Center Flow, Well, Drain, General Head Boundary, and Recharge packages were used to simulate the ground water flow patterns.

Basic Package

The Basic Input package is used to define the model grid and boundary conditions. A 4000 ft by 7000 ft finite difference grid was constructed using a uniform cell discretization. The grid boundaries were set a sufficient distance away from the area of investigation to eliminate model boundary effects. The upgradient boundary (South-Southeast) and the downgradient boundary (North-Northwest) of the flow model were simulated as constant head boundaries. Both side boundaries were simulated as no-flow boundaries.

Block Center Flow Package

The Block Center Flow package is used to define the aquifer parameters for each cell of the model. The sand and gravel aquifer is under unconfined conditions. The aquifer thickness varies between 10 ft and 60 ft based on the well logs and cross sections in the hydrogeologic investigation reports(phase III and IV). Hydraulic conductivity values used in the model were based on the site permeability tests(slug tests) with a range of 17 to 192 ft/day.

Other Packages

Cole Drain was simulated using the General Head Boundary package. This package was chosen to simulate communication between water in the drain and the aquifer when water elevation in the drain fluctuates. A foundation drain under the GM CPC building was simulated using Drain package. Purge wells were simulated using Well package. The recharge package was used to simulate surface infiltration. A recharge rate of 10 inches per year was input to the modeled areas not covered with buildings, roads, or other paved areas.

Calibration

The ground water flow model was calibrated to the December 10, 1992 water table elevations using the steady-state flow option. A calibration of approximately ± 0.3 ft was obtained over all the modeled area(see Table 1). The simulated ground water flow patterns are presented in Figure 1. These results indicate the current system is effectively capturing the ground water beneath the facility property.

Purge Scenarios

Two additional ground water flow purge scenarios were performed under steady-state conditions. Keeping the current pumping situation, an additional purge well (MPW) was modeled near well 87-11 with pumping rates at 10 gpm and 40 gpm.

The simulated ground water flow pattern for the two additional purge rates with off-site purging are illustrated in Figures 2 and 3.

The results of the calibration scenario (i.e., current purging conditions) and off-site purging scenarios were used as input into the contaminant transport model.

2.2 CONTAMINANT TRANSPORT SIMULATIONS

The input structure for MT3D is similar to the ground water flow model(MODFLOW). The input data is divided into packages which contain input parameters needed to simulate the different aspects of contaminant transport. Of the available packages the Basic Transport, Advection, Dispersion, Chemical Reaction, and Source/Sink Mixing packages were used to simulate the contaminant migration. The application of each of these packages is described below.

Basic Transport Package

Due to the similarity of the input formats between MODFLOW and MT3D, most of the information for the definition of the model domain was obtained directly from the existing MODFLOW Basic and Block Center Flow input files.

In this model, trichloroethene(TCE) was simulated. The initial concentrations were input based on the analytical results for samples collected on September 1989. Two grid cells were set as constant concentration sources(200 ug/L and 75 ug/L) to simulate the continuous TCE input from the vadose zone or capillary fringe.

Advection Packages

The advection package simulates the change in concentration due to advection. MT3D provide three types of Eulerian-Lagrangian algorithms to solve for the advection portion of contaminant transport. The Method of Characteristics(MOC) was used in this model. It uses a conventional particle tracking technique for solving the advection term. One important feature of the MOC technique is that it is virtually free of numerical dispersion, which creates serious difficulty in many standard numerical schemes.

Dispersion Package

The dispersion package simulates the change in contaminant concentrations due to hydrodynamic dispersion. Hydrodynamic dispersion occurs because of mechanical mixing during advection through porous medium and because of molecular diffusion due to the thermal-kinetic energy of the contaminant particles.

The dispersivity term is broken down into three orthogonal components of spreading: longitudinal dispersivity (spreading in the direction of ground water flow), horizontal transverse dispersivity, and vertical transverse dispersivity. The values of longitudinal,

horizontal, and vertical dispersivity were set 10 ft, 0.2 ft, and 0.2 ft, respectively. These values are considered appropriate considering the homogeneous nature of the aquifer. Spreading due to molecular diffusion was not considered during the transport simulations because the average linear ground water flow velocities observed at the site fell within an advection dominated flow regime (i.e., diffusion is negligible for the simulations).

Sink Source Mixing Package

The sink source mixing package simulates dissolved contaminants entering the simulated domain through sources (i.e. recharge), or leaving the simulated domain through sinks (i.e. well drain).

This package was used to simulate the removal of TCE due to pumping of purge wells PW-DISCH, 86-2, and the modeled off-site purge well, as well as Cole Drain and the foundation drain under GM CPC building. The locations and flow rates of point sources/sinks are obtained directly from the output of the ground water flow model.

Chemical Reaction Package

The chemical reaction package was used to simulate the retardation of contaminant migration due to sorption of the contaminants on the aquifer. A linear isotherm was selected to simulate the adsorption and desorption processes.

A bulk density of 120.6 lb/ft³ and a distribution coefficient (kd) 0.00202 ft³/lb were input into the contaminant transport model so that a retardation factor of 1.97 was calculated by the model. The first order irreversible rate reaction (radioactive decay or biodegradation) was not considered for any of the simulations. Because TCE is observed to breakdown to DCE at the site TCE concentrations may decrease slightly more rapidly than predicted due to degradation.

Calibration

A calibration of TCE migration was performed. The model was calibrated to the December 1992 TCE concentrations, with TCE concentrations from September 1989 used as the starting concentrations. Figures 4 and 5 illustrate the initial TCE concentrations and the simulated TCE concentrations for December 1992. The simulated results closely matched the observed conditions for December 1992 indicating the model is able to simulate the observed conditions.

Scenarios

Starting with the current conditions (i.e., December 1992) predictions were made for each scenario for three future time intervals: five years, December 1997; 10 years, December 2002; and 15 years, December 2007.

For the off-site purging scenarios a purge well (MPW) was modeled near monitoring well 87-11. Two scenarios were modeled. The first with purging at 10 gpm and the second with purging at 40 gpm. In each of the scenarios the purge well begins pumping in December 1993.

3.0 MODEL RESULTS

The results of the modeling are presented in Figures 6 through 15, Tables 1 and 2, and Appendix A. Figures 6 through 8 illustrate the predicted TCE concentrations under current pumping conditions. Evaluation of the data presented in Figures 6 through 8 indicate that the purge well in the parking lot (PW-DISCH) is preventing further migration of TCE from the plant area to the off-site area. By the end of 2002 the off-site plume is predicted to be at or near 3 ug/l beneath the southern half of the off-site property. By the end of 2007 the off-site plume is predicted to have decreased to 3 ug/l or less throughout most of the off-site area.

Figures 9 through 11 illustrate the predicted TCE concentrations with off-site purging at a rate of 10 gpm. Evaluation of the data presented in these figures illustrate that an off-site purge rate of 10 gpm has little effect on plume changes relative to no off-site purging. Figures 12 through 14 illustrate the predicted TCE concentrations with off-site purging at a rate of 40 gpm. The data presented in these figures indicate that off-site purging at a rate of 40 gpm should cause the concentrations within the central portion of the off-site plume to decrease below 50 ug/l by the end of 1997. The data presented in Figure 13 for the year 2002, however, indicates purging off-site at 40 gpm could cause migration of TCE past the existing purge well PW-DISCH (see Figure 7, 10, and 13).

Table 1 summarizes the ground water flow model calibration results. Table 2 summarizes the amount of TCE remaining off-site for each model scenario as a percentage of the initial amount present when the remedial system was started in 1989. A 25% reduction has already occurred in the off-site plume with the operation of the current system. Figure 15 presents the predicted reduction of total TCE present in the off-site plume area through time for each scenario. Appendix A presents tables of the modeling output summarizing

the ground water volumetric and contaminant mass budgets for each of the modeled scenarios.

All three model scenarios, including continued operation of the existing system, show less than 1% of the mass remaining in the off-site plume at the end of 15 years. The total mass presented in Appendix A is over estimated from actual due to the model assumption that the entire thickness of the aquifer is at the modeled concentration. We estimate approximately one fourth of the aquifer thickness is contaminated to the level measured in the monitoring wells. The monitoring wells are placed in the most contaminated zone of the aquifer on the basis of analysis from temporary wells used to vertically profile the aquifer.

The placement of a second off-site well in the axis of the plume midway between PW-DISCH in the north parking lot and MW-11 was considered for evaluation. The model results for the existing system indicate that the concentration of TCE is dropping already in that area.

4.0 COST ANALYSIS

The cost estimate, Table 3, lists the major assumptions for the construction of one 10 gpm purge well in Hillcraft Park near monitoring well MW 87-11. The well, to be effective, has to be located in the immediate vicinity of the baseball diamond. The estimate includes a capital cost of \$70,000 for construction of the well, piping, and control vault and an annual operating cost of \$20,000 based on current cost rates. The discharge is proposed to be directed to the City of Wyoming sanitary sewer, as is the existing operating system. The City of Wyoming has recently considered a substantial increase in the discharge fee rate for ground water discharges which could significantly increase the cost. The life cost, assuming 15 years of operation at 10 GPM, is \$375,000. For a conservatively estimated 10 to 15 lbs of TCE that is dissolved and/or sorbed in the plume beyond PW-DISCH in the parking lot, the expected off-site purge well capture is 50% or 7.5 lbs based on the model. The minimum cost per pound captured would be approximately \$50,000.

5.0 SITE ACCESS

Permission to place the well and vault in the park will have to be obtained from the City of Wyoming. The City will also have to allow the discharge of the ground water to the sanitary sewer. The purge well and equipment would be placed below grade to create the

least hazard to the use of the park and present the least liability and vandalism issues to GM CPC. Power will have to be brought across adjacent property to operate the system.

GM CPC has no assurance that access can be obtained from either property owner for installation of any system. GM CPC would also need to be able to obtain easements or agreements for long term monitoring and maintenance of the system. For model purposes we have assumed that access and installation could be obtained by December 1993.

6.0 ENGINEERING CONSIDERATIONS

The off-site system would likely be constructed with all structures placed below grade in a vault. Access would be through a locked hatch. If a treatment system has to be installed along with the purge well system, a substantial increase in the vault size and access capabilities would be required.

7.0 TREATMENT OPTIONS

The existing operating system discharges directly to the City of Wyoming for treatment. The city is currently conducting a study of its waste water treatment facility which may affect its ability or willingness to accept ground water for treatment. GM CPC would incur additional cost if a treatment system has to be added to the requested off-site purge well.

8.0 COMPLIANCE CONSIDERATIONS

GM CPC has the objective to meet the Type B closure criteria for this site. The Type B criteria for ground water is 3 ug/l which is the health based drinking water criteria.

The Type B surface water criteria measured at the ground water/surface water interface (GSI) is 94 ug/l.

The MDNR contends that GM CPC must "undertake an aggressive and accelerated program to remediate and secure closure for all off-site contamination" in accordance with the Michigan Environmental Response Act (MERA; 1982 Public Act 307, as amended) and the Water Resources Commission Act (1929 Public Act 245). The purpose of this report is to present an evaluation of remedial alternatives for achieving compliance with these regulations. The remedial alternatives evaluated were: 1) continued operation of the existing purge well system; 2) installation of an additional purge well in the city park near monitoring well MW-11 to be operated in conjunction with the existing purge well system

as proposed by the MDNR; and 3) installation of two purge wells off-site to be operated in conjunction with the existing purge well system. For alternatives, one well would be located as in alternative two and a second well would be located midway along the plume axis between PW-DISCH and MW-11.

Unlike Act 307, Act 245 does not contain guidelines for the evaluation of remedial alternatives. Act 245 stipulates only that the "best available technology" be used for discharges to the waters of the State. Because each remedial alternative uses the best available technology for remediation of ground water at the GM CPC facility, both remedial alternatives meet this requirement of Act 245.

Rule 603 of the Act 307 Administrative Rules requires the MDNR to evaluate remedial alternatives according to specific criteria. These criteria include effectiveness, long-term uncertainties, compliance with other regulations, threats to human health and the environment, reliability, failure costs, ease of performance monitoring, public's perspective, and permanent reduction/destruction of contaminants. Based on the ground water modelling results presented in this report and these evaluation criteria, each of the remedial alternatives "adequately protect the public health, safety, welfare and the environment and natural resources, consistent with part 7 of the Act 307 administrative rules" (Rule 601(3)).

2.0 SUMMARY AND RECOMMENDATIONS

The following conclusions can be drawn from the evaluation process.

- 1) The ground water capture analysis indicates that the purge well in the parking lot (PW-DISCH) is preventing further migration of TCE from the facility property to the off-site area. The progress of the plume reduction beyond the parking lot purge well is not apparent from the historic monitoring data because of the configuration of the monitoring wells off-site. The current reduction of the plume will be apparent in the monitor wells in the park only in the later stages of the clean up.
- 2) Off-site purging would reduce the concentration of TCE in the vicinity of MW-11. However, the off-site purging does not significantly reduce the duration of the clean up.

- 3) Off-site purging at 40 gpm in the park may increase the potential for contaminants to bypass the purge well PW-DISCH in the parking lot as evidenced in the model predictions for December 2002.
- 4) Approximately 7.5 or 11 lbs of the contaminant mass in the off-site plume area would be collected by the off-site purge well (MPW) pumping at 10 and 40 gpm, respectively.
- 5) The model predictions clearly indicate that installation of a purge well midway between MW-11 and PW-DISCH does not significantly increase the clean up rate over using the current system. The predictions also indicate that the concentrations in that area are currently decreasing. A mass reduction on the order of 25% is predicted to have already occurred in the off-site plume with the operation of the existing purge well system.
- 6) The model predictions indicate that the TCE plume in the off-site area will be remediated within a reasonable time frame with continued operation of the existing system. The concentration of TCE will be at or below current Type B values within approximately 10 to 15 years.
- 7) The additional purge well in the city park near MW-11 does not significantly increase the rate of mass reduction or reduce the time frame for reaching Type B cleanup numbers for the off-site plume as compared to the existing system (Figure 15). Less than 1% of the original off-site mass should remain after 15 years with either system.
- 8) The cost analysis indicates a \$50,000 cost per pound of TCE captured for the additional well.
- 9) GM CPC's ability to purge water in the city park will depend upon the willingness of property owners to grant access.

According to Rule 603, when choosing among alternatives which are adequately protective such as the alternatives evaluated in this report, the MDNR must also evaluate the cost (including long-term maintenance costs) of each remedial alternative. Each alternative will achieve the same level of cleanup (i.e., Type B criteria) in the same time period (10-15 years) and the costs associated with the additional purge well in the park are significantly more than the costs associated with continued operation of the existing purge

well system. Therefore, we recommend continued operation of the existing system as the best remedial alternative for addressing the off-site contaminant plume.

To alleviate the MDNR's concerns that remediation of the off-site plume will require 10-15 years, GM CPC may want to conduct a risk evaluation of current and future exposures to the off-site contamination and/or strive to reach an agreement with the adjacent property owners which would restrict use of the aquifer and prevent placement of a water supply well within the plume.

Table 1

GROUND WATER FLOW MODEL CALIBRATION FORM

GM CPC Group
Grand Rapids , Michigan

Well Location #	Elevation of Water Level(ft) (12/10/92)	Modeling Calibration Results (ft)	Difference (ft)
85 - 1	659.51	659.57	0.06
85 - 2	658.22	658.10	-0.12
85 - 3	659.92	659.72	-0.20
85 - 5B	660.10	659.86	-0.24
85 - 6	660.62	660.63	0.01
85 - 7	658.48	658.20	-0.28
86 - 1	659.17	659.19	0.02
86 - 2	658.81	659.18	0.37
86 - 3	657.60	657.31	-0.29
87 - 1	659.16	659.38	0.22
87 - 2	660.09	660.25	0.16
87 - 4	659.14	659.12	-0.02
87 - 5	659.07	659.14	0.07
87 - 8	657.82	657.67	-0.15
87 - 9	657.63	657.30	-0.33
87 - 10	656.21	655.93	-0.28
87 - 11	655.99	655.77	-0.22
87 - 13	653.83	653.90	0.07
88 - 2	655.08	654.78	-0.30
88 - 3	654.11	653.97	-0.14
88 - 4	653.11	653.13	0.02
C - 1	657.84	657.95	0.11
C - 2	651.94	651.99	0.05
C - 4	657.85	657.84	-0.01
X - 10	658.69	658.61	-0.08
PWDISCH	644.75	657.12	

Table 2
Percentage of TCE Remaining in Off-Site Area
For Each Scenario Though Time

GM CPC Group
Grand Rapids Metal Fabrication Plant
Grand Rapids , Michigan

Purge Condition	Percent TCE Remaining By Date				
	Sept. 1989	Dec. 1993	Dec. 1997	Dec. 2002	Dec. 2007
Scenario 1 (Current Conditions)	100.00	77.52	51.53	16.26	0.83
Scenario 2 (MPW @ 10 gpm)	100.00	77.52	45.81	11.05	0.34
Scenario 3 (MPW @ 40 gpm)	100.00	77.52	32.95	2.56	0.16

Notes:

(1): The modeled purge well MPW start pumping at 12/1993.

**TABLE 3 - COST ESTIMATE FOR
OFF-SITE GROUND WATER REMEDIATION SYSTEM
GENERAL MOTORS - CPC GROUP
GRAND RAPIDS METAL FABRICATION PLANT
WYOMING, MICHIGAN**

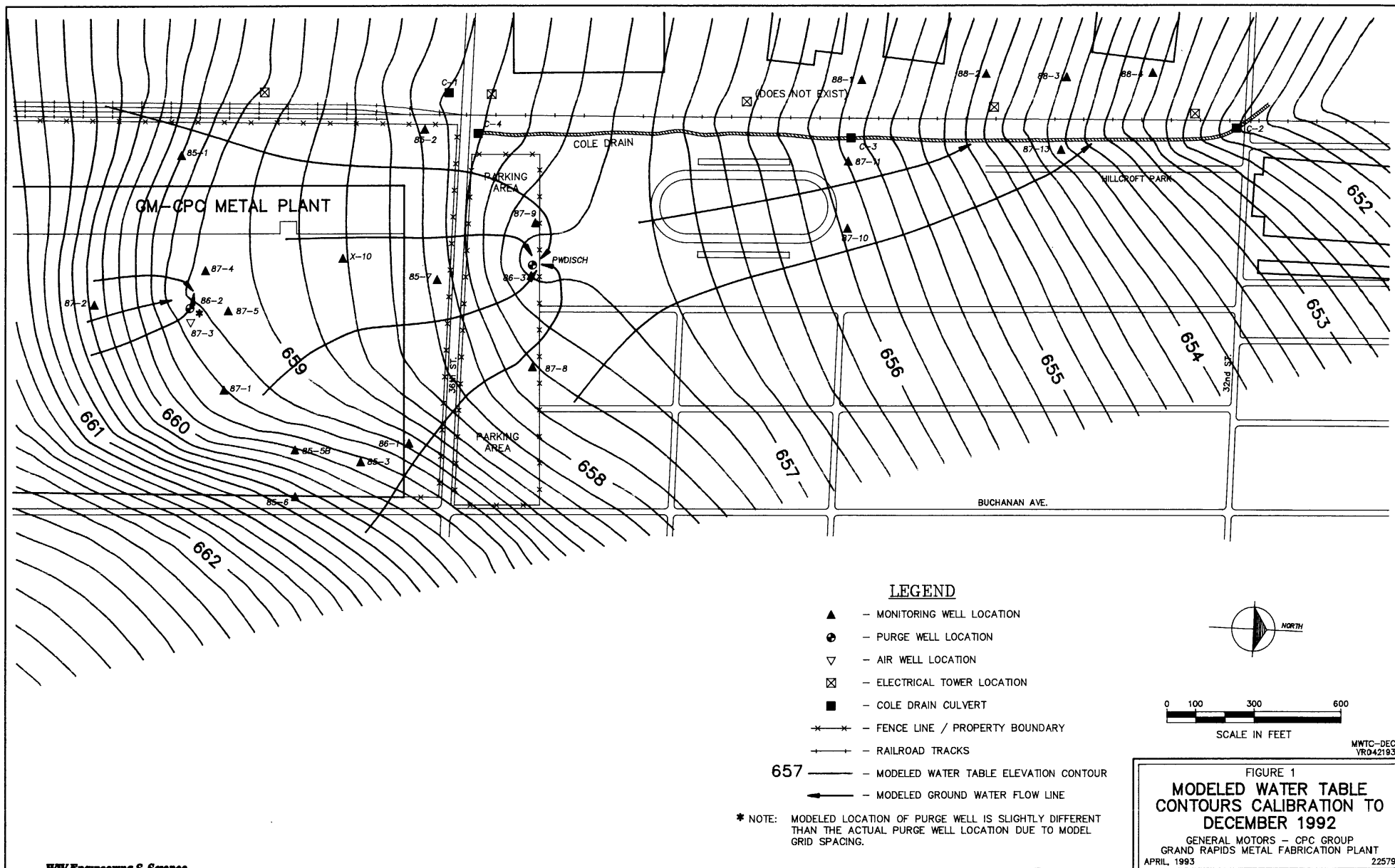
	Unit	Qty	Rate	Cost
Research City of Wyoming engineering requirements	HR	8	\$58	\$464
Drawings	EA	3	\$4,000	\$12,000
Specifications	HR	48	\$68	\$3,264
Permission from adjacent properties for access and system installation	HR	8	\$78	\$624
Encroachment permit for municipal sewer manhole modification	HR	8	\$78	\$624
Bid out contract services	HR	24	\$68	\$1,632
Evaluate bids	HR	24	\$68	\$1,632
Issue contracts	HR	12	\$68	\$816
Health and safety plan	HR	16	\$78	\$1,248
Site survey	LS	1	\$1,400	\$1,400
Utility survey	LS	1	\$1,500	\$1,500
Install monitoring well(s)	EA	1	\$2,500	\$2,500
Install wellhead vault(s)	EA	1	\$920	\$920
Develop well(s)	HR	4	\$48	\$192
Containerize soil cuttings	HR	2	\$48	\$96
Permission for disposal of development water to municipal sewer	HR	4	\$68	\$272
Dispose soil cuttings	LS	1	\$50	\$50
Remove and replace chain link fence	LF	10	\$23.25	\$233
Trench adjacent property	LF	1250	\$2.26	\$2,829
Trench GM property	LF	550	\$2.26	\$1,245
Install pull boxes	EA	5	\$1,000	\$5,000
Lay in conduit	LF	1250	\$3.00	\$3,750
Install piping	LF	1800	\$3.70	\$6,658
Connect with municipal sewer manhole	LS	1	\$500	\$500
Install flow meter	EA	1	\$2,000	\$2,000
Backfill and compact	LF	1800	\$2.20	\$3,960
Set pumps	EA	1	\$3,500	\$3,500
Install pump controls	LS	1	\$4,000	\$4,000
Pull power and control cable	LF	2500	\$2.09	\$5,225
Connect electric service	LS	1	\$1,000	\$1,000
Test system	HR	16	\$63	\$1,008
TOTAL CAPITAL COSTS				\$70,000

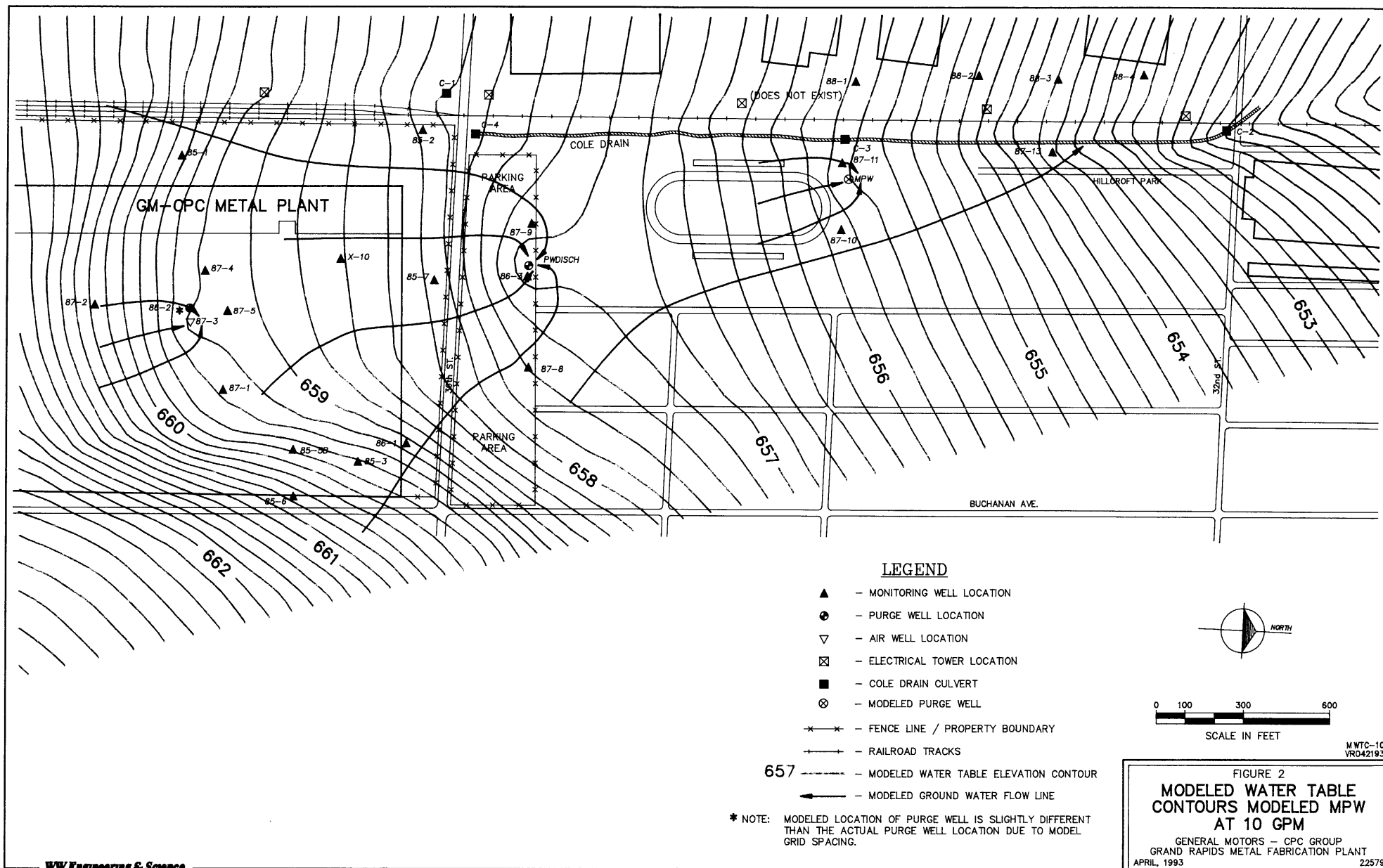
**TABLE 3 - COST ESTIMATE FOR
OFF-SITE GROUND WATER REMEDIATION SYSTEM
GENERAL MOTORS - CPC GROUP
GRAND RAPIDS METAL FABRICATION PLANT
WYOMING, MICHIGAN**

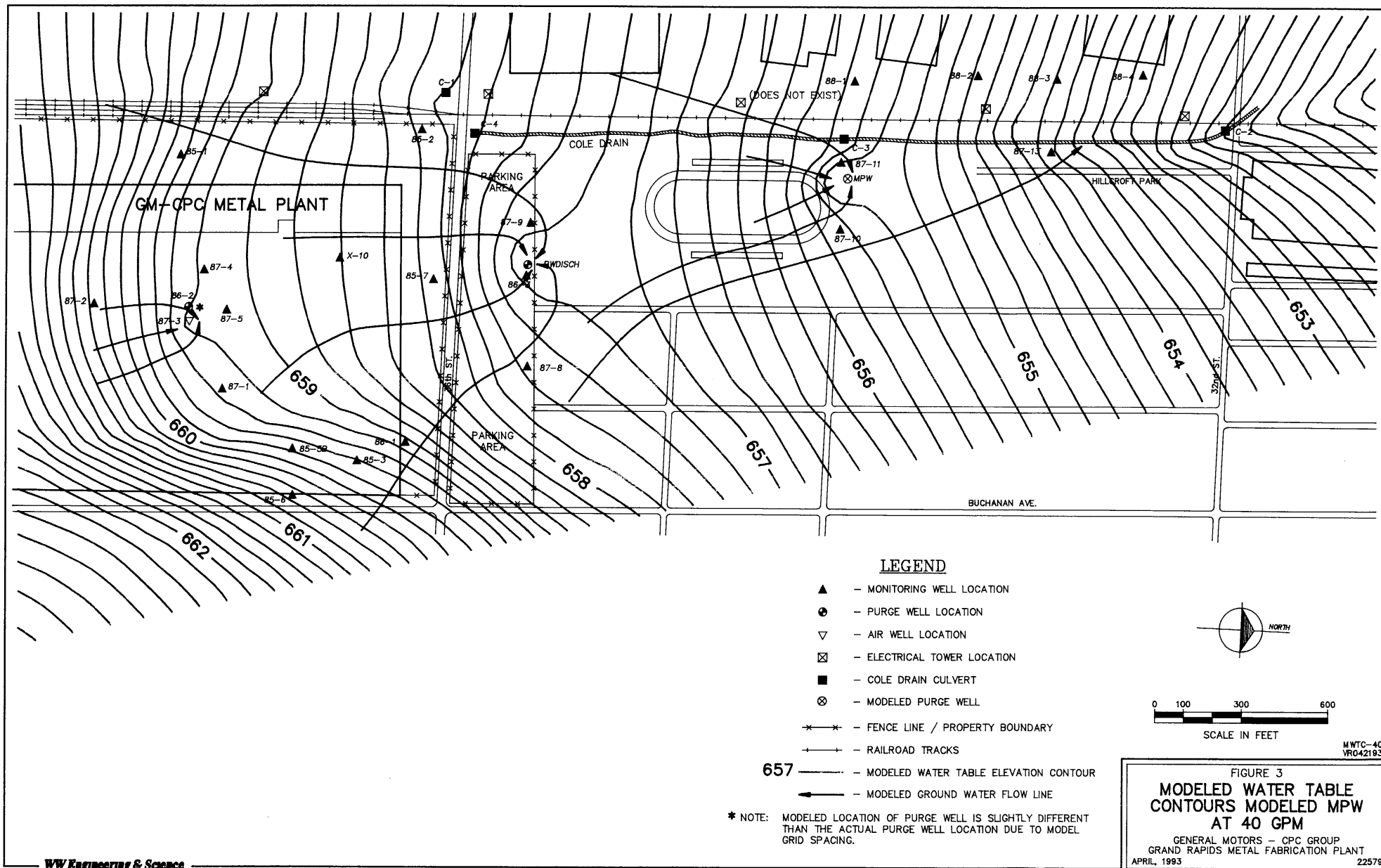
	Unit	Qty	Rate	Cost
Quarterly monitoring	QTR	4	\$609	\$2,436
Monthly sampling and analysis	MO	12	\$225	\$2,700
System maintenance	MO	12	\$384	\$4,608
Energy consumption	YR	1	\$518	\$518
Sewer discharge fee	GAL	5184000	\$0.0008	\$4,228
Reporting	YR	1	\$5,832	\$5,832
TOTAL ANNUAL O&M COSTS				\$20,322

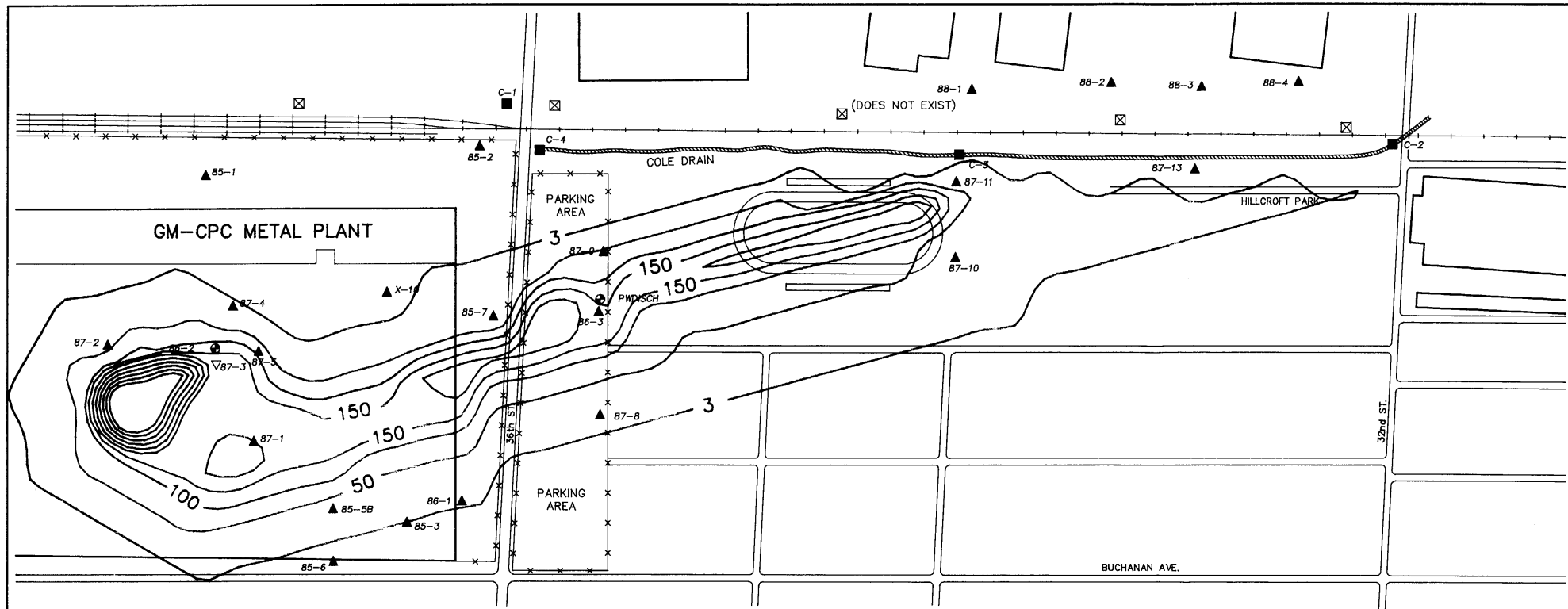
Assumptions:

GM maintains appropriate general liability insurance for offsite equipment
Two monitoring wells on school district property
One flush mount utility vault per wellhead; I&C located in vaults
Replace exist 30 A main breaker with 60 A to power pumps
Pull boxes every 250 feet, maximum
Downhole pumps
No water treatment required
Soil cuttings are nonhazardous
Pump controls located in existing equipment building
Quarterly monitoring and S&A
Energy at \$0.08/kwh
Discharge fee = \$0.61/100 c.f.
No turf will be disrupted on school district property
Quarterly reports prepared by WWES; monthly reports by GM_CPC personnel









LEGEND

- ▲ - MONITORING WELL LOCATION
- - PURGE WELL LOCATION
- ▽ - AIR WELL LOCATION
- ⊠ - ELECTRICAL TOWER LOCATION
- - COLE DRAIN CULVERT
- x—x— - FENCE LINE / PROPERTY BOUNDARY
- +—+— - RAILROAD TRACKS
- 3 — - TCE CONCENTRATION CONTOUR (ug/l)

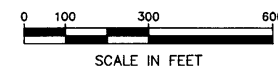
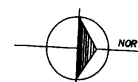
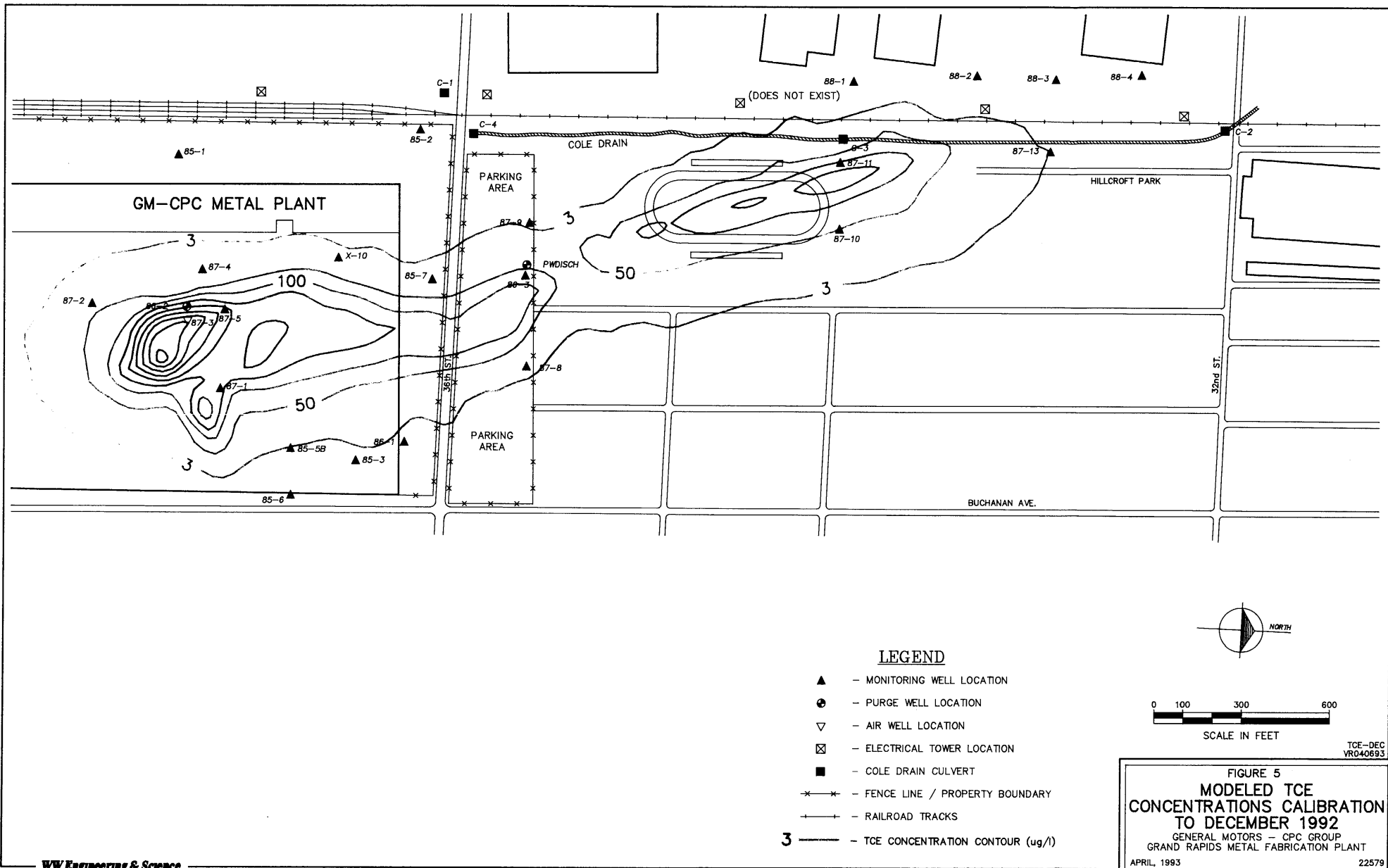
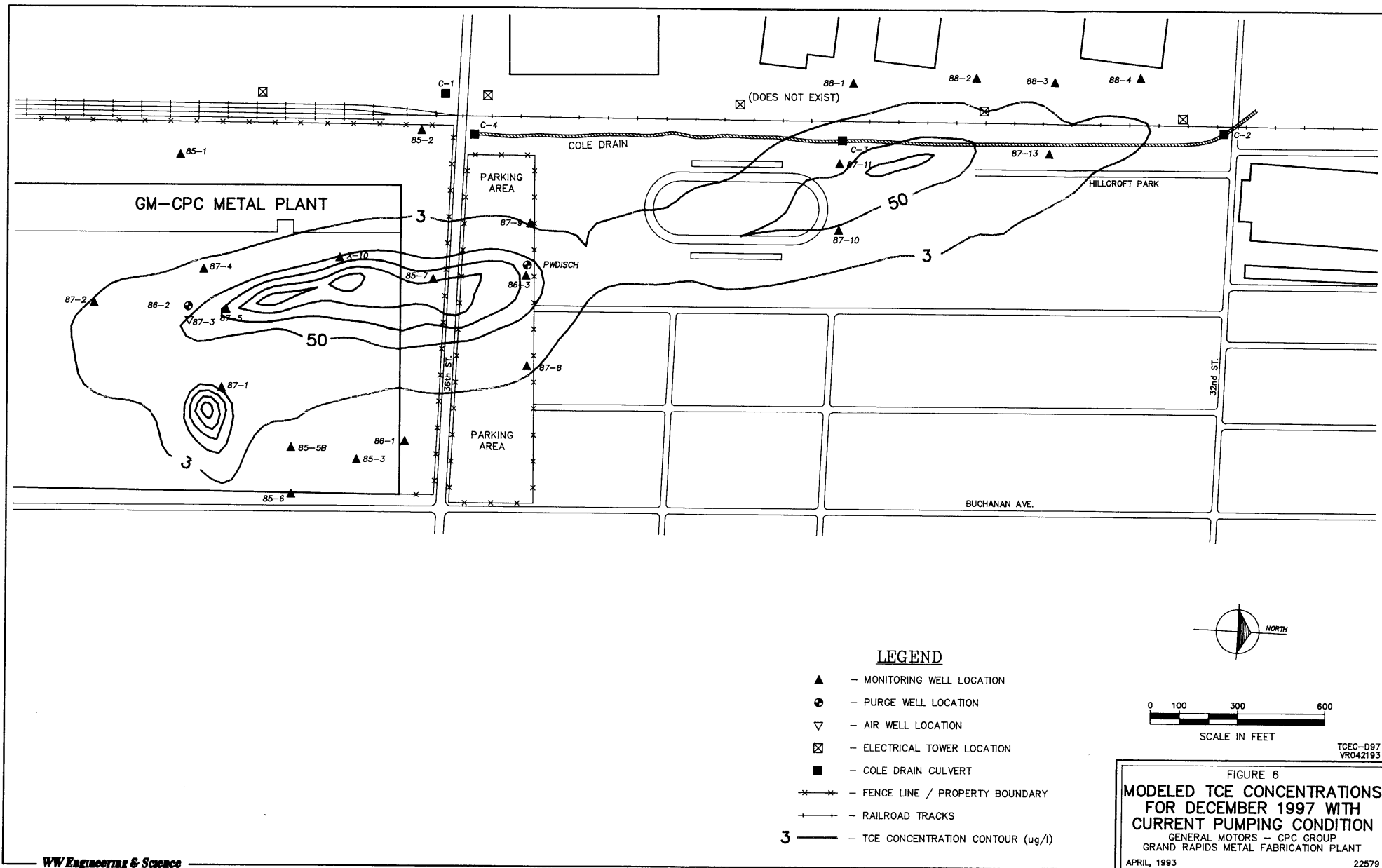


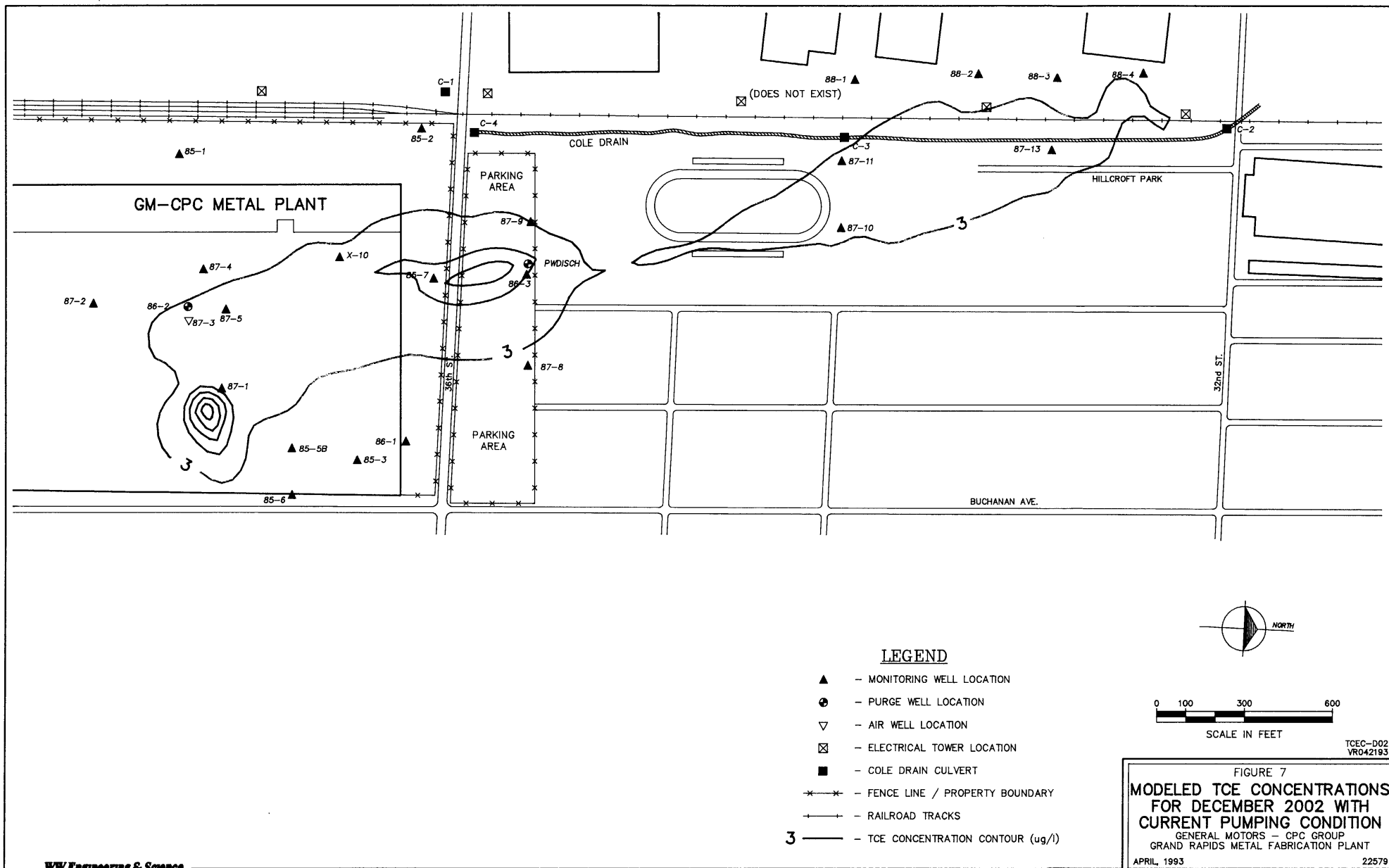
FIGURE 4
INITIAL TCE CONCENTRATIONS
SEPTEMBER 20, 1989
 GENERAL MOTORS - CPC GROUP
 GRAND RAPIDS METAL FABRICATION PLANT
 APRIL, 1993

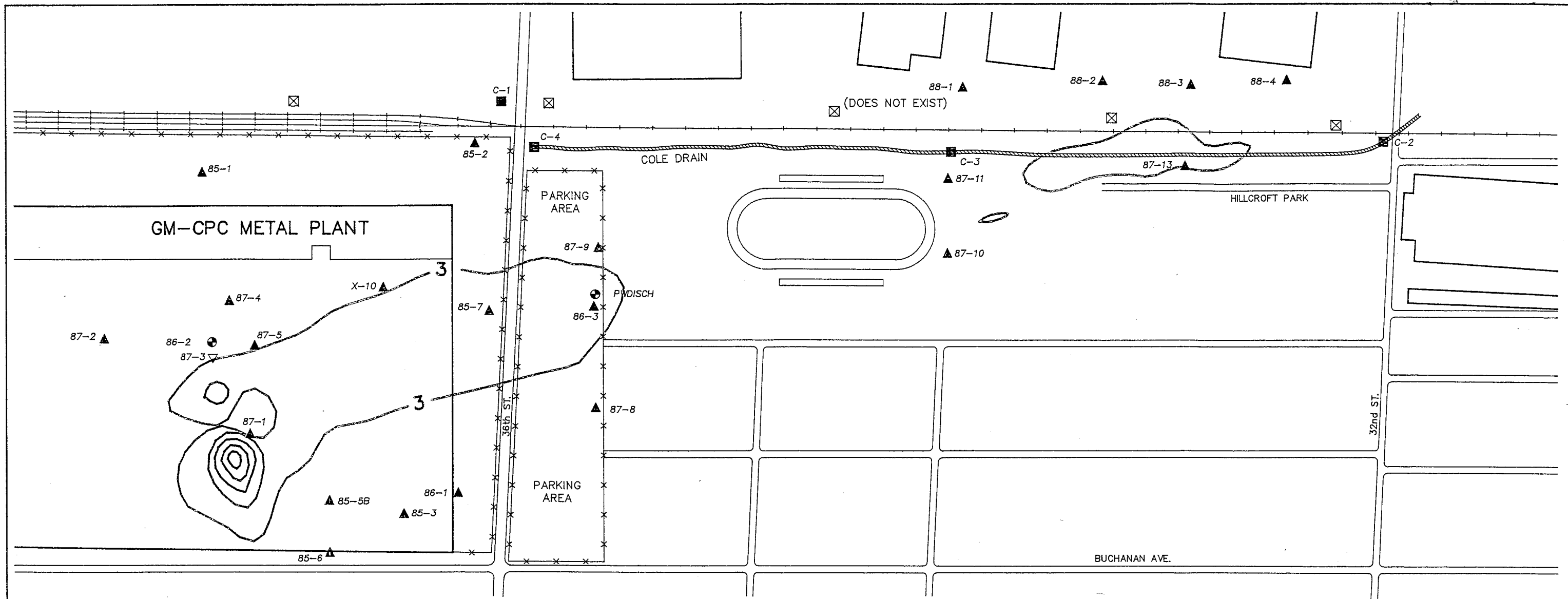
TCE-SEPT
 VR040593

22579



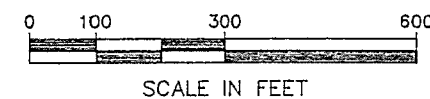
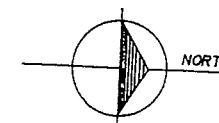






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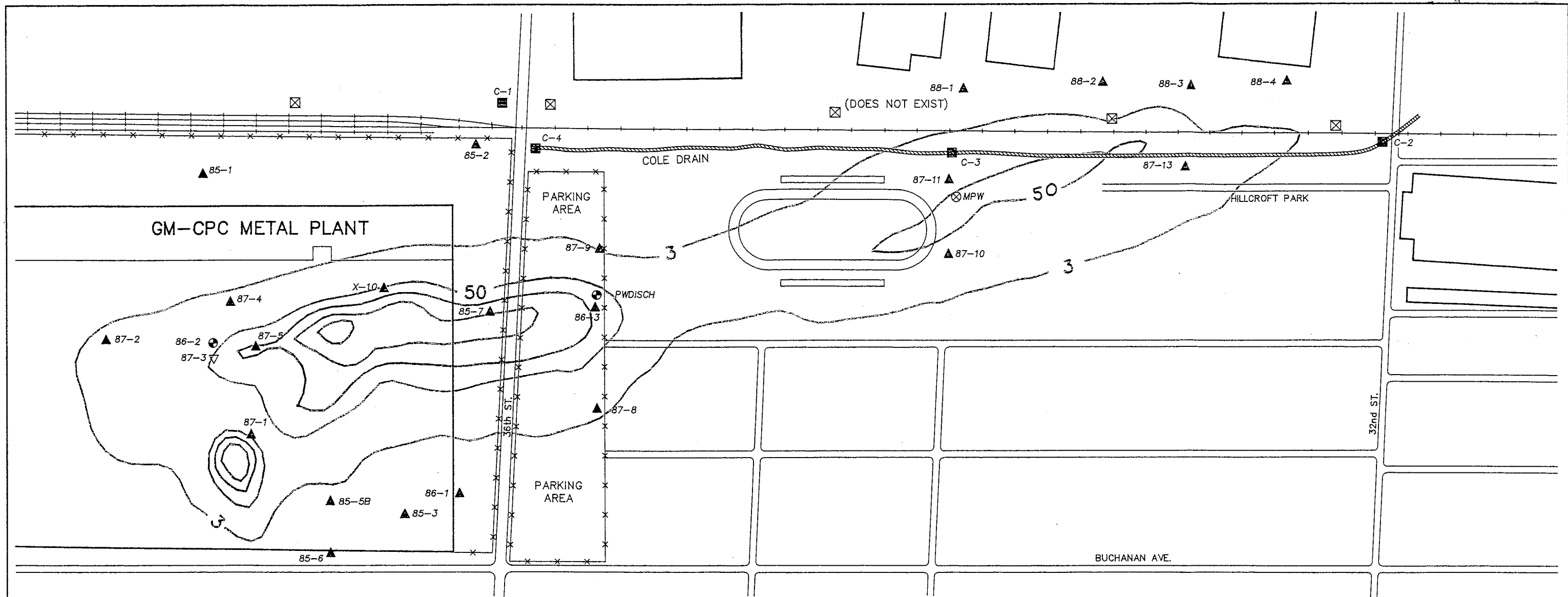
- ▲ - MONITORING WELL LOCATION
- - PURGE WELL LOCATION
- ▽ - AIR WELL LOCATION
- ⊠ - ELECTRICAL TOWER LOCATION
- - COLE DRAIN CULVERT
- x-x- - FENCE LINE / PROPERTY BOUNDARY
- + - RAILROAD TRACKS
- 3 - TCE CONCENTRATION CONTOUR (ug/l)



TCEC-D07
VR042193

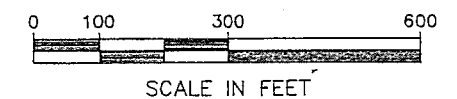
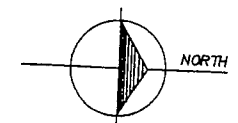
FIGURE 8
**MODELED TCE CONCENTRATIONS
 FOR DECEMBER 2007 WITH
 CURRENT PUMPING CONDITION**
 GENERAL MOTORS - CPC GROUP
 GRAND RAPIDS METAL FABRICATION PLANT
 APRIL, 1993

22579



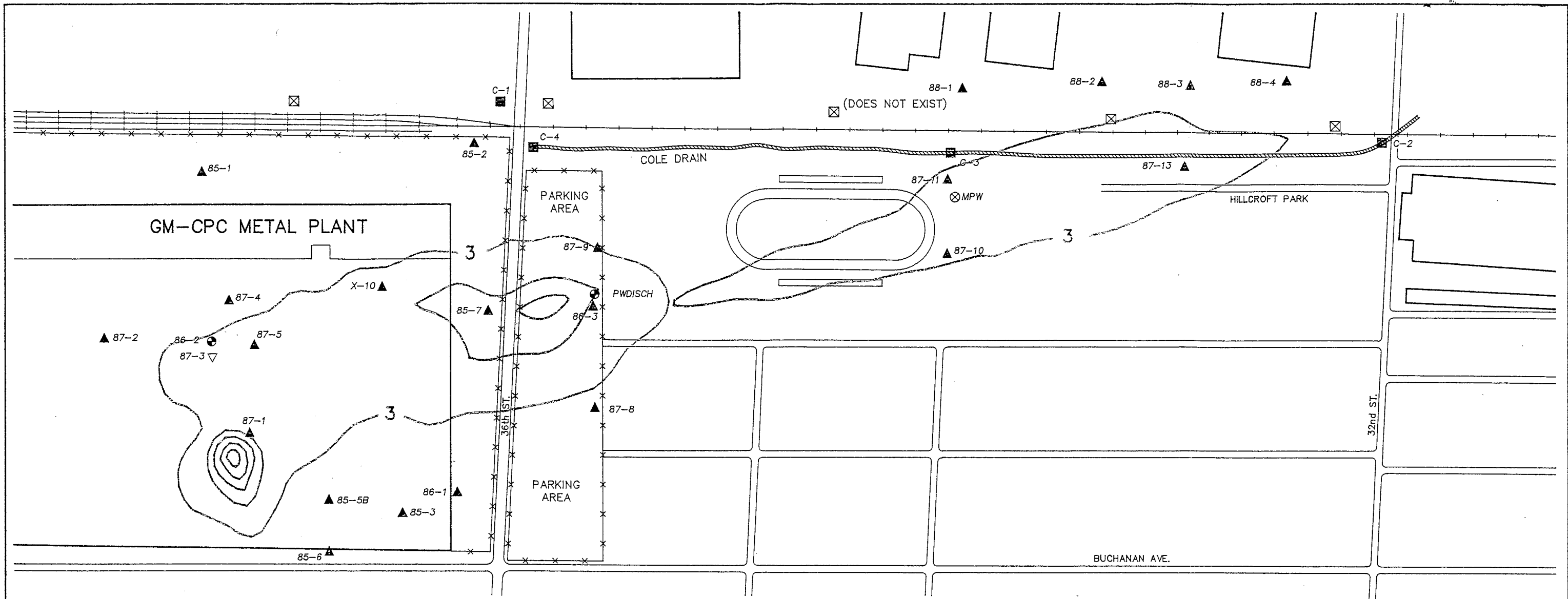
LEGEND

- ▲ - MONITORING WELL LOCATION
- - PURGE WELL LOCATION
- ▼ - AIR WELL LOCATION
- ⊠ - ELECTRICAL TOWER LOCATION
- - COLE DRAIN CULVERT
- x—x— - FENCE LINE / PROPERTY BOUNDARY
- +—+— - RAILROAD TRACKS
- ⊗ - MODELED PURGE WELL
- (line) — - TCE CONCENTRATION CONTOUR (ug/l)



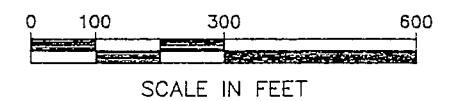
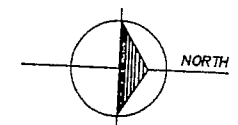
DEC97-10
VR040693

FIGURE 9
MODELED TCE CONCENTRATIONS
FOR DEC. 1997 WITH MPW PUMPING
AT 10 GPM STARTING DEC. 1993
 GENERAL MOTORS - CPC GROUP
 GRAND RAPIDS METAL FABRICATION PLANT
 APRIL, 1993 22579



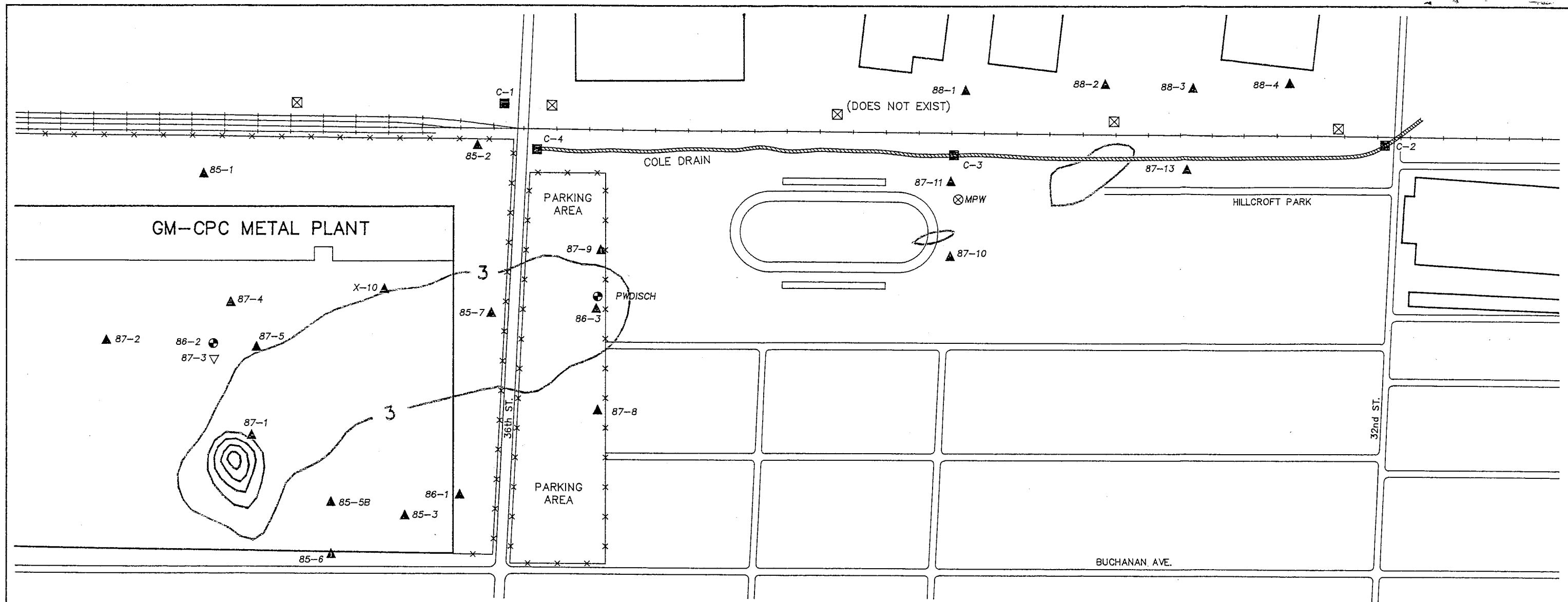
LEGEND

- ▲ - MONITORING WELL LOCATION
- ⊙ - PURGE WELL LOCATION
- ▽ - AIR WELL LOCATION
- ⊠ - ELECTRICAL TOWER LOCATION
- - COLE DRAIN CULVERT
- x—x— - FENCE LINE / PROPERTY BOUNDARY
- +—+— - RAILROAD TRACKS
- ⊗ - MODELED PURGE WELL
- - TCE CONCENTRATION CONTOUR (ug/l)



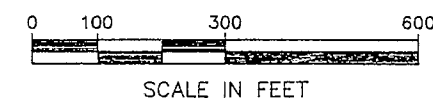
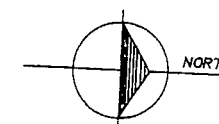
DEC02-10
VR040693

FIGURE 10
**MODELED TCE CONCENTRATIONS
 FOR DEC. 2002 WITH MPW PUMPING
 AT 10 GPM STARTING DEC. 1993**
 GENERAL MOTORS - CPC GROUP
 GRAND RAPIDS METAL FABRICATION PLANT
 APRIL, 1993



LEGEND

- ▲ - MONITORING WELL LOCATION
- - PURGE WELL LOCATION
- ▽ - AIR WELL LOCATION
- ⊠ - ELECTRICAL TOWER LOCATION
- - COLE DRAIN CULVERT
- X-X- - FENCE LINE / PROPERTY BOUNDARY
- +--+ - RAILROAD TRACKS
- ⊗ - MODELED PURGE WELL
- - TCE CONCENTRATION CONTOUR (ug/l)

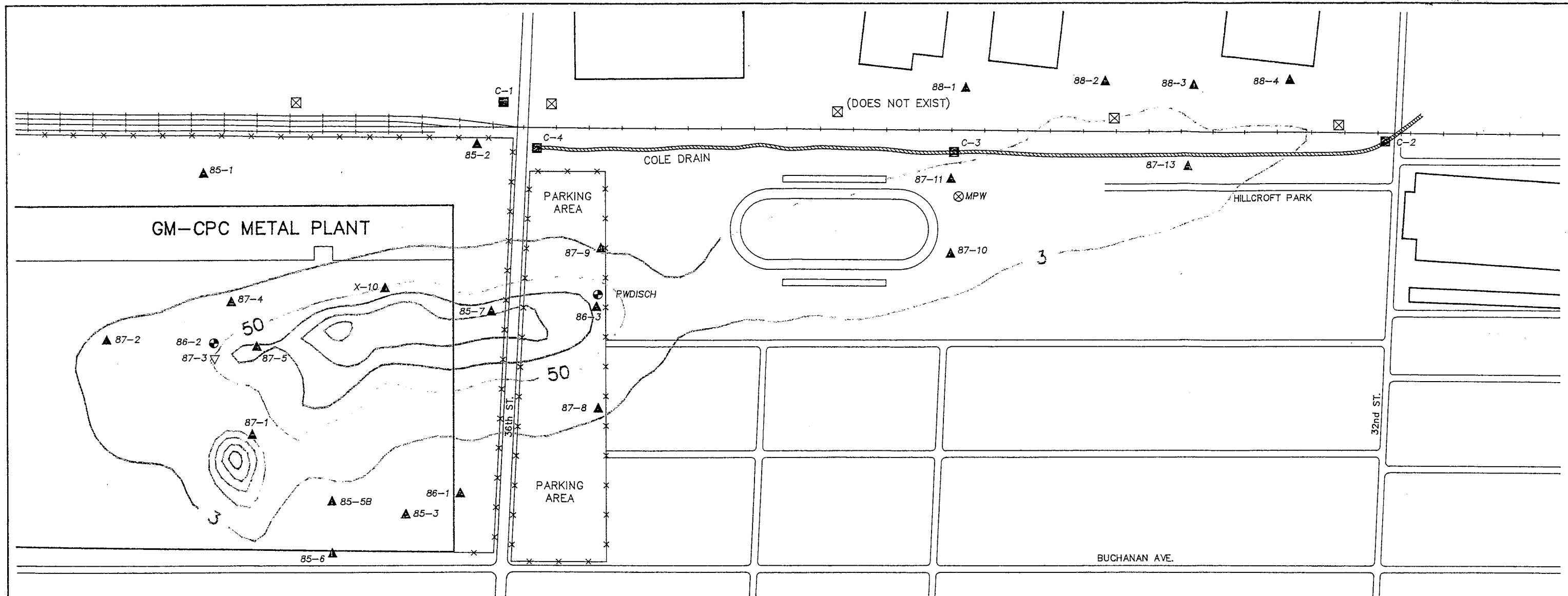


DEC07-10
VR040693

FIGURE 11
MODELED TCE CONCENTRATIONS
FOR DEC. 2007 WITH MPW PUMPING
AT 10 GPM STARTING DEC. 1993

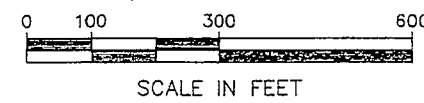
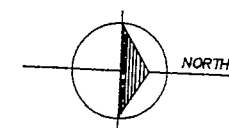
GENERAL MOTORS - CPC GROUP
GRAND RAPIDS METAL FABRICATION PLANT
APRIL, 1993

22579



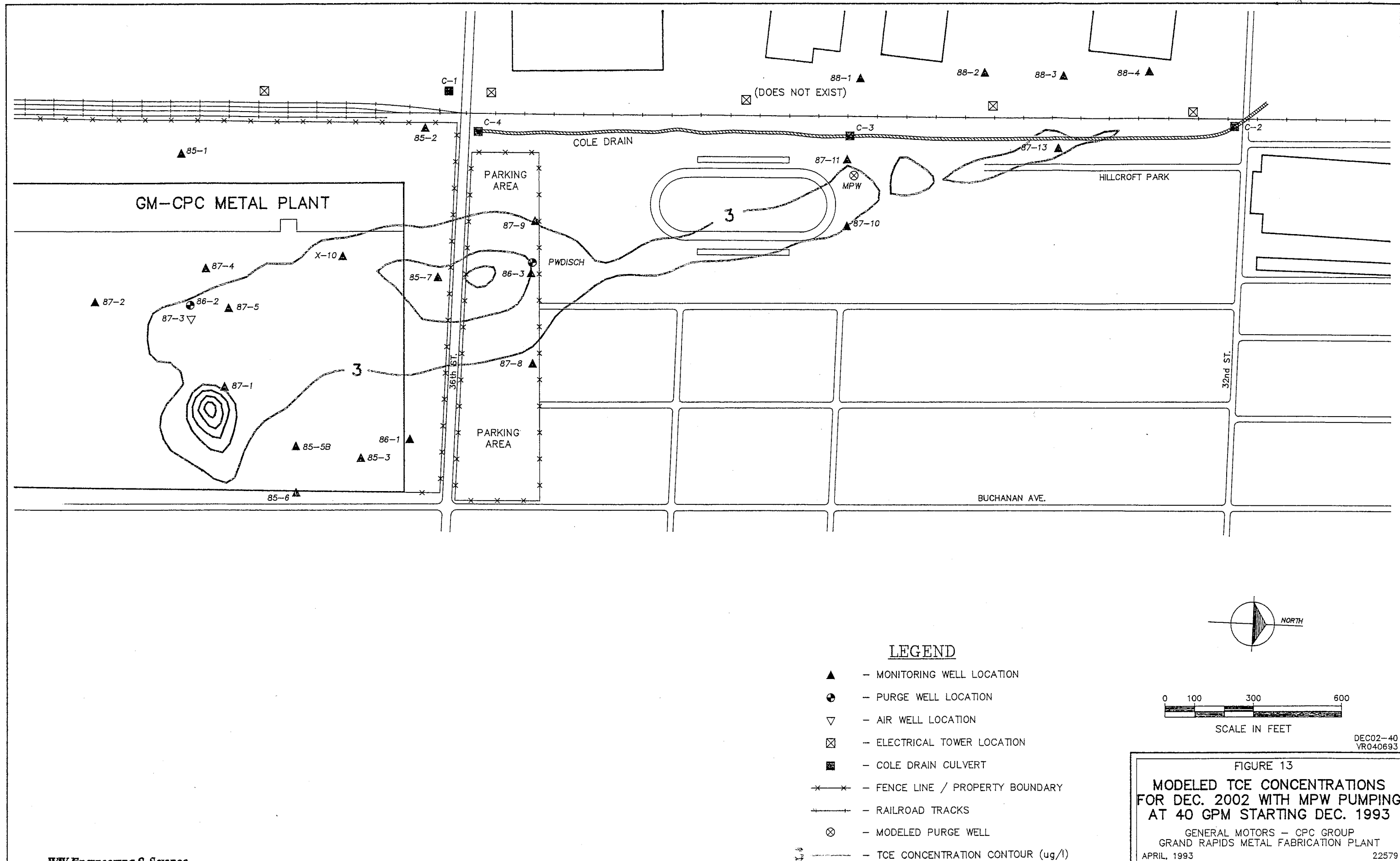
LEGEND

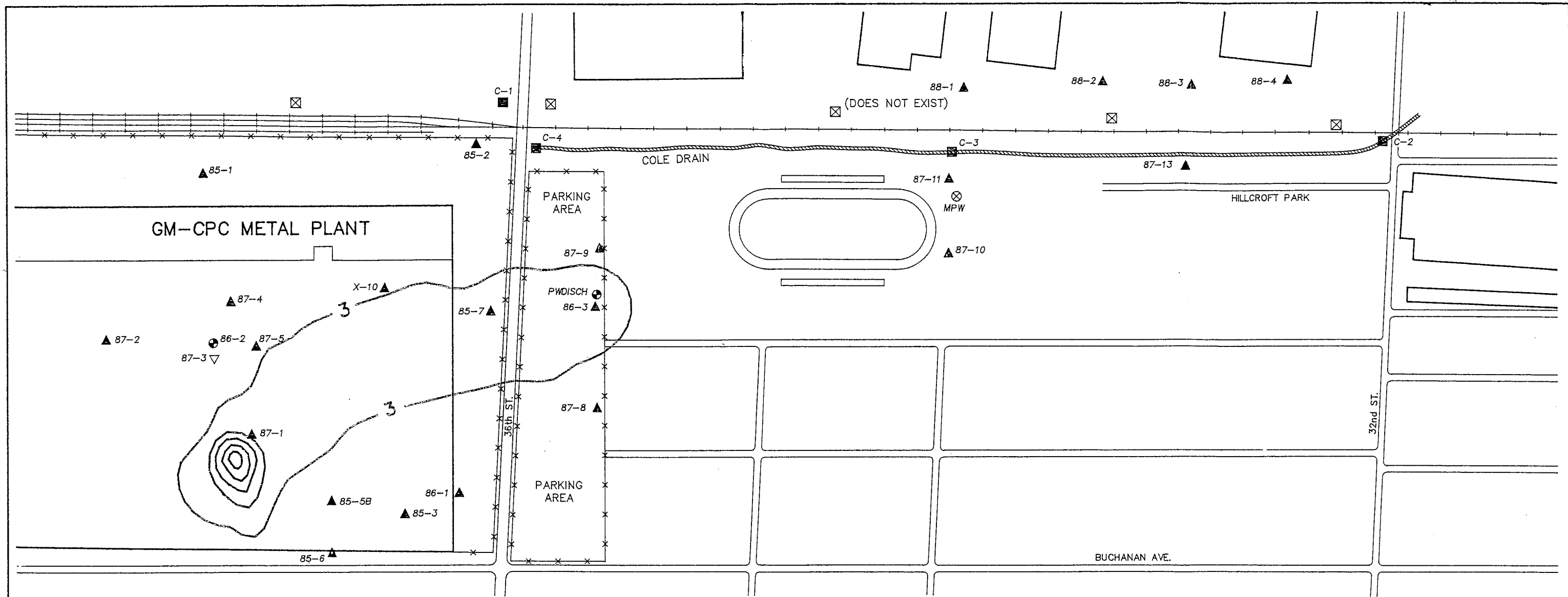
- ▲ - MONITORING WELL LOCATION
- - PURGE WELL LOCATION
- ▽ - AIR WELL LOCATION
- ⊠ - ELECTRICAL TOWER LOCATION
- ▤ - COLE DRAIN CULVERT
- x-x- - FENCE LINE / PROPERTY BOUNDARY
- + - RAILROAD TRACKS
- ⊗ - MODELED PURGE WELL
- 3 - TCE CONCENTRATION CONTOUR (ug/l)



DEC97-40
VR040693

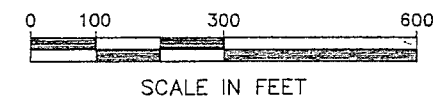
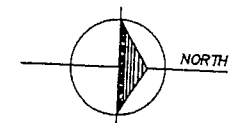
FIGURE 12
**MODELED TCE CONCENTRATIONS
 FOR DEC. 1997 WITH MPW PUMPING
 AT 40 GPM STARTING DEC. 1993**
 GENERAL MOTORS - CPC GROUP
 GRAND RAPIDS METAL FABRICATION PLANT
 APRIL, 1993 22579





LEGEND

- ▲ - MONITORING WELL LOCATION
- - PURGE WELL LOCATION
- ▽ - AIR WELL LOCATION
- ⊠ - ELECTRICAL TOWER LOCATION
- - COLE DRAIN CULVERT
- x—x— - FENCE LINE / PROPERTY BOUNDARY
- +—+— - RAILROAD TRACKS
- ⊗ - MODELED PURGE WELL
- (line with dots) — - TCE CONCENTRATION CONTOUR (ug/l)



DEC07-40
VR040693

FIGURE 14
**MODELED TCE CONCENTRATIONS
 FOR DEC. 2007 WITH MPW PUMPING
 AT 40 GPM STARTING DEC. 1993**
 GENERAL MOTORS - CPC GROUP
 GRAND RAPIDS METAL FABRICATION PLANT
 APRIL, 1993 22579

Figure 15
Summary of Total TCE in Off-Site Area For
Each Scenario Though Time

GM CPC Group
Grand Rapids Metal Fabrication Plant
Grand Rapids , Michigan

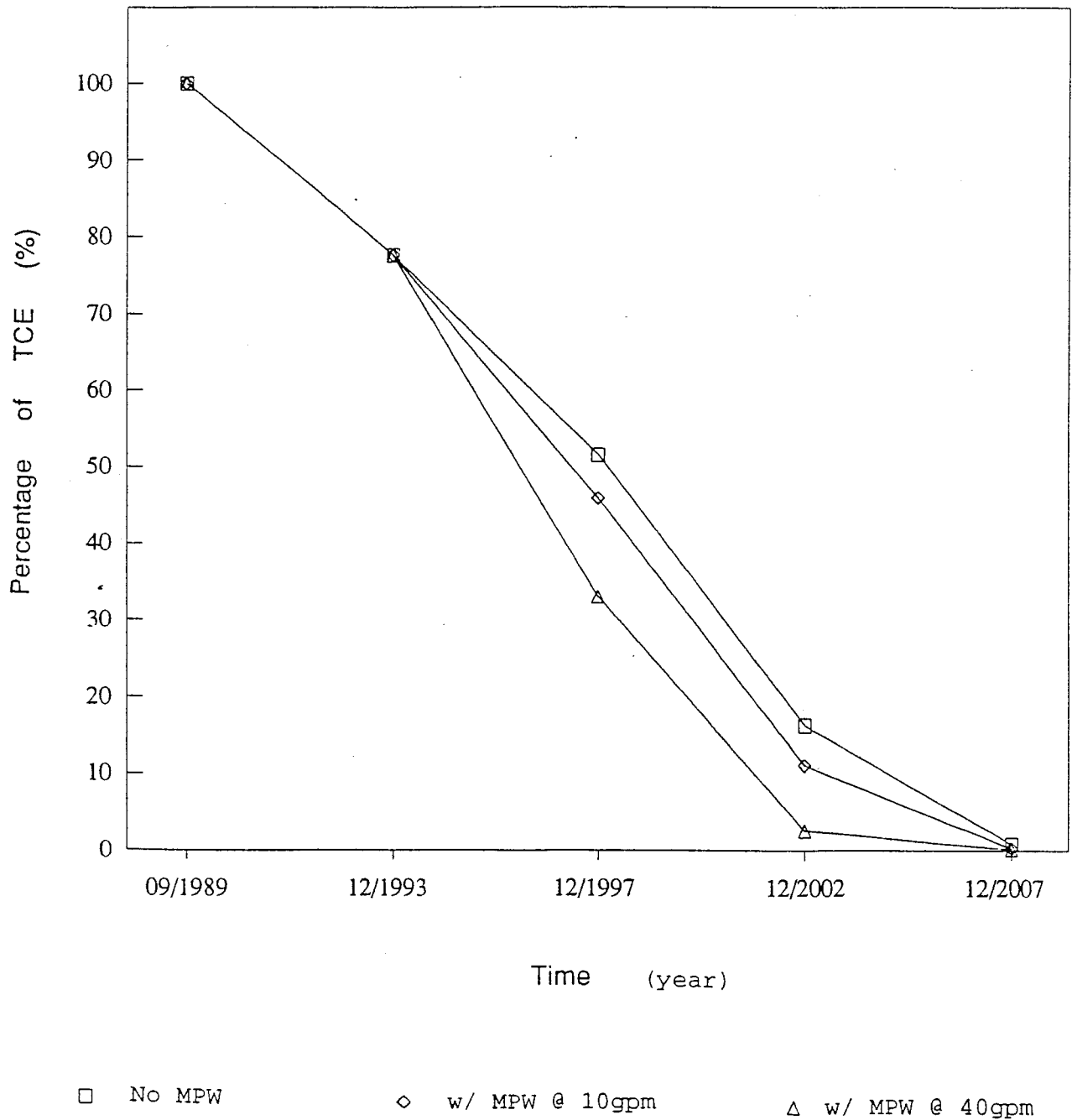




Table 1. Volumetric Budget For Entire Modeled Area

Unit: CFT/DAY

Pumping Rate: 86-2 = 6 gpm
PWDISCH = 45 gpm

Flow Status: Steady State

<u>Cumulative Volumes (L**3)</u>		<u>Rates For This Time Step (L**3/T)</u>	
IN:		IN:	
Storage =	0.00000	Storage =	0.00000
Constant Head =	17811.0	Constant Head =	17811.0
Wells =	0.00000	Wells =	0.00000
Drain =	0.00000	Drain =	0.00000
Recharge =	51141.0	Recharge =	51141.0
Head Dep. Bounds =	3204.2	Head Dep. Bounds =	3204.2
TOTAL IN:	72156.2	TOTAL IN:	72156.2
OUT:		OUT:	
Storage =	0.00000	Storage =	0.00000
Constant Head =	26725.0	Constant Head =	26725.0
Wells =	9818.0	Wells =	9818.0
Drain =	2518.1	Drain =	2518.1
Recharge =	0.00000	Recharge =	0.00000
Head Dep. Bounds =	33074.0	Head Dep. Bounds =	33074.0
TOTAL OUT:	72135.1	TOTAL OUT:	72135.1
IN - OUT:	21.100	IN - OUT:	21.100
Percent Discrepancy	0.03	Percent Discrepancy	0.03

Table 2. Volumetric Budget For Entire Modeled Area

Unit: CFT/DAY

Pumping Rate: 86-2 = 6 gpm
 PWDISCH = 45 gpm
 MPW = 10 gpm

Flow Status: Steady State

<u>Cumulative Volumes (L**3)</u>		<u>Rates For This Time Step (L**3/T)</u>	
IN:		IN:	
Storage =	0.00000	Storage =	0.00000
Constant Head =	17820.0	Constant Head =	17820.0
Wells =	0.00000	Wells =	0.00000
Drain =	0.00000	Drain =	0.00000
Recharge =	51141.0	Recharge =	51141.0
Head Dep. Bounds =	3504.3	Head Dep. Bounds =	3504.3
TOTAL IN:	72465.3	TOTAL IN:	72465.3
OUT:		OUT:	
Storage =	0.00000	Storage =	0.00000
Constant Head =	26681.0	Constant Head =	26681.0
Wells =	11743.0	Wells =	11743.0
Drain =	2485.6	Drain =	2485.6
Recharge =	0.00000	Recharge =	0.00000
Head Dep. Bounds =	31533.0	Head Dep. Bounds =	31533.0
TOTAL OUT:	72442.6	TOTAL OUT:	72442.6
IN - OUT:	22.700	IN - OUT:	22.700
Percent Discrepancy	0.03	Percent Discrepancy	0.03

Table 3. Volumetric Budget For Entire Modeled Area

Unit: CFT/DAY

Pumping Rate: 86-2 = 6 gpm
 PWDISCH = 45 gpm
 MPW = 40 gpm

Flow Status: Steady State

<u>Cumulative Volumes (L**3)</u>		<u>Rates For This Time Step (L**3/T)</u>	
IN:		IN:	
Storage =	0.00000	Storage =	0.00000
Constant Head =	17847.0	Constant Head =	17847.0
Wells =	0.00000	Wells =	0.00000
Drain =	0.00000	Drain =	0.00000
Recharge =	51141.0	Recharge =	51141.0
Head Dep. Bounds =	6354.8	Head Dep. Bounds =	6354.8
TOTAL IN:	75342.8	TOTAL IN:	75342.8
OUT:		OUT:	
Storage =	0.00000	Storage =	0.00000
Constant Head =	26562.0	Constant Head =	26562.0
Wells =	17518.0	Wells =	17518.0
Drain =	2461.2	Drain =	2461.2
Recharge =	0.00000	Recharge =	0.00000
Head Dep. Bounds =	28779.0	Head Dep. Bounds =	28779.0
TOTAL OUT:	75320.0	TOTAL OUT:	75320.0
IN - OUT:	22.800	IN - OUT:	22.800
Percent Discrepancy	0.03	Percent Discrepancy	0.03

Table 4. Cumulative Mass Budget for Entire Modeled Area

Unit: LB.

Pumping Rate:	86-2 = 6 gpm PWDISCH = 45 gpm
Flow Status:	Transient State
Starting Time:	September 1989
Ending Time:	December 1992

Mass Balance In Ground Water Flow System:

	IN:	OUT:
Constant Concentration:	12.32553	0.00000
Constant Head:	0.00000	0.00000
Well:	0.00000	-75.34651
Drain:	0.00000	-3.83695
Head-Dependent Boundary:	0.00000	-6.47700
Recharge:	0.00000	0.00000
Decay or Biodegradation:	0.00000	0.00000
Mass Storage(Solute):	112.74650	-71.00082
Mass Storage(Adsorbed):	109.86570	-69.18662
TOTAL :	234.93773	-225.84790
NET (IN - OUT) :		9.08983
DISCREPANCY(percent) :		3.94536

Table 5. Cumulative Mass Budget for Entire Modeled Area

Unit: LB.

Pumping Rate: 86-2 = 6 gpm
PWDISCH = 45 gpm

Flow Status: Transient State

Starting Time: September 1989
Ending Time: December 1997

Mass Balance In Ground Water Flow System:

	IN:	OUT:
Constant Concentration:	38.78429	0.00000
Constant Head:	0.00000	0.00000
Well:	0.00000	-141.77120
Drain:	0.00000	-4.75996
Head-Dependent Boundary:	0.00000	-38.78831
Recharge:	0.00000	0.00000
Decay or Biodegradation:	0.00000	0.00000
Mass Storage(Solute):	241.79430	-156.83220
Mass Storage(Adsorbed):	235.61590	-152.82480
TOTAL :	516.19449	-494.97647
NET (IN - OUT) :		21.21802
DISCREPANCY(percent) :		4.19672

Table 6. Cumulative Mass Budget for Entire Modeled Area

Unit: LB.

Pumping Rate:	86-2 = 6 gpm PWDISCH = 45 gpm
Flow Status:	Transient State
Starting Time:	Sptember 1989
Ending Time:	December 2002

Mass Balance In Ground Water Flow System:

	IN:	OUT:
Constant Concentration:	65.82980	0.00000
Constant Head:	0.00000	0.00000
Well:	0.00000	-205.29100
Drain:	0.00000	-5.07956
Head-Dependent Boundary:	0.00000	-64.44821
Recharge:	0.00000	0.00000
Decay or Biodegradation:	0.00000	0.00000
Mass Storage(Solute):	323.40960	-202.26060
Mass Storage(Adsorbed):	315.14580	-197.09240
TOTAL :	704.38520	-674.17176
NET (IN - OUT) :		30.21344
DISCREPANCY(percent) :		4.38334

Table 7. Cumulative Mass Budget for Entire Modeled Area

Unit: LB.

Pumping Rate: 86-2 = 6 gpm
PWDISCH = 45 gpm

Flow Status: Transient State

Starting Time: Sptember 1989
Ending Time: December 2007

Mass Balance In Ground Water Flow System:

	IN:	OUT:
Constant Concentration:	92.87055	0.00000
Constant Head:	0.00000	0.00000
Well:	0.00000	-231.38990
Drain:	0.00000	-5.35681
Head-Dependent Boundary:	0.00000	-73.92852
Recharge:	0.00000	0.00000
Decay or Biodegradation:	0.00000	0.00000
Mass Storage(Solute):	351.96570	-218.90720
Mass Storage(Adsorbed):	342.97230	-213.31370
TOTAL :	787.80855	-742.89613
NET (IN - OUT) :		44.91242
DISCREPANCY(percent) :		5.86820

Table 8. Cumulative Mass Budget for Entire Modeled Area

Unit: LB.

Pumping Rate: 86-2 = 6 gpm
PWDISCH = 45 gpm

Flow Status: Transient State

Starting Time: September 1989
Ending Time: December 1993

Mass Balance In Ground Water Flow System:

	IN:	OUT:
Constant Concentration:	17.45945	0.00000
Constant Head:	0.00000	0.00000
Well:	0.00000	-91.85497
Drain:	0.00000	-4.18389
Head-Dependent Boundary:	0.00000	-11.16678
Recharge:	0.00000	0.00000
Decay or Biodegradation:	0.00000	0.00000
Mass Storage(Solute):	143.01370	-92.91093
Mass Storage(Adsorbed):	139.35940	-90.34198
TOTAL :	299.83255	-290.45855
NET (IN - OUT) :		9.37400
DISCREPANCY(percent) :		3.17606

Table 9. Cumulative Mass Budget for Entire Modeled Area

Unit: LB.

Pumping Rate: 86-2 = 6 gpm
 PWDISCH = 45 gpm
 MPW = 10 gpm

Flow Status: Transient State

Starting Time: December 1993
 Ending Time: December 1997

Mass Balance In Ground Water Flow System:

	IN:	OUT:
Constant Concentration:	20.90512	0.00000
Constant Head:	0.00000	0.00000
Well:	0.00000	-64.95621
Drain:	0.00000	-0.71343
Head-Dependent Boundary:	0.00000	-20.56678
Recharge:	0.00000	0.00000
Decay or Biodegradation:	0.00000	0.00000
Mass Storage(Solute):	96.17483	-61.38072
Mass Storage(Adsorbed):	93.71733	-59.81233
TOTAL :	210.79728	-207.42947
NET (IN - OUT) :		3.36781
DISCREPANCY(percent) :		1.61052

Table 10. Cumulative Mass Budget for Entire Modeled Area

Unit: LB.

Pumping Rate: 86-2 = 6 gpm
PWDISCH = 45 gpm
MPW = 10 gpm

Flow Status: Transient State

Starting Time: December 1993
Ending Time: December 2002

Mass Balance In Ground Water Flow System:

	IN:	OUT:
Constant Concentration:	47.90842	0.00000
Constant Head:	0.00000	0.00000
Well:	0.00000	-128.95660
Drain:	0.00000	-1.05739
Head-Dependent Boundary:	0.00000	-36.52038
Recharge:	0.00000	0.00000
Decay or Biodegradation:	0.00000	0.00000
Mass Storage(Solute):	179.71650	-108.86280
Mass Storage(Adsorbed):	175.12440	-106.08110
TOTAL :	402.74932	-381.47827
NET (IN - OUT) :	21.27105	
DISCREPANCY(percent) :	5.42471	

Table 11. Cumulative Mass Budget for Entire Modeled Area

Unit: LB.

Pumping Rate: 86-2 = 6 gpm
PWDISCH = 45 gpm
MPW = 10 gpm

Flow Status: Transient State

Starting Time: December 1993

Ending Time: December 2007

Mass Balance In Ground Water Flow System:

	IN:	OUT:
Constant Concentration:	74.93900	0.00000
Constant Head:	0.00000	0.00000
Well:	0.00000	-155.64330
Drain:	0.00000	-1.35052
Head-Dependent Boundary:	0.00000	-41.71561
Recharge:	0.00000	0.00000
Decay or Biodegradation:	0.00000	0.00000
Mass Storage(Solute):	204.70150	-122.06170
Mass Storage(Adsorbed):	199.47100	-118.94280
TOTAL :	479.11150	-439.71393
NET (IN - OUT) :	39.39757	
DISCREPANCY(percent) :	8.57564	

Table 12. Cumulative Mass Budget for Entire Modeled Area

Unit: LB.

Pumping Rate: 86-2 = 6 gpm
PWDISCH = 45 gpm
MPW = 40 gpm

Flow Status: Transient State

Starting Time: December 1993

Ending Time: December 1997

Mass Balance In Ground Water Flow System:

	IN:	OUT:
Constant Concentration:	20.95008	0.00000
Constant Head:	0.00000	0.00000
Well:	0.00000	-87.72757
Drain:	0.00000	-0.69963
Head-Dependent Boundary:	0.00000	-11.25273
Recharge:	0.00000	0.00000
Decay or Biodegradation:	0.00000	0.00000
Mass Storage(Solute):	100.69140	-61.74780
Mass Storage(Adsorbed):	98.11854	-60.17003
TOTAL :	219.76002	-221.59776
NET (IN - OUT) :		-1.83774
DISCREPANCY(percent) :		-0.83277

Table 13. Cumulative Mass Budget for Entire Modeled Area

Unit: LB.

Pumping Rate: 86-2 = 6 gpm
PWDISCH = 45 gpm
MPW = 40 gpm

Flow Status: Transient State

Starting Time: December 1993

Ending Time: December 2002

Mass Balance In Ground Water Flow System:

	IN:	OUT:
Constant Concentration:	48.00901	0.00000
Constant Head:	0.00000	0.00000
Well:	0.00000	-155.52460
Drain:	0.00000	-1.01681
Head-Dependent Boundary:	0.00000	-18.15664
Recharge:	0.00000	0.00000
Decay or Biodegradation:	0.00000	0.00000
Mass Storage(Solute):	176.34890	-103.30600
Mass Storage(Adsorbed):	171.84280	-100.66640
TOTAL :	396.20071	-378.67045
NET (IN - OUT) :		17.53026
DISCREPANCY(percent) :		4.52469

Table 14. Cumulative Mass Budget for Entire Modeled Area

Unit: LB.

Pumping Rate: 86-2 = 6 gpm
 PWDISCH = 45 gpm
 MPW = 40 gpm

Flow Status: Transient State

Starting Time: December 1993

Ending Time: December 2007

Mass Balance In Ground Water Flow System:

	IN:	OUT:
Constant Concentration:	75.01453	0.00000
Constant Head:	0.00000	0.00000
Well:	0.00000	-182.72490
Drain:	0.00000	-1.30533
Head-Dependent Boundary:	0.00000	-19.09705
Recharge:	0.00000	0.00000
Decay or Biodegradation:	0.00000	0.00000
Mass Storage(Solute):	198.62150	-115.32710
Mass Storage(Adsorbed):	193.54620	-112.38030
TOTAL :	467.18223	-430.83468
NET (IN - OUT) :		36.34755
DISCREPANCY(percent) :		8.09507

GRMP
ENVIR FILE

Results of

Phase II

Hydrogeological Investigation

for

**General Motors Corporation
Chevrolet - Pontiac - Canada Group
Grand Rapids, Michigan**

June, 1986

20571

EDI Engineering & Science

Environmental Engineering, Geology, Biology and Chemistry
Grand Rapids, MI: (616) 942-0970



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1. INTRODUCTION

During a Phase I study of the hydrogeology by EDI at the General Motors Corporation CPC Metal Fabrication Plant in Wyoming, Michigan several monitoring wells sampled contained volatile organic compounds. The compound of highest concern was trichloroethylene (TCE) found in Well 85-7 with a concentration of 84 ug/l. Well 85-7 is located north of the Metal Fabrication Plant. Based upon the existing data, groundwater flow is to the north; therefore, this well is located immediately downgradient of the plant. The source of the TCE was not known at the time, and EDI recommended that additional wells be drilled to determine the source of the TCE. The March, 1986 report and recommendations titled "Results of Hydrogeological Investigation at the Column A-15 Excavation" were reviewed by the MDNR. The present work plan incorporates the MDNR comments in their April 4, 1986 letter. This report presents the information gathered during the investigation for the TCE source.

2. PURPOSE AND SCOPE

The major purpose of this investigation was to determine the source of TCE present in Well 85-7. Plant records indicate that the only likely source was a parts cleaner which used TCE. The equipment was installed near Column T-27 in 1953 and removed in 1979. One well was drilled and sampled with depth at the location of the parts cleaner.

A second purpose was to determine if the TCE contamination was confined to the GM property. To accomplish this, one well was drilled near the northern boundary of the property. The potential for human contact was considered by examining the area downgradient for actual or potential users.

The third purpose for the study was to determine if the oil discovered in the excavation at Column A-15 has migrated downgradient to the edge of the building.

*was oil found?
not reported!!*

3. METHODS

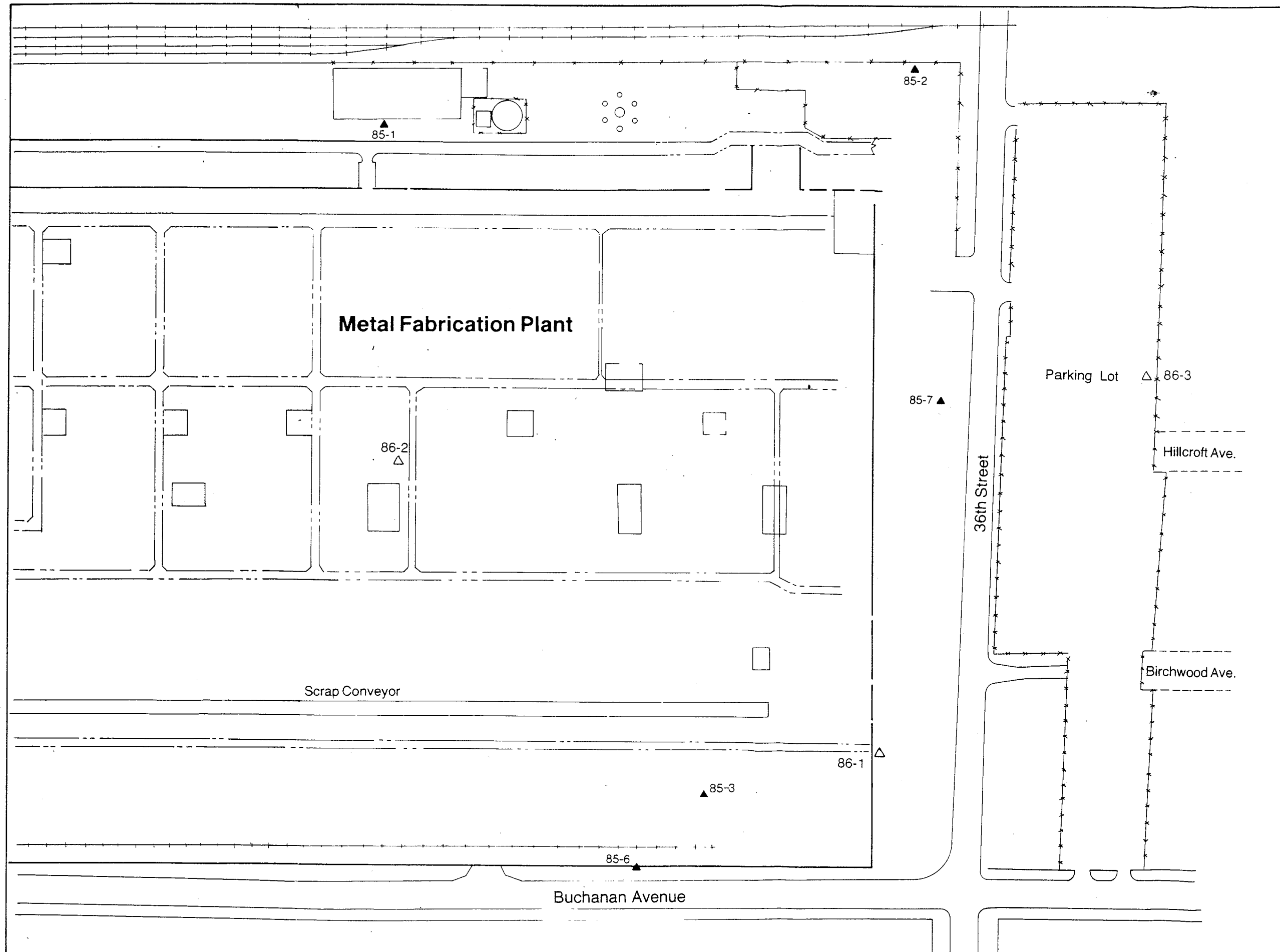
3.1 Drilling Methods:

Three new monitoring wells were installed using hollow stem auger and mud-rotary drilling techniques. Wells 86-1 and 86-2 were installed entirely with hollow stem augers, while the depth of 86-3 required a combination of hollow stem augers and mud-rotary. Locations of these wells are shown in Figure 1.

3.2 Temporary Wells and Soil Sampling:

Temporary wells were set in the borings for Well 86-2 and 86-3 at 10-foot intervals below the water table so that water samples could be collected to characterize the vertical variation in concentration. The wells set in mud rotary borings were driven below the boring. This minimizes the influence of drilling fluids present in the boring. Only one sample, namely the sample at 64 feet in Well 86-3 was taken when drilling muds were present. The remainder of the temporary wells were sampled when using hollow stem augers.

The temporary wells were constructed with 2-inch galvanized casing and 3-foot stainless steel screen. All the well materials were thoroughly steam-cleaned prior to collecting the water samples to minimize the possibility of cross-contamination between sample depths. After setting the screen at the desired depth, the wells were developed to remove all fine sediment from the water and to help assure a representative sample of the aquifer water. After purging, the water samples were collected with a stainless steel bailer that was steam cleaned between sampling events.



Legend

- ▲ Existing Monitoring Wells
- △ New Monitoring Wells

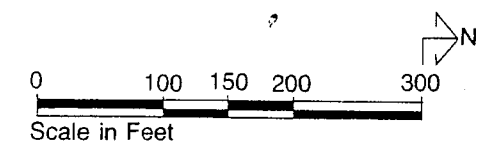


Figure 1
Location of Monitoring Wells
 General Motors Corp.-CPC Group
 June, 1986

Soil samples were collected with a split-spoon sampler at 5-foot intervals to a depth of 25 feet during drilling of well 86-1. Soil samples at well 86-2 were collected with a split-spoon sampler during drilling at 5-foot intervals to a depth of 25 feet. Water samples were then collected at 30, 40, and 45 feet using the method described in 3.2. Soil samples were collected at 50, 55, and 60 feet. Water samples were not collected at these latter depths due to the low permeability of the strata at these depths. The soil and groundwater samples were then analyzed for TCE by EDI's laboratory to determine the zone of highest contamination.

Soil samples were collected during the drilling of well 86-3 at 5-foot intervals. Water samples were then collected at depth of 21, 34, 44, 53 and 64 feet. The boring was performed with hollow stem augers to a depth of 55 feet, then with mud-rotary to 70 feet. The water samples collected were analyzed for TCE by EDI's laboratory to determine the zone of highest concentration.

3.3 Permanent Wells:

Well 86-1 was constructed of 2-inch galvanized casing and a 10-foot stainless steel screen which was positioned so that it intercepted the water table. This allowed for the measurement of any contaminants that may be present floating on the water table.

Well 86-2 was constructed of 2-inch galvanized casing and a 5-foot stainless steel screen set between 27.5 and 32.5 feet.

Well 86-3 was constructed with 2-inch galvanized casing and a 5-foot stainless steel screen set between 41.5 and 46.5 feet.

All three wells were supplied with flush-mounted sealed caps with enclosed locking caps. The elevation of the top of casing and the

location of the wells were determined using standard instrument survey techniques.

3.4 Groundwater Sampling:

Water samples were collected from the three new wells and five existing wells on May 5, 1986. Prior to sampling, the static level of the water table was determined to the nearest 0.01 foot using the wetted tape method. This information was used to determine groundwater flow direction and rate.

The water samples were then analyzed for the volatile fraction priority pollutants using GC/MS and EPA Method 624.

4. RESULTS

4.1 General Site Geology:

The Metal Fabrication Plant is underlain by glacial outwash consisting of sands and gravels. A silty clay unit exists at a depth of approximately 45 feet along the east side of the plant. None of the borings penetrates the unit, so the thickness is not known. Based upon the thickness of clay that was penetrated (up to 50 feet), it may serve as an effective aquitard between the upper and lower aquifers; however, not enough information exists to prove this interpretation. Ten borings performed along the west side of the plant did not encounter this unit and were terminated at depths of 30, 40 or 60 feet. One boring was continued to a depth of 90 feet and penetrated a silty clay layer 2 feet thick at a depth of 79 to 81 feet.

Due to the lack of information, the continuity of the east-side clay unit cannot be determined. Assuming the unit is continuous, it thins to the west, and the surface of the unit dips from about 45 feet deep along

the east side of the plant to about 80 feet on the west side of the plant.

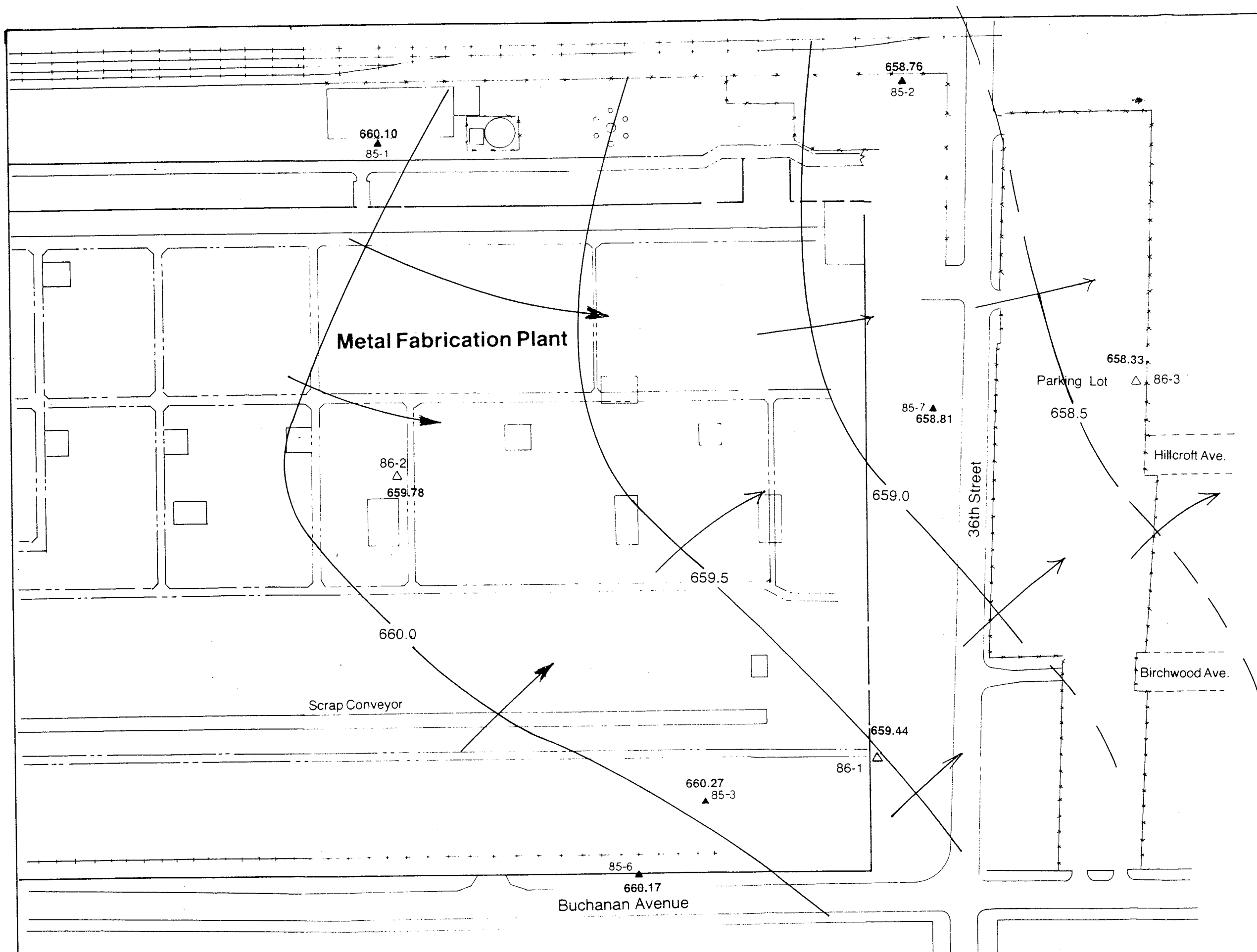
Bedrock in the area occurs at approximately 100 feet, based upon a limited number of water well records. The upper bedrock is part of the Michigan formation, approximately 100 feet thick, underlain by the Marshall sandstone. The Michigan formation consists of a sequence of shale, gypsum, and limestone. These rock types generally exhibit low permeability values, and may serve as additional protection for the underlying Marshall sandstone aquifer.

4.2 Direction and Rate of Groundwater Movement:

Based upon water table elevation measurements summarized in Table 1, the slope of the water table in the vicinity of the Metal Fabrication Plant indicates that the shallow groundwater flow is in a northerly direction as shown in Figures 2 and 3. Neither the direction of flow nor the gradient has changed significantly between December, 1985 and May, 1986. The water level of Cole Drain was measured 10 feet south of the south end of the culvert under 36th Street on May 6, 1986. The level suggests that there is some groundwater discharge to Cole Drain.

The groundwater gradient reported in the Hydrogeological Investigation submitted in March, 1986 was reported as 16.9 ft/mile based upon interpretation of data collected in December, 1985. This interpretation was reviewed with the added knowledge of water table elevations at the three new wells, and the water table contours were redrawn as shown in Figure 3. This newer interpretation yields a groundwater gradient of 6.9 ft/mile, which agrees with the groundwater gradient calculated from more recent water table data collected May 5, 1986.

In-situ hydraulic conductivity tests were performed on four monitoring wells on the site to aid in the calculation of groundwater flow rates. Only four wells were selected because the test requires a fully-



Legend

- ▲ Existing Monitoring Wells
- △ New Monitoring Wells
- ↗ Direction of Groundwater Flow

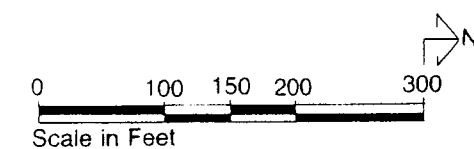
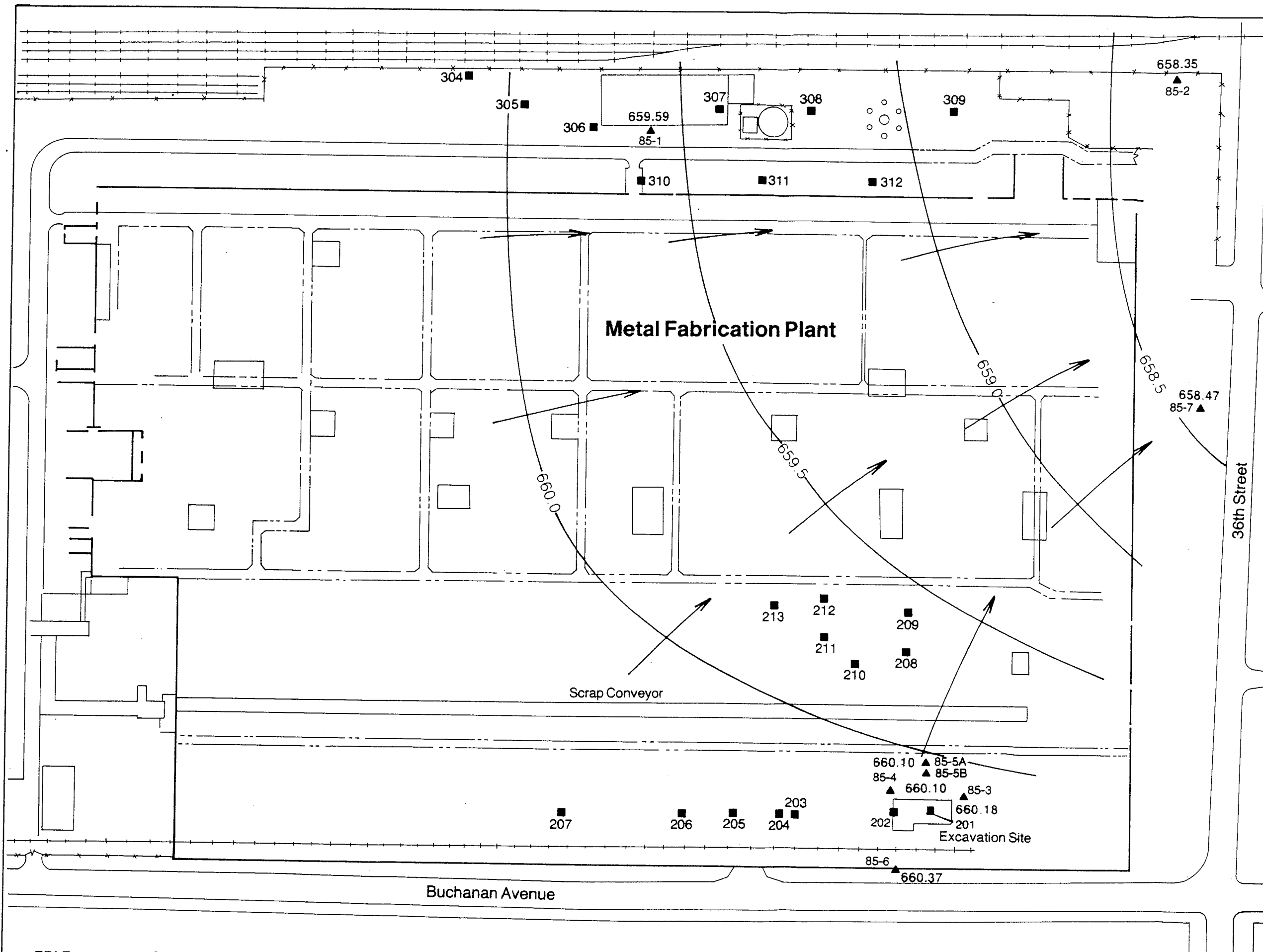


Figure 2
Water Table Elevation and
Direction of Groundwater Flow
(data collected 5-5-86)
 General Motors Corp.-CPC Group

June, 1986

20571



- Legend**
- ▲ Monitor Well
Drilled by EDI November, 1985
 - Soil Boring
Drilled by Scits and Materials
Engineers March, 1985
 - ➔ Direction of
Groundwater Flow

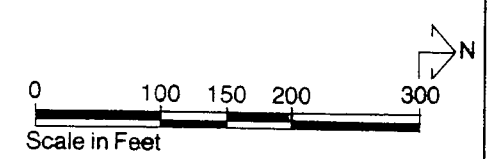


Figure 3
**Water Table Elevation and
 Direction of Groundwater Flow**
 (data collected 12-6-85)
 General Motors Corp.-CPC Group
 February, 1986

TABLE 1

WATER TABLE ELEVATIONS

<u>WELL</u>	<u>TOP OF CASING ELEVATION (feet)</u>	<u>WATER LEVEL ELEVATION (05/05/86)</u>	<u>WATER LEVEL ELEVATION (12/06/85)</u>
85-1	675.87	660.10	659.59
85-2	672.48	658.76	658.35
85-3	681-37	660.27	660.18
85-6	680.35	660.17	660.37
85-7	678.69	658.81	658.47
86-1	680.67	659.44	---
86-2	681.38	659.78	---
86-3	676.77	658.33	---
*Cole		658.22 @	
Drain		(05/06/86)	

*10 feet south of south end of 36th Street culvert

TABLE 2

HYDRAULIC CONDUCTIVITY

<u>WELL</u>	<u>FT/SEC</u>	<u>FT/DAY</u>
85-1	1.98×10^{-4}	17.1
85-7	9.19×10^{-4}	79.4
86-2	3.53×10^{-4}	30.5
86.3	2.23×10^{-3}	192.6

TABLE 3

RATE OF GROUNDWATER FLOW

<u>GRADIENT</u>	<u>RANGE OF FLOW RATES</u>
6.9 ft/mile	0.089 to 1.01 ft/day

submerged well screen, and many of the wells constructed on site do not satisfy this requirement. The methods used for the in-situ tests are presented in Appendix 2. The results of the in-situ tests are summarized in Table 2.

The hydraulic conductivity values range from 17.1 ft/day in Well 85-1 to 192.6 ft/day in Well 86-3. The high value reported in Well 86-3 is due to the fact that the well is screened in a gravel layer. While this may be the reflection of that layer, the entire thickness of the aquifer probably does not have as high a hydraulic conductivity. It should be noted that these values are point measurements that are assumed to be applied over the entire aquifer thickness with the assumption that the aquifer is homogeneous at that well location. Therefore, these values may be slightly higher or lower than the true average value at that well location.

Using the measured hydraulic conductivity and water table gradient, Darcy's Law (Freeze and Cherry, Groundwater, 1979, p. 71) is applied to determine the rate of groundwater movement. Porosity of the aquifer is assumed to be 0.25, which is a reasonable estimate for this type of formation. This results in a range of flow rates as presented in Table 3.

Assuming a worst case of average overall aquifer hydraulic conductivity of 192.6 ft/day and a gradient of 6.9 ft/mile, groundwater flow is estimated at 1.01 ft/day, resulting in a migration of 368 ft/year. The range of permeabilities measured suggests an average flow velocity of less than 0.5 ft/day.

4.3 Analytical Results:

The results of the analyses of samples collected at various depths in Wells 86-2 and 86-3 are presented in Table 4. In both boring locations, the concentrations are highest within the upper 25 feet of the water

TABLE 4

ANALYTICAL RESULTS OF DEPTH PROFILING

<u>WELL</u>	<u>DEPTH</u> <u>(feet)</u>	TCE		<u>TYPE OF SAMPLE</u>
		(ug/kg) Soil	(ug/l) Water	
86-2	3.5 - 5.0	<5.0		Soil
	9.0 - 10.5	<5.0		Soil
	14.5 - 16.0	42		Soil
	19.0 - 20.5	5.0		Soil
	24.0 - 25.5	260		Soil
	30.0 - 33.0	47,000		Water
	40.0 - 43.0	220		Water
	45.0 - 48.0	9.8		Water
	50.0 - 51.5	<5.0		Soil
86-3	21.0 - 24.0	45		Water
	34.0 - 36.0	210		Water
	44.0 - 46.0	600		Water
	53.0 - 55.0	230		Water
	63.0 - 65.0	15		Water
	64.0 - 69.0	14		Water

table aquifer. The silt at the base of the aquifer in Boring 86-2 had no detectable TCE, and the water collected just above the clay base at 86-3 contained 14 ug/l.

Water samples were collected from the three new wells, as well as five existing monitoring wells. The results of analyses for the volatile fraction of priority pollutants are presented in Table 5. Only those parameters with positive results are reported. Figure 4 depicts the areal extent of contaminants in the groundwater.

The highest concentration of TCE in Boring 86-2 occurred approximately 10 feet below the water table and dropped off to below the detection limit 30 feet below the water table. In Boring 86-3, the highest concentrations was found at a depth of about 25 feet below the water table, and decreased to 14 ppb at a depth of 48 feet below the water table. This indicates that the TCE is migrating down in the aquifer as it moves away from the former storage tank area. Also as the TCE migrates out from under the plant, water from rainfall and snow melt will infiltrate down to the water table and serve to force the TCE below the water table. The density of TCE is greater than water which tends to cause TCE to sink at high concentrations. At these concentrations, however, the plume will not be greatly affected by the density difference.

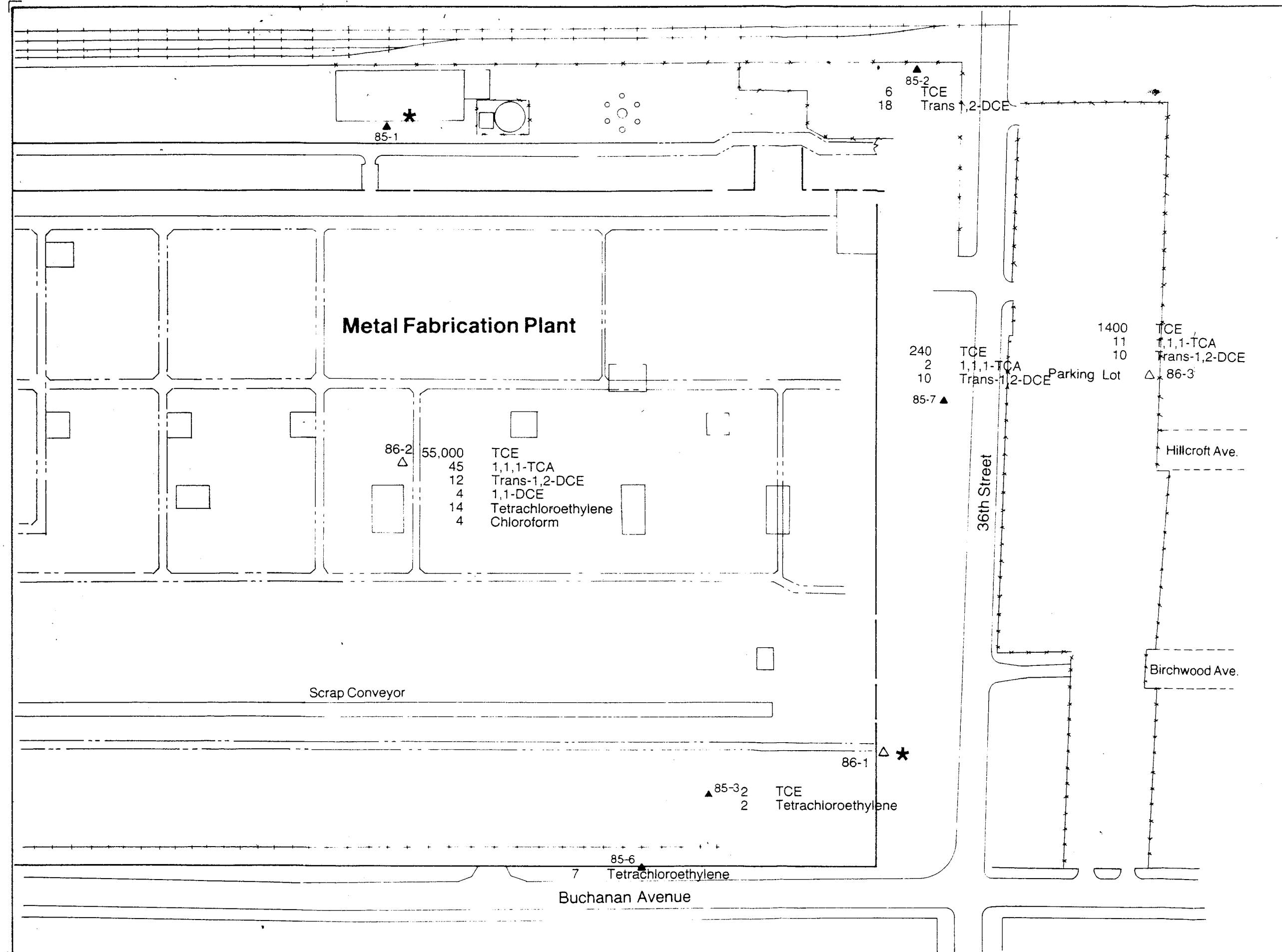
Due to the downward migration of the TCE, it may reach a lower aquifer if the silty clay aquitard is not continuous throughout the site. As discussed previously, neither the continuity nor the thickness of this aquitard can be determined with the present data. TCE may also migrate downward and along the surface of the silty clay aquitard if the concentration is high enough. The surface of this unit dips to the west; therefore, TCE may be migrating westerly on the top of this unit. There is no evidence from present data that an organic phase reached the clay as the concentration of TCE in the boring decreased at the base of the aquifer.

TABLE 5

RESULTS OF GROUNDWATER ANALYSES
(reported in ug/l)

<u>COMPOUND</u>	<u>85-1</u>	<u>85-2</u>	<u>85-3</u>	<u>85-6</u>	<u>85-7</u>	<u>86-1</u>	<u>86-2</u>	<u>86-3</u>	<u>DETECTION LIMIT</u>
TCE	*	6	*	*	240	*	55000	1400	2
1,1,1-TCA	*	*	2	*	2	*	45	11	2
trans-1,2-DCE	26	18	*	*	10	*	12	10	2
Tetrachloroethylene	*	*	*	7	*	*	14	*	2
1,1-DCE	*	*	*	*	*	*	4	*	2
Chloroform	*	*	*	*	*	*	4	*	1

 * Compound not present at detection level.



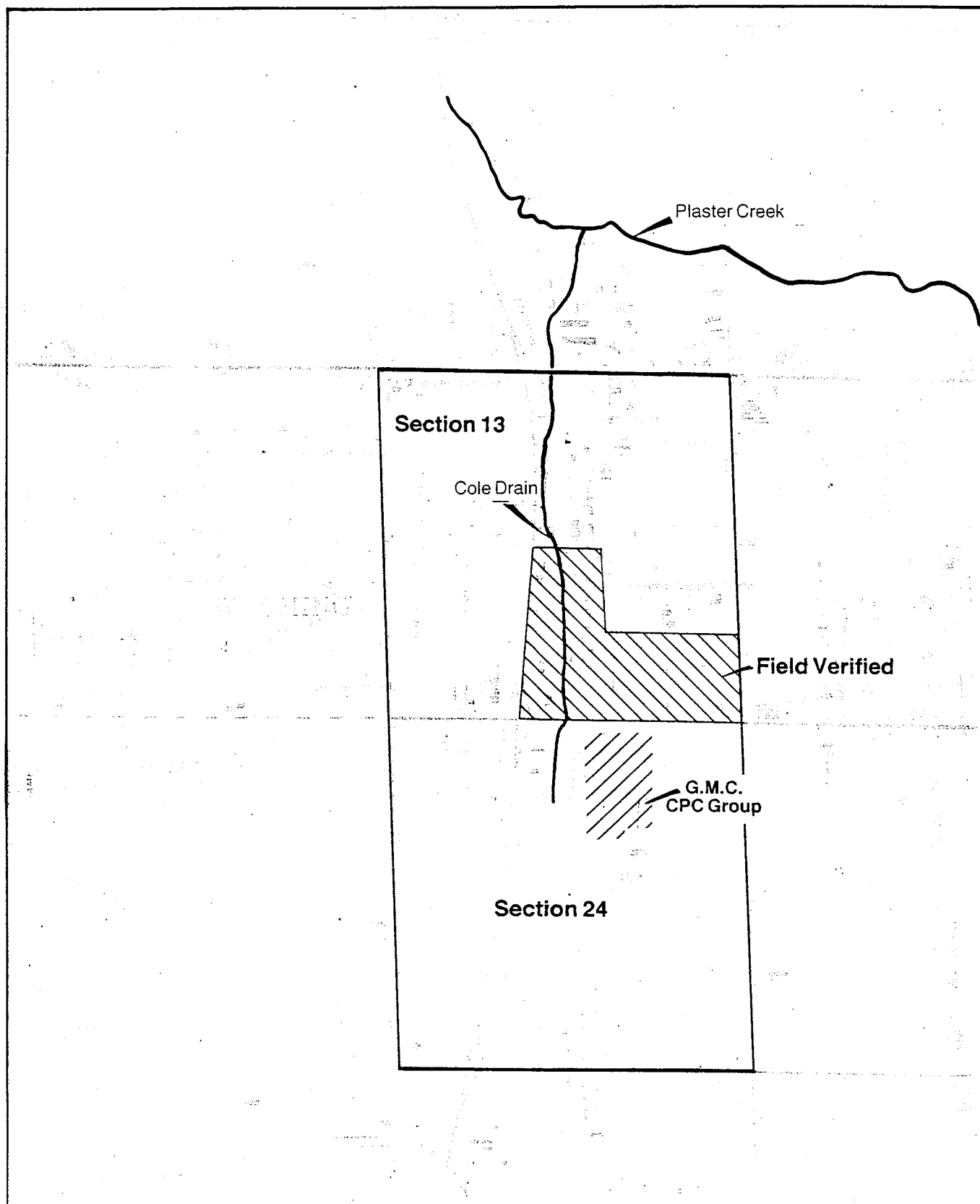


Figure 5
Off-Site Investigation Area
General Motors Corp.-CPC Group
June, 1986 20571

4.4 Potential Contact:

The area immediately downgradient (north) of the GM facility consists of a residential section to the eastern side, a city park in the center adjacent to Cole Drain, and a commercial industrial section west of Cole Drain (Figure 5). The City of Wyoming was contacted to obtain a list of the residences on Hillcroft, Birchwood, Buchanan, 34th and 35th Street which are connected to city water. A survey was conducted in the neighborhood for residences which did not appear on the city's list. No residences in that category were found. The city park is connected to city water as well. No records exist of wells for the businesses on the west side of Cole Drain. The only well of record in Section 13, located about 3/4 of a mile north of the plant, is for commercial use. Section 24 records indicate two wells southwest of the facility, both of which are located about 1/2 mile southeast of the plant.

For the community, the potential for immediate contact with the TCE contamination appears to be minimal.

5. SUMMARY OF FINDINGS

The concentration of TCE in the groundwater is highest in the vicinity of the former TCE storage tank near column T-27 at Well 86-2. Soils below the former tank site also contain elevated levels of TCE, indicating that residual TCE is still present in the pore space of the soils.

Well 86-3, located near the edge of the GM-CPC property line also contained high levels of TCE.

The highest levels of TCE found at Wells 86-2 and 86-3 were in the upper portion of the groundwater, and concentrations were below or slightly above detection limits in the samples collected just above or in the top of the silty clay unit that is thought to act as an aquitard. The area of highest

concentration is deeper with respect to the water table in the borings further away from the plant.

The sampling of Well 86-1 revealed that no detectable hydrocarbons were present on the surface of the groundwater. Analysis also produced no detectable quantities of priority pollutant volatiles. Therefore, the oil discovered in the excavation at Column A-15 has probably not migrated from under the plant.

Groundwater flow rates are estimated to average less than 0.5 ft/day which indicates that TCE is being carried with the groundwater off-site.

Appendix A: Well Logs

County	Kent	Township	City of Wyoming	Fraction	1/4 NW 1/4 NE 1/4	Section	18	T	6N	R	12W

[See site map](#)

Elevation
Casing: _____
Ground: _____
Ref. Pt.: _____

Remarks (include here, other data available)

No floating product reported

[illegible]

Well / Boring Log Sheet

County	Township	Fraction	Section	T	R
Kent	City of Wyoming	$\frac{1}{4}$ NW $\frac{1}{4}$ NE $\frac{1}{4}$	18	6N	12W

Contractor: Stearns
Address: _____
Equipment: CME-45B
Supervisor: FLC

Drilling Method(s)	Depth
HSA	60.5

Grouting/Seal		
Depth	To	Material
0	23.0	natural soil
		and bentonite
23.0	60.5	natural soils

Development: _____

Water Level: 23 Ft. Below: TQC
Measured On: 4-30-86

Screen:
 Manufacturer: Johnson
 Material: stainless steel
 Model: 960
 Slot/Gauze: 10-slot Dia.: 2"
 Length: 2 x 60 x 72
 Depth Set: 27 5 To: 32 5

Casing

Dia.	Type	Depth Set
2"	galv.	0 To 27
		To

Elevation
Casing: _____
Ground: _____
Ref. Pt.: _____

Remarks (include here, other data available)

Water sample depths: 30-33'; 40-43'; 45-48'

No odor detected when drilling

Location Sketch

See site map

[illegible]

Page: _____ of _____ 028
Well/Boring No.: _____ 86-3 _____
Client: _____ GMC-CPC _____
Project No.: _____ 20571 _____
Permit No.: _____
Date Started 5/1 Finished 5/2/86

Well / Boring Log Sheet

County	Kent	Township	City of Wyoming	Fraction	$\frac{1}{4}$ SW $\frac{1}{4}$ SE $\frac{1}{4}$	Section	13	T	6N	R	12W

Contractor: Stearns
Address: _____
Equipment: CME-45B
Supervisor: FLC

Drilling Method(s)	Depth
HSA	55'
mud rotary	70'

Grouting/Seal		
Depth	To	Material
<u>0</u>	<u>0.4</u>	<u>concrete</u>
<u>0.4</u>	<u>19</u>	<u>natural soils</u> <u>and bentonite</u>

Development: _____

Water Level: _____ Ft. Below: _____
Measured On: _____

Screen:
 Manufacturer: Johnson
 Material: stainless steel
 Model: 960
 Slot/Gauze: 10-slot Dia.: 2"
 Length: 2 x 60 x 72
 Depth Set: 41.5 To: 46.5

Casing

Dia.	Type	Depth Set
<u>2"</u>	<u>galv.</u>	<u>0</u> To <u>41</u>
		To _____

Elevation
Casing: _____
Ground: _____
Ref. Pt.: _____

Remarks (include here, other data available)

Water sample depths: 21-24'; 34-36'; 44-46'
54-56; 63-65.

No odor detected when drilling.

Location Sketch

See site map

[illegible]

Appendix B: In-Situ Hydraulic Conductivity Methods

APPENDIX B

IN-SITU HYDRAULIC CONDUCTIVITY TEST

Hydraulic conductivity can be estimated by a variety of techniques. One of the most common techniques is to subject a water well to stress by changing the water level and then monitoring how the water level responds to this stress. The stress is often applied by pumping water from the well. In a slug test (or "in-situ" permeability test), a known quantity of water is injected (or withdrawn) "instantaneously" into the well. After the well has been injected, the water level is monitored as it returns to the original static or pre-stress level.

Of the various methods for stressing the water level in a well, EDI has found that application of a vacuum which draws water into the well is very efficient. After a constant vacuum has been applied and flow into the well has been stabilized, the vacuum can be released creating the effect of an instantaneous slug.

Rapid measurement of the water level decline is mandatory for some test situations. Normally, such measurements are not possible with measuring tapes or electronic sounding devices. However, a pressure transducer instrument linked to a data logger allows accurate measurement and recording of water levels. With this instrumentation, measurements begin upon release of the vacuum. Subsequent measurements are recorded thereafter. The resulting water level records are accurate to ± 0.01 foot.

The degree of well development may affect test results. Wells should be developed to insure that the well screen freely transmits water, but overdevelopment should be avoided.

Methods

An understanding of the subsurface conditions is a prerequisite to proper interpretation of test results. This includes knowledge of the type of geologic materials being tested, the thickness of the test zone, the type of geologic materials overlying and underlying the test zone, and the position of the well screen within the test zone. In addition, the physical dimensions of the well must be known.

The Bouwer and Rice (1976) solution to water level decay after stress is applicable to unconfined conditions, but the authors note that the technique is applicable to confined aquifers if the water enters the aquifer through the upper confining layer through compression or leakage. Their equations are based on a modification of the Thiem equation and assumes:

1. Drawdown of the water table around the well is negligible.
2. Flow above the water table can be ignored.
3. Head losses as water enters the well are negligible.
4. The aquifer is homogeneous and isotropic.

The equations of importance are:

$$K = \frac{[r_w^2 \ln(R_e/r_w) \ln(Y_o/Y_t)]}{2lt}$$

and (for partially penetrating wells):

$$\ln(R_e/r_w) = \frac{1.1}{\ln(h/r_w)} + \frac{A + B \ln(D-h)/r_w}{1/r_w}$$

Where:

l = screen length

Y_o, Y_t = water level, static, and at time t

R_e = effective radius over which Y is dissipated
 r_w = horizontal distance from well center to original aquifer
 t = time between measurements
 H = distance between static water level and base of screen
 D = aquifer thickness
 A, B = dimensionless coefficients that are a function of $1/r_w$
and determined graphically

Values of time and water level are selected from the straight-line portion of the plot of water level (log scale) versus time (arithmetic scale). These values plus the values for well construction and aquifer thickness are substituted into the above equations to determine horizontal hydraulic conductivity.

Appendix C: Laboratory Data Sheets

ANALYTICAL SERVICES
PRIORITY POLLUTANT ANALYSIS

TABLE 1
VOLATILE FRACTION

CLIENT: GMC CPC DIVISION
PROJECT NO.: 25615
SAMPLE: MW 85-1

DATE SAMPLED: 05/05/86 TIME: 2:58 PM
DATE RECEIVED: 05/05/86 TIME: 8:10 PM
DATE COMPLETED: 05/09/86

SAMPLE NO. 62222

COMPOUND	RESULT	D.L.	COMPOUND	RESULT	D.L.
	(mg/l)			(mg/l)	
BENZENE	*	0.001	TRANS-1,2-DICHLOROETHYLENE	0.026	0.002
BROMODICHLOROMETHANE	*	0.002	1,2-DICHLOROPROPANE	*	0.003
BROMOFORM	*	0.015	CIS-1,3-DICHLOROPROPYLENE	*	0.004
BROMOMETHANE	*	0.010	TRANS-1,3-DICHLOROPROPYLENE	*	0.004
CARBON TETRACHLORIDE	*	0.004	ETHYL BENZENE	*	0.001
CHLOROBENZENE	*	0.001	METHYLENE CHLORIDE	*	0.002
CHLORODIBROMOMETHANE	*	0.003	1,1,2,2-TETRACHLOROETHANE	*	0.002
CHLOROETHANE	*	0.010	TETRACHLOROETHYLENE	*	0.002
2-CHLOROETHYL VINYL ETHER	*	0.010	TOLUENE	*	0.001
CHLOROFORM	*	0.001	1,1,1-TRICHLOROETHANE	*	0.002
CHLOROMETHANE	*	0.010	1,1,2-TRICHLOROETHANE	*	0.003
1,1-DICHLOROETHANE	*	0.002	TRICHLOROETHYLENE	*	0.002
1,2-DICHLOROETHANE	*	0.002	TRICHLOROFLUOROMETHANE	*	0.003
1,1-DICHLOROETHYLENE	*	0.002	VINYL CHLORIDE	*	0.010

*COMPOUND NOT PRESENT AT DETECTION LIMIT

ANALYTICAL SERVICES
PRIORITY POLLUTANT ANALYSIS

TABLE 1
VOLATILE FRACTION

CLIENT: GMC CPC DIVISION
PROJECT NO.: 25615
SAMPLE: 85-2

DATE SAMPLED: 05/05/86 TIME: 2:25 PM
DATE RECEIVED: 05/05/86 TIME: 8:10 AM
DATE COMPLETED: 05/07/86

SAMPLE NO. 62223

COMPOUND	RESULT	D.L.	COMPOUND	RESULT	D.L.
	(mg/l)			(mg/l)	
BENZENE	*	0.001	TRANS-1,2-DICHLOROETHYLENE	0.018	0.002
BROMODICHLOROMETHANE	*	0.002	1,2-DICHLOROPROPANE	*	0.003
BROMOFORM	*	0.015	CIS-1,3-DICHLOROPROPYLENE	*	0.004
BROMOMETHANE	*	0.010	TRANS-1,3-DICHLOROPROPYLENE	*	0.004
CARBON TETRACHLORIDE	*	0.004	ETHYL BENZENE	*	0.001
CHLOROBENZENE	*	0.001	METHYLENE CHLORIDE	*	0.002
CHLORODIBROMOMETHANE	*	0.003	1,1,2,2-TETRACHLOROETHANE	*	0.002
CHLOROETHANE	*	0.010	TETRACHLOROETHYLENE	*	0.002
2-CHLOROETHYL VINYL ETHER	*	0.010	TOLUENE	*	0.001
CHLOROFORM	*	0.001	1,1,1-TRICHLOROETHANE	*	0.002
CHLOROMETHANE	*	0.010	1,1,2-TRICHLOROETHANE	*	0.003
1,1-DICHLOROETHANE	*	0.002	TRICHLOROETHYLENE	0.006	0.002
1,2-DICHLOROETHANE	*	0.002	TRICHLOROFLUOROMETHANE	*	0.003
1,1-DICHLOROETHYLENE	*	0.002	VINYL CHLORIDE	*	0.010

*COMPOUND NOT PRESENT AT DETECTION LIMIT

ANALYTICAL SERVICES
PRIORITY POLLUTANT ANALYSIS

TABLE 1
VOLATILE FRACTION

CLIENT: GMC CPC DIVISION
PROJECT NO.: 25615
SAMPLE: MW 85-3

DATE SAMPLED: 05/05/86 TIME: 2:58 PM
DATE RECEIVED: 05/05/86 TIME: 8:10 PM
DATE COMPLETED: 05/09/86

SAMPLE NO. 62224

COMPOUND	RESULT	D.L.	COMPOUND	RESULT	D.L.
	(mg/l)			(mg/l)	
BENZENE	*	0.001	TRANS-1,2-DICHLOROETHYLENE	*	0.002
BROMODICHLOROMETHANE	*	0.002	1,2-DICHLOROPROPANE	*	0.003
BROMOFORM	*	0.015	CIS-1,3-DICHLOROPROPYLENE	*	0.004
BROMOMETHANE	*	0.010	TRANS-1,3-DICHLOROPROPYLENE	*	0.004
CARBON TETRACHLORIDE	*	0.004	ETHYL BENZENE	*	0.001
CHLOROBENZENE	*	0.001	METHYLENE CHLORIDE	*	0.002
CHLORODIBROMOMETHANE	*	0.003	1,1,2,2-TETRACHLOROETHANE	*	0.002
CHLOROETHANE	*	0.010	TETRACHLOROETHYLENE	0.002	0.002
2-CHLOROETHYL VINYL ETHER	*	0.010	TOLUENE	*	0.001
CHLOROFORM	*	0.001	1,1,1-TRICHLOROETHANE	0.002	0.002
CHLOROMETHANE	*	0.010	1,1,2-TRICHLOROETHANE	*	0.003
1,1-DICHLOROETHANE	*	0.002	TRICHLOROETHYLENE	*	0.002
1,2-DICHLOROETHANE	*	0.002	TRICHLOROFLUOROMETHANE	*	0.003
1,1-DICHLOROETHYLENE	*	0.002	VINYL CHLORIDE	*	0.010

*COMPOUND NOT PRESENT AT DETECTION LIMIT

ANALYTICAL SERVICES
PRIORITY POLLUTANT ANALYSIS

TABLE 1
VOLATILE FRACTION

CLIENT: GMC CPC DIVISION
PROJECT NO.: 25615
SAMPLE: MW 85-6

DATE SAMPLED: 05/05/86 TIME: 7:25 PM
DATE RECEIVED: 05/05/86 TIME: 8:10 PM
DATE COMPLETED: 05/09/86

SAMPLE NO. 62225

COMPOUND	RESULT (mg/l)	D.L.	COMPOUND	RESULT (mg/l)	D.L.
BENZENE	*	0.001	TRANS-1,2-DICHLOROETHYLENE	*	0.002
BROMODICHLOROMETHANE	*	0.002	1,2-DICHLOROPROPANE	*	0.003
BROMOFORM	*	0.015	CIS-1,3-DICHLOROPROPYLENE	*	0.004
BROMOMETHANE	*	0.010	TRANS-1,3-DICHLOROPROPYLENE	*	0.004
CARBON TETRACHLORIDE	*	0.004	ETHYL BENZENE	*	0.001
CHLOROBENZENE	*	0.001	METHYLENE CHLORIDE	*	0.002
CHLORODIBROMOMETHANE	*	0.003	1,1,2,2-TETRACHLOROETHANE	*	0.002
CHLOROETHANE	*	0.010	TETRACHLOROETHYLENE	0.007	0.002
2-CHLOROETHYL VINYL ETHER	*	0.010	TOLUENE	*	0.001
CHLOROFORM	*	0.001	1,1,1-TRICHLOROETHANE	*	0.002
CHLOROMETHANE	*	0.010	1,1,2-TRICHLOROETHANE	*	0.003
1,1-DICHLOROETHANE	*	0.002	TRICHLOROETHYLENE	*	0.002
1,2-DICHLOROETHANE	*	0.002	TRICHLOROFLUOROMETHANE	*	0.003
1,1-DICHLOROETHYLENE	*	0.002	VINYL CHLORIDE	*	0.010

*COMPOUND NOT PRESENT AT DETECTION LIMIT

ANALYTICAL SERVICES
PRIORITY POLLUTANT ANALYSIS

TABLE 1
VOLATILE FRACTION

CLIENT: GMC CPC DIVISION
PROJECT NO.: 25615
SAMPLE: MW 85-7

DATE SAMPLED: 05/05/86 TIME: 3:12 PM
DATE RECEIVED: 05/05/86 TIME: 8:10 PM
DATE COMPLETED: 05/09/86

SAMPLE NO. 62226

COMPOUND	RESULT (mg/l)	D.L.	COMPOUND	RESULT (mg/l)	D.L.
BENZENE	0.001	0.001	TRANS-1,2-DICHLOROETHYLENE	0.010	0.002
BROMODICHLOROMETHANE	*	0.002	1,2-DICHLOROPROPANE	*	0.003
BROMOFORM	*	0.015	CIS-1,3-DICHLOROPROPYLENE	*	0.004
BROMOMETHANE	*	0.010	TRANS-1,3-DICHLOROPROPYLENE	*	0.004
CARBON TETRACHLORIDE	*	0.004	ETHYL BENZENE	*	0.001
CHLOROBENZENE	*	0.001	METHYLENE CHLORIDE	*	0.002
CHLORODIBROMOMETHANE	*	0.003	1,1,2,2-TETRACHLOROETHANE	*	0.002
CHLOROETHANE	*	0.010	TETRACHLOROETHYLENE	*	0.002
2-CHLOROETHYL VINYL ETHER	*	0.010	TOLUENE	*	0.001
CHLOROFORM	*	0.001	1,1,1-TRICHLOROETHANE	0.002	0.002
CHLOROMETHANE	*	0.010	1,1,2-TRICHLOROETHANE	*	0.003
1,1-DICHLOROETHANE	*	0.002	TRICHLOROETHYLENE	0.24	0.002
1,2-DICHLOROETHANE	*	0.002	TRICHLOROFLUOROMETHANE	*	0.003
1,1-DICHLOROETHYLENE	*	0.002	VINYL CHLORIDE	*	0.010

*COMPOUND NOT PRESENT AT DETECTION LIMIT

ANALYTICAL SERVICES
PRIORITY POLLUTANT ANALYSIS

TABLE 1
VOLATILE FRACTION

CLIENT: GMC CPC DIVISION
PROJECT NO.: 25615
SAMPLE: MW 86-1

DATE SAMPLED: 05/05/86 TIME: 4:04 PM
DATE RECEIVED: 05/05/86 TIME: 8:10 PM
DATE COMPLETED: 05/09/86

SAMPLE NO. 62227

COMPOUND	RESULT	D.L.	COMPOUND	RESULT	D.L.
	(mg/l)			(mg/l)	
BENZENE	*	0.001	TRANS-1,2-DICHLOROETHYLENE	*	0.002
BROMODICHLOROMETHANE	*	0.002	1,2-DICHLOROPROPANE	*	0.003
BROMOFORM	*	0.015	CIS-1,3-DICHLOROPROPYLENE	*	0.004
BROMOMETHANE	*	0.010	TRANS-1,3-DICHLOROPROPYLENE	*	0.004
CARBON TETRACHLORIDE	*	0.004	ETHYL BENZENE	*	0.001
CHLOROBENZENE	*	0.001	METHYLENE CHLORIDE	*	0.002
CHLORODIBROMOMETHANE	*	0.003	1,1,2,2-TETRACHLOROETHANE	*	0.002
CHLOROETHANE	*	0.010	TETRACHLOROETHYLENE	*	0.002
2-CHLOROETHYL VINYL ETHER	*	0.010	TOLUENE	*	0.001
CHLOROFORM	*	0.001	1,1,1-TRICHLOROETHANE	*	0.002
CHLOROMETHANE	*	0.010	1,1,2-TRICHLOROETHANE	*	0.003
1,1-DICHLOROETHANE	*	0.002	TRICHLOROETHYLENE	*	0.002
1,2-DICHLOROETHANE	*	0.002	TRICHLOROFLUOROMETHANE	*	0.003
1,1-DICHLOROETHYLENE	*	0.002	VINYL CHLORIDE	*	0.010

*COMPOUND NOT PRESENT AT DETECTION LIMIT

ANALYTICAL SERVICES
PRIORITY POLLUTANT ANALYSIS

TABLE 1
VOLATILE FRACTION

CLIENT: GMC CPC DIVISION
PROJECT NO.: 25615
SAMPLE: MW 86-2

DATE SAMPLED: 05/05/86 TIME: 5:41 PM
DATE RECEIVED: 05/05/86 TIME: 8:10 PM
DATE COMPLETED: 05/09/86

SAMPLE NO. 62228

COMPOUND	RESULT (mg/l)	D.L.	COMPOUND	RESULT (mg/l)	D.L.
BENZENE	*	0.001	TRANS-1,2-DICHLOROETHYLENE	0.012	0.002
BROMODICHLOROMETHANE	*	0.002	1,2-DICHLOROPROPANE	*	0.003
BROMOFORM	*	0.015	CIS-1,3-DICHLOROPROPYLENE	*	0.004
BROMOMETHANE	*	0.010	TRANS-1,3-DICHLOROPROPYLENE	*	0.004
CARBON TETRACHLORIDE	*	0.004	ETHYL BENZENE	*	0.001
CHLOROBENZENE	*	0.001	METHYLENE CHLORIDE	*	0.002
CHLORODIBROMOMETHANE	*	0.003	1,1,2,2-TETRACHLOROETHANE	*	0.002
CHLOROETHANE	*	0.010	TETRACHLOROETHYLENE	0.014	0.002
2-CHLOROETHYL VINYL ETHER	*	0.010	TOLUENE	*	0.001
CHLOROFORM	0.004	0.001	1,1,1-TRICHLOROETHANE	0.045	0.002
CHLOROMETHANE	*	0.010	1,1,2-TRICHLOROETHANE	*	0.003
1,1-DICHLOROETHANE	*	0.002	TRICHLOROETHYLENE	55.	0.002
1,2-DICHLOROETHANE	*	0.002	TRICHLOROFLUOROMETHANE	*	0.003
1,1-DICHLOROETHYLENE	0.004	0.002	VINYL CHLORIDE	*	0.010

*COMPOUND NOT PRESENT AT DETECTION LIMIT

ANALYTICAL SERVICES
PRIORITY POLLUTANT ANALYSIS

TABLE 1
VOLATILE FRACTION

CLIENT: GMC CPC DIVISION
PROJECT NO.: 25615
SAMPLE: MW 86-3

DATE SAMPLED: 05/05/86 TIME: 7:29 PM
DATE RECEIVED: 05/05/86 TIME: 8:10 PM
DATE COMPLETED: 05/09/86

SAMPLE NO. 62229

COMPOUND	RESULT (mg/l)	D.L.	COMPOUND	RESULT (mg/l)	D.L.
BENZENE	*	0.005	TRANS-1,2-DICHLOROETHYLENE	0.010	0.010
BROMODICHLOROMETHANE	*	0.010	1,2-DICHLOROPROPANE	*	0.015
BROMOFORM	*	0.075	CIS-1,3-DICHLOROPROPYLENE	*	0.020
BROMOMETHANE	*	0.050	TRANS-1,3-DICHLOROPROPYLENE	*	0.020
CARBON TETRACHLORIDE	*	0.020	ETHYL BENZENE	*	0.005
CHLOROBENZENE	*	0.005	METHYLENE CHLORIDE	*	0.010
CHLORODIBROMOMETHANE	*	0.015	1,1,2,2-TETRACHLOROETHANE	*	0.010
CHLOROETHANE	*	0.050	TETRACHLOROETHYLENE	*	0.010
2-CHLOROETHYL VINYL ETHER	*	0.050	TOLUENE	*	0.005
CHLOROFORM	*	0.005	1,1,1-TRICHLOROETHANE	0.011	0.010
CHLOROMETHANE	*	0.010	1,1,2-TRICHLOROETHANE	*	0.015
1,1-DICHLOROETHANE	*	0.010	TRICHLOROETHYLENE	1.4	0.010
1,2-DICHLOROETHANE	*	0.010	TRICHLOROFLUOROMETHANE	*	0.015
1,1-DICHLOROETHYLENE	*	0.010	VINYL CHLORIDE	*	0.050

*COMPOUND NOT PRESENT AT DETECTION LIMIT

ANALYTICAL SERVICES
PRIORITY POLLUTANT ANALYSIS

TABLE 1
VOLATILE FRACTION

CLIENT: GMC-CPC DIVISION
PROJECT NO.: 25554
SAMPLE: BH-3 SUMP

DATE SAMPLED: 05/05/86 TIME: 1:18 PM
DATE RECEIVED: 05/05/86 TIME: 8:10 PM
DATE COMPLETED: 05/09/86

SAMPLE NO. 62231

COMPOUND	RESULT (mg/l)	D.L.	COMPOUND	RESULT (mg/l)	D.L.
BENZENE	*	0.001	TRANS-1,2-DICHLOROETHYLENE	*	0.002
BROMODICHLOROMETHANE	*	0.002	1,2-DICHLOROPROPANE	*	0.003
BROMOFORM	*	0.015	CIS-1,3-DICHLOROPROPYLENE	*	0.004
BROMOMETHANE	*	0.010	TRANS-1,3-DICHLOROPROPYLENE	*	0.004
CARBON TETRACHLORIDE	*	0.004	ETHYL BENZENE	*	0.001
CHLOROBENZENE	*	0.001	METHYLENE CHLORIDE	*	0.002
CHLORODIBROMOMETHANE	*	0.003	1,1,2,2-TETRACHLOROETHANE	*	0.002
CHLOROETHANE	*	0.010	TETRACHLOROETHYLENE	0.002	0.002
2-CHLOROETHYL VINYL ETHER	*	0.010	TOLUENE	*	0.001
CHLOROFORM	*	0.001	1,1,1-TRICHLOROETHANE	*	0.002
CHLOROMETHANE	*	0.010	1,1,2-TRICHLOROETHANE	*	0.003
1,1-DICHLOROETHANE	*	0.002	TRICHLOROETHYLENE	*	0.002
1,2-DICHLOROETHANE	*	0.002	TRICHLOROFLUOROMETHANE	*	0.003
1,1-DICHLOROETHYLENE	*	0.002	VINYL CHLORIDE	*	0.010

*COMPOUND NOT PRESENT AT DETECTION LIMIT

ANALYTICAL SERVICES
PRIORITY POLLUTANT ANALYSIS

TABLE 1
VOLATILE FRACTION

CLIENT: GMC-CPC DIVISION
PROJECT NO.: 25554
SAMPLE: DRAIN SUMP AT CONVEYOR

DATE SAMPLED: 05/05/86 TIME: 1:29 PM
DATE RECEIVED: 05/05/86 TIME: 8:10 PM
DATE COMPLETED: 05/09/86

SAMPLE NO. 62232

COMPOUND	RESULT (mg/l)	D.L.	COMPOUND	RESULT (mg/l)	D.L.
BENZENE	*	0.001	TRANS-1,2-DICHLOROETHYLENE	0.004	0.002
BROMODICHLOROMETHANE	*	0.002	1,2-DICHLOROPROPANE	*	0.003
BROMOFORM	*	0.015	CIS-1,3-DICHLOROPROPYLENE	*	0.004
BROMOMETHANE	*	0.010	TRANS-1,3-DICHLOROPROPYLENE	*	0.004
CARBON TETRACHLORIDE	*	0.004	ETHYL BENZENE	*	0.001
CHLOROBENZENE	*	0.001	METHYLENE CHLORIDE	*	0.002
CHLORODIBROMOMETHANE	*	0.003	1,1,2,2-TETRACHLOROETHANE	*	0.002
CHLOROETHANE	*	0.010	TETRACHLOROETHYLENE	0.035	0.002
2-CHLOROETHYL VINYL ETHER	*	0.010	TOLUENE	*	0.001
CHLOROFORM	0.001	0.001	1,1,1-TRICHLOROETHANE	0.12	0.002
CHLOROMETHANE	*	0.010	1,1,2-TRICHLOROETHANE	*	0.003
1,1-DICHLOROETHANE	0.004	0.002	TRICHLOROETHYLENE	0.031	0.002
1,2-DICHLOROETHANE	*	0.002	TRICHLOROFLUOROMETHANE	*	0.003
1,1-DICHLOROETHYLENE	0.004	0.002	VINYL CHLORIDE	*	0.010

*COMPOUND NOT PRESENT AT DETECTION LIMIT

ANALYTICAL SERVICES
EDI LABORATORY REPORT

CLIENT: GMC CPC DIVISION
PROJECT NO.: 25615
LOCATION: GRAND RAPIDS, MICHIGAN
SAMPLED BY: ELC (WATER SAMPLE)
DESCRIPTION: PHASE II HYDROGEO INVEST.

DATE SAMPLED: 04/29/86 TIME: PM
DATE RECEIVED: 04/29/86 TIME: 7:10 PM
DATE COMPLETED: 05/05/86
SCHEDULED COMPLETION: 5/05/86
ANALYST: PT
QUALITY CONTROL REVIEW BY: SJL
WORKSHEET NO: 1

DETECTION UNITS
LIMIT

WELL#86-2 WELL #86-2
30'- 33' 40'- 43'

EDI SAMPLE NO: 62062 62063

TRICHLOROETHYLENE 47,000 220 1.0 ug/l

ANALYSIS BY STANDARD METHODS 16TH EDITION AND/OR METHODS FOR
CHEMICAL ANALYSIS OF WATER AND WASTES, USEPA, 1983.

ANALYTICAL SERVICES
EDI LABORATORY REPORT

CLIENT: GMC CPC DIVISION
PROJECT NO.: 25615
LOCATION: GRAND RAPIDS, MICHIGAN
SAMPLED BY: ELC (SOIL SAMPLE)
DESCRIPTION: PHASE II HYDROGEO INVEST.

DATE SAMPLED: 04/29/86 TIME:
DATE RECEIVED: 04/29/86 TIME: 7:10 PM
DATE COMPLETED: 05/05/86
SCHEDULED COMPLETION: 5/05/86
ANALYST: PT
QUALITY CONTROL REVIEW BY: SJL
WORKSHEET NO: 2

					DETECTION	UNITS
					LIMIT	
	WELL#86-2	WELL#86-2	WELL#86-2	WELL#86-2		
	3.5'-5'	9'-10.5'	14.5'-16'	19'-20.5'		
EDI SAMPLE NO:	62064	62065	62066	62067		
TRICHLOROETHYLENE	<5.0	<5.0	42	5.0	5.0	ug/kg

ANALYSIS BY STANDARD METHODS 16TH EDITION AND/OR METHODS FOR
CHEMICAL ANALYSIS OF WATER AND WASTES, USEPA, 1983.



ANALYTICAL SERVICES
EDI LABORATORY REPORT

CLIENT: GMC CPC DIVISION
PROJECT NO.: 25615
LOCATION: GRAND RAPIDS, MI
SAMPLED BY: ELC

DESCRIPTION: PHASE II HYDROGEO INVEST.

DATE SAMPLED: 04/29/86 TIME:
DATE RECEIVED: 04/29/86 TIME: 7:10 PM
DATE COMPLETED: 05/01/86
SCHEDULED COMPLETION: 5/13/86
ANALYST: PCC,PT
QUALITY CONTROL REVIEW BY: SJL
WORKSHEET NO: 3

			DETECTION LIMIT	UNITS
	WELL#86-2	86-2		
	24'-25.5'	50'-51.6'		
EDI SAMPLE NO:	62068	62069		
TRICHLOROETHYLENE	260	<5.0	5.0	ug/kg

ANALYSIS BY STANDARD METHODS 16TH EDITION AND/OR METHODS FOR
CHEMICAL ANALYSIS OF WATER AND WASTES, USEPA, 1983.



ANALYTICAL SERVICES
EDI LABORATORY REPORT

CLIENT: GMC CPC DIVISION
PROJECT NO.: 25615

LOCATION: GRAND RAPIDS, MI

SAMPLED BY: ELC

DESCRIPTION: PHASE II HYDROGEO INVEST.

DATE SAMPLED: 05/01/86 TIME:
DATE RECEIVED: 05/01/86 TIME: 11:40 AM
DATE COMPLETED: 05/01/86
SCHEDULED COMPLETION: 5/01/86
ANALYST: JE
QUALITY CONTROL REVIEW BY: DEK
WORKSHEET NO: 4

	86-3 21'-24'	86-3 34'-36'	86-3 44'-46'	86-3 53'-55'	DETECTION LIMIT	UNITS
EDI SAMPLE NO:	62106	62107	62108	62109		
TRICHLOROETHYLENE	45	210	600	230	1.0	ug/l

ANALYSIS BY STANDARD METHODS 16TH EDITION AND/OR METHODS FOR
CHEMICAL ANALYSIS OF WATER AND WASTES, USEPA, 1983.

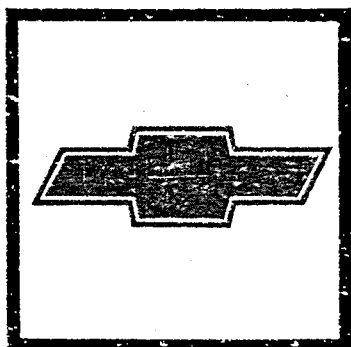
M. PETZOLD
FINAL COPY

Results of

Phase III-A

Hydrogeological Investigation

for



General Motors Corporation
CPC Group
Grand Rapids, Michigan

March 1987

20676

EDI Engineering & Science

Environmental Engineering, Geology, Biology and Chemistry
Grand Rapids, MI (616) 342-0270



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1.0 INTRODUCTION

Previous hydrogeological investigations by EDI at the General Motors Corporation, CPC Group, Metal Fabrication Plant in Wyoming, Michigan have identified a location in the plant at Column T-27 where equipment leaked through the floor of the facility. The equipment, a parts cleaner, is no longer located at that point. The leakage was Trichloroethylene (TCE). The soils below the floor have residuals of TCE and the groundwater has a plume of dissolved TCE which extends to the north of the source. The previous work had identified that TCE is present in the soils below the floor and that the plume extended to the north property line of the plant. In phase III, the highest priority was given to determining the size and character of the source area soils which were contaminated with TCE. Another purpose was to set wells in place to remove TCE from the soils by soil vapor extraction and to provide additional information on the groundwater in the source area. The previous studies completed on the site were the March, 1986 report titled "Results of Hydrogeological Investigation at the Column A-15 Excavation" and the June, 1986 report titled "Results of Phase II Hydrogeological Investigation".

2.0 PURPOSE AND SCOPE

This phase of work addressed the size and character of the TCE source area in the soils and groundwater. The investigation is shaped to provide necessary information for source remediation. The scope of work accomplished is as follows:

- 2.1 Soil vapor samples were taken from beneath the floor of the plant in three areas and along the south side of 36th Street. The largest area within the plant from which soil vapor samples were recovered, centers around column T-27, the known source area (see Figure 1). A portable gas chromatograph was installed in the plant during this sampling period. Soil vapor samples were also taken from the area around column O-44 and the area around column RS-9. These two areas were suspected to have had degreaser equipment use in the past. These samples were transported to EDI's laboratory and analyzed within 24 hours.
- 2.2 A four inch screen twenty feet in length, Well 87-3 (Figure 2), was placed in the soils in the center of the source area to recover soil vapor as a remedial measure.
- 2.3 Four soil borings 87-1, 87-2, 87-4, and 87-5 were placed around the column T-27 source area as shown in Figure 2. The soils above the water table were sampled for TCE contamination. Temporary wells were set in the groundwater at vertical ten foot intervals to sample for TCE. A well was placed in the boring with a ten foot screen extending upward from just above the water table to serve for soil vapor recovery and monitoring. A second screen in the same well was positioned

at the depth which the temporary wells indicated contained the most contaminated groundwater.

3.0 METHODS

3.1 Soil Vapor Study

For the soil vapor study CPC precut 3-inch cores through the concrete floor of the facility. Soil vapors were collected by driving a hollow metal rod into the soils beneath the facility to a depth of three feet. In a few locations, additional samples were taken at a depth of 6 feet as a calibration of the method. The soil vapors were extracted by a battery-operated air pump pulling 1000 cubic centimeter of soil vapor per minute. The soil vapors are pulled through the hollow rod and Teflon tubing for purging at least five minutes. The samples are either extracted from the tubing ahead of the pump with a syringe, or a Tedlar bag is attached to the discharge of the air pump. The metal rod is brushed to remove soils and heated with a propane torch to decontaminate it between samples. During a majority of the sampling the gas chromatograph was located on-site. Duplicate samples were taken in some locations to assess the sampling variability.

3.2 Drilling and Well Installation

3.3 Soil Borings

At each of the locations where wells were installed, the soil boring was advanced using hollow stem augers. For the 2-inch wells installed, the augers were 4 1/4- inch ID. For the two 4-inch wells installed, the augers were 6 inch ID.

3.4 Soil Sampling

Soil samples were collected at 5-foot intervals with a split spoon sampler down to the water table. The samples thus collected were examined for lithology to complete the log of the boring, and a portion of each spoon sample was taken for chemical analysis for trichloroethylene. When clay was encountered beneath the aquifer, a split spoon sample was taken for both lithology and chemical analysis. The soil borings and well logs are included in Appendix A.

3.5 Temporary Wells

In all of the borings, when groundwater was encountered, a temporary well was set. After development and sampling the augers were advanced 10 feet and a second temporary well was set. This pattern was continued through the thickness of the aquifer until clay or non-permeable materials were encountered. The resulting chemical analyses were used to characterize the vertical variation within the aquifer. The temporary wells

were constructed of 2-inch galvanized casing and 3-foot stainless steel screen. All of the well materials were thoroughly steam cleaned prior to installation in the augers. Each time a temporary well was set, the well was developed by a Brainard hand pump or bailing. After development, the water samples were collected for chemical analysis with a stainless steel bailer.

3.6 Permanent Wells

The permanent wells were set through the augers to a depth indicated by the results from the temporary wells. Three of the permanent wells, 87-1, 87-2, and 87-4, are constructed of 2 inch galvanized casing and 3-foot stainless steel screen. The formation was allowed to collapse around the screen. Each of these wells has an upper section with 10 feet of stainless steel screen in the soils above the water table. The screen is set from 8.5 to 19.5 with a 1 foot connector in the middle. The boring was backfilled with natural soils to the surface. The wells were completed with a flush-mount cap cemented into the floor of the plant level with the cement and below the wood block. Well 87-5 is constructed of 4-inch galvanized casing with a 4 inch stainless steel screen 10 feet in length set near the bottom of the aquifer at 39.5 to 50.5 feet. The boring was backfilled with natural soils to the surface. The well was completed with a standard cap below grade inside a 12-inch steel ring and cover set level with the concrete floor. Well 87-3 was constructed of 4-inch stainless steel screen set from 1.0 to 20.7 feet. The boring was backfilled with natural soils. The well was completed with 0.5 feet of 4-inch galvanized casing and a standard cap below grade inside a 12-inch steel ring and cover set level with the concrete floor.

3.7 Groundwater Sampling

Water samples were collected from the new wells and selected existing wells. Wells 86-2, 87-1, 87-2, and 87-3 were sampled on January 23, 1987. Well 87-5 was sampled on January 30, 1987. The wells were purged of at least three casing volumes with a ditch pump or a bailer prior to sampling. In the case of well 87-5, the yield of the well indicated that development of the well was not complete. The well was alternately purged and filled with water from the plant water system approximately ten times. Just prior to sampling the well was pumped steadily at 1 gallon per minute for one hour.

3.8 Hydrology

The static water level in the wells was determined to the nearest 0.01 foot using the wetted tape method. The flush mount style of cap used in many of the wells are not vented. This requires that the well be allowed to stabilize to atmospheric pressure before the water level is measured in the well. In this case, the permeability of the formation is sufficient that stabilization occurs within 5 minutes. The water level was measured after stabilization occurred.

3.9 Chemical Analysis

The chemical analyses were performed according to the following methods:

Chemical	Instrumentation	Method
Trichloroethylene	GC	EPA 601
Volatile Priority Pollutant	GC/MS	EPA 624
Acid Priority Pollutant	GC/MS	EPA 625
Base Neutral Priority Pollutant	GC/MS	EPA 625

4.0 RESULTS AND DISCUSSION

4.1 General Site Geology

The Metal Fabrication Plant is underlain by glacial outwash consisting of sands and gravels. Beneath the sands and gravels is a silty clay which slopes to the west and north. Figure 2 plots the locations of soil borings from this study, previous groundwater sampling work, and previous work done for the placement of equipment within the facility. The traces of the geologic cross-sections which have been assembled are also indicated in Figure 2. Figures 3 through 6 are the cross-sections. None of the borings on-site penetrate to bedrock which occurs at approximately 100 feet in this area based on a limited number of water well records. The upper bedrock is part of the Michigan formation, approximately 100 feet thick, underlain by the Marshall sandstone. The Michigan formation consists of a sequence of shale, gypsum, and limestone. These rock types generally exhibit low permeability values and may serve as substantial protection for the underlying Marshall sandstone aquifer.

The older borings completed for equipment foundations penetrate the clay unit for a substantial depth (up to 50 feet). On the west side of the plant where the top of the clay is the deepest, boring 311 penetrated through two feet of clay and encountered further sands and gravel. The well logs from previous work are included in the Appendix for the Phase II Report. The most recent borings penetrate the clay only a few feet to substantiate its depth. The surface elevation of the clay has been plotted in Figure 7. The slope of the clay surface is to the west-northwest in general and at a gradient of approximately 1 foot in 15 feet. In the source area, the slope is less, approximately 1 foot in 30 feet. The highest elevations of the clay occur along the east side of the plant from column A-10 to Column A-20. Cross-sections A-A' and B-B', Figures 3 and 4, record the apparent slope of the clay surface in the direction of the cross-section. Cross-section B-B', Figure 4, trending north and south through the source area to the north property line, indicates a consistent slope of the clay to the north. Additional borings between well 87-5 and well 86-3 would most likely show that the surface of the clay is not as smooth as indicated.

The expected variability is a couple of feet. Cross-sections x-x and y-y. Figures 5 and 6, are expanded-scale representations of the source area in north-south and east-west directions, respectively.

The sands and gravels above the clay are in general free of silty material and clay stringers or partings. The relative positions of these materials do probably influence the flow pattern of groundwater to some extent due to differences in permeability. The amount of fine sand is substantially greater in the area of the source than in surrounding areas. To the north of the source area is medium sand overlain with progressively thicker fine sand. Above the water table, the soil materials are predominantly medium and fine sand. Gravels occur as occasional thin layers within the sand or in some locations just above the clay.

4.2 Soil Vapor Study

The soil vapor work done on site covered four areas. The largest area was surrounding the source area at column T-27. Twenty-nine soil vapor samples were collected from the area. Two areas, which were suspected as having had degreaser equipment, were also tested on a smaller scale. At column O-44 six locations were sampled. At column RS-9 nine samples were collected. The fourth area was along the south side of 36th Street. The concentrations of TCE found in the soil vapor samples are summarized in Table 1 and the analyses are included in Appendix B. The locations of the samples are plotted on Figure 1 and the TCE values are plotted on Figure 8. The area of column O-44 shows no discernible TCE in any of the samples. The area of column T-27 shows a large area of TCE in the soil vapors. The concentrations appear to be highest just to the east of Column T-27 and to fall off more rapidly to the north and west than to the east. The plume of TCE in the groundwater stretching to the north generates low concentration values in the soil vapor in the areas of column RS-9 and along 36th Street. In the area of RS-9 slightly higher values were found in two of the locations. These may indicate that a small amount of TCE was introduced into the soils in the area from equipment located there. The amount in the soils is probably not significant.

4.3 Hydrology

The groundwater levels have been measured twice during the completion of this study and the results summarized in Table 2. Water levels were taken on January 21, and 23, 1987 during sampling of the wells. A second round of measurements were taken on February 24, 1987. The surface of the groundwater has been contoured in Figure 9 based on the February 24, 1987 measurements. As can be seen in the figure, the groundwater flow direction is north-northwest in the vicinity of 36th Street. The shape of the groundwater surface is very similar to that found during the previous study except that the February 1987 levels are approximately 0.3 feet lower than those measured in May 1986.

TABLE 1

GM CPC
SOIL VAPOR TCE SUMMARY
(Mg TCE/M³ Soil Vapor)

LOCATION	DEPTH (FEET)	PPM	MG/M ³	LOCATION	DEPTH (FEET)	PPM	MG/M ³	LOCATION	DEPTH (FEET)	PPM	MG/M ³
1	3	140	740	17	3	160	850	34	6	0.2	1.1
	3D	160	850						6D	0.16	0.85
	6	160	860	18	3	550	2900	35	6	0.89	4.7
									6D	0.23	1.2
2	3	7.4	39	19	3	180	960	36	3.3	*	*
	6	6.0	32		3D	170	900	37	2.7	*	*
3	6	1.9	10	20	MA	7.6	40	38	3	*	*
4	3	6.2	33	21	3	25	130	39	3.5	*	*
5	3	310	1650	22	2	40	210	40	3	*	*
6	3	610	3240	23	2	17	90	41	2	*	*
7	3	73	390	24	3	2.6	14	42	3.2	0.3	1.6
	3R	77	410	25	3	710	3800	43	3	0.11	0.59
	3RD	60	320	26	3	5.0	27	44	1.5	0.42	2.2
8	3	4.9	26		3D	4.5	24	45	4.0	0.40	2.1
9	3	180	960	27	3	2.8	15	46	3.6	3.0	16
10	3	330	1750	28	3	98	520	47	3.5	0.44	2.3
11	3	630	3350	29	3	1.0	5.3	48	3.0	0.15	0.80
12	3	360	1900	30	6	0.52	2.8	49	4.0	1.4	7.4
13	3	480	2550	31	6	0.23	1.2	50	3.0	0.2	1.1
14	3	83	440	32	6	0.15	0.80				
15	3	620	3300		6D	2.3	12				
16	3	360	1900	33	6	0.33	0.41				
					6D	1.8	2.2				

D = Duplicate Sample

* = Non-Detectable

MA = Method Alteration, Open Column 0-6 ft.

R = Duplicate Analysis

TABLE 2

GM CPC SURVEY SUMMARY
WATER TABLE ELEVATIONS

WELL NO.	SURFACE ELEVATION	T.O.C. ^a ELEVATION	WATER TABLE ELEVATION 01/21/87	WATER TABLE ELEVATION 02/24/87	SCREEN BOTTOM ELEVATION	SCREEN LENGTH	T.D. BORING
85-1		675.61		659.81	655.4	5	20
85-2		672.22		658.35	653.9	5	20
85-3		681.11		660.2 b	651.1	10	30
85-4		681.06		660.1 b	650.6	10	30
85-5B		681.07		660.0 b	649.4	10	30
85-6		680.09		660.38	655.9	5	25.5
85-7		678.43	658.69	658.45	653.1	5	25

86-1		680.62		659.44	651.9	10	30
86-2	681.6	681.12	659.64	659.42	648.9	5	60.5
86-3		676.51	658.25	657.99	630.3	5	72

87-1	681.6	681.15	659.43	659.22	651.9	10/5	55
87-2	681.6	681.16	660.27	660.09	642.9	11/5	49.5
87-3		680.5		NA	658.8	20	22
87-4	681.6	681.11	659.50		652.4	10/5	65.5
87-5	681.5	680.77			630.5	11/11	64.0

87-8		677.62	658.45	658.12	655.4	3	66.5
87-9		673.87	658.10	657.92	620.6	3	85.0

All Elevations N.G.V.D.

a - TOC = +0.04 feet

b - Date Other Than 02/24/87

BORING NO.	DEPTH	SURFACE ELEVATION	BORING NO.	DEPTH	SURFACE ELEVATION
201	50	681.6	212	60	681.6
202	50	681.6	213	100	681.6
203	50	681.6	304	30	676.2
204	50	681.6	305	31	676.1
205	50	681.6	306	30.5	676.0
206	50.5	681.6	307	40.5	676.0
207	50.5	681.6	308	40	676.8
208A	115	681.6	309	70	674.1
209	60	681.6	310	40.5	677.1
210	60	681.6	311	90	677.4
211	60	681.6	312	40	677.1

The January 1987 levels are 0.2 feet above the February 1987 levels. Beneath the building the flow direction is converging. Two factors may contribute to this pattern. The building foundations on the eastern side have drains which remove some water from the top of the aquifer. The building also prevents recharge to the aquifer beneath it. The convergence of the water beneath the building has the effect of lessening the dispersion of the TCE plume as it moves north.

Hydraulic conductivity was measured in four wells as part of the Phase II Study. The hydraulic conductivity ranged from 17.1 ft/day to 192.6 ft/day. The average hydraulic conductivity is 79.9 ft/day. The flow rate can be calculated for the groundwater at the site by using the gradient of the groundwater as measured in the wells and the average of the hydraulic conductivity tests. The flow rate or velocity can be calculated as:

$$V = K i / P$$

where:

V is the velocity
K is the hydraulic conductivity
i is the hydraulic gradient
P is the porosity

The average hydraulic conductivity is 79.9 ft/day. The hydraulic gradient is 7.2 ft/mile (1.37×10^{-3}). The porosity is estimated at 25 percent. The estimated velocity is .44 ft per day.

4.4 Chemical Analyses

The bulk soil samples taken with split spoons during drilling were analyzed for TCE. The results have been summarized in Table 3. Well 87-2 to the south of the source is the most distant well installed. No TCE was found in any of the soil samples in this well. In wells 87-1, 87-4, and 87-5, concentrations of TCE found in the soils increase with depth, although 87-4 does not have the uniformity that the other well samples show. Well 87-3, placed at the source, shows the same pattern of increasing concentration with depth. The concentrations of TCE are substantially higher in well 87-3 than in 87-4 or 87-5.

The groundwater samples collected from the temporary wells installed during drilling were analyzed for TCE. The results of those analyses are presented in Table 4. The results in all cases except for well 87-5 show the concentration of TCE is highest near the top of the groundwater. In well 87-5, the concentration was highest at the top of the aquifer (1900 ug/l), then dropped two orders of magnitude in concentration to 15 ug/l; at a deeper level however the concentration again rose to 490 ug/l just above the silty sand and clay at the bottom of the aquifer. These results have been plotted on the cross-sections in Figures 10 through 13 along with the soil vapor analysis where appropriate and the TCE results that were part of the analysis of the permanent wells. In the source

TABLE 3
SUMMARY OF SOIL SAMPLES ANALYSES
CONCENTRATION TCE

Results Reported As ug/kg
Detection Limit 4.0

<u>DATE</u>	<u>WELL NO.</u>	<u>DEPTH (FEET)</u>	<u>CONCENTRATION</u>	<u>DATE</u>	<u>WELL NO.</u>	<u>DEPTH (FEET)</u>	<u>CONCENTRATION</u>
01/12/87	87-1	4.0 - 5.5	<4.0	01/20/87	87-4	4.5 - 6.0	<4.0
		9.0 - 10.5	<4.0			8.5 - 10.0	<4.0
		14.0 - 15.5	25			13.5 - 15.0	5.5
		19.0 - 20.5	40			18.5 - 20.0	<4.0
		24.0 - 25.5	81			23.5 - 25.0	12
						64.0 - 65.5	<4.0
01/14/87	87-2	4.0 - 5.5	<4.0	01/23/87	87-5	3.5 - 5.0	<4.0
		9.0 - 10.5	<4.0			8.5 - 10.0	<4.0
		14.0 - 15.5	<4.0			13.5 - 15.0	20
		19.0 - 20.5	<4.0			18.5 - 20.0	19
		24.0 - 25.5	<4.0			23.5 - 25.0	17
		47.0 - 49.5	<4.0			62.0 - 64.0	<4.0
01/16/87	87-3	4.0 - 5.5	16	04/30/86	86-2 (Previously Drilled)	3.5 - 5.0	<5.0
		9.0 - 10.5	65			9.0 - 10.5	<5.0
		14.0 - 15.5	110			14.5 - 16.0	42
		18.0 - 19.5	140			19.0 - 20.5	5.0
						24.0 - 25.5	260
						50.0 - 51.5	<5.0

TABLE 4

SUMMARY OF TEMPORARY WELL GROUNDWATER ANALYSES
CONCENTRATION TCE

Results Reported As ug/L

<u>DATE</u>	<u>WELL NO.</u>	<u>DEPTH (FEET)</u>	<u>CONCENTRATION</u>	<u>DATE</u>	<u>WELL NO.</u>	<u>DEPTH (FEET)</u>	<u>CONCENTRATION</u>
01/12/87	87-1	25.0 - 28.0	280	01/23/87	87-5	22.0 - 24.0	1900
		34.5 - 37.5	120			31.0 - 34.0	15
		43.5 - 46.5	140			41.0 - 44.0	57
		Final	1300			51.0 - 54.0	490
		(24.0 - 29.0)					
01/14/87	87-2	25.0 - 28.5	6.6	04/30/86	86-2	30.0 - 33.0	47,000
		35.0 - 38.5	54		(Previously	40.0 - 43.0	220
		43.0 - 46.0	9.5		Drilled)	45.0 - 48.0	9.8
		Final	45				
		(33.0 - 38.0)					
01/20/87	87-4	22.3 - 24.3	220				
		32.0 - 35.0	8.3				
		42.0 - 45.0	1.3				
		51.5 - 54.5	4.9				

area at column T-27, the TCE concentrations can be seen to drop off most rapidly to the south and west. The northeastward trend of the TCE in the groundwater from the source area may be due in part to the convergence of the groundwater beneath the building.

The new permanent wells and well 86-2 were sampled and analyzed for the volatile, acid, and base neutral fractions of the priority pollutants. In addition, the samples were analyzed for hardness, pH, iron, and grease and oil. The positive results are summarized in Table 5.

In the volatile fraction, (trans)1,2-Dichloroethylene (1,2 DCE) appears in two of the wells in low concentrations. This compound is a common contaminant in TCE and also a biodegradation product of TCE. The plant has no history of use of 1,2 DCE so the probable source in the groundwater is the TCE.

In the base neutral fraction, Phenanthrene, Fluoranthene, and Pyrene appear in wells in the source area. These compounds are present at or just above the detection limit. These compounds are common contaminants of diesel fuels and oils. The other base neutral compounds present are Phthalates which are common plasticizers and also formed in the combustion process. The Phthalates present are Bis-2-Hexyl, Butyl-benzyl, and Di-N-Butyl.

No acid fraction compounds were present in the samples.

The pH averaged 7.75 with a range of 7.63 to 7.89. The hardness ranged from 350 mg/l to 460 mg/l. None of the samples showed a significant amount of oil or grease. The concentration of iron ranged from 1.4 mg/l to 230 mg/l.

4.5 Completion of Wells for Soil Vapor Recovery

The wells placed in the area of the source are multi-purpose. In addition to the characterization of the aquifer, and sampling of groundwater contamination, the wells were constructed in a manner suitable for use in soil vapor recovery. Wells 87-1, 87-2, 87-4, and 87-5 each have a second section ten feet in length screened above the groundwater. The total thickness of soils between the floor and the top of the groundwater is 21 to 23 feet. The bottom of the screened section was placed two to three feet above the groundwater so that approximately the lower half of the unsaturated soils are screened.

Well 87-3 is constructed of sections of 10 slot, 4-inch stainless steel screen connected to screen the entire thickness of the soils above the groundwater. The connections between screens are approximately one foot in length. The screen extends from one foot below the floor to 21.7 feet. Well 87-3 was placed in the center of the source area as determined by the information provided by plant personnel and the soil vapor study. The location selected is centered in the square formed by columns S-27, T-27, S-28, and T-

TABLE 5

ANALYTICAL SUMMARY OF
GROUNDWATER FROM THE PERMANENT WELLS

GM CPC

WELL ID	GREASE & OIL (mg/L)	TOTAL IRON (mg/L)	HARDNESS (mg/L)	pH+	TCE (ug/L)	OTHER VOLATILE ORGANICS (ug/L)		OTHER PARAMETERS (Base Neutral Fraction) (ug/L)	
86-2	<1.0	12	350	7.89	90,000			Bis-2-Ethyl Hexyl Phthalate Butyl Benzyl Phthalate Fluoranthene Phenanthrene Pyrene	- 36 - 13 - 3 - 4 - 2
87-1	1.1	190	360	7.63	1,200	(trans)1,2-Dichloroethylene	- 16	Phenanthrene	- 3
87-2	1.7	15	460	7.81	65	(trans)1,2-Dichloroethylene	- 12	Bis-2-Ethyl Hexyl Phthalate Butyl Benzyl Phthalate Di-N-Butyl Phthalate Fluoranthene Pyrene	- 9 - 16 - 2 - 3 - 2
87-4	1.4	230	430	7.73	87			Bis-2-Ethyl Hexyl Phthalate Fluoranthene Pyrene	- 29 - 2 - 2
87-5		1.4	350	7.70	70	Chloroform	- 3		
Detection Limit	1.0	0.010	2.0	---					

+Standard Units

20676

G/EC27/891

28. The boring was backfilled with natural soils and completed 0.5 feet below the floor inside a 12-inch diameter metal collar with a flat plate cover. In this manner, piping for the soil vapor recovery program can be placed below grade.

Estimation of the quantity of TCE in the soils of the source area has to be based on a combination of the TCE in the soil vapor phase and the amount of TCE present in the soils as a residual liquid. Calculation of the quantity of TCE contained in the soil vapor is based on the assumption that the concentration is uniform vertically. The soil vapor sampling at 3-foot and 6-foot depths at the same location indicated that was the case in the upper quarter of the soils above the groundwater. However, TCE is a dense vapor which will sink through air. The soil vapor concentrations in the lower soils may approach the saturation value. A minimum quantity contained in the soil vapor can be calculated by assuming an average value of 1000 mg/m³ over the area defined by the soil vapor study. This is an area approximately 400 feet (125 meters) on a side and 21 feet (6.5 meters) in thickness. The porosity of the sand material is estimated at 25 percent. The minimum quantity is equal to the concentration X porosity X volume of soils = 1000 mg/m³ x .25 x 125 m x 125 m x 6.5 m = 25 Kg of TCE. Soil boring samples may not adequately represent the amount in the soils because the liquid TCE is probably not distributed uniformly in the source area soils. However, the concentrations in the groundwater at the source indicate liquids have sunk through the unsaturated soils to the water. According to MacKay, Roberts, and Cherry (Environmental Science and Technology, 1985), the residual for dense chlorinated liquids such as TCE would range from .35% to 5% by volume of soil. If we assume an area 10 feet square through which liquid settled, the residual can be estimated as:

$$\text{Volume of soils} \times \text{residual factor} \times 1.47 \text{ g/cm}^3 = \text{Kg TCE}$$

$$\text{for } 3\text{m} \times 3\text{m} \times 6.5\text{m} \times .0035 \times 1.47 \text{ g/cm}^3 = 300 \text{ Kg TCE}$$

$$\text{for } 3\text{m} \times 3\text{m} \times 6.5\text{m} \times .05 \times 1.47 \text{ g/cm}^3 = 4300 \text{ Kg TCE}$$

The estimated amount of residual liquid is much greater than that in the soil vapors. The rate of change in the concentration of TCE extracted from well 87-3 during vapor recovery may provide a more refined estimate of the quantity of liquid in the soils.

5.0 CONCLUSIONS

The soil vapor study and borings and wells placed in the source area have defined the size of the source area and provided information about the concentrations in the area. There is a significant quantity of material in the soils above the groundwater which should be recoverable by soil vapor extraction. The soil materials are estimated to be permeable enough to allow adequate soil vapor flow. The wells have been constructed for soil vapor recovery. The plan for the pilot study of soil vapor recovery is included here as Section 6.

Soil vapor samples were taken in the two additional suspected source areas. In neither case was sufficient TCE measured to indicate significant soil contamination.

The source area in the groundwater has been confirmed by the wells completed. The source area groundwater with concentrations above 1 part per million is slightly smaller than the soil vapor study area and shifted northward slightly by the groundwater flow.

6.0 WORK PLAN FOR SOIL VENTING

6.1 Goals

1. To develop criteria for a full scale soil venting design, the pilot study needs to provide the following information:
 - a. How many air intake wells are needed and their location in relation with the recovery well.
 - b. Most effective air purge rate and system pressure.
 - c. The concentration of trichloroethylene in the soils with time; at various flow rates; and how quickly it builds up and stabilizes after shutdown.
 - d. Starting levels of soil vapors at various depths and the concentration change with time.
 - e. The air flow rate at the intake wells at various air purge rates.
 - f. TCE concentration of ambient air samples in the plant.
 - g. The allowable levels of discharge to the air (following discussion with the regulatory agency).

6.2 Work Plan

1. Get MDNR approval and permit to install.
2. Construct galvanized steel tubing soil vapor monitoring wells at various distances and depths from the vapor recovery well. Figure 14 indicates proposed locations.
3. Extend the top of casing elevation of the air intake wells by four feet; install a rotameter to the intake and drill a velocity port.
4. Install a pipeline from the vapor recovery well to a vacuum pump fitted with a water seal.

4. Install a pipeline from the vapor recovery well to a vacuum pump fitted with a water seal.

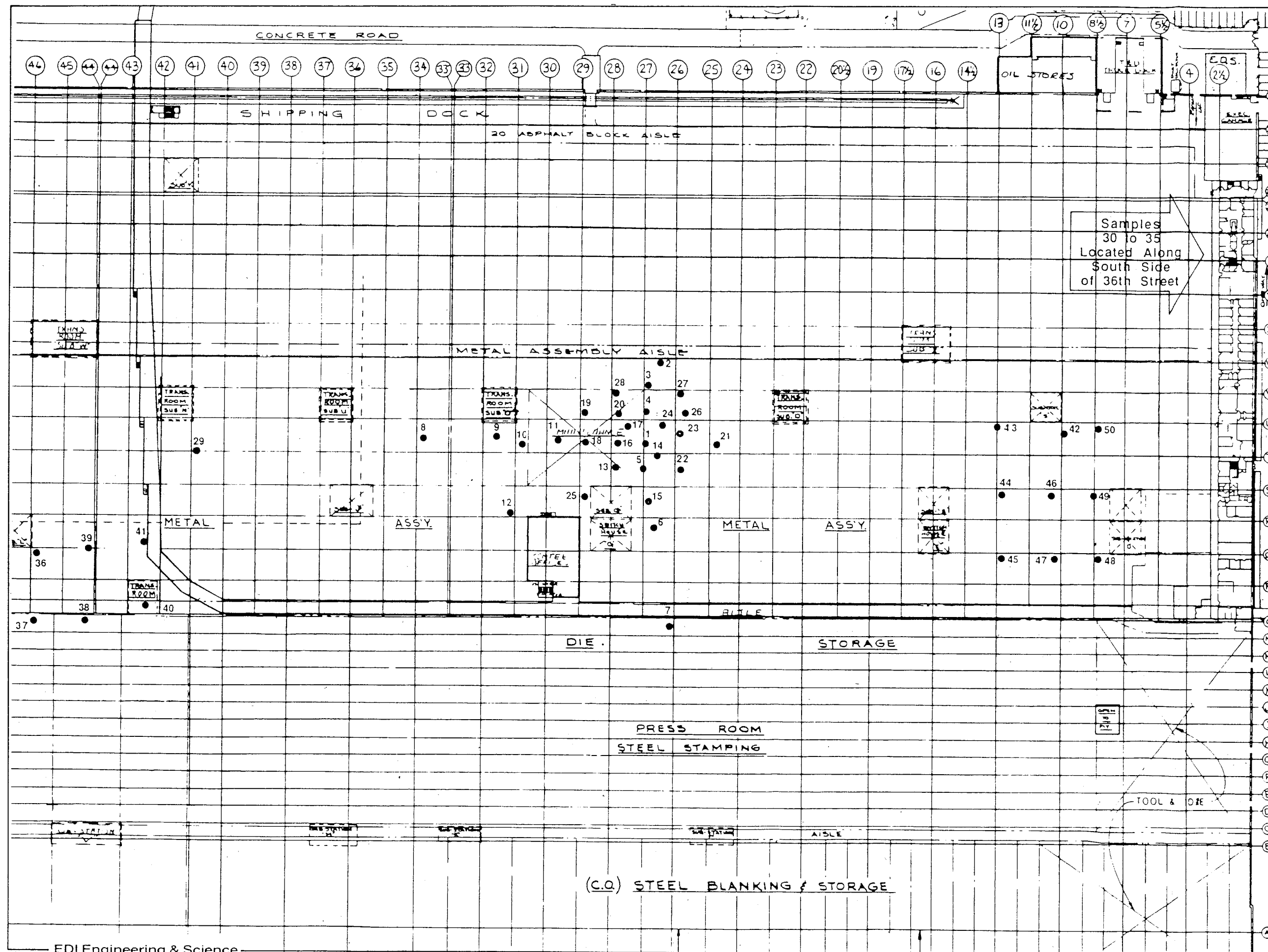
The pipeline should include:

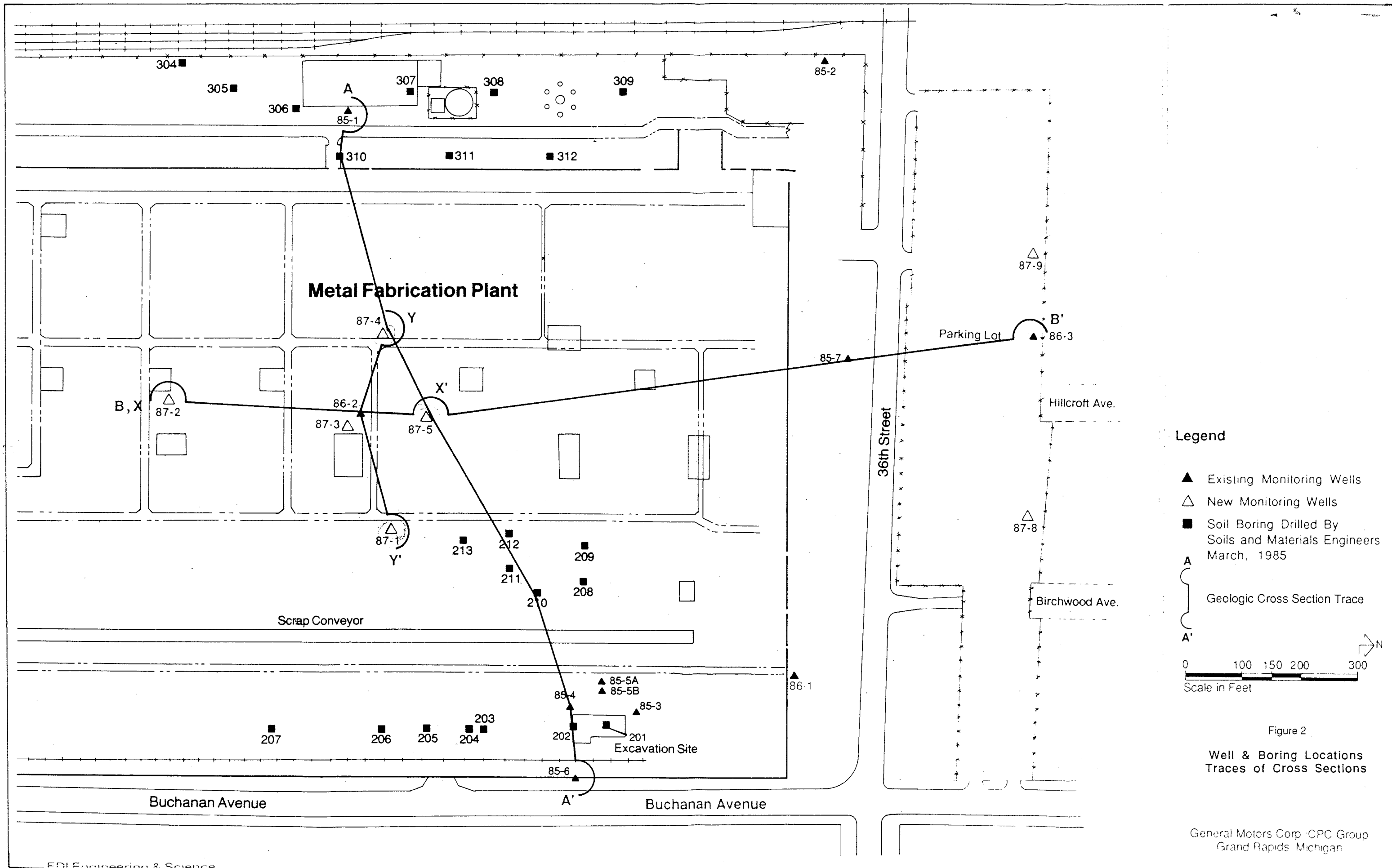
- sample port
- pitot arrangement or air flow meter
- appropriate valves
- vacuum gauge
- vent

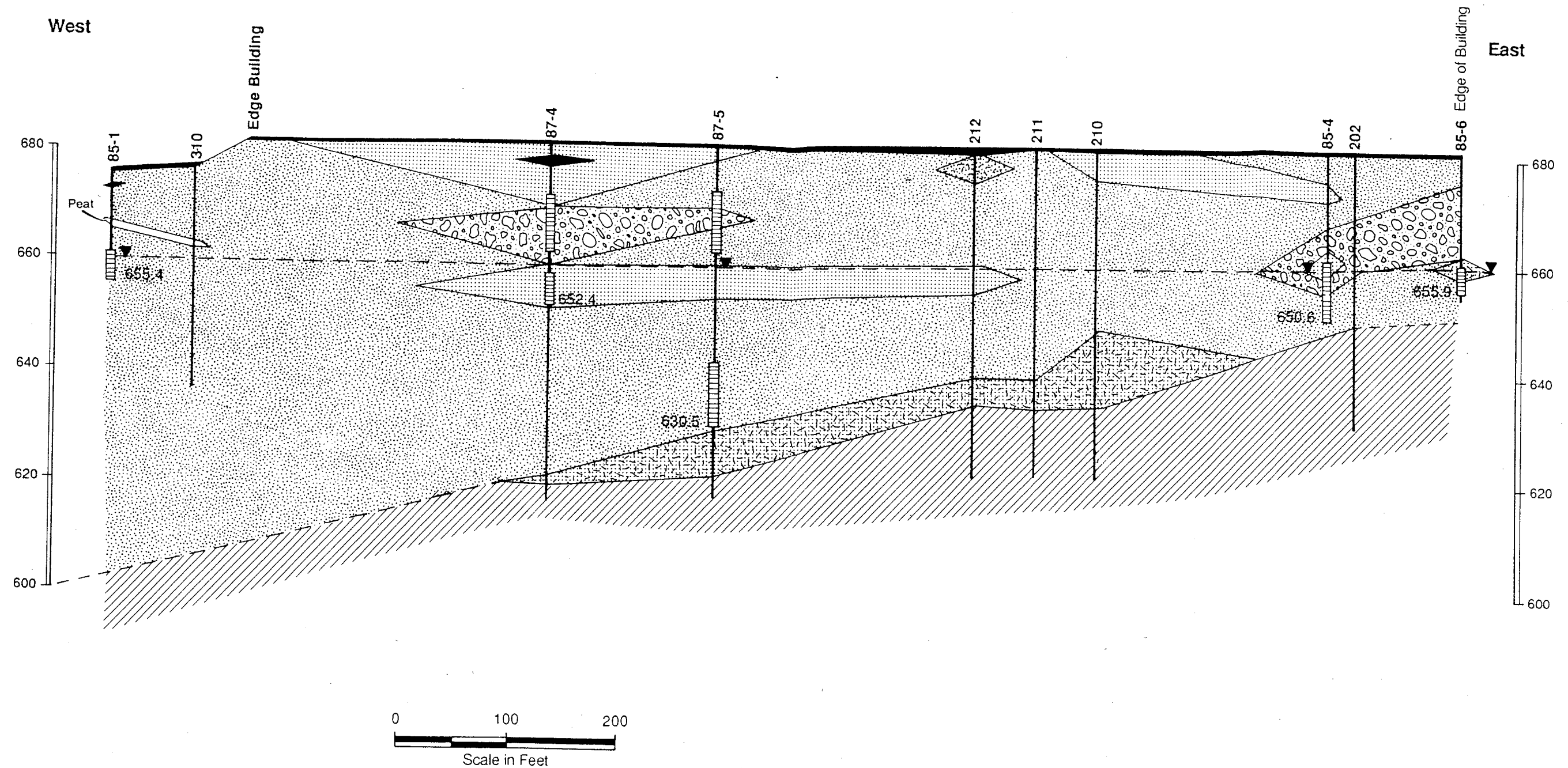
5. Obtain an ambient air sample and analyze it for trichloroethylene and 1,1,1-trichloroethane.
6. Obtain soil vapor samples from soil vapor monitoring wells and vapor recovery well before starting vacuum pump.
7. Start vacuum pump and throttle to regulate the flow rate to 20 cfm. Measure the intake velocity and flow rate at each air intake well at periodic time intervals. At various time intervals, collect an air sample being drawn from the vapor recovery well. The system will then be shut down. Air samples will be collected from the vapor monitoring wells immediately after shutdown and at periodic time intervals thereafter. Repeat this procedure at two other air flow rates; i.e., 25 cfm, 30 cfm.
8. Evaluate data to determine if additional air intake wells are required; the optimum air flow rate from vapor recovery well; cycle time for vapor recovery and shutdown; maximum trichloroethylene concentrations; and if the surface needs to be sealed between the air intake wells and the vapor recovery well.
9. Arrange a meeting with the regulatory agency to discuss the allowable levels of TCE that can be discharged and required air emission controls
10. Based upon the above steps, finalize the design and prepare a cost estimate for final implementation. Use pilot equipment to minimize any additional costs.

6.3 Pilot Soil Recovery Schedule

The pilot study will be conducted on the following schedule beginning with authorization to proceed:







LEGEND

- Concrete
- Fine Sand
- Sand
- Sand & Gravel
- Gravel
- Silt
- Clay
- Water Level

Well Screen
(630.5) Elevation

Horizontal Scale 1" = 100"

Vertical Scale 1" = 20'

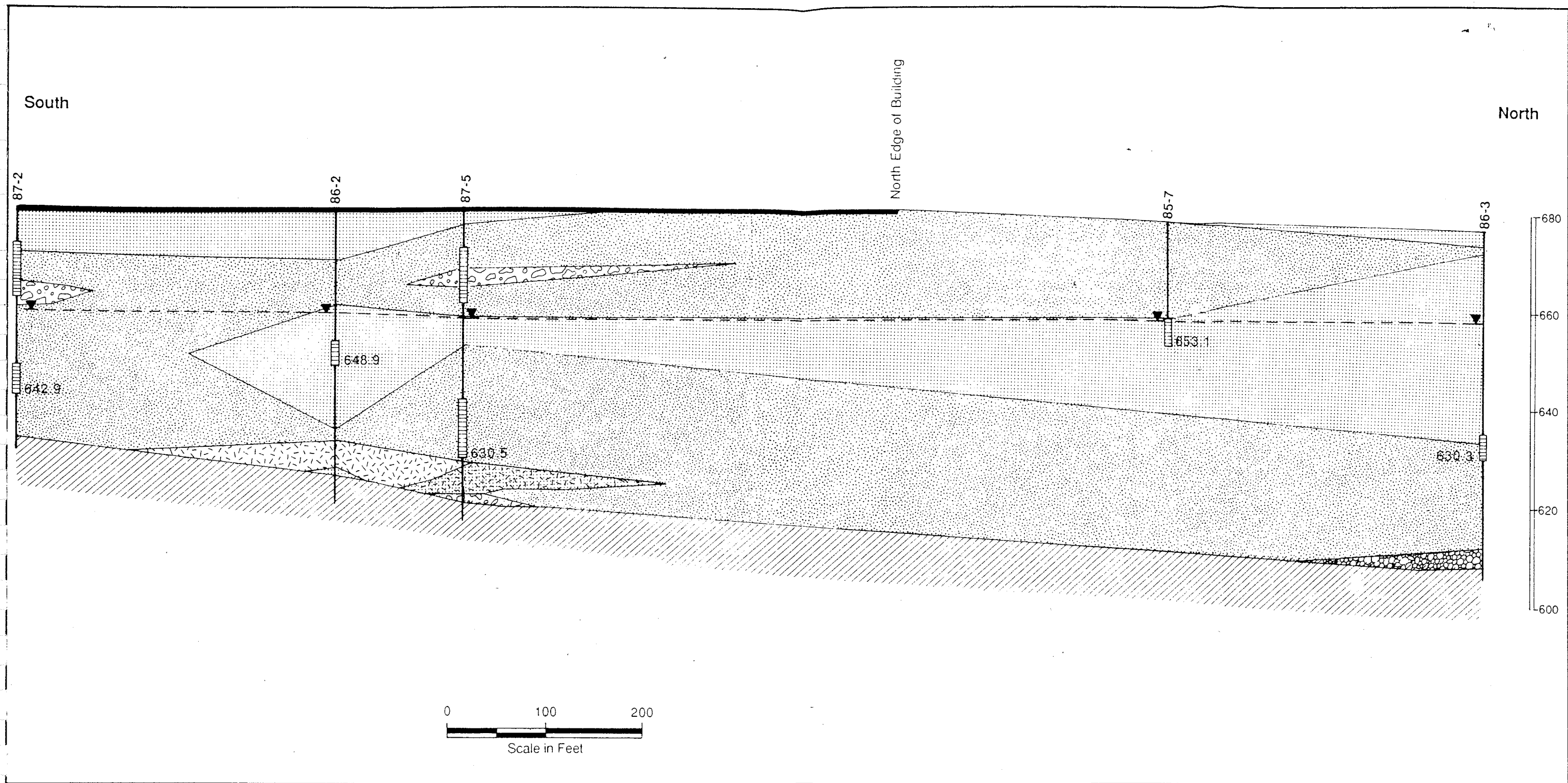
Elevations NGVD

EDI Engineering & Science

Figure 3

Geological Cross-Section A-A'

General Motors Corp./CPC Group
Grand Rapids, Michigan



LEGEND

-  Concrete
-  Fine Sand
-  Sand
-  Sand & Gravel
-  Gravel
-  Silt
-  Clay
-  Water Level

 Well Screen
(630.5) Elevation

Horizontal Scale 1" = 100'

Vertical Scale 1" = 20'

Elevations NGVD

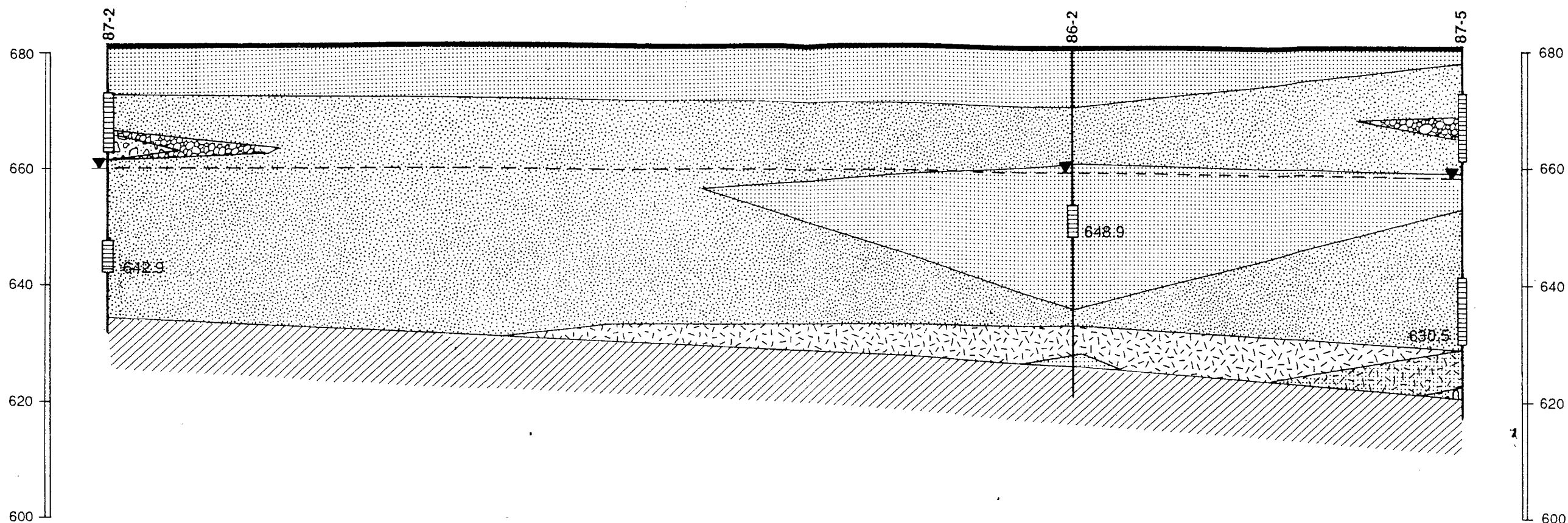
Figure 4

Geological Cross-Section B-B'

General Motors Corp./CPC Group
Grand Rapids, Michigan

South

North



0 40 80
Scale in Feet

LEGEND

-  Concrete
-  Fine Sand
-  Sand
-  Sand & Gravel
-  Gravel
-  Silt
-  Clay
-  Water Level

 Well Screen
(630.5) Elevation

Horizontal Scale 1" = 40'

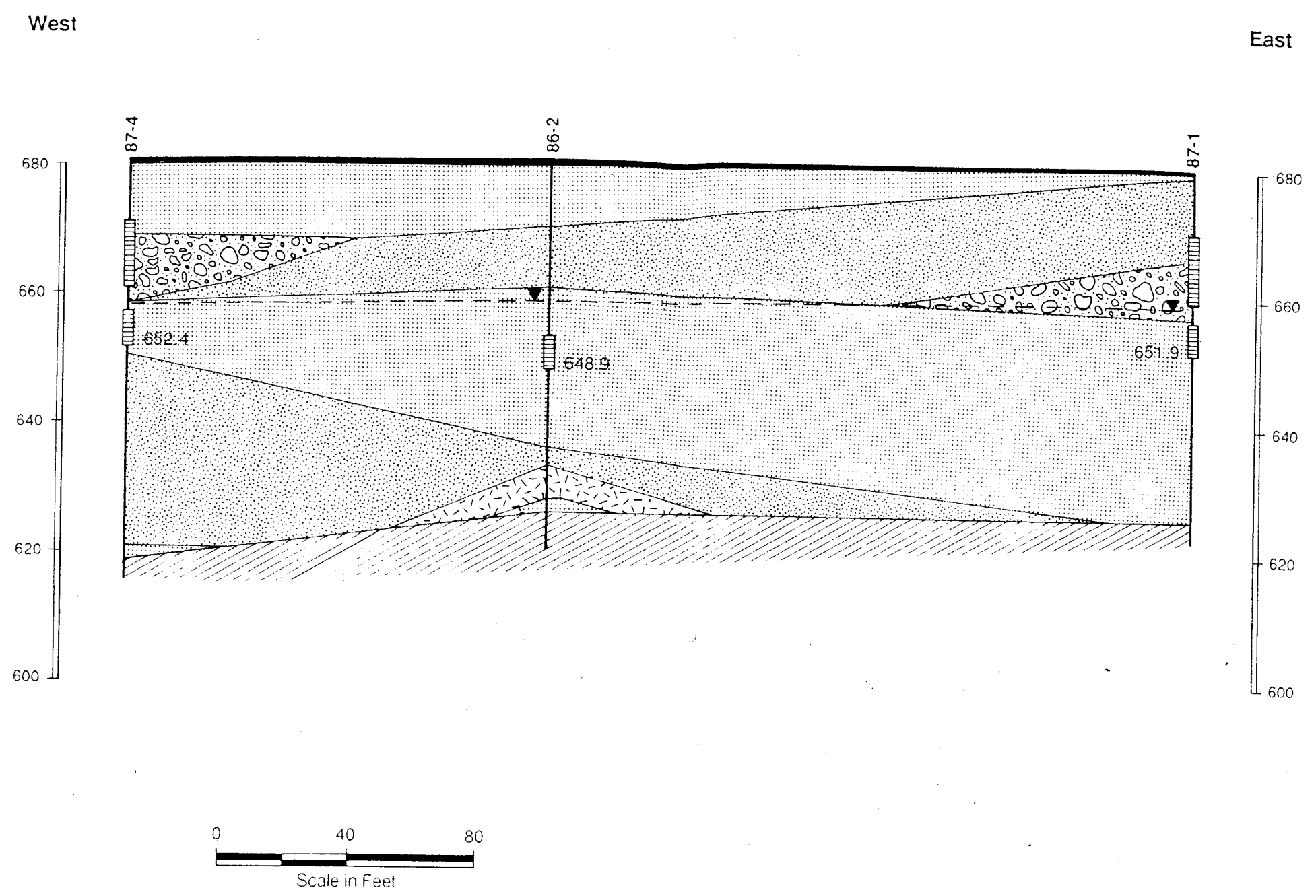
Vertical Scale 1" = 20'

Elevations NGVD

Figure 5

Geological Cross-Section X-X'

General Motors Corp./CPC Group
Grand Rapids, Michigan



LEGEND

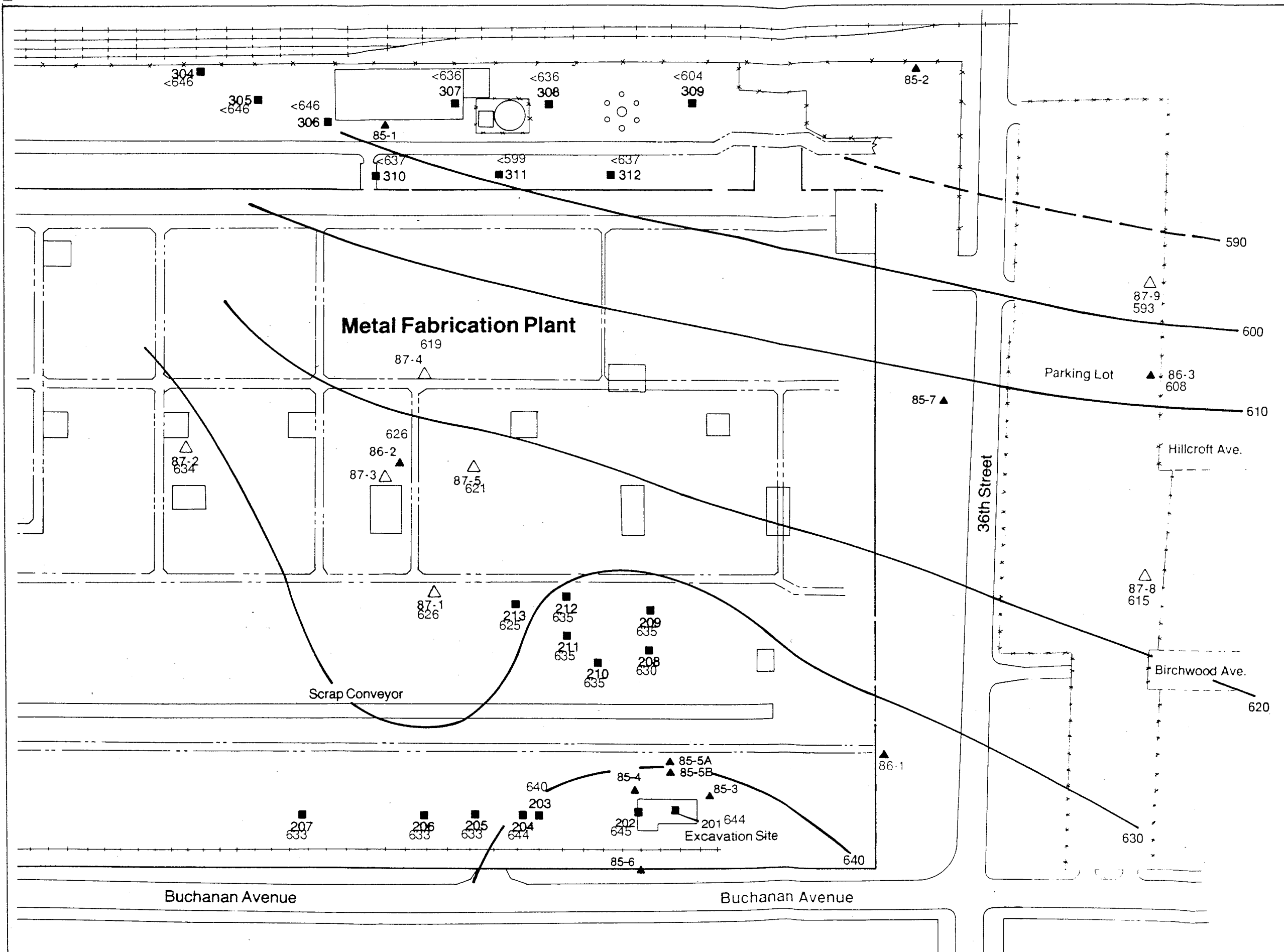
- Concrete
- Fine Sand
- Sand
- Sand & Gravel
- Gravel
- Silt
- Clay
- Water Level

Well Screen
(630.5) Elevation

Horizontal Scale 1" = 40"
Vertical Scale 1" = 20'
Elevations NGVD

Figure 6
Geological Cross-Section Y-Y'

General Motors Corp./CPC Group
Grand Rapids, Michigan



Legend

- ▲ Existing Monitoring Wells
- △ New Monitoring Wells
- Soil Boring Drilled By
Soils and Materials Engineers
March, 1985

658 Clay Elevation

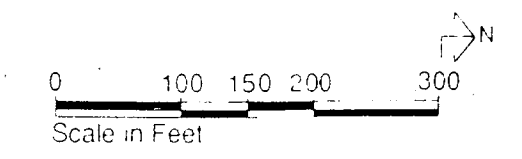
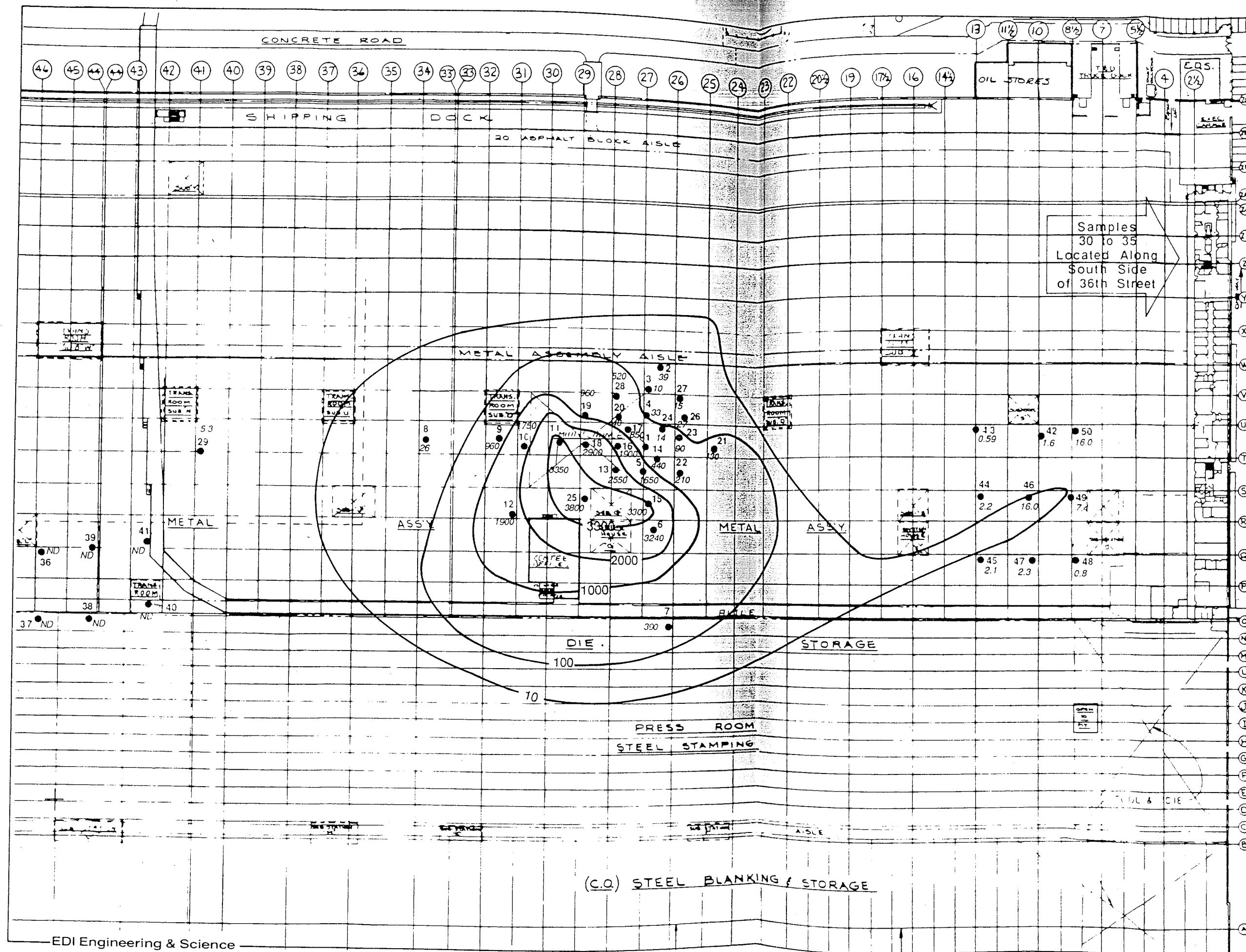
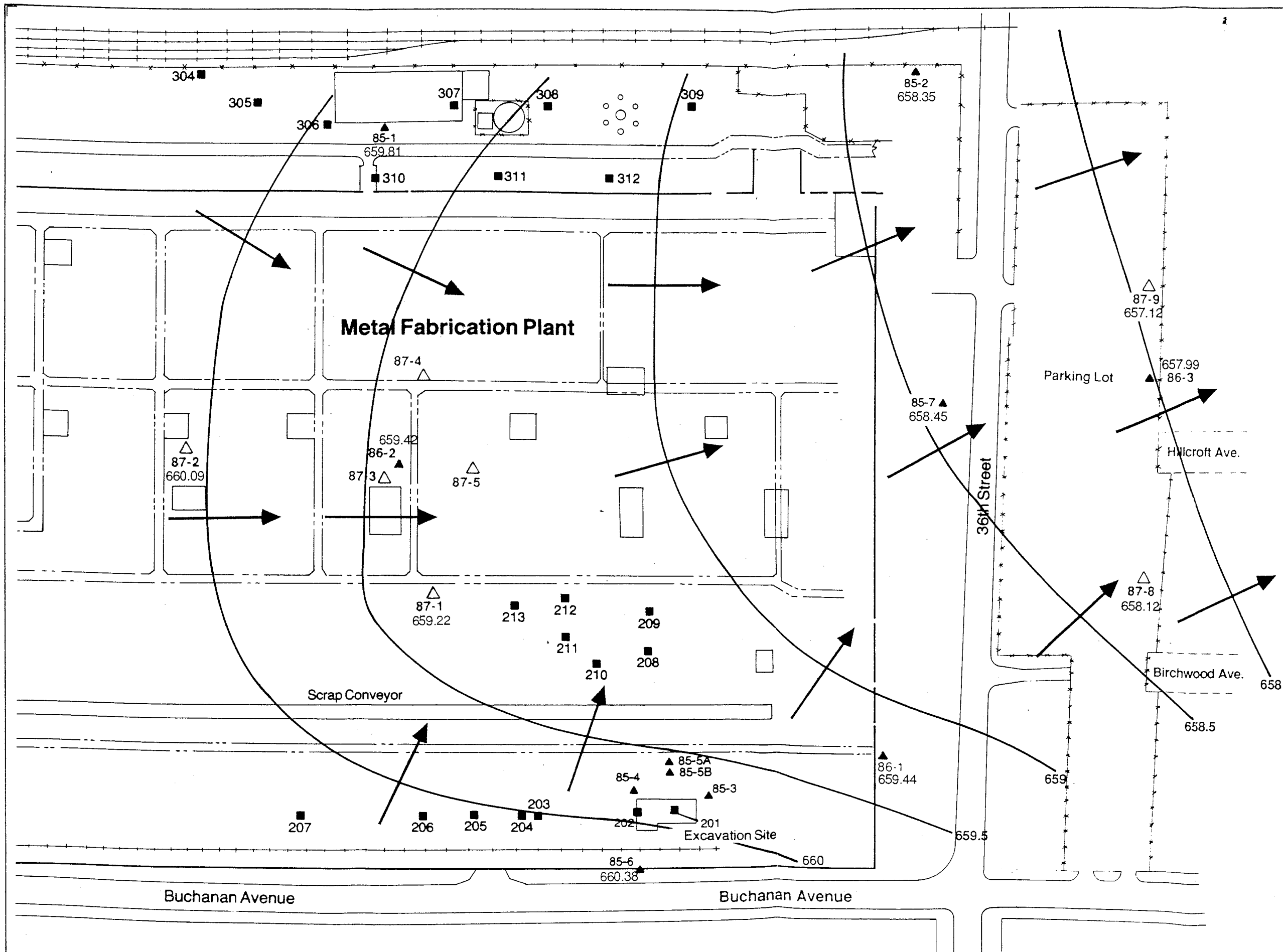
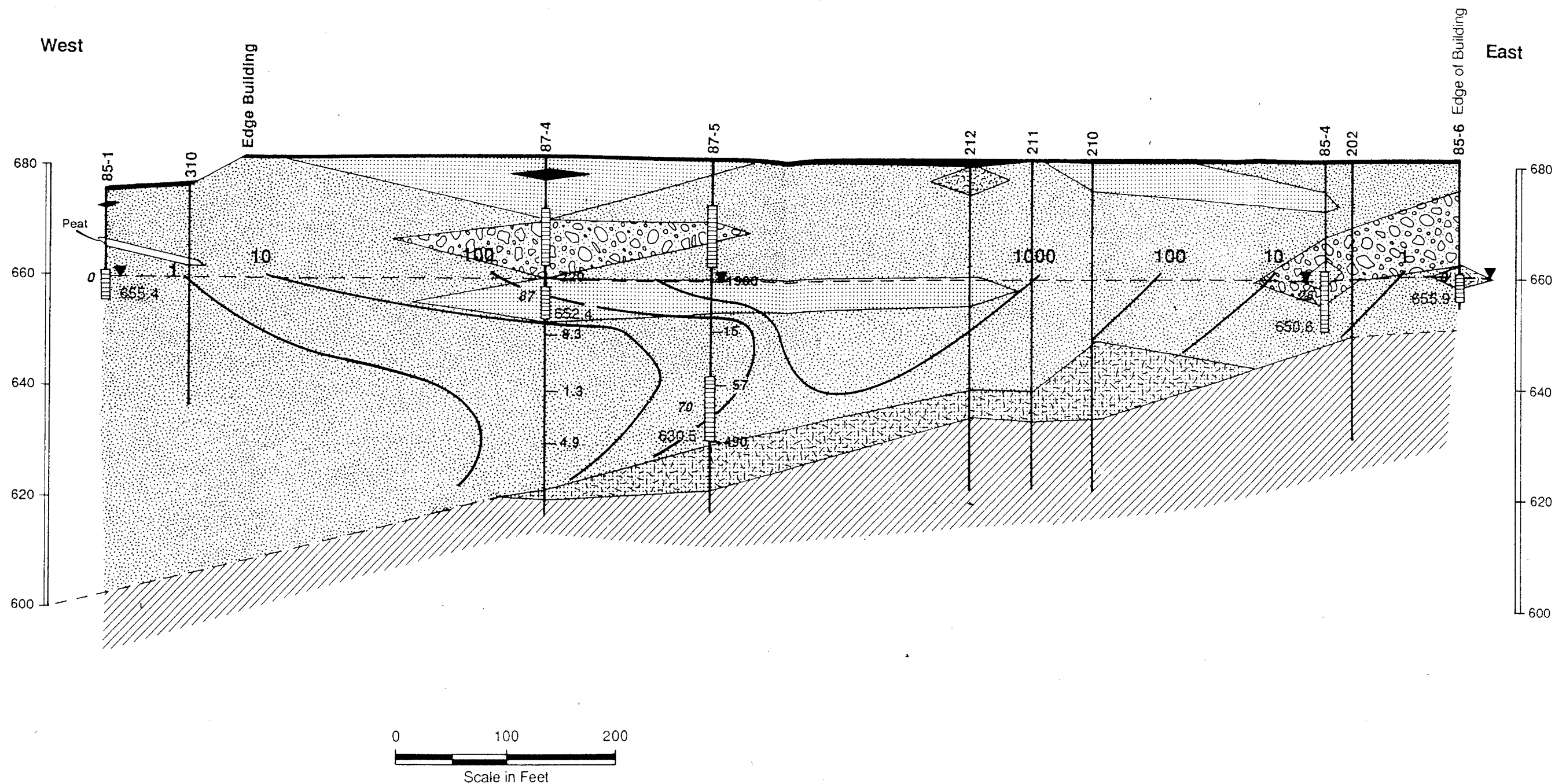


Figure 7

Confining Clay Elevation
General Motors Corp. GMG Group
Grand Rapids, Michigan







LEGEND

- Concrete
- Fine Sand
- Sand
- Sand & Gravel
- Gravel
- Silt
- Clay
- Water Level

- Well Screen
- TCE in Permanent Well Concentration ug/l
- 6.6 TCE in Temp. Well Concentration ug/l
- 6.6 TCE in Soil Concentration ug/kg

12 Soil Vapor Location Number

TCE in Soil Vapor Concentration mg/m^3

220

100 TCE Concentration in Groundwater ug/l

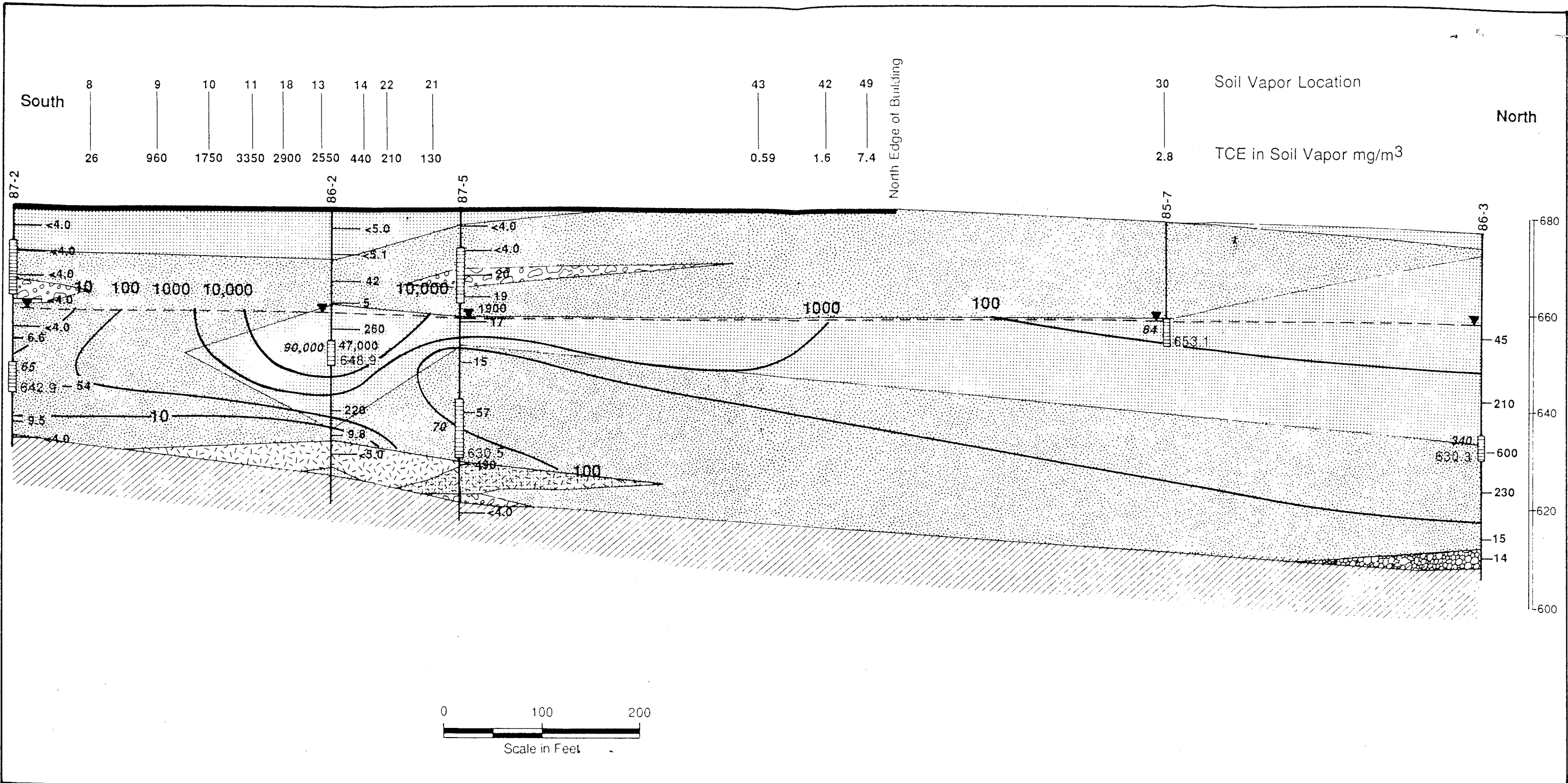
Horizontal Scale 1" = 100'

Vertical Scale 1" = 20'

Elevations NGVD

Figure 10
Geological Cross-Section A-A'
TCE Concentrations
in Soil Vapor, Bulk Soil, Groundwater

General Motors Corp./CPC Group
Grand Rapids, Michigan



LEGEND

- Concrete
- Fine Sand
- Sand
- Sand & Gravel
- Gravel
- Silt
- Clay
- Water Level

- Well Screen
- TCE in Permanent Well Concentration ug/l
- TCE in Temp. Well Concentration ug/l
- TCE in Soil Concentration ug/kg

- Soil Vapor Location Number
- TCE in Soil Vapor Concentration mg/m³
- TCE Concentration in Groundwater ug/l
- Horizontal Scale 1" = 100'
- Vertical Scale 1" = 20'
- Elevations NGVD

Figure 11

Geological Cross-Section B-B'

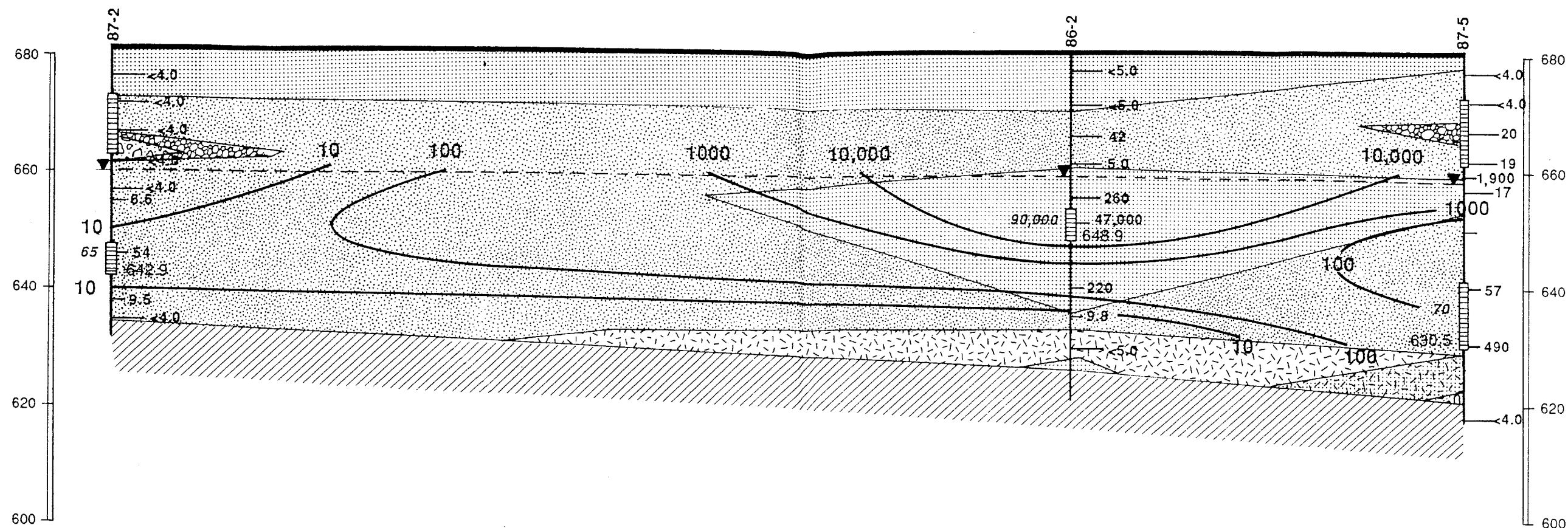
TCE Concentrations

in Soil Vapor, Bulk Soil, Groundwater

General Motors Corp./CPC Group

Grand Rapids, Michigan

South 8 9 10 11 18 13 14 22 21 North Soil Vapor Location
26 960 1750 3350 2900 2550 440 210 130 TCE in Soil Vapor mg/m³



LEGEND

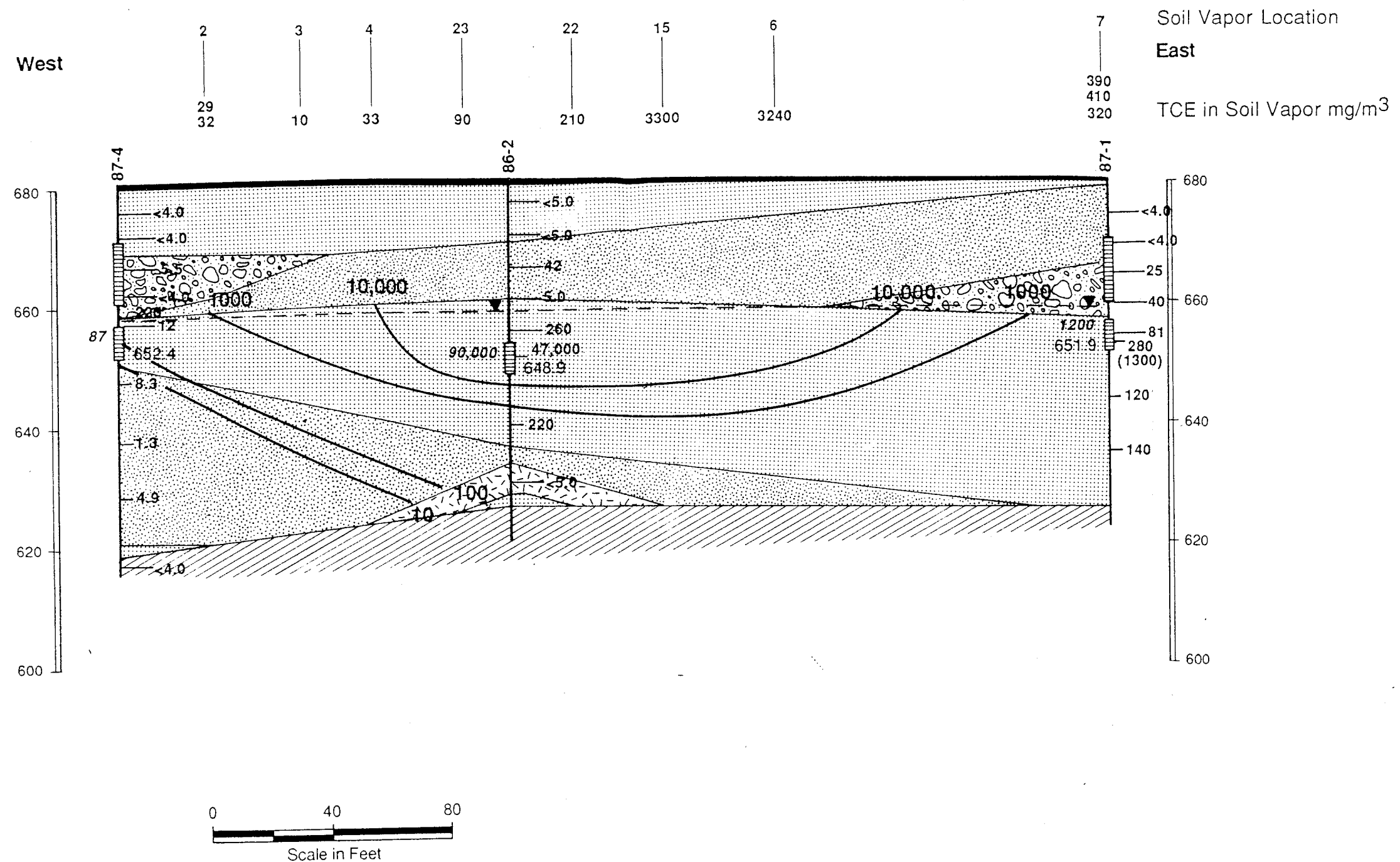
- Concrete
- Fine Sand
- Sand
- Sand & Gravel
- Gravel
- Silt
- Clay
- Water Level

- Well Screen
- TCE in Permanent Well Concentration ug/l
- 6.6 TCE in Temp. Well Concentration ug/l
- 6.6 TCE in Soil Concentration ug/kg

- Soil Vapor Location Number
- TCE in Soil Vapor Concentration mg/m³
- 100 - TCE Concentration in Groundwater ug/l
- Horizontal Scale 1" = 40'
- Vertical Scale 1" = 20'
- Elevations NGVD

Figure 12
Geological Cross-Section X-X'
TCE Concentrations
in Soil Vapor, Bulk Soil, Groundwater

General Motors Corp./CPC Group
Grand Rapids, Michigan



LEGEND

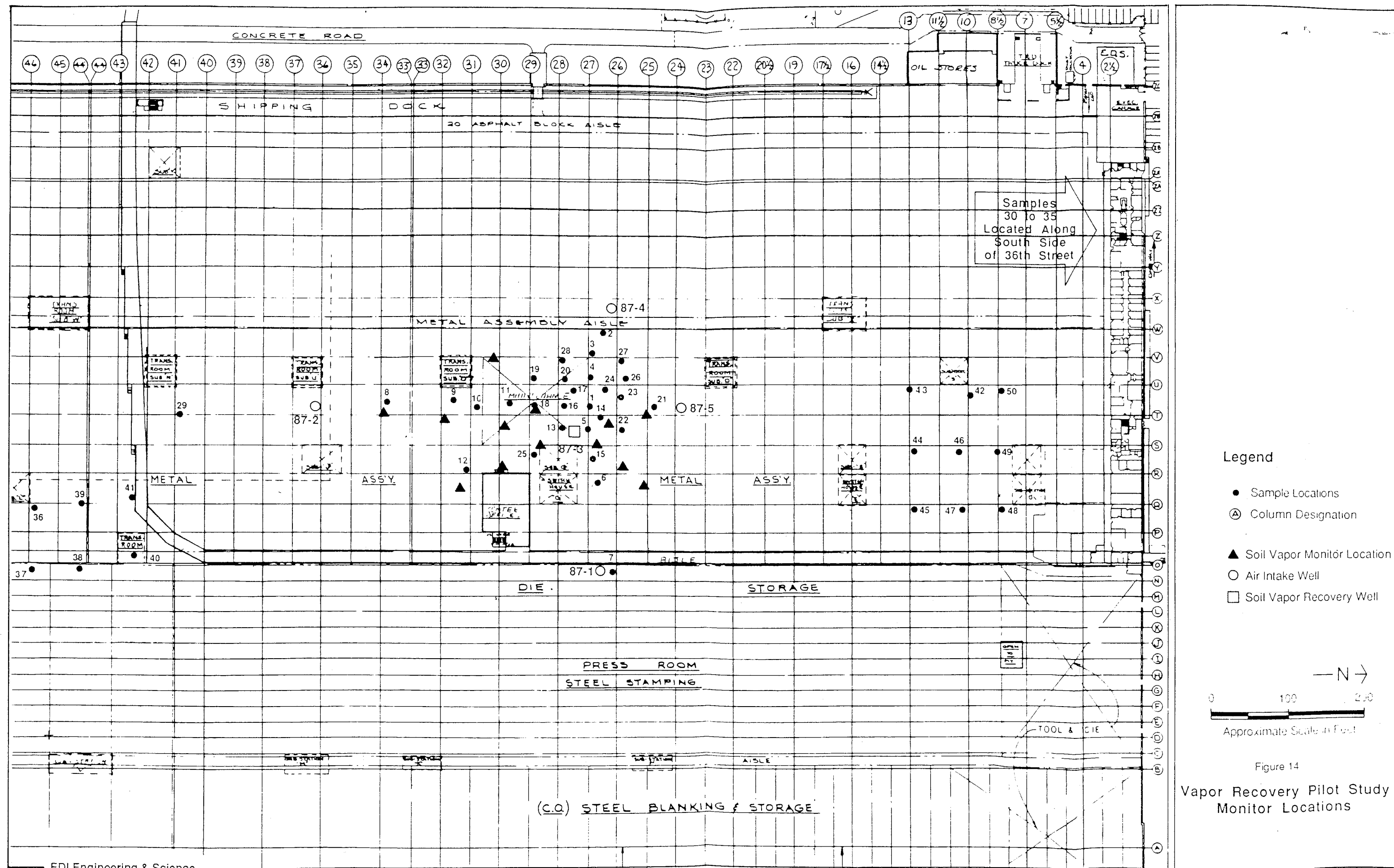
- Concrete
- Fine Sand
- Sand
- Sand & Gravel
- Gravel
- Silt
- Clay
- Water Level

- Well Screen
- TCE in Permanent Well Concentration ug/l
- TCE in Temp. Well Concentration ug/l
- TCE in Soil Concentration ug/kg

- Soil Vapor Location Number
- TCE in Soil Vapor Concentration mg/m³
- TCE Concentration in Groundwater ug/l
- Horizontal Scale 1" = 40'
- Vertical Scale 1" = 20'
- Elevations NGVD

Figure 13
Geological Cross-Section Y-Y'
TCE Concentrations
in Soil Vapor, Bulk Soil, Groundwater

General Motors Corp./CPC Group
Grand Rapids, Michigan



County	KENT	Township	CITY OF WYOMING	Fraction	$\frac{1}{4}$ NW $\frac{1}{4}$ NE $\frac{1}{4}$	Section	18	T	6N	R	12W

[illegible]

Remarks (include here, other data available)

Water Sample #1 screened @ 25.0 - 28.0'

#2 screened @ 34.5 - 37.5'

#3 screened @ 43.5 - 46.5'

Total Depth 29.5' from top of flush mount cover.

[illegible]

County KENT	Township CITY OF WYOMING	Fraction 1/4 NW 1/4 NE 1/4	Section 18	T 6N	R 12W

Total Depth 38.8'

[illegible][illegible]

County	Township	Fraction	Section	T	R
KENT	CITY OF WYOMING	$\frac{1}{4}$ NW $\frac{1}{4}$ NE $\frac{1}{4}$	18	6N	12W

Measured On:

Ref. Pt.: NGVD[illegible]

Remarks (include here, other data available)

[illegible]

County KENT	Township CITY OF WYOMING	Fraction 1/4 NW 1/4 NE 1/4	Section 18	T 6N	R 12W

Location Sketch : SEE LOCATION MAP

Manufacturer: Johnson

Material: stainless steel

Model: wire wound

Slot/Gauze: 7 slot Dia.:

Length: 5'

Depth Set: $\frac{8.5}{24.0}$ To: $\frac{19.5}{27.0}$

Casing

Dia.	Type	Depth Set

211 Galv. 0.3 to 8.5

2" Galv. 19.5 To 24.0'

Elevation

Casing: 681.11'

Ground: 681 6 1

Ref. Pt.: NGVD

Remarks (include here, other data available)

Temporary Wells Set @: 19.5 - 24.5'. Bailed

32.0 - 35.0' Rod Pump

42.0 - 45.0' Rod Pump

51.5 - 54.5' Rod Pump

Samples Taken w/Teflon Bailer

*Sample

Type

Remarks

Sample

Depth (ft)

(feet) (feet)

Thick- ness	Depth To Base

Description

0.2	0.2	WOODEN FLOOR	4 1/2	6	S/OVA

0.7	0.9	CONCRETE FLOOR	8 1/2 10	S/QVA

1.1	2.0	SAND - fine, brown to dirty brown	13415	S/OVA

2.5	4.5	CONCRETE - rubble	18	20	S/OVA

7.5	12.0	SAND - fine, brown	23 ¹ / ₂ 25	S/QVA

10.3	22.3	SAND - medium to coarse, pebbles, brown	22.324.3	W/OVA

7.7	30.0	SAND - fine, brown, wet	32	35	W/OVA

30.0	60.0	SAND - medium to coarse, brown, wet	42	45	W/OVA

2.0	62.0	SAND - medium, gravelly, layers of gray clay	51 $\frac{1}{2}$	54 $\frac{1}{2}$	W/OVA

3 F	65.5	CLAY - gray sandy occasional pebbles occasional	64	65.5	S/OVA

lenses of fine wet sand

Well / Boring Log Sheet

County	KENT	Township	CITY OF WYOMING	Fraction	$\frac{1}{4}$ NW $\frac{1}{4}$ NE $\frac{1}{4}$	Section	18	T	6N	R	12W

Contractor: Stearns Drilling

Address: Dutton, MI

Equipment: CME 850

811 HSA

Supervisor: E. Culver

Drilling Method(s)	Depth

8" HSA 62'

12" HSA	54"

Grouting/Seal

Depth	To	Material
0.9	22.0	Nat'l Soils

Development:

Water Level: 22 Ft. Below:

Measured On: 1/22/87

Screen:

Manufacturer: Johnson

Material: stainless steel

Model: wire wound

Slot/Gauze: 10 slot Dia.: 4"

Length: 20'

Depth Set: 8.5' To: 19.5'

39.5'	50.5'

Casing

Dia.	Type	Depth	Set
4"	Galv.	0.0	To 8.5'

4th Galv. 19.5 To 39.5

Elevation

Casing: 680.77'

Ground: 681.5

Ref Pt. NGVD

Remarks (include here, other data available)

Temporary Wells Set @: 22 - 25'

Location Sketch: SEE LOCATION MAP

[illegible]

DEVELOPMENT:

Bailed

31 - 34' Rod Pump

41 - 44' Rod Pump

51 - 54' Rod Pump

Samples Taken w/Teflon Bailer

* S = Soil / W = Water

Remarks

*Sample

Type

Sample

Depth (ft)

[illegible]

County KENT	Township CITY OF WYOMING	Fraction 1/4 NE 1/4 NW 1/4	Section 18	T 6N	R 12W

[illegible]

Samples Taken w/Teflon Bailer

Bailed	
Rod Pump	45 gal
Rod Pump	45 gal
Rod Pump	75 gal
Rod Pump	30 gal

Type:

Sample
Depth (ft)

[illegible]

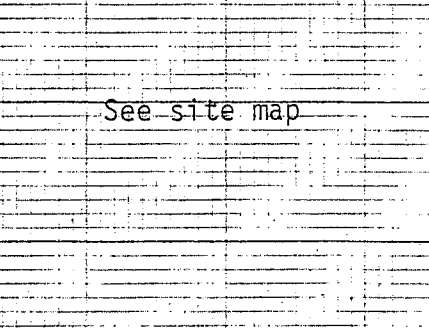
County KENT	Township CITY OF WYOMING	Fraction 1/4 NE 1/4 NW 1/4	Section 18	T 6N	R 12W

Rod Pump	75 gals

*S = Soil / W = Water		*Sample	
(FEET)	(FEET)	Remarks	Type:
Thick- ness	Depth To Base	Description	Sample Depth (ft)
0.25	0.25	ASPHALT	3 1/2 5 S/REP
2.75	3.0	RUBBLE - black, metal, concrete	8 1/2 10 S/REP
2.0	5.0	SAND - fine, black, rubble	13 1/2 15 S/REP
3.0	8.0	SAND - fine, brown	16 17 1/2 W/VOA
8.0	16.0	SAND - fine to medium, brown	22 25 W/VOA
34.0	50.0	SAND - fine to medium, brown, wet	32 35 W/VOA
10.0	60.0	SAND - fine, brown, wet	41 44 W/VOA
21.0	81.0	SAND - medium, brown, wet	52 55 W/VOA
4.0+	85.0	CLAY - gray, sandy, pebbles	62 65 W/VOA
			72 75 W/QVA
			83 1/2 85 W/QVA
		NOTE: Well caps have been stamped with ID # and	
		locked with #506 padlock.	

County	Township	Fraction	Section	T	R
Kent	City of Wyoming	$\frac{1}{4}$ NW $\frac{1}{4}$ NE $\frac{1}{4}$	18	6N	12W

Location Sketch



See site map

See site map

Depth Set: 27 5 To: 32 5

To

Ref. Pt.: _____

Remarks (include here, other data available)

Water sample depths: 30-33'; 40-43'; 45-48'

No odor detected when drilling

[illegible]

APPENDIX B

CHEMICAL ANALYSES

Soil Vapor TCE
Temporary Well TCE
Soil TCE
Permanent Well Analyses

Soil Vapor TCE

**ANALYTICAL SERVICES
EDI LABORATORY REPORT**

CLIENT: CPC-GR METAL FAB PLANT
PROJECT NO.: 25615
LOCATION: 36th ST. PLANT
SAMPLED BY: LIETZKE & BOUWENS
DESCRIPTION: SOURCE SOIL VAPOR TESTING

DATE SAMPLED: 12/15/86 TIME:
DATE RECEIVED: 12/15/86 TIME:
DATE COMPLETED: 121586
SCHEDULED COMPLETION: 12/15/86
ANALYST: PCC
QUALITY CONTROL REVIEW BY: PCC
WORKSHEET NO: 54

	#1-3'	#1-3'D	#1-6'	#2-3'	DETECTION LIMIT	UNITS
EDI SAMPLE NO:	1	2	3	4		
TRICHLOROETHYLENE	140	160	160	7.4	0.10	ppm
	740	850	850	39	0.50	mg/m3

ANALYSIS BY "TEST METHODS FOR EVALUATING A SOLID WASTE
PHYSICAL/CHEMICAL METHODS", USEPA SW-846 SECOND EDITION,
JULY, 1982.



**ANALYTICAL SERVICES
EDI LABORATORY REPORT**

CLIENT: CPC-GR METAL FAB PLANT
PROJECT NO.: 25615
LOCATION: 36th ST. PLANT
SAMPLED BY: LIETZKE & BOUWENS
DESCRIPTION: SOURCE SOIL VAPOR TESTING

DATE SAMPLED: 12/15/86 TIME:
DATE RECEIVED: 12/15/86 TIME:
DATE COMPLETED: 121586
SCHEDULED COMPLETION: 12/15/86
ANALYST: PCC
QUALITY CONTROL REVIEW BY: PCC
WORKSHEET NO: 53

	#2-6'	#3-6'	#4-3'	#5-3'	DETECTION LIMIT	UNITS
EDI SAMPLE NO:	5	6	7	8		
TRICHLOROETHYLENE	6.0	1.9	6.2	310	0.10	ppm
	32	10	33	1,650	0.50	mg/m3

ANALYSIS BY "TEST METHODS FOR EVALUATING A SOLID WASTE
PHYSICAL/CHEMICAL METHODS", USEPA SW-846 SECOND EDITION,
JULY, 1982.



**ANALYTICAL SERVICES
EDI LABORATORY REPORT**

CLIENT: CPC-GR METAL FAB PLANT
PROJECT NO.: 25615
LOCATION: 36th ST. PLANT
SAMPLED BY: LIETZKE & BOUWENS
DESCRIPTION: SOURCE SOIL VAPOR TESTING

DATE SAMPLED: 00/00/00 TIME:
DATE RECEIVED: 12/16/86 TIME:
DATE COMPLETED: 121686
SCHEDULED COMPLETION: 12/16/86
ANALYST: PCC
QUALITY CONTROL REVIEW BY: PCC
WORKSHEET NO: 52

	6-3'	#7-3'	#7R-3'	#7R-3'D	DETECTION LIMIT	UNITS
EDI SAMPLE NO:	9	10	11	12		
TRICHLOROETHYLENE	610	73	77	60	0.10	ppm
	3,240	390	410	320	0.50	mg/m3
TIME SAMPLED:	12/15/86	12/15/86	12/16/86	12/16/86		

ANALYSIS BY "TEST METHODS FOR EVALUATING A SOLID WASTE
PHYSICAL/CHEMICAL METHODS", USEPA SW-846 SECOND EDITION,
JULY, 1982.



ANALYTICAL SERVICES
EDI LABORATORY REPORT

CLIENT: CPC-GR METAL FAB PLANT
PROJECT NO.: 25615
LOCATION: 36th ST. PLANT
SAMPLED BY: LIETZKE & BOUWENS
DESCRIPTION: SOURCE SOIL VAPOR TESTING

DATE SAMPLED: 12/16/86 TIME:
DATE RECEIVED: 12/16/86 TIME:
DATE COMPLETED: 121686
SCHEDULED COMPLETION: 12/16/86
ANALYST: PCC
QUALITY CONTROL REVIEW BY: PCC
WORKSHEET NO: 51

	#8-3'	#9-3'	#10-3'	#11-3'	DETECTION LIMIT	UNITS
EDI SAMPLE NO:	13	14	15	16		
TRICHLOROETHYLENE	4.9	180	330	630	0.10	ppm
	26	960	1,750	3,350	0.50	mg/m3

ANALYSIS BY "TEST METHODS FOR EVALUATING A SOLID WASTE
PHYSICAL/CHEMICAL METHODS", USEPA SW-846 SECOND EDITION,
JULY, 1982.



**ANALYTICAL SERVICES
EDI LABORATORY REPORT**

CLIENT: CPC-GR METAL FAB PLANT
PROJECT NO.: 25615
LOCATION: 36th ST. PLANT
SAMPLED BY: LIETZKE & BOUWENS
DESCRIPTION: SOURCE SOIL VAPOR TESTING

DATE SAMPLED: 12/16/86 TIME:
DATE RECEIVED: 12/16/86 TIME:
DATE COMPLETED: 121686
SCHEDULED COMPLETION: 12/16/86
ANALYST: PCC
QUALITY CONTROL REVIEW BY: PCC
WORKSHEET NO: 50

	#12-3'	#13-3'	#14-3'	#15-3'	DETECTION LIMIT	UNITS
EDI SAMPLE NO:	17	18	19	20		
TRICHLOROETHYLENE	360	480	83	620	0.10	ppm
	1,900	2,550	440	3,300	0.50	mg/m3

ANALYSIS BY "TEST METHODS FOR EVALUATING A SOLID WASTE
PHYSICAL/CHEMICAL METHODS", USEPA SW-846 SECOND EDITION,
JULY, 1982.



**ANALYTICAL SERVICES
EDI LABORATORY REPORT**

CLIENT: CPC-GR METAL FAB PLANT
PROJECT NO.: 25615
LOCATION: 36th ST. PLANT
SAMPLED BY: LIETZKE & BOUWENS
DESCRIPTION: SOURCE SOIL VAPOR TESTING

DATE SAMPLED: 12/16/86 TIME:
DATE RECEIVED: 12/16/86 TIME:
DATE COMPLETED: 121686
SCHEDULED COMPLETION: 12/16/86
ANALYST: PCC
QUALITY CONTROL REVIEW BY: PCC
WORKSHEET NO: 49

	#16-3'	#17-3'	#18-3'	#19-3'	DETECTION LIMIT	UNITS
EDI SAMPLE NO:	21	22	23	24		
TRICHLOROETHYLENE	360	160	550	180	0.10	ppm
	1,900	850	2,900	960	0.50	mg/m3

ANALYSIS BY "TEST METHODS FOR EVALUATING A SOLID WASTE
PHYSICAL/CHEMICAL METHODS", USEPA SW-846 SECOND EDITION,
JULY, 1982.



ANALYTICAL SERVICES
EDI LABORATORY REPORT

CLIENT: CPC-GR METAL FAB PLANT
PROJECT NO.: 25615
LOCATION: 36th ST. PLANT
SAMPLED BY: LIETZKE & BOUWENS
DESCRIPTION: SOURCE SOIL VAPOR TESTING

DATE SAMPLED: 12/16/86 TIME:
DATE RECEIVED: 12/16/86 TIME:
DATE COMPLETED: 121686
SCHEDULED COMPLETION: 12/16/86
ANALYST: PCC
QUALITY CONTROL REVIEW BY: PCC
WORKSHEET NO: 48

	#19-3'D	#20	#20D	#21-3'	DETECTION LIMIT	UNITS
EDI SAMPLE NO:	25	26	27	28		
TRICHLOROETHYLENE	170	7.6	8.5	25	0.10	ppm
	900	40	45	130	0.50	mg/m3

ANALYSIS BY "TEST METHODS FOR EVALUATING A SOLID WASTE
PHYSICAL/CHEMICAL METHODS", USEPA SW-846 SECOND EDITION,
JULY, 1982.



ANALYTICAL SERVICES
EDI LABORATORY REPORT

CLIENT: CPC-GR METAL FAB PLANT
PROJECT NO.: 25615
LOCATION: 36th ST. PLANT
SAMPLED BY: LIETZKE & BOUWENS
DESCRIPTION: SOURCE SOIL VAPOR TESTING

DATE SAMPLED: 00/00/00 TIME:
DATE RECEIVED: 12/17/86 TIME:
DATE COMPLETED: 121786
SCHEDULED COMPLETION: 12/17/86
ANALYST: PCC
QUALITY CONTROL REVIEW BY: PCC
WORKSHEET NO: 47

	#22-2'	#23-2'	#24-3'	#25-3'	DETECTION LIMIT	UNITS
EDI SAMPLE NO:	29	30	31	32		
TRICHLOROETHYLENE	40	17	2.6	710	0.10	ppm
	210	90	14	3,800	0.50	mg/m3
TIME SAMPLED:	21/16/86	12/16/86	12/16/86	12/17/86		

ANALYSIS BY "TEST METHODS FOR EVALUATING A SOLID WASTE
PHYSICAL/CHEMICAL METHODS", USEPA SW-846 SECOND EDITION,
JULY, 1982.



ANALYTICAL SERVICES
EDI LABORATORY REPORT

CLIENT: CPC-GR METAL FAB PLANT
PROJECT NO.: 25615
LOCATION: 36th ST. PLANT
SAMPLED BY: LIETZKE & BOUWENS
DESCRIPTION: SOURCE SOIL VAPOR TESTING

DATE SAMPLED: 12/17/86 TIME:
DATE RECEIVED: 12/17/86 TIME:
DATE COMPLETED: 12/17/86
SCHEDULED COMPLETION: 12/17/86
ANALYST: PCC
QUALITY CONTROL REVIEW BY: PCC
WORKSHEET NO: 46

	#26-3'	#26-3'D	#27-3'	#28-3'	DETECTION LIMIT	UNITS
EDI SAMPLE NO:	33	34	35	36		
TRICHLOROETHYLENE	5.0	4.5	2.8	98	0.10	ppm
	27	24	15	520	0.50	mg/m3

ANALYSIS BY "TEST METHODS FOR EVALUATING A SOLID WASTE
PHYSICAL/CHEMICAL METHODS", USEPA SW-846 SECOND EDITION,
JULY, 1982.



**ANALYTICAL SERVICES
EDI LABORATORY REPORT**

CLIENT: CPC-GR METAL FAB PLANT
PROJECT NO.: 25615
LOCATION: 36th ST. PLANT
SAMPLED BY: DD
DESCRIPTION: SOIL VAPOR TESTING

DATE SAMPLED: 01/20/87 TIME:
DATE RECEIVED: 01/20/87 TIME:
DATE COMPLETED: 012187
SCHEDULED COMPLETION: 02/05/87
ANALYST: PT
QUALITY CONTROL REVIEW BY: JE
WORKSHEET NO: 38

				DETECTION LIMIT	UNITS
	46	47	48		
EDI SAMPLE NO:	70752	70753	70754		
TRICHLOROETHYLENE	3.0	0.44	0.15	0.10	ppm
	16	2.3	0.80	0.50	mg/m3



ANALYTICAL SERVICES
EDI LABORATORY REPORT

CLIENT: CPC-GR METAL FAB PLANT
PROJECT NO.: 25615
LOCATION: 36th ST. PLANT
SAMPLED BY: TL
DESCRIPTION: PHASE II HYDROGEO

DATE SAMPLED: 01/30/87 TIME:
DATE RECEIVED: 01/30/87 TIME: 2:00 PM
DATE COMPLETED: 013087
SCHEDULED COMPLETION: 01/30/87
ANALYST: PT
QUALITY CONTROL REVIEW BY: JE
WORKSHEET NO: 39

		DETECTION LIMIT	UNITS
	49		
	4' DEEP		
EDI SAMPLE NO:	70969		
TRICHLOROETHYLENE	1.4	0.1	ppm
	7.4	0.50	mg/m3

ANALYSIS BY "TEST METHODS FOR EVALUATING A SOLID WASTE
PHYSICAL/CHEMICAL METHODS", USEPA SW-846 SECOND EDITION,
JULY, 1982.



ANALYTICAL SERVICES
EDI LABORATORY REPORT

CLIENT: CPC-GR METAL FAB PLANT
PROJECT NO.: 25615
LOCATION: 36th ST. PLANT
SAMPLED BY: DD
DESCRIPTION: SOIL VAPOR TESTING

DATE SAMPLED: 01/20/87 TIME: PM
DATE RECEIVED: 01/20/87 TIME:
DATE COMPLETED: 012187
SCHEDULED COMPLETION: 02/05/87
ANALYST: PT
QUALITY CONTROL REVIEW BY: JE
WORKSHEET NO: 37

	#50	AMBIENT	DETECTION LIMIT	UNITS
EDI SAMPLE NO:	70756	70757		
TRICHLOROETHYLENE	0.20	0.14	0.10	ppm
	1.1	0.74	0.50	mg/m3

"NIOSH MANUAL OF ANALYTICAL METHODS", THIRD EDITION, VOLUMES
1 AND 2, FEBRUARY, 1984.



Temporary Well TCE

**ANALYTICAL SERVICES
EDI LABORATORY REPORT**

CLIENT: CPC-GR METAL FAB PLANT
PROJECT NO.: 25615
LOCATION: 36th ST. PLANT
SAMPLED BY: MVC
DESCRIPTION: PHASE III HYDROGEO

DATE SAMPLED: 00/00/00 TIME:
DATE RECEIVED: 01/14/87 TIME: 1:15 PM
DATE COMPLETED: 011487
SCHEDULED COMPLETION: 01/27/87
ANALYST: PT
QUALITY CONTROL REVIEW BY: JE
WORKSHEET NO: 16

	87-1				87-1	87-1	87-1	FINAL	DETECTION UNITS	
	25-28'	34.5-37.5'	43.5-46.5'	24-29'					LIMIT	
EDI SAMPLE NO:	70528	70531	70535	70551						
TRICHLOROETHYLENE	280	120	140	1,300	1.0					ug/l
DATE SAMPLED:	1/13/87	1/13/87	1/13/87	1/14/87						

ANALYSIS BY "METHODS FOR ORGANIC CHEMICAL ANALYSIS OF
MUNICIPAL AND INDUSTRIAL WASTEWATER", USEPA-600/4-82-057.



**ANALYTICAL SERVICES
EDI LABORATORY REPORT**

CLIENT: CPC-GR METAL FAB PLANT
PROJECT NO.: 25615
LOCATION: 36th ST. PLANT
SAMPLED BY: MVC
DESCRIPTION: PHASE III HYDROGEO

DATE SAMPLED: 00/00/00 TIME:
DATE RECEIVED: 01/16/87 TIME: 10:50 AM
DATE COMPLETED: 011687
SCHEDULED COMPLETION: 01/27/87
ANALYST: PT
QUALITY CONTROL REVIEW BY: JE
WORKSHEET NO: 17

	87-2 25-28.5'	87-2 35-38.5'	87-2 43-46'	87-2 FINAL 33-38'	DETECTION LIMIT	UNITS
EDI SAMPLE NO:	70574	70575	70576	70650		
TRICHLOROETHYLENE	6.6	54	9.5	45	1.0	ug/l
DATE SAMPLED:	1/14/87	1/14/87	1/14/87	1/15/87		

ANALYSIS BY "METHODS FOR ORGANIC CHEMICAL ANALYSIS OF
MUNICIPAL AND INDUSTRIAL WASTEWATER", USEPA-600/4-82-057.



ANALYTICAL SERVICES
EDI LABORATORY REPORT

CLIENT: CPC-GR METAL FAB PLANT
PROJECT NO.: 25615
LOCATION: 36th ST. PLANT
SAMPLED BY: ELC
DESCRIPTION: PHASE III HYDROGEO

DATE SAMPLED: 00/00/00 TIME:
DATE RECEIVED: 01/19/87 TIME: 5:00 PM
DATE COMPLETED: 01/19/87
SCHEDULED COMPLETION: 02/05/87
ANALYST: PT
QUALITY CONTROL REVIEW BY: JE
WORKSHEET NO: 18

	87-4 22.3-24.3'	87-4 32-35'	87-4 42-45'	DETECTION LIMIT	UNITS
EDI SAMPLE NO:	70736	70737	70738		
TRICHLOROETHYLENE	220	8.3	1.3	1.0	ug/l

ANALYSIS BY "METHODS FOR ORGANIC CHEMICAL ANALYSIS OF
MUNICIPAL AND INDUSTRIAL WASTEWATER", USEPA-600/4-82-057.

ANALYTICAL SERVICES
EDI LABORATORY REPORT

CLIENT: CPC-GR METAL FAB PLANT
PROJECT NO.: 25615
LOCATION: 36th ST. PLANT
SAMPLED BY: ELC
DESCRIPTION: PHASE III HYDROGEO

DATE SAMPLED: 01/20/87 TIME: 9:30 AM
DATE RECEIVED: 01/20/87 TIME: 11:45 AM
DATE COMPLETED: 012087
SCHEDULED COMPLETION: 02/05/87
ANALYST: PCC
QUALITY CONTROL REVIEW BY: JE
WORKSHEET NO: 19

DETECTION UNITS
LIMIT

87-4
51.5-54.5'

EDI SAMPLE NO: 70742

TRICHLOROETHYLENE	4.9	1.0	ug/l

ANALYSIS BY "METHODS FOR ORGANIC CHEMICAL ANALYSIS OF
MUNICIPAL AND INDUSTRIAL WASTEWATER", USEPA-600/4-82-057.



ANALYTICAL SERVICES
EDI LABORATORY REPORT

CLIENT: CPC-GR METAL FAB PLANT
PROJECT NO.: 25615
LOCATION: 36th ST. PLANT
SAMPLED BY: ELC
DESCRIPTION: PHASE III HYDROGEO

DATE SAMPLED: 01/22/87 TIME:
DATE RECEIVED: 01/22/87 TIME: 2:10 PM
DATE COMPLETED: 012287
SCHEDULED COMPLETION: 02/05/87
ANALYST: PT
QUALITY CONTROL REVIEW BY: JE
WORKSHEET NO: 20

	87-5 22-24'	87-5 31-34'	87-5 41-44'	DETECTION LIMIT	UNITS
EDI SAMPLE NO:	70782	70783	70784		
TRICHLOROETHYLENE	1,900	15	57	1.0	ug/l
TIME SAMPLED:	10:30 AM	11:15 AM	1:00 PM		

ANALYSIS BY "METHODS FOR ORGANIC CHEMICAL ANALYSIS OF
MUNICIPAL AND INDUSTRIAL WASTEWATER", USEPA-600/4-82-057.

ANALYTICAL SERVICES
EDI LABORATORY REPORT

CLIENT: CPC-GR METAL FAB PLANT
PROJECT NO.: 25615
LOCATION: 36th ST. PLANT
SAMPLED BY: ELC
DESCRIPTION: PHASE III HYDROGEO

DATE SAMPLED: 01/22/87 TIME: PM
DATE RECEIVED: 01/22/87 TIME: 7:00 PM
DATE COMPLETED: 012287
SCHEDULED COMPLETION: 02/05/87
ANALYST: PT
QUALITY CONTROL REVIEW BY: JE
WORKSHEET NO: 21

DETECTION UNITS
LIMIT

87-5
51-54'

EDI SAMPLE NO: 70799

TRICHLOROETHYLENE	490	1.0	ug/l

ANALYSIS BY "METHODS FOR ORGANIC CHEMICAL ANALYSIS OF
MUNICIPAL AND INDUSTRIAL WASTEWATER", USEPA-600/4-82-057.

Soil TCE

**ANALYTICAL SERVICES
EDI LABORATORY REPORT**

CLIENT: CPC-GR METAL FAB PLANT
PROJECT NO.: 25615
LOCATION: 36th ST. PLANT
SAMPLED BY: MVC
DESCRIPTION: PHASE III HYDROGEO

DATE SAMPLED: 01/13/87 TIME: AM
DATE RECEIVED: 01/13/87 TIME: 11:30 AM
DATE COMPLETED: 01/13/87
SCHEDULED COMPLETION: 01/27/87
ANALYST: PT
QUALITY CONTROL REVIEW BY: JE
WORKSHEET NO: 26

	87-1 4-5.5'	87-1 9-10.5'	87-1 14-15.5'	87-1 19-20.5'	DETECTION LIMIT	UNITS
EDI SAMPLE NO:	70523	70524	70525	70526		
TRICHLOROETHYLENE	<4.0	<4.0	25	40	4.0	ug/kg

ANALYSIS BY "TEST METHODS FOR EVALUATING A SOLID WASTE
PHYSICAL/CHEMICAL METHODS", USEPA SW-846 SECOND EDITION,
JULY, 1982.



ANALYTICAL SERVICES
EDI LABORATORY REPORT

CLIENT: CPC-GR METAL FAB PLANT
PROJECT NO.: 25615
LOCATION: 36th ST. PLANT
SAMPLED BY: MVC
DESCRIPTION: PHASE III HYDROGEO

DATE SAMPLED: 01/13/87 TIME: AM
DATE RECEIVED: 01/13/87 TIME: 11:30 AM
DATE COMPLETED: 01/13/87
SCHEDULED COMPLETION: 01/27/87
ANALYST: PT
QUALITY CONTROL REVIEW BY: JE
WORKSHEET NO: 27

DETECTION UNITS
LIMIT

87-1
24-25.5'

EDI SAMPLE NO: 70527

TRICHLOROETHYLENE	81	4.0	ug/kg

ANALYSIS BY "TEST METHODS FOR EVALUATING A SOLID WASTE
PHYSICAL/CHEMICAL METHODS", USEPA SW-846 SECOND EDITION,
JULY, 1982.



ANALYTICAL SERVICES
EDI LABORATORY REPORT

CLIENT: CPC-GR METAL FAB PLANT
PROJECT NO.: 25615
LOCATION: 36th ST. PLANT
SAMPLED BY: MVC
DESCRIPTION: PHASE II HYDROGEO

DATE SAMPLED: 01/14/87 TIME: PM
DATE RECEIVED: 01/14/87 TIME: 6:20 PM
DATE COMPLETED: 01/14/87
SCHEDULED COMPLETION: 01/28/87
ANALYST: PT
QUALITY CONTROL REVIEW BY: JE
WORKSHEET NO: 24

	87-2 4-5.5'	87-2 9-10.5'	87-2 14-15.5'	87-2 19-20.5'	DETECTION LIMIT	UNITS
EDI SAMPLE NO:	70568	70569	70570	70571		
TRICHLOROETHYLENE	<4.0	<4.0	<4.0	<4.0	4.0	ug/kg

ANALYSIS BY "TEST METHODS FOR EVALUATING A SOLID WASTE
PHYSICAL/CHEMICAL METHODS", USEPA SW-846 SECOND EDITION,
JULY, 1982.



ANALYTICAL SERVICES
EDI LABORATORY REPORT

CLIENT: CPC-GR METAL FAB PLANT
PROJECT NO.: 25615
LOCATION: 36th ST. PLANT
SAMPLED BY: MVC
DESCRIPTION: PHASE II HYDROGEO

DATE SAMPLED: 01/14/87 TIME:
DATE RECEIVED: 01/14/87 TIME: 6:20 PM
DATE COMPLETED: 01/14/87
SCHEDULED COMPLETION: 01/28/87
ANALYST: PT
QUALITY CONTROL REVIEW BY: JE
WORKSHEET NO: 25

	87-2 24-25.5'	87-2 47-49.5'	DETECTION LIMIT	UNITS
EDI SAMPLE NO:	70572	70573		
TRICHLOROETHYLENE	<4.0	<4.0	4.0	ug/kg

ANALYSIS BY "TEST METHODS FOR EVALUATING A SOLID WASTE
PHYSICAL/CHEMICAL METHODS", USEPA SW-846 SECOND EDITION,
JULY, 1982.

ANALYTICAL SERVICES
EDI LABORATORY REPORT

CLIENT: CPC-GR METAL FAB PLANT
PROJECT NO.: 25615
LOCATION: 36th ST. PLANT
SAMPLED BY: MVC
DESCRIPTION: PHASE III HYDROGEO

DATE SAMPLED: 01/16/87 TIME: AM
DATE RECEIVED: 01/16/87 TIME: 10:50 AM
DATE COMPLETED: 01/19/87
SCHEDULED COMPLETION: 01/30/87
ANALYST: PT
QUALITY CONTROL REVIEW BY: JE
WORKSHEET NO: 28

	87-3 4-5.5'	87-3 9-10.5'	87-3 14-15.5'	87-3 18-19.5'	DETECTION LIMIT	UNITS
EDI SAMPLE NO:	70651	70652	70653	70654		
TRICHLOROETHYLENE	16	65	110	140	4.0	ug/kg

ANALYSIS BY "TEST METHODS FOR EVALUATING A SOLID WASTE
PHYSICAL/CHEMICAL METHODS", USEPA SW-846 SECOND EDITION,
JULY, 1982.



ANALYTICAL SERVICES
EDI LABORATORY REPORT

CLIENT: CPC-GR METAL FAB PLANT
PROJECT NO.: 25615
LOCATION: 36th ST. PLANT
SAMPLED BY: ELC
DESCRIPTION: PHASE III HYDROGEO

DATE SAMPLED: 01/19/87 TIME:
DATE RECEIVED: 01/19/87 TIME: 5:00 PM
DATE COMPLETED: 01/19/87
SCHEDULED COMPLETION: 02/05/87
ANALYST: PT
QUALITY CONTROL REVIEW BY: JE
WORKSHEET NO: 30

	87-4 4.5-6.0'	87-4 8.5-10'	87-4 13.5-15'	87-4 18.5-20'	DETECTION LIMIT	UNITS
EDI SAMPLE NO:	70731	70732	70733	70734		
TRICHLOROETHYLENE	<4.0	<4.0	5.5	<4.0	4.0	ug/kg

ANALYSIS BY "TEST METHODS FOR EVALUATING A SOLID WASTE
PHYSICAL/CHEMICAL METHODS", USEPA SW-846 SECOND EDITION,
JULY, 1982.

ANALYTICAL SERVICES
EDI LABORATORY REPORT

CLIENT: CPC-GR METAL FAB PLANT
PROJECT NO.: 25615
LOCATION: 36th ST. PLANT
SAMPLED BY: ELC
DESCRIPTION: PHASE III HYDROGEO

DATE SAMPLED: 01/19/87 TIME:
DATE RECEIVED: 01/19/87 TIME: 5:00 PM
DATE COMPLETED: 01/19/87
SCHEDULED COMPLETION: 02/05/87
ANALYST: PT
QUALITY CONTROL REVIEW BY: JE
WORKSHEET NO: 31

DETECTION UNITS
LIMIT

87-4
23.5-25'

EDI SAMPLE NO: 70735

TRICHLOROETHYLENE	12	4.0	ug/kg

ANALYSIS BY "TEST METHODS FOR EVALUATING A SOLID WASTE
PHYSICAL/CHEMICAL METHODS", USEPA SW-846 SECOND EDITION,
JULY, 1982.



ANALYTICAL SERVICES
EDI LABORATORY REPORT

CLIENT: CPC-GR METAL FAB PLANT
PROJECT NO.: 25615
LOCATION: 36th ST. PLANT
SAMPLED BY: ELC
DESCRIPTION: PHASE III HYDROGEO

DATE SAMPLED: 01/20/87 TIME:
DATE RECEIVED: 01/20/87 TIME: 11:45 AM
DATE COMPLETED: 012087
SCHEDULED COMPLETION: 02/05/87
ANALYST: PCC
QUALITY CONTROL REVIEW BY: JE
WORKSHEET NO: 29

DETECTION UNITS
LIMIT

87-4
64-65.5'

EDI SAMPLE NO: 70743

TRICHLOROETHYLENE <4.0

4.0 ug/kg

ANALYSIS BY "TEST METHODS FOR EVALUATING A SOLID WASTE
PHYSICAL/CHEMICAL METHODS", USEPA SW-846 SECOND EDITION,
JULY, 1982.



**ANALYTICAL SERVICES
EDI LABORATORY REPORT**

CLIENT: CPC-GR METAL FAB PLANT
PROJECT NO.: 25615
LOCATION: 36th ST. PLANT
SAMPLED BY: ELC
DESCRIPTION: PHASE III HYDROGEO

DATE SAMPLED: 01/22/87 TIME:
DATE RECEIVED: 01/22/87 TIME: 2:10 PM
DATE COMPLETED: 012287
SCHEDULED COMPLETION: 02/05/87
ANALYST: PT
QUALITY CONTROL REVIEW BY: JE
WORKSHEET NO: 33

	87-5 3.5-5'	87-5 8.5-10'	87-5 13.5-15'	87-5 18.5-20'	DETECTION LIMIT	UNITS
EDI SAMPLE NO:	70785	70786	70787	70788		
TRICHLOROETHYLENE	<4.0	<4.0	20	19	4.0	ug/kg
TIME SAMPLED:	9:30 AM	9:40 AM	9:50 AM	10:00 AM		

ANALYSIS BY "TEST METHODS FOR EVALUATING A SOLID WASTE
PHYSICAL/CHEMICAL METHODS", USEPA SW-846 SECOND EDITION,
JULY, 1982.



ANALYTICAL SERVICES
EDI LABORATORY REPORT

CLIENT: CPC-GR METAL FAB PLANT
PROJECT NO.: 25615
LOCATION: 36th ST. PLANT
SAMPLED BY: ELC
DESCRIPTION: PHASE III HYDROGEO

DATE SAMPLED: 01/22/87 TIME:
DATE RECEIVED: 01/22/87 TIME: 2:10 PM
DATE COMPLETED: 012287
SCHEDULED COMPLETION: 02/05/87
ANALYST: PT
QUALITY CONTROL REVIEW BY: JE
WORKSHEET NO: 34

DETECTION UNITS
LIMIT

87-5
23.5-25'

EDI SAMPLE NO: 70789

TRICHLOROETHYLENE 17

4.0 ug/kg

TIME SAMPLED: 10:05 AM

ANALYSIS BY "TEST METHODS FOR EVALUATING A SOLID WASTE
PHYSICAL/CHEMICAL METHODS", USEPA SW-846 SECOND EDITION,
JULY, 1982.



ANALYTICAL SERVICES
EDI LABORATORY REPORT

CLIENT: CPC-GR METAL FAB PLANT
PROJECT NO.: 25615
LOCATION: 36th ST. PLANT
SAMPLED BY: ELC
DESCRIPTION: PHASE III HYDROGEO

DATE SAMPLED: 00/00/00 TIME:
DATE RECEIVED: 01/22/87 TIME: 7:00 PM
DATE COMPLETED: 012287
SCHEDULED COMPLETION: 02/05/87
ANALYST: PT
QUALITY CONTROL REVIEW BY: JE
WORKSHEET NO: 35

DETECTION UNITS
LIMIT

87-5
62-64'

EDI SAMPLE NO: 70800

TRICHLOROETHYLENE <4.0 4.0 ug/kg

ANALYSIS BY "TEST METHODS FOR EVALUATING A SOLID WASTE
PHYSICAL/CHEMICAL METHODS", USEPA SW-846 SECOND EDITION,
JULY, 1982.



Permanent Well Analyses

Grease & Oil

Iron

Hardness

pH

Volatile Priority Pollutants

Acid Priority Pollutants

Base Neutral Priority Pollutants

**ANALYTICAL SERVICES
EDI LABORATORY REPORT**

CLIENT: CPC-GR METAL FAB PLANT
PROJECT NO.: 25615
LOCATION: GRAND RAPIDS, MI
SAMPLED BY: ELC
DESCRIPTION: PHASE III, HYDROGEO

DATE SAMPLED: 00/00/00 TIME:
DATE RECEIVED: 01/30/87 TIME: 5:00 PM
DATE COMPLETED: 020487
SCHEDULED COMPLETION: 02/20/87
ANALYST: NJB,TL,BJM,BH
QUALITY CONTROL REVIEW BY: DEK
WORKSHEET NO: 14

	87-1	87-2	87-4	87-5	DETECTION LIMIT	UNITS
EDI SAMPLE NO:	70825	70826	70827	70828		
GREASE&OIL/FREON-EXT	1.1	1.7	1.4	<1.0	1.0	mg/l
IRON, TOTAL	190	15	230	1.4	0.01	mg/l
HARDNESS (as CaCO3)	360	460	430	350	2.0	mg/l
pH VALUE	7.63	7.81	7.73	7.70	---	std. units
DATE SAMPLED:	1/23/87	1/23/87	1/23/87	1/30/87		
TIME SAMPLED:	4:25 PM	5:20 PM	3:30 PM	3:45 PM		

****SAMPLES COLLECTED JAN. 23 WERE UNREFRIDGERATED OVER THE WEEKEND.**



ANALYTICAL SERVICES
EDI LABORATORY REPORT

CLIENT: CPC-GR METAL FAB PLANT
PROJECT NO.: 25615
LOCATION: GRAND RAPIDS, MI
SAMPLED BY: ELC
DESCRIPTION: PHASE III, HYDROGEO

DATE SAMPLED: 00/00/00 TIME:
DATE RECEIVED: 01/30/87 TIME: 5:00 PM
DATE COMPLETED: 020487
SCHEDULED COMPLETION: 02/20/87
ANALYST: JB,NJB,TL,BJM,BH
QUALITY CONTROL REVIEW BY: DEK
WORKSHEET NO: 9

		DETECTION	UNITS
		LIMIT	
	86-2		
EDI SAMPLE NO:	70823		
GREASE&OIL/FREON-EXT	<1.0	1.0	mg/l
IRON,TOTAL	12	0.01	mg/l
HARDNESS (as CaCO3)	350	2.0	mg/l
pH VALUE	7.89	----	std. units

DATE SAMPLED: 1/23/87
TIME SAMPLED: 3:15 PM

**SAMPLES COLLECTED JAN. 23 WERE UNREFRIDGERATED OVER THE WEEKEND.

ANALYTICAL SERVICES
PRIORITY POLLUTANT ANALYSIS

TABLE 1
VOLATILE FRACTION

CLIENT: CPC-GR METAL FAB PLANT
PROJECT NO.: 25615
SAMPLE: 86-2

DATE SAMPLED: 01/23/87 TIME: 3:15 PM
DATE RECEIVED: 01/26/87 TIME: 11:00 AM
DATE COMPLETED: 012787

SAMPLE NO. 70823

COMPOUND	RESULT	D.L.	COMPOUND	RESULT	D.L.
	(mg/l)			(mg/l)	
BENZENE	*	0.10	TRANS-1,2-DICHLOROETHYLENE	*	0.20
BROMODICHLOROMETHANE	*	0.20	1,2-DICHLOROPROPANE	*	0.30
BROMOFORM	*	1.5	CIS-1,3-DICHLOROPROPYLENE	*	0.40
BROMOMETHANE	*	1.0	TRANS-1,3-DICHLOROPROPYLENE	*	0.40
CARBON TETRACHLORIDE	*	0.40	ETHYL BENZENE	*	0.10
CHLOROBENZENE	*	0.10	METHYLENE CHLORIDE	*	0.20
CHLORODIBROMOMETHANE	*	0.30	1,1,2,2-TETRACHLOROETHANE	*	0.20
CHLOROETHANE	*	1.0	TETRACHLOROETHYLENE	*	0.20
2-CHLOROETHYL VINYL ETHER	*	1.0	TOLUENE	*	0.10
CHLOROFORM	*	0.10	1,1,1-TRICHLOROETHANE	*	0.20
CHLOROMETHANE	*	1.0	1,1,2-TRICHLOROETHANE	*	0.30
1,1-DICHLOROETHANE	*	0.20	TRICHLOROETHYLENE	90.	0.20
1,2-DICHLOROETHANE	*	0.20	TRICHLOROFLUOROMETHANE	*	0.30
1,1-DICHLOROETHYLENE	*	0.20	VINYL CHLORIDE	*	1.0

*COMPOUND NOT PRESENT AT DETECTION LIMIT



ANALYTICAL SERVICES
PRIORITY POLLUTANT ANALYSIS

TABLE 1
VOLATILE FRACTION

CLIENT: CPC-GR METAL FAB PLANT
PROJECT NO.: 25615
SAMPLE: 86-2

DATE SAMPLED: 01/23/87 TIME: 3:15 PM
DATE RECEIVED: 01/26/87 TIME: 11:00 AM
DATE COMPLETED: 012787

SAMPLE NO. 70823

COMPOUND	RESULT (mg/l)	D.L.
XYLENE	<1.0	1.0



ANALYTICAL SERVICES
PRIORITY POLLUTANT ANALYSIS

TABLE 2
BASE-NEUTRAL FRACTION

CLIENT: CPC-GR METAL FAB PLANT
PROJECT NO.: 25615
SAMPLE: 86-2

DATE SAMPLED: 01/23/87 TIME: 3:15 PM
DATE RECEIVED: 01/26/87 TIME: 11:00 AM
DATE COMPLETED: 013087

SAMPLE NO. 70823

COMPOUND	RESULT (mg/l)	D.L.	COMPOUND	RESULT (mg/l)	D.L.
ACENAPHTHENE	*	0.002	3,3'-DICHLOROBENZIDINE	*	0.020
ACENAPHTHYLENE	*	0.001	DIETHYL PHTHALATE	*	0.002
ANTHRACENE	*	0.001	DIMETHYL PHTHALATE	*	0.002
BENZIDINE	*	0.050	2,4-DINITROTOLUENE	*	0.010
BENZO (A) ANTHRACENE	*	0.005	2,6-DINITROTOLUENE	*	0.009
BENZO (K) FLUORANTHENE	*	0.005	DI-N-OCTYLPHTHALATE	*	0.002
BENZO (A) PYRENE	*	0.005	1,2-DIPHENYLHYDRAZINE	*	0.001
BENZO (G,H,I) PERYLENE	*	0.010	FLUORANTHENE	0.003	0.001
BIS-(2-CHLOROETHYL) ETHER	*	0.004	FLUORENE	*	0.002
BIS(2-CHLOROETHOXY) METHANE	*	0.004	HEXACHLOROBENZENE	*	0.005
BIS(2-CHLOROISOPROPYL) - ETHER	*	0.001	HEXACHLOROBUTADIENE	*	0.005
BIS-(2-ETHYL HEXYL) - PHTHALATE	0.036	0.002	HEXACHLOROETHANE	*	0.007
4-BROMOPHENYL PHENYL ETHER	*	0.007	HEXACHLOROCYCLOPENTADIENE	*	0.005
BUTYL BENZYL PHTHALATE	0.013	0.003	INDENO (1,2,3-CD) PYRENE	*	0.010
2-CHLORONAPHTHALENE	*	0.002	ISOPHORONE	*	0.002
4-CHLOROPHENYL PHENYL ETHER	*	0.003	NAPHTHALENE	*	0.001
CHRYSENE	*	0.005	NITROBENZENE	*	0.004
DIBENZO (A,H) ANTHRACENE	*	0.010	N-NITROSODI-N-PROPYLAMINE	*	0.004
DI-N-BUTYL PHTHALATE	*	0.001	N-NITROSODIPHENYLAMINE	*	0.003
1,2-DICHLOROBENZENE	*	0.003	PHENANTHRENE	0.004	0.001
1,3-DICHLOROBENZENE	*	0.003	PYRENE	0.002	0.001
1,4-DICHLOROBENZENE	*	0.003	1,2,4-TRICHLOROBENZENE	*	0.003

*COMPOUND NOT PRESENT AT DETECTION LIMIT



ANALYTICAL SERVICES
PRIORITY POLLUTANT ANALYSIS

TABLE 3
ACID FRACTION

CLIENT: CPC-GR METAL FAB PLANT
PROJECT NO.: 25615
SAMPLE: 86-2

DATE SAMPLED: 01/23/87 TIME: 3:15 PM
DATE RECEIVED: 01/26/87 TIME: 11:00 AM
DATE COMPLETED: 013087

SAMPLE NO. 70823

COMPOUND	RESULT	D.L.	COMPOUND	RESULT	D.L.
	(mg/l)			(mg/l)	
4-CHLORO-3-METHYLPHENOL	*	0.004	2-NITROPHENOL	*	0.005
2-CHLOROPHENOL	*	0.002	4-NITROPHENOL	*	0.015
2,4-DICHLOROPHENOL	*	0.003	PENTACHLOROPHENOL	*	0.020
2,4-DIMETHYLPHENOL	*	0.003	PHENOL	*	0.002
2,4-DINITROPHENOL	*	0.050	2,4,6-TRICHLOROPHENOL	*	0.005
2-METHYL-4,6-DINITROPHENOL	*	0.020			

*COMPOUND NOT PRESENT AT DETECTION LIMIT



ANALYTICAL SERVICES
PRIORITY POLLUTANT ANALYSIS

TABLE 1
VOLATILE FRACTION

CLIENT: CPC-GR METAL FAB PLANT
PROJECT NO.: 25615
SAMPLE: 87-1

DATE SAMPLED: 01/23/87 TIME: 4:25 PM
DATE RECEIVED: 01/26/87 TIME: 11:00 AM
DATE COMPLETED: 012787

SAMPLE NO. 70825

COMPOUND	RESULT	D.L.	COMPOUND	RESULT	D.L.
	(mg/l)			(mg/l)	
BENZENE	*	0.005	TRANS-1,2-DICHLOROETHYLENE	0.016	0.010
BROMODICHLOROMETHANE	*	0.010	1,2-DICHLOROPROPANE	*	0.015
BROMOFORM	*	0.075	CIS-1,3-DICHLOROPROPYLENE	*	0.020
BROMOMETHANE	*	0.050	TRANS-1,3-DICHLOROPROPYLENE	*	0.020
CARBON TETRACHLORIDE	*	0.020	ETHYL BENZENE	*	0.005
CHLOROBENZENE	*	0.005	METHYLENE CHLORIDE	*	0.010
CHLORODIBROMOMETHANE	*	0.015	1,1,2,2-TETRACHLOROETHANE	*	0.010
CHLOROETHANE	*	0.050	TETRACHLOROETHYLENE	*	0.010
2-CHLOROETHYL VINYL ETHER	*	0.050	TOLUENE	*	0.005
CHLOROFORM	*	0.005	1,1,1-TRICHLOROETHANE	*	0.010
CHLOROMETHANE	*	0.050	1,1,2-TRICHLOROETHANE	*	0.015
1,1-DICHLOROETHANE	*	0.010	TRICHLOROETHYLENE	1.2	0.010
1,2-DICHLOROETHANE	*	0.010	TRICHLOROFLUOROMETHANE	*	0.015
1,1-DICHLOROETHYLENE	*	0.010	VINYL CHLORIDE	*	0.050

*COMPOUND NOT PRESENT AT DETECTION LIMIT



ANALYTICAL SERVICES
PRIORITY POLLUTANT ANALYSIS

TABLE 1
VOLATILE FRACTION

CLIENT: CPC-GR METAL FAB PLANT
PROJECT NO.: 25615
SAMPLE: 87-4

DATE SAMPLED: 01/23/87 TIME: 2:30 PM
DATE RECEIVED: 01/26/87 TIME: 11:00 AM
DATE COMPLETED: 012787

SAMPLE NO. 70827

COMPOUND	RESULT (mg/l)	D.L.	COMPOUND	RESULT (mg/l)	D.L.
BENZENE	*	0.001	TRANS-1,2-DICHLOROETHYLENE	*	0.002
BROMODICHLOROMETHANE	*	0.002	1,2-DICHLOROPROPANE	*	0.003
BROMOFORM	*	0.015	CIS-1,3-DICHLOROPROPYLENE	*	0.004
BROMOMETHANE	*	0.010	TRANS-1,3-DICHLOROPROPYLENE	*	0.004
CARBON TETRACHLORIDE	*	0.004	ETHYL BENZENE	*	0.001
CHLOROBENZENE	*	0.001	METHYLENE CHLORIDE	*	0.002
CHLORODIBROMOMETHANE	*	0.003	1,1,2,2-TETRACHLOROETHANE	*	0.002
CHLOROETHANE	*	0.010	TETRACHLOROETHYLENE	*	0.002
2-CHLOROETHYL VINYL ETHER	*	0.010	TOLUENE	*	0.001
CHLOROFORM	*	0.001	1,1,1-TRICHLOROETHANE	*	0.002
CHLOROMETHANE	*	0.010	1,1,2-TRICHLOROETHANE	*	0.003
1,1-DICHLOROETHANE	*	0.002	TRICHLOROETHYLENE	0.087	0.002
1,2-DICHLOROETHANE	*	0.002	TRICHLOROFLUOROMETHANE	*	0.003
1,1-DICHLOROETHYLENE	*	0.002	VINYL CHLORIDE	*	0.010

*COMPOUND NOT PRESENT AT DETECTION LIMIT



ANALYTICAL SERVICES
PRIORITY POLLUTANT ANALYSIS

TABLE 1
VOLATILE FRACTION

CLIENT: CPC-GR METAL FAB PLANT
PROJECT NO.: 25615
SAMPLE: 87-4

DATE SAMPLED: 01/23/87 TIME: 2:30 PM
DATE RECEIVED: 01/26/87 TIME: 11:00 AM
DATE COMPLETED: 012787

SAMPLE NO. 70827

COMPOUND	RESULT (mg/l)	D.L.
XYLENE	<0.010	0.010



**ANALYTICAL SERVICES
PRIORITY POLLUTANT ANALYSIS**

**TABLE 2
BASE-NEUTRAL FRACTION**

CLIENT: CPC-GR METAL FAB PLANT
PROJECT NO.: 25615
SAMPLE: 87-4

DATE SAMPLED: 01/23/87 TIME: 2:30 PM
DATE RECEIVED: 01/26/87 TIME: 11:00 AM
DATE COMPLETED: 013087

SAMPLE NO. 70827

COMPOUND	RESULT	D.L.	COMPOUND	RESULT	D.L.
	(mg/l)			(mg/l)	
ACENAPHTHENE	*	0.002	3,3'-DICHLOROBENZIDINE	*	0.020
ACENAPHTHYLENE	*	0.001	DIETHYL PHTHALATE	*	0.002
ANTHRACENE	*	0.001	DIMETHYL PHTHALATE	*	0.002
BENZIDINE	*	0.050	2,4-DINITROTOLUENE	*	0.010
BENZO (A) ANTHRACENE	*	0.005	2,6-DINITROTOLUENE	*	0.009
BENZO (K) FLUORANTHENE	*	0.005	DI-N-OCTYLPHTHALATE	*	0.002
BENZO (A) PYRENE	*	0.005	1,2-DIPHENYLHYDRAZINE	*	0.001
BENZO (G,H,I) PERYLENE	*	0.010	FLUORANTHENE	0.002	0.001
BIS-(2-CHLOROETHYL) ETHER	*	0.004	FLUORENE	*	0.002
BIS(2-CHLOROETHOXY) METHANE	*	0.004	HEXACHLOROBENZENE	*	0.005
BIS(2-CHLOROISOPROPYL) - ETHER	*	0.001	HEXACHLOROBUTADIENE	*	0.005
BIS-(2-ETHYL HEXYL) - PHTHALATE	0.029	0.002	HEXACHLOROETHANE	*	0.007
4-BROMOPHENYL PHENYL ETHER	*	0.007	HEXACHLOROCYCLOPENTADIENE	*	0.005
BUTYL BENZYL PHTHALATE	*	0.003	INDENO (1,2,3-CD) PYRENE	*	0.010
2-CHLORONAPHTHALENE	*	0.002	ISOPHORONE	*	0.002
4-CHLOROPHENYL PHENYL ETHER	*	0.003	NAPHTHALENE	*	0.001
CHRYSENE	*	0.005	NITROBENZENE	*	0.004
DIBENZO (A,H) ANTHRACENE	*	0.010	N-NITROSODI-N-PROPYLAMINE	*	0.004
DI-N-BUTYL PHTHALATE	*	0.001	N-NITROSODIPHENYLAMINE	*	0.003
1,2-DICHLOROBENZENE	*	0.003	PHENANTHRENE	*	0.001
1,3-DICHLOROBENZENE	*	0.003	PYRENE	0.002	0.001
1,4-DICHLOROBENZENE	*	0.003	1,2,4-TRICHLOROBENZENE	*	0.003

*COMPOUND NOT PRESENT AT DETECTION LIMIT



ANALYTICAL SERVICES
PRIORITY POLLUTANT ANALYSIS

TABLE 3
ACID FRACTION

CLIENT: CPC-GR METAL FAB PLANT
PROJECT NO.: 25615
SAMPLE: 87-4

DATE SAMPLED: 01/23/87 TIME: 2:30 PM
DATE RECEIVED: 01/26/87 TIME: 11:00 AM
DATE COMPLETED: 013087

SAMPLE NO. 70827

COMPOUND	RESULT (mg/l)	D.L.	COMPOUND	RESULT (mg/l)	D.L.
4-CHLORO-3-METHYLPHENOL	*	0.004	2-NITROPHENOL	*	0.005
2-CHLOROPHENOL	*	0.002	4-NITROPHENOL	*	0.015
2,4-DICHLOROPHENOL	*	0.003	PENTACHLOROPHENOL	*	0.020
2,4-DIMETHYLPHENOL	*	0.003	PHENOL	*	0.002
2,4-DINITROPHENOL	*	0.050	2,4,6-TRICHLOROPHENOL	*	0.005
2-METHYL-4,6-DINITROPHENOL	*	0.020			

*COMPOUND NOT PRESENT AT DETECTION LIMIT



**ANALYTICAL SERVICES
PRIORITY POLLUTANT ANALYSIS**

**TABLE 1
VOLATILE FRACTION**

CLIENT: CPC-GR METAL FAB PLANT
PROJECT NO.: 25615
SAMPLE: 87-5

DATE SAMPLED: 01/30/87 TIME: 3:45 PM
DATE RECEIVED: 01/30/87 TIME: 5:00 PM
DATE COMPLETED: 020287

SAMPLE NO. 70828

COMPOUND	RESULT	D.L.	COMPOUND	RESULT	D.L.
	(mg/l)			(mg/l)	
BENZENE	*	0.001	TRANS-1,2-DICHLOROETHYLENE	*	0.002
BROMODICHLOROMETHANE	*	0.002	1,2-DICHLOROPROPANE	*	0.003
BROMOFORM	*	0.015	CIS-1,3-DICHLOROPROPYLENE	*	0.004
BROMOMETHANE	*	0.010	TRANS-1,3-DICHLOROPROPYLENE	*	0.004
CARBON TETRACHLORIDE	*	0.004	ETHYL BENZENE	*	0.001
CHLOROBENZENE	*	0.001	METHYLENE CHLORIDE	*	0.002
CHLORODIBROMOMETHANE	*	0.003	1,1,2,2-TETRACHLOROETHANE	*	0.002
CHLOROETHANE	*	0.010	TETRACHLOROETHYLENE	*	0.002
2-CHLOROETHYL VINYL ETHER	*	0.010	TOLUENE	*	0.001
CHLOROFORM	0.003	0.001	1,1,1-TRICHLOROETHANE	*	0.002
CHLOROMETHANE	*	0.010	1,1,2-TRICHLOROETHANE	*	0.003
1,1-DICHLOROETHANE	*	0.002	TRICHLOROETHYLENE	0.070	0.002
1,2-DICHLOROETHANE	*	0.002	TRICHLOROFLUOROMETHANE	*	0.003
1,1-DICHLOROETHYLENE	*	0.002	VINYL CHLORIDE	*	0.010

*COMPOUND NOT PRESENT AT DETECTION LIMIT

ANALYTICAL SERVICES
PRIORITY POLLUTANT ANALYSIS

TABLE 1
VOLATILE FRACTION

CLIENT: CPC-GR METAL FAB PLANT
PROJECT NO.: 25615
SAMPLE: 87-5

DATE SAMPLED: 01/30/87 TIME: 3:45 PM
DATE RECEIVED: 01/30/87 TIME: 5:00 PM
DATE COMPLETED: 020287

SAMPLE NO. 70828

COMPOUND	RESULT (mg/l)	D.L.
XYLENE	<0.010	0.010

**ANALYTICAL SERVICES
PRIORITY POLLUTANT ANALYSIS**

**TABLE 2
BASE-NEUTRAL FRACTION**

CLIENT: CPC-GR METAL FAB PLANT
PROJECT NO.: 25615
SAMPLE: 87-5

DATE SAMPLED: 01/30/87 TIME: 3:45 PM
DATE RECEIVED: 01/30/87 TIME: 5:00 PM
DATE COMPLETED: 020387

SAMPLE NO. 70828

COMPOUND	RESULT	D.L.	COMPOUND	RESULT	D.L.
	(mg/l)			(mg/l)	
ACENAPHTHENE	*	0.002	3,3'-DICHLOROBENZIDINE	*	0.020
ACENAPHTHYLENE	*	0.001	DIETHYL PHTHALATE	*	0.002
ANTHRACENE	*	0.001	DIMETHYL PHTHALATE	*	0.002
BENZIDINE	*	0.050	2,4-DINITROTOLUENE	*	0.010
BENZO (A) ANTHRACENE	*	0.005	2,6-DINITROTOLUENE	*	0.009
BENZO (K) FLUORANTHENE	*	0.005	DI-N-OCTYLPHTHALATE	*	0.002
BENZO (A) PYRENE	*	0.005	1,2-DIPHENYLHYDRAZINE	*	0.001
BENZO (G,H,I) PERYLENE	*	0.010	FLUORANTHENE	*	0.001
BIS-(2-CHLOROETHYL) ETHER	*	0.004	FLUORENE	*	0.002
BIS(2-CHLOROETHOXY) METHANE	*	0.004	HEXACHLOROBENZENE	*	0.005
BIS(2-CHLOROISOPROPYL)- ETHER	*	0.001	HEXACHLOROBUTADIENE	*	0.005
BIS-(2-ETHYL HEXYL)- PHTHALATE	*	0.002	HEXACHLOROETHANE	*	0.007
4-BROMOPHENYL PHENYL ETHER	*	0.007	HEXACHLOROCYCLOPENTADIENE	*	0.005
BUTYL BENZYL PHTHALATE	*	0.003	INDENO (1,2,3-CD) PYRENE	*	0.010
2-CHLORONAPHTHALENE	*	0.002	ISOPHORONE	*	0.002
4-CHLOROPHENYL PHENYL ETHER	*	0.003	NAPHTHALENE	*	0.001
CHRYSENE	*	0.005	NITROBENZENE	*	0.004
DIBENZO (A,H) ANTHRACENE	*	0.010	N-NITROSODI-N-PROPYLAMINE	*	0.004
DI-N-BUTYL PHTHALATE	*	0.001	N-NITROSODIPHENYLAMINE	*	0.003
1,2-DICHLOROBENZENE	*	0.003	PHENANTHRENE	*	0.001
1,3-DICHLOROBENZENE	*	0.003	PYRENE	*	0.001
1,4-DICHLOROBENZENE	*	0.003	1,2,4-TRICHLOROBENZENE	*	0.003

*COMPOUND NOT PRESENT AT DETECTION LIMIT

ANALYTICAL SERVICES
PRIORITY POLLUTANT ANALYSIS

TABLE 3
ACID FRACTION

CLIENT: CPC-GR METAL FAB PLANT
PROJECT NO.: 25615
SAMPLE: 87-5

DATE SAMPLED: 01/30/87 TIME: 3:45 PM
DATE RECEIVED: 01/30/87 TIME: 5:00 PM
DATE COMPLETED: 020387

SAMPLE NO. 70828

COMPOUND	RESULT (mg/l)	D.L.	COMPOUND	RESULT (mg/l)	D.L.
4-CHLORO-3-METHYLPHENOL	*	0.004	2-NITROPHENOL	*	0.005
2-CHLOROPHENOL	*	0.002	4-NITROPHENOL	*	0.015
2,4-DICHLOROPHENOL	*	0.003	PENTACHLOROPHENOL	*	0.020
2,4-DIMETHYLPHENOL	*	0.003	PHENOL	*	0.002
2,4-DINITROPHENOL	*	0.050	2,4,6-TRICHLOROPHENOL	*	0.005
2-METHYL-4,6-DINITROPHENOL	*	0.020			

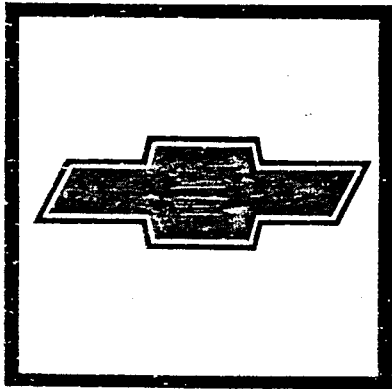
*COMPOUND NOT PRESENT AT DETECTION LIMIT

ENVIR. FILE

Results of

Phase III-B Hydrogeological Investigation

for



**General Motors Corporation
CPC Group
Grand Rapids, Michigan**

July 1987

20676

EDI Engineering & Science

Environmental Engineering Geology Biology and Chemistry
Grand Rapids, MI 49503-0970





Chevrolet · Pontiac · Canada Group
Grand Rapids Metal Fabrication Plant
General Motors Corporation
300 36th Street S.W.
Grand Rapids, Michigan 49508 · 2107

July 15, 1987

Ms. Bonnie L. White
Envir. Quality Analyst
Groundwater Quality Div.
Mich DNR - State Office Bldg.
350 Ottawa Ave N.W.
Grand Rapids, MI 49503

Re: Phase III-B - Hydrogeological Investigation

In reply to your letter of June 15, 1987, this plant
is submitting the attached Phase III-B Report and
Workplan.

We await your response to this plan.

Merlin A. Petzold
Ch Engr Energy & Envir.

James A. Brandt
Gen Supt-Mfg Engineering

cc: J. Spindel
A. Aguwa-GMEAS
W.T. McKeel-CPC Fac. Planning
T. Strauss-CPC Fac Planning

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- A - WELL LOGS
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- C - CHEMICAL ANALYSES

1.0 INTRODUCTION

The TCE groundwater contamination which originates in the area of column T-27 was found in Phase II to have reached the northern property line north of 36th Street. Concurrent with additional work done in the source area, investigation of the extent of the plume on-site and potential impact of the plume on Cole Drain was examined in this phase of work, Phase III-B. In addition, the report includes a work plan for off-site investigation of the plume. The work completed for the source area is included in the Phase III-A Hydrogeological Investigation Report.

2.0 PURPOSE AND SCOPE

The purposes of this work were to: 1) examine the potential impact of the TCE plume in the groundwater on the water quality of Cole Drain 2) determine the width of the plume in the northern portion of the property 3) obtain information about the aquifer characteristics in the northern portion of the plant property. To accomplish these goals, the following scope of work was completed.

- 1) Soil vapor samples were taken along the south side of 36th Street to aid in selection of the locations of two wells.
- 2) Two wells (87-8 and 87-9) were placed along the northern property line of the parking lot. They were located east and west of the location of well 86-3 to define the width of the plume at the property line. The aquifer was sampled at ten foot intervals with temporary wells and the permanent well set in the zone of greatest contamination.
- 3) Cole Drain was sampled in four locations to assess the possible impact of TCE contaminated groundwater on the surface water in the drain. One sample was taken just downstream of the CPC retention pond and above any likely contribution to the stream flow by contaminated groundwater from the plume or source area. Three samples were taken between 36th and 28th Streets to measure downstream changes in concentration of TCE.
- 4) The hydraulic conductivity of the aquifer in the two new wells was measured by the falling head method. Water levels were obtained in these two wells at the same time as the other wells on site were measured.

3.0 METHODS

3.1 SOIL VAPOR STUDY

Soil vapors were collected by driving a hollow metal rod into the soils to a depth of three feet. The soil vapors were extracted by a battery-operated air pump pulling 1000 cubic centimeters of soil vapor per minute. The soil vapors are drawn through the hollow rod and Teflon connecting tubing for at least five minutes of purging. The samples are extracted from the tubing ahead of the pump with a syringe. The metal rod is brushed to remove soils and heated with a propane torch to decontaminate it between samples. The samples were run on a gas chromatograph located on site. Duplicate samples were taken at four locations to assess the sampling variability.

3.2 SOIL BORINGS

At the two locations where wells were installed, the soil borings were advanced using 3-1/4 ID hollow stem augers. Soil samples were obtained with a split spoon sampler at five foot intervals above the water table. A split spoon sample was obtained of the clay beneath the aquifer for lithology, and a portion of the sample was sent to the laboratory for chemical analysis of TCE. The soil borings and well logs are included in Appendix A.

3.3 TEMPORARY WELLS

In the soil borings, when groundwater was encountered, a temporary well was set. After development and sampling the augers were advanced 10 feet and a second temporary well was set. This pattern was continued through the thickness of the aquifer until clay or other non-permeable materials were encountered. The resulting chemical analyses were used to characterize the vertical variation within the aquifer. The temporary wells were constructed of 2-inch galvanized casing and 3-foot stainless steel screen. All of the well materials were thoroughly steam cleaned prior to installation in the augers. Each time a temporary well was set, the well was developed by a Brainard hand pump or by bailing. After development, the water samples were collected for chemical analysis with a stainless steel bailer.

3.4 PERMANENT WELLS

The permanent wells were set through the augers to a depth indicated by the results from the temporary wells. The permanent wells, 87-8 and 87-9 are constructed of 2-inch galvanized casing and 3-foot stainless steel screen. The formation was allowed to collapse around the screen. The boring was backfilled with natural soils and bentonite to the surface. The wells were completed with flush-mount locking cap set to the level of the parking lot asphalt.

3.5 GROUNDWATER SAMPLING

Water samples were collected from the new wells and selected existing wells. Wells 85-7, 86-3, 87-8, and 87-9 were sampled on January 21, 1987. The wells were purged of at least three casing volumes with a ditch pump or bailer prior to sampling.

3.6 HYDROLOGY

The static water level in the wells was determined to the nearest 0.01 foot using the wetted tape method.

The permeability of the aquifer in the vicinity of the wells was measured by the falling head method using a pressure transducer and In-situ data logger. A vacuum is created which pulls water into the well. Once the level is stabilized, the vacuum is released and the rate of fall recorded. The mathematics, methods, and the raw data are presented in Appendix B.

3.7 CHEMICAL ANALYSIS

The chemical analyses were performed according to the following methods:

Chemical	Instrumentation	Method
Trichloroethylene	GC	EPA 604
Volatile Priority Pollutant	GC/MS	EPA 624
Acid Priority Pollutant	GC/MS	EPA 625
Base Neutral Priority Pollutant	GC/MS	EPA 625

4.0 RESULTS AND DISCUSSION

4.1 GEOLOGY

The general geology of the Metal Fabrication Plant site is discussed in the Phase III-A Hydrological Investigation. Figure 1 plots the locations of soil borings from this study, previous groundwater sampling locations, and locations of previous work done for the placement of equipment within the facility. The traces of the geologic cross-sections are also indicated in Figure 1. Figures 2 through 4 are the geological cross-sections in the area of the plume. The wells and borings indicate a substantial slope of the clay (1 foot in 15 feet) beneath the sand and gravel surface aquifer to the west-northwest. Cross-section Z-Z' (Figure 2) displays the geology of the aquifer from east to west along the northern edge of the parking lot. The slope of the clay beneath the aquifer is evident. The sands and gravels above the clay do not show partings of clay which would influence

the direction and rate of contaminant movement with the groundwater. There is however a slope to the sand and gravel units to the west which may influence the flow direction and rate due to slight differences in the permeabilities of these different materials. In Cross-section C-C' (Figure 3), along the northern edge of the building, all of the wells are shallow and do not provide information on the slope of the clay. Cross-section B-B' (Figure 4), extends from the source north to the property line. The apparent slope of the clay in this direction is substantially less than in the east-west direction.

4.2 SOIL VAPOR STUDY

Samples of the soil vapor were collected and analyzed from the unpaved strip along the south side of 36th Street in front of the plant. An initial attempt was made to sample through the asphalt of the north parking lot to obtain soil vapor samples. At the time of year the study was conducted (December) the melting snow and ice of the parking lot seeped into the hole for the soil vapor probe and into the sampling apparatus. The series of locations along the south side of 36th Street were sampled as an alternative. The first sample was collected adjacent to well 85-7 to serve as a calibration point. The locations sampled and the concentration of TCE in milligrams per cubic meter of soil vapor are shown in Figure 5. Table 1 summarizes the soil vapor data which are included in Appendix C. All of the values obtained are very low compared to values found near the source. Several factors may contribute to this difference of values. The soil and air temperature may affect the values obtained from relatively shallow soils (six feet). Heavy rains early in the fall may have affected the levels of TCE in the soils. The plume appears to be moving downward as uncontaminated water recharges the top of the aquifer. The downward movement disconnects the plume from the soils above the water table.

The distribution of TCE in the soil vapor samples indicates the existence of the plume 400 feet east and 300 feet west of well 85-7. The concentrations of TCE found along 36th Street were used to select the locations of the two wells installed along the northern property line.

4.3 COLE DRAIN

Samples of Cole Drain were taken on January 7, 1987 at four locations along its course. The results of the analyses are summarized in Table 2, and the analytical report is included in Appendix C. Very similar values for TCE (2.7 to 4.8 ug/l) were found in all of the samples. Sample CD 1 was collected just below the retention pond outfall and upstream of any likely contribution to the drain by contaminated groundwater from the plume or source area. The uniformity of the TCE levels found along Cole Drain shows that no significant amount of TCE is entering the drain at this time.

TABLE 1
GM CPC METAL PLANT
SOIL VAPOR TCE SUMMARY
(Mg TCE/M³ Soil Vapor)

Location	Depth (feet)	ppm	MG/M ³
30	6	0.52	2.8
31	6	0.23	1.2
32	6 6D	0.15 2.3	0.80 12
33	6 6D	0.33 1.8	0.41 2.2
34	6 6D	0.2 0.16	1.1 0.85
35	6 6D	0.89 0.23	4.7 1.2

D = Duplicate Sample

* = Non-detectable

NA = Method Alteration, Open Column 0-6 ft

R = Duplicate Analysis

TABLE 2

GM CPC METAL PLANT
COLE DRAIN SURFACE WATER SAMPLES
(ug/l)

Sample Date	Sample No.	Location	Trichloro-ethylene	Tetrachloro-ethylene	Bromodichloro-methane	Chloroform	1,1,1-Trichloro-ethane
1/7/87	1	West side of drain downstream of GM retention pond	4.4				
1/7/87	2	1,300 feet south of 32nd Street bridge	3.6				
1/7/87	3	20 feet north of 32nd Street bridge	4.8				
1/7/87	4	1,450 feet north of 32nd Street bridge	2.7				
6/15/87	5	Retention pond inlet	2.0	ND	3.0	5.0	8.0
6/15/87	6	Retention pond outlet	2.0	ND	ND	3.0	4.0
6/15/87	7	Cole Drain adjacent to Clay Ave.	4.0	11.0	ND	ND	ND

Not analyzed

Detection Limit - 1.0 ug/l
ND - No detection

Three additional locations were sampled on June 15, 1987 to assess the impact of the CPC Retention Pond on Cole Drain. The locations were the Retention Pond Inlet, Retention Pond Outfall, and Cole Drain adjacent to the Clay Avenue Outfalls. The samples were analysed for volatile organic compounds on the Priority Pollutant List. The analyses are included in Appendix C and the results are summarized in Table 2. The sample taken near the Clay Avenue Outfalls is to assess the water quality coming into Cole Drain other than from the CPC Retention Pond. The water entering Cole Drain from the Retention Pond causes an eddy to develop around the head end of the Drain where the Clay Avenue Outfalls enter. The sample taken at the Clay Avenue Outfalls may thus have been mixed with water from the CPC Retention Pond by the eddy. The results of the sampling show an approximately 50 percent drop in the levels of compounds across the pond from inlet to the outflow. The exception was that the concentration of TCE was low in the Inlet water (2 ppb) and remained at that level at the Outfall. The sample taken near the Clay Avenue Outfalls contained Tetrachloroethylene which was not found at either the Inlet or Outfall of the CPC Retention Pond. The other chemicals found in the Retention Pond do not appear in the Clay Avenue sample and the level of TCE in the Clay Avenue sample was higher than the level in the Retention Pond Outfall. The different distributions of chemicals found in the Retention Pond and the Clay Avenue Outfalls sample suggest that potential mixing in the drain did not affect the Clay Avenue sample. An off-site source is likely for the Tetrachloroethylene and also for TCE found in Cole Drain.

4.4 HYDROLOGY

The groundwater levels have been measured twice during the completion of this study and were reported in the Phase III-A Investigation. Figure 6 shows the groundwater levels from February 24, 1987. They have been contoured at a 0.5 foot interval. The groundwater flow direction in the north parking lot is north-northwest. The hydraulic conductivity was measured on wells 87-8 and 87-9. The results of these tests are summarized in Table 3 along with the results of previous tests conducted on wells on site. The results for the two new wells are less than, but not greatly different from, the hydraulic conductivity measured in well 86-3 previously.

The flow rate can be calculated for the plume groundwater by using the gradient of the groundwater as measured in the wells and the average of the three hydraulic conductivity tests completed in the north parking lot. The flow rate or velocity can be calculated as:

$$V=Ki/P$$

where:

- V is the velocity
- K is the hydraulic conductivity
- i is the hydraulic gradient
- P is the porosity

TABLE 3
GM CPC METAL PLANT
HYDRAULIC CONDUCTIVITY

Well	Ft/Sec	Ft/Day
Measurements:		
87-8	1.15×10^{-3}	99.4
87-9	1.81×10^{-3}	156.4
Previous Measurements:		
85-1	1.98×10^{-4}	17.1
85-7	9.19×10^{-4}	79.4
86-2	3.53×10^{-4}	30.5
86-3	2.23×10^{-3}	192.6
Average		95.9
Average of 86-3,87-8 and 87-9		149

The average hydraulic conductivity is 149 ft/day. The hydraulic gradient is 7.2 ft/mile (1.37×10^{-3}). The porosity is estimated at 25 percent. The estimated velocity is 0.8 ft per day. The estimated velocity is less (0.5 ft/day) in the source area. If these differences in estimated flow velocity are significant, the result may be that the leading edge of the plume is being stretched.

4.5 CHEMICAL ANALYSES

The groundwater samples collected from the temporary wells installed during the drilling of wells 87-8 and 87-9 were analyzed for TCE. The results of those analyses are presented in Table 4. Figures 7, 8, and 9 show the concentrations of TCE in the temporary and permanent wells overlain on the cross-sections of the aquifer. The results for well 87-8 show the highest concentration to be at the surface of the groundwater. In well 87-9, the largest concentration of TCE is at an intermediate depth (between 22 and 55 feet). This pattern is similar to what was found in well 86-3 in the previous investigation. The concentration levels are significantly lower in the two new wells by comparison with well 86-3. Well 87-8 approximates the edge of the plume. Well 87-9 is within the plume. The probable western edge of the plume is approximately 100 to 200 feet west of well 87-9.

The two new permanent wells and wells 85-7 and 86-3 were sampled and analyzed for the volatile, acid, and base neutral fractions of the priority pollutants. In addition, the samples were analyzed for hardness, pH, iron, and grease and oil. The positive results are summarized in Table 5.

In the volatile fraction, (trans)1,2-Dichloroethylene (DCE) appears in wells 85-7 and 86-3 in low concentrations. This compound is a common contaminant in TCE and also a degradation product of TCE. The plant has no history of use of DCE so the probable source in the groundwater plume is the TCE. 1,1,1-Trichloroethane (TCA) found in low concentration in well 86-3 is used on site. TCA was not found in other wells on site.

In the base neutral fraction, Bis-(2-ethyl hexyl)-phthalate appeared in well 85-7 and Butyl benzyl phthalate was found in well 86-3. These compounds are common plasticizers and are also products of combustion. Some of the wells in the source area contained these compounds in similar quantities.

No acid fraction compounds were present in the samples.

The pH averaged 7.82 with a range of 7.68 to 7.94. The hardness ranged from 350 to 410 mg/l. None of the samples showed a significant amount of oil and grease. The concentration of iron ranged from 2.8 to 150 mg/l.

TABLE 4
SUMMARY OF TEMPORARY WELL SAMPLE ANALYSES
CONCENTRATION TCE
GM CPC METAL PLANT
Results Reported as ug/l

Well No.	Date	Depth (feet)	Concentration
87-8	1/13/87	18.7-19.7	17
		28.0-31.0	5.4
		38.0-41.0	<1.0
		48.0-51.0	<1.0
		58.0-61.0	5.2
87-9	1/14/87	16.0-17.5	14
		22.0-25.0	42
		32.0-35.0	27
		41.0-44.0	41
		52.0-55.0	63
		62.0-65.0	19
		72.0-75.0	2.9
Detection Limit - 1.0 ug/l			

TABLE 5

ANALYTICAL SUMMARY OF
GROUNDWATER FROM THE PERMANENT WELLS
GM CPC METAL PLANT

Well ID	Grease & Oil (mg/l)	Total Iron (mg/l)	Hardness (mg/l)	pH+	TCE (ug/l)	Other Volatile Organics (ug/l)	Other Parameters (base neutral fraction) (ug/l)
85-7	1.2	44	350	7.68	150	(trans)1,2-Dichloroethylene - 4	Bis-2-Ethyl Hexyl Phthalate - 68
86-3	1.7	2.8	360	7.82	340	(trans)1,2-Dichloroethylene - 4 1,1,1-Trichloroethane - 6	Butyl-Benzyl Phthalate - 26
87-8	1.0	150	410	7.82	9		
87-9	1.9	0.50	360	7.94	62		
Detection Limit	1.0	0.010	2.0	--	1.0		

+ Standard units.

5.0 CONCLUSIONS

The core of the plume of TCE with concentration over 100 ug/l is approximately 300 feet wide on the north property line. The plume has settled from the surface of the groundwater beneath the plant to the middle portion of the aquifer. The most likely cause of the downward movement of the plume is the recharge of the aquifer north of the plant.

The TCE plume at the north property line has traveled almost 1,200 feet from the source area. Because the date when the leakage in the source area and other factors are unknown, it is difficult to predict how far the tip of the plume is from the plant. One attempt to estimate the tip would be to consider the distance on-site over which the concentration decreases by a factor of 10. On-site that distance is about 1,000 feet. Extending the same regime off-site would indicate TCE to be present at approximately 30 ppb 1,000 feet north of the property line (in line with 34th Street). The apparent increase in velocity of groundwater toward the north may significantly influence the distance that the tip of the plume has covered.

Cole Drain samples do not indicate a detectable flux of TCE into the drain between 30th and 36th Streets. The level of TCE in Cole Drain was uniformly low.

6.0 WORK PLAN FOR PLUME DEFINITION

6.1 PURPOSE AND SCOPE OF WORK

The work done on-site has indicated a plume of TCE contaminated groundwater is going off the property to the north-northwest. The purpose of this scope of work is to define the horizontal and vertical extent of the off-site plume, including the biodegradation products of TCE, determine the groundwater flow direction and velocity in the plume area, and determine the relationship of the groundwater and Cole Drain. To accomplish these goals, the following tasks will be completed:

6.1.1 Soil Gas Survey

To aid in the selection of drilling locations, a soil gas (vapor) survey will be conducted in the area bounded by 36th Street, Buchanan Avenue, US-131, and 32nd Street. The survey will be initiated by placing locations along an east-west line near the north boundary of the GM-CPC property. The survey will continue toward the north until the limits of contamination are found or until reaching 32nd Street.

Soil vapors will be collected by driving a hollow metal rod into the soil to a depth of three feet. The soil vapors will be extracted by a battery-operated air pump pulling 1,000 cubic centimeters of soil vapor per minute. The soil vapors will be pulled through the hollow rod and Teflon tubing for purging at least five minutes. The samples will be

extracted from the tubing ahead of the pump with a syringe. The metal rod will be brushed to remove soils and heated, with a propane torch to decontaminate it between samples.

The soil vapor samples will be analyzed with a portable gas chromatograph (GC) for TCE at a temporary laboratory set up at GM-CPC and operated by an EDI chemist. The results of the GC analysis of the soil vapor samples will guide the progress of the study until the area of soil impact is delineated. If the initial results along the northern edge of the parking lot do not indicate the cross section of the plume, the soil vapor program will be terminated at that time.

6.1.2 Soil Borings and Temporary Wells

Up to twelve (12) soil borings will be drilled within the area described in task (1) above, with the actual locations picked after reviewing the results of the soil gas survey and the information of the previous wells. The soil borings will be drilled until the bottom of the aquifer is penetrated (approximately 60 feet below the surface). Two of the wells will be drilled in the warehouse area east of US-131 and north of 36th Street for water levels and water sample analyses west of Cole Drain. These two wells will not be drilled to the bottom of the aquifer if an adjacent well on the east side of the drain shows no TCE.

All soil borings will be drilled using a 3 1/4" I.D. hollow-stem auger with split-spoon cores collected every five feet until reaching the water table which varies from approximately 5 to 20 feet below the surface. In addition, one split-spoon sample will be recovered in each boring from the clay at approximately 60 feet below the surface. At least 5 feet of clay will be penetrated in each boring to verify that the bottom of the aquifer has been reached.

As each split spoon is recovered at the surface, it will be opened and immediately scanned with an Hnu photoionization detector calibrated for TCE. The Hnu detector will be used to help in determining the presence of TCE-contaminated soil. If the Hnu indicates that there is a localized source(s) of soil contamination above the water table, the soil sample(s) will be collected from the split-spoon(s) and placed in standard vials with Teflon septa. Five soil samples have been budgeted for this purpose to allow for identification of sources that are **not related** to the TCE source at the GM-CPC plant.

Groundwater samples will be collected from each boring at approximately 10-foot intervals below the water table with a temporary 2-inch well point consisting of a stainless steel screen and galvanized steel casing. It is anticipated that five samples will be collected from each well for a total of 60 groundwater samples. The temporary wells will be developed with a rod pump, if possible, or a Teflon or stainless steel bailer. Bailers will also be used to collect groundwater samples in standard vials with Teflon septa.

The soil and groundwater samples will be analyzed with a gas chromatograph (GC) for vinyl chloride, TCE, and 1,2-DCE at EDI's laboratory in Grand Rapids. The GC analysis of the temporary groundwater samples will determine the vertical variation of the solvents within the aquifer.

The soil borings will be backfilled with bentonite within the clay and with a combination of bentonite and clean soils from the top of the clay to the surface.

6.1.3 Monitoring Wells

Up to twelve (12) monitoring wells will be constructed at locations directly offset to the soil borings described in task 2 described above. The wells will be completed with 2-inch diameter galvanized steel casing and a 5-foot long, 2-inch diameter stainless steel, wire-wrapped, slotted screen. The screens will be set within the interval determined to be the most contaminated from the analysis of the temporary groundwater samples.

The monitoring wells will be gravel packed opposite the screen and to two feet above the screen, bentonite seals above the gravel pack, and a combination of bentonite and clean soil up to near the surface. Flush-mount caps with internally locking caps will be placed at the surface with cement placed around the ground level portion of the caps.

6.1.4 Decontamination

The split-spoon samplers, bailers, and temporary well points (both screens and casing) will be steam-cleaned between samples to prevent cross-contamination. The augers will be steam-cleaned between wells and borings, and the permanent galvanized steel casings and screens will be steam-cleaned before being lowered into the bore holes.

6.1.5 Sampling and Analysis

Groundwater samples will be collected from the twelve new wells, the three monitoring wells in the GM parking lot near the north boundary of the property, and at four locations along Cole Drain (19 samples total). The groundwater samples will be analyzed for complete VOC scans at EDI's laboratory in Grand Rapids. The samples will be analyzed using GC/MS instrumentation.

6.1.6 In-Situ Permeability Measurements

In-situ permeability tests will be performed on the twelve new monitoring wells, using a vacuum pump and Hermit data logger. The tests will be performed according to EDI's standard operating procedure, and the data will be analyzed according to the Bouwer-Rice method. The permeability measurements will be combined with other data to

determine the velocity of groundwater flow.

6.1.7 ELEVATION SURVEY

The U.S.G.S. elevations of the top-of-casing for the twelve monitoring wells will be determined. From these data, the elevation of the groundwater will be calculated, and the direction of groundwater flow will be determined.

6.2 REPORT

The report will contain and/or address the following sections:

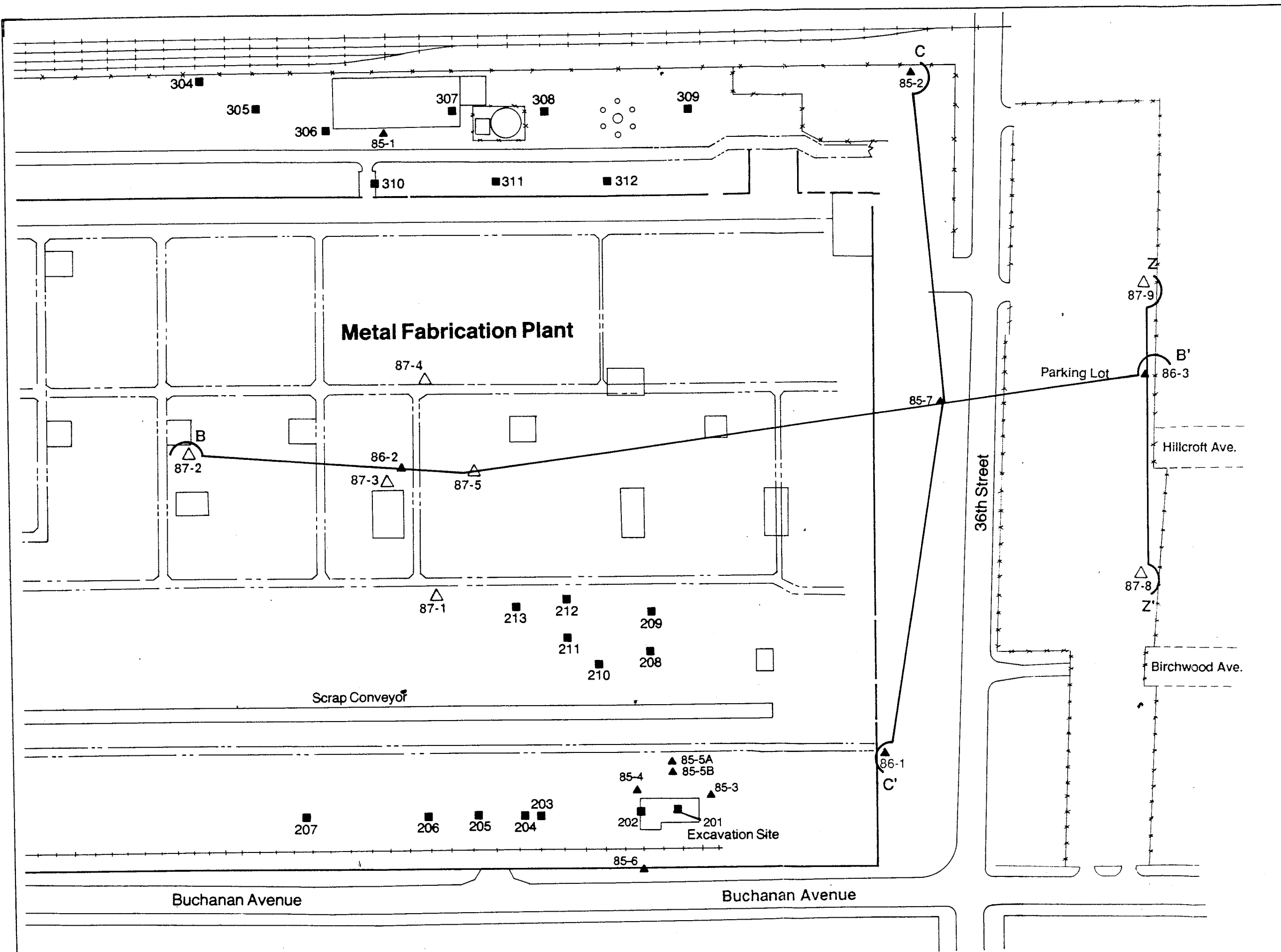
- A. Lithology of the aquifer
- B. Methods used for drilling, decontamination, sampling and analysis
- C. Direction and rate of flow of groundwater
- D. Estimate of extent of the plume
- E. Discussion of relationship between Cole Drain and groundwater
- F. Conclusions including projected movement of the plume
- G. Well construction logs
- H. Analytical laboratory reports

6.3 SCHEDULE FOR OFF-SITE WORK PLAN

The off-site plume investigation will be conducted on the following schedule, Table 6, beginning with authorization to proceed. Since landowner permissions will be required to conduct most of this work, the schedule may be delayed by the time necessary to obtain these permissions.

TABLE 6

[illegible]



Legend

- ▲ Existing Monitoring Wells
- △ New Monitoring Wells
- Soil Boring Drilled By
Soils and Materials Engineers
March, 1985
- Geologic Cross-Section Trace

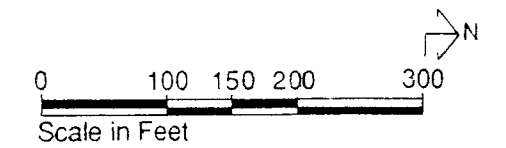
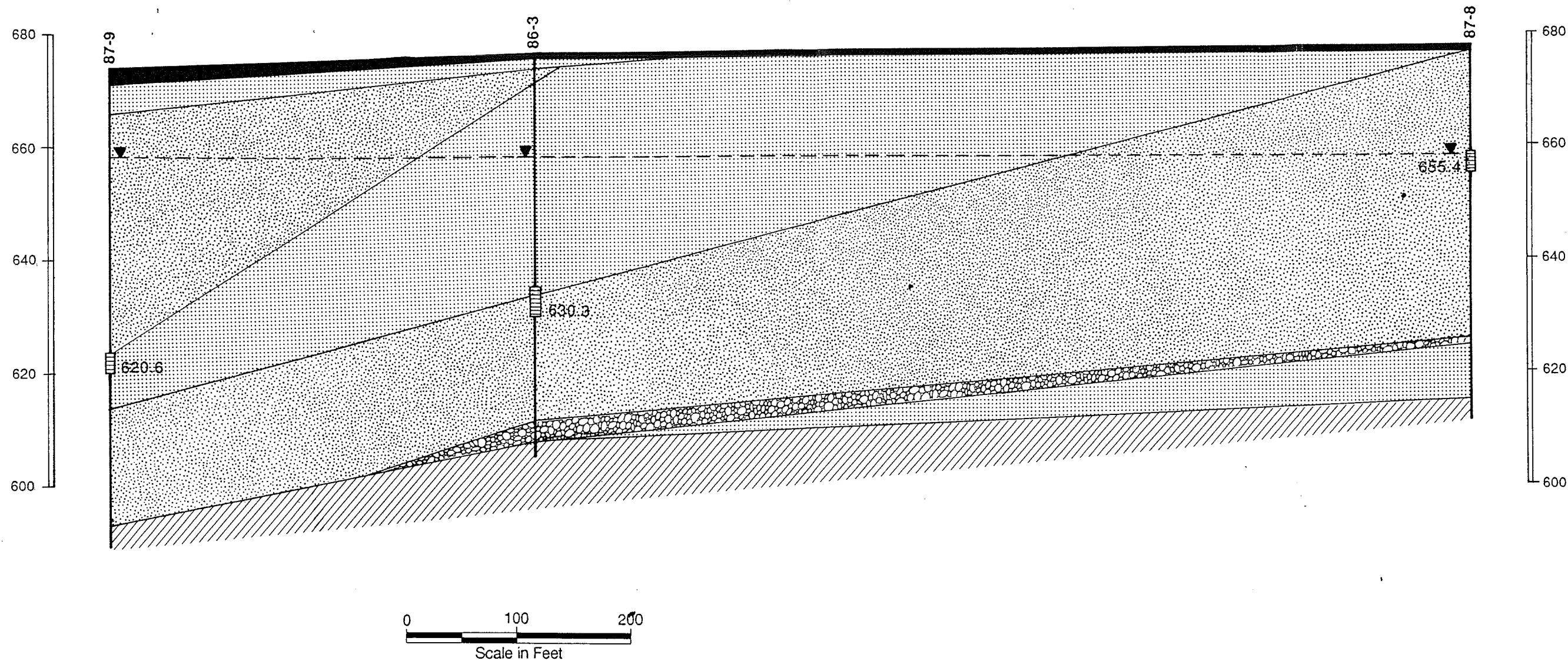


Figure 1
**Well & Boring Locations
Traces of Cross-Sections**

General Motors Corp./CPC Group
Grand Rapids, Michigan

West

East



LEGEND

 Concrete	 Gravel
 Fine Sand	 Silt
 Sand	 Clay
 Sand & Gravel	 -▽- Water Level

 Well Screen
(620.6) Elevation

Horizontal Scale 1" = 40'

Vertical Scale 1" = 20'

Elevations NGVD

Figure 2

Geological Cross-Section Z-Z'

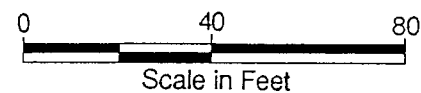
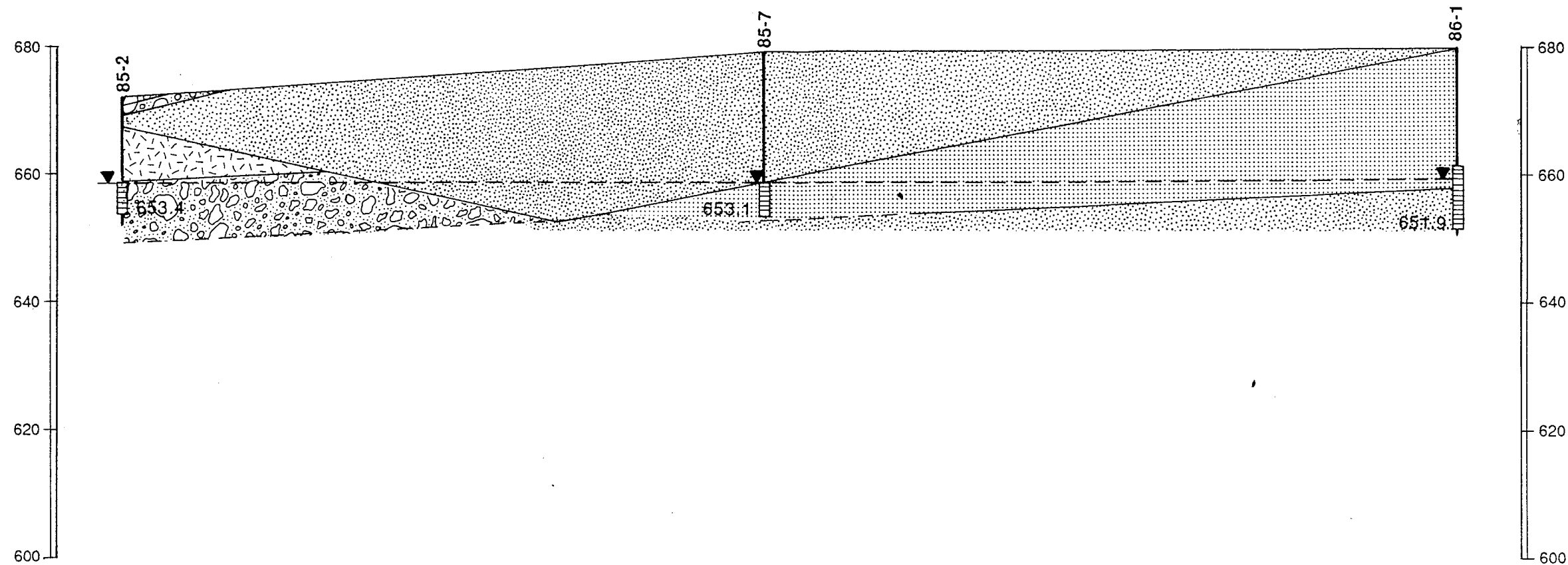
General Motors Corp./CPC Group
Grand Rapids, Michigan

June, 1987

20676

West

East



LEGEND

Concrete	Gravel
Fine Sand	Silt
Sand	Clay
Sand & Gravel	Water Level

Well Screen
(620.6) Elevation

Horizontal Scale 1" = 100"
Vertical Scale 1" = 20'

Elevations NGVD

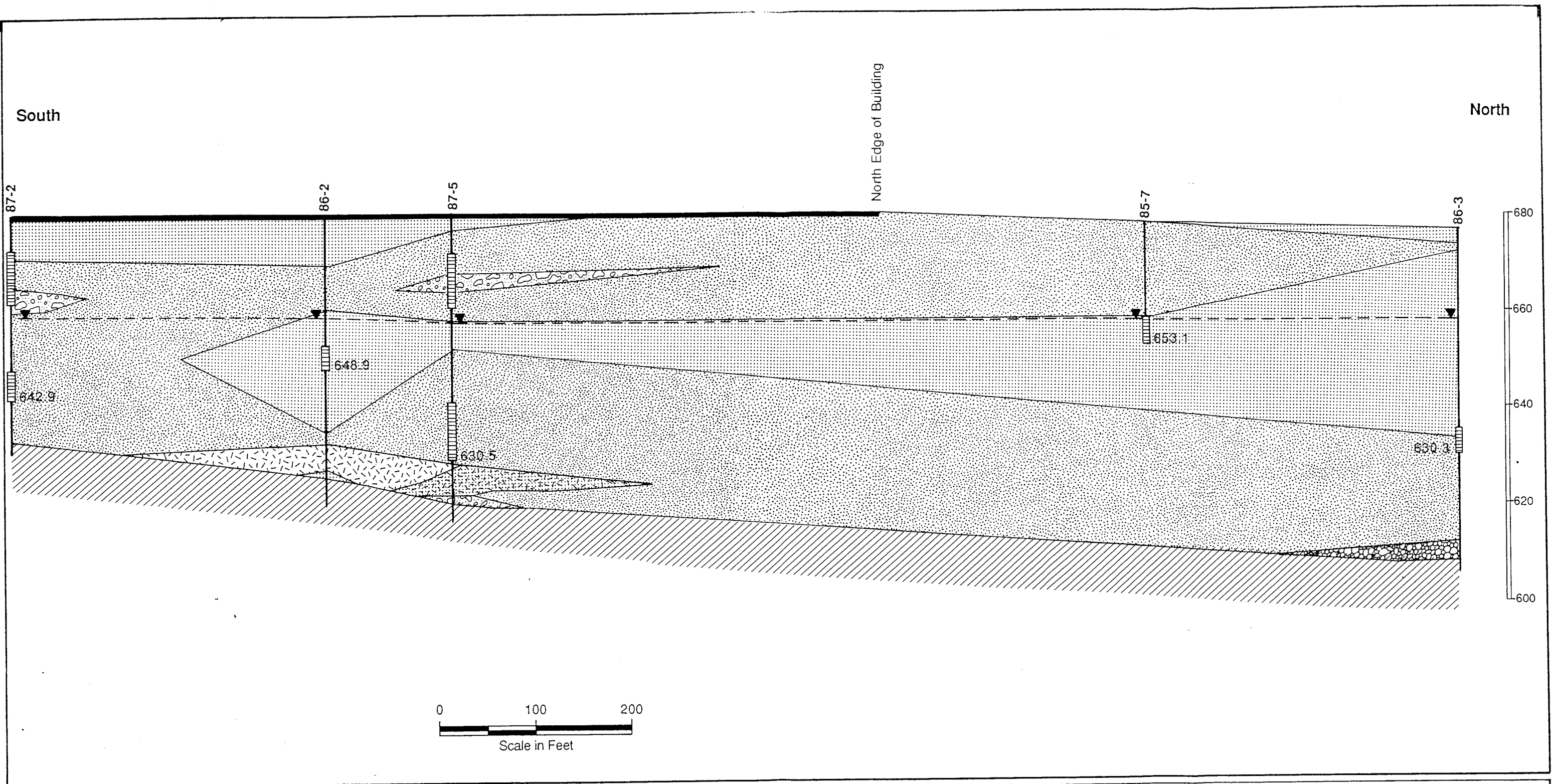
Figure 3

Geological Cross-Section C-C'

General Motors Corp./CPC Group
Grand Rapids, Michigan

June, 1987

20676



LEGEND

	Concrete		Gravel
	Fine Sand		Silt
	Sand		Clay
	Sand & Gravel		Water Level

 Well Screen
(630.5) Elevation

Horizontal Scale 1" = 100'

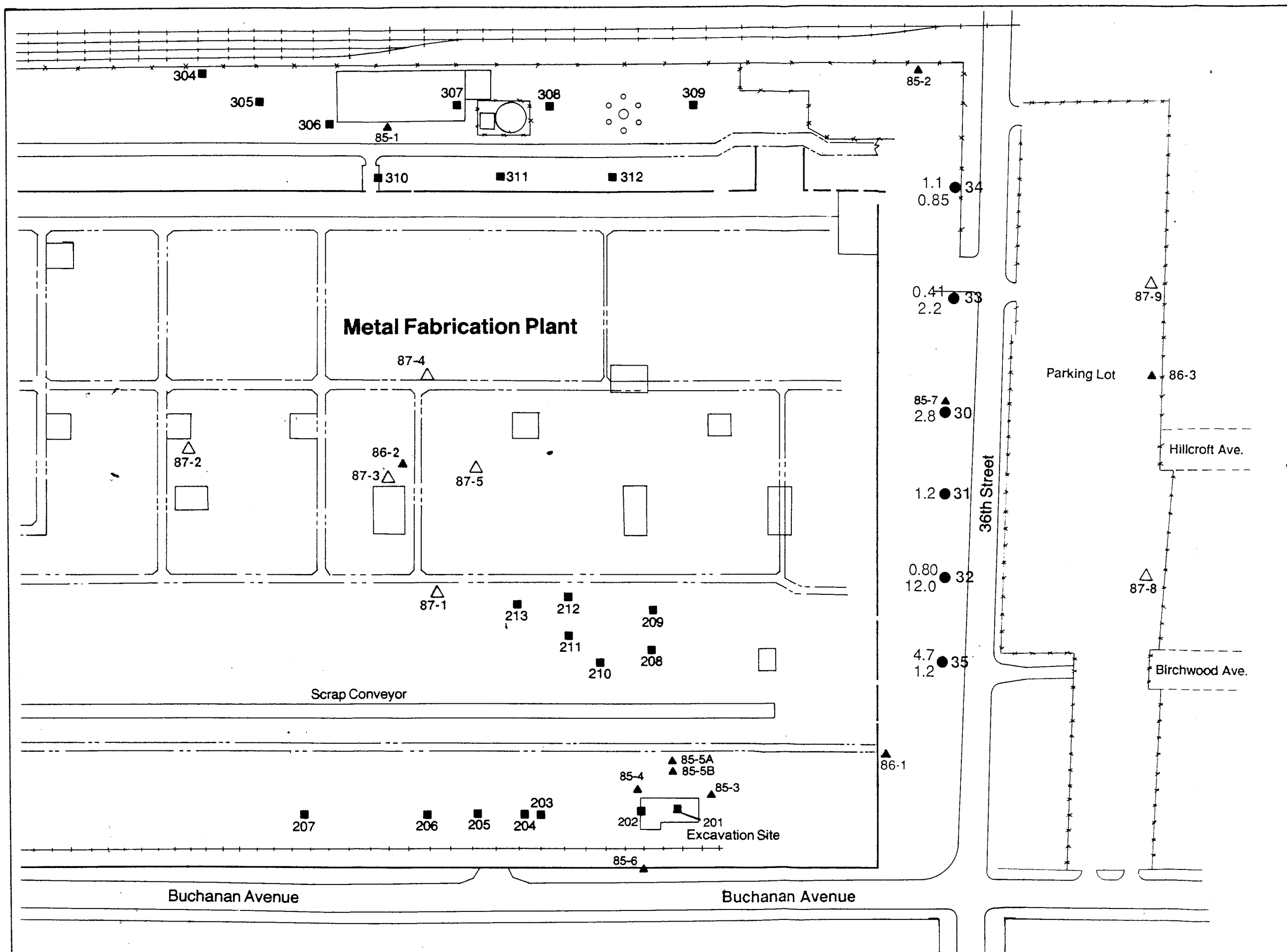
Vertical Scale 1" = 20'

Elevations NGVD

Figure 4

Geological Cross-Section B-B'

General Motors Corp./CPC Group
Grand Rapids, Michigan



Legend

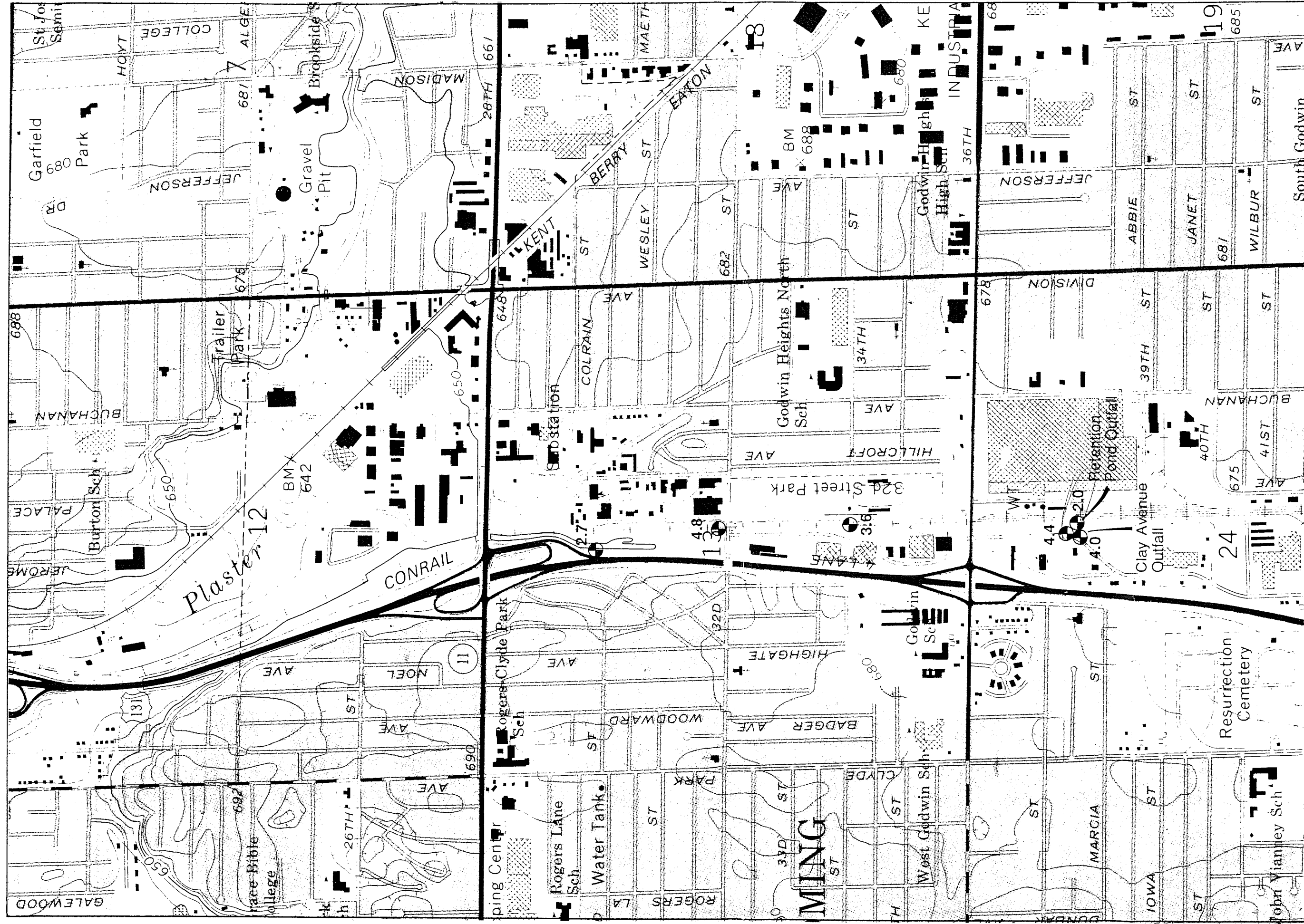
- ▲ Existing Monitoring Wells
- △ New Monitoring Wells
- Soil Boring Drilled By Soils and Materials Engineers March, 1985
- Soil Vapor Sample Location

0.52 TCE Concentration mg/m³
Sample Depth 6 ft.

0 100 150 200 300
Scale in Feet

N

Figure 5
Soil Vapor Concentrations of TCE along 36th Street
 General Motors Corp./CPC Group
 Grand Rapids, Michigan
 June, 1987 20676



Legend

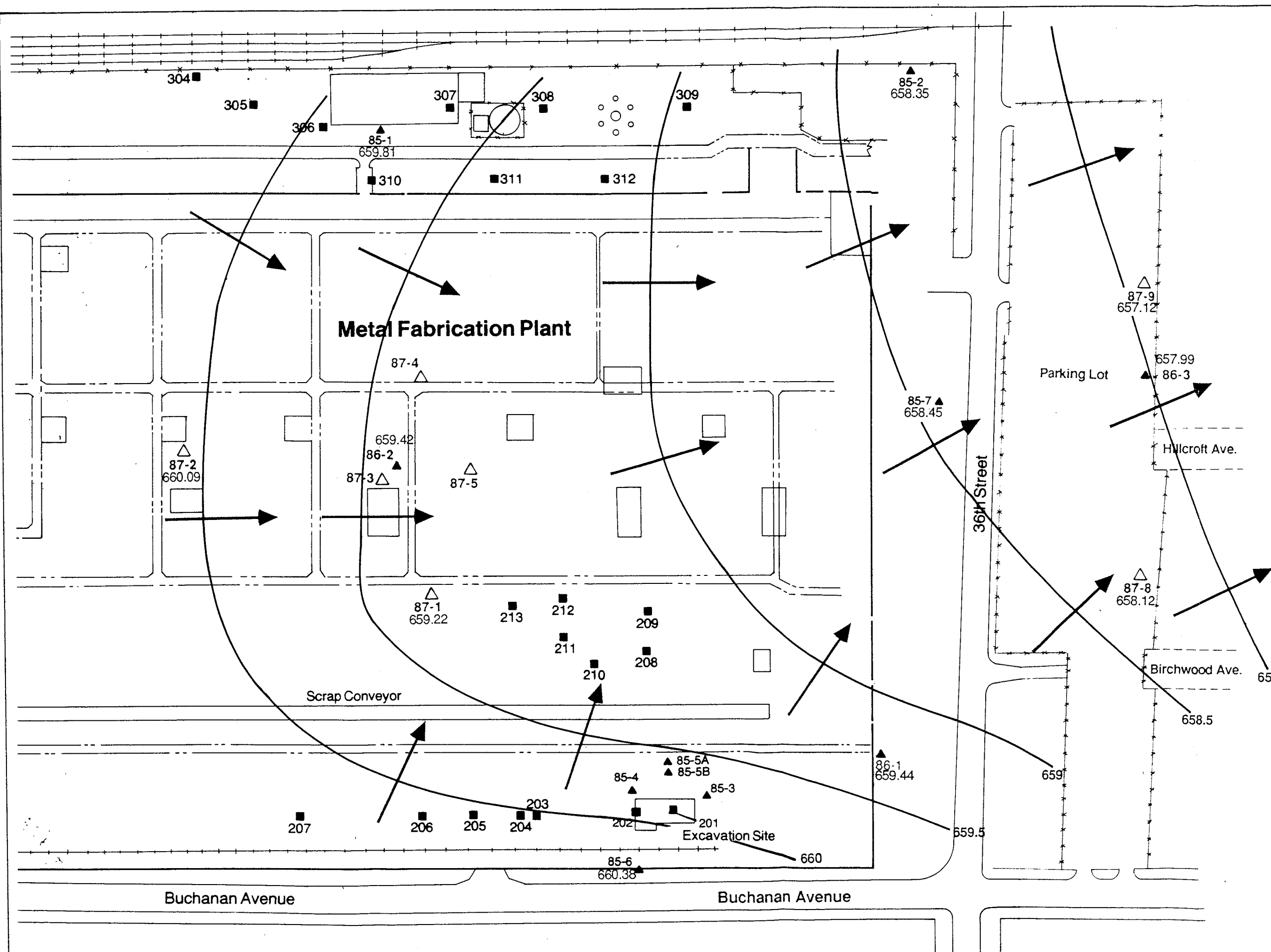
4.4 TCE Concentration ug/l

Cole Drain Sample Locations & TCE Concentrations

General Motor Corp./CPC Group
Grand Rapids, Michigan

June, 1987

20676



Legend

- ▲ Existing Monitoring Wells
- △ New Monitoring Wells
- Soil Boring Drilled By Soils and Materials Engineers March, 1985
- ➔ Direction of Groundwater Flow

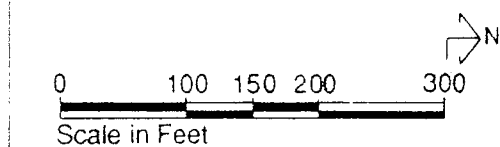


Figure 7

Water Table Elevation and Direction of Groundwater Flow
(data collected 2/24/87)

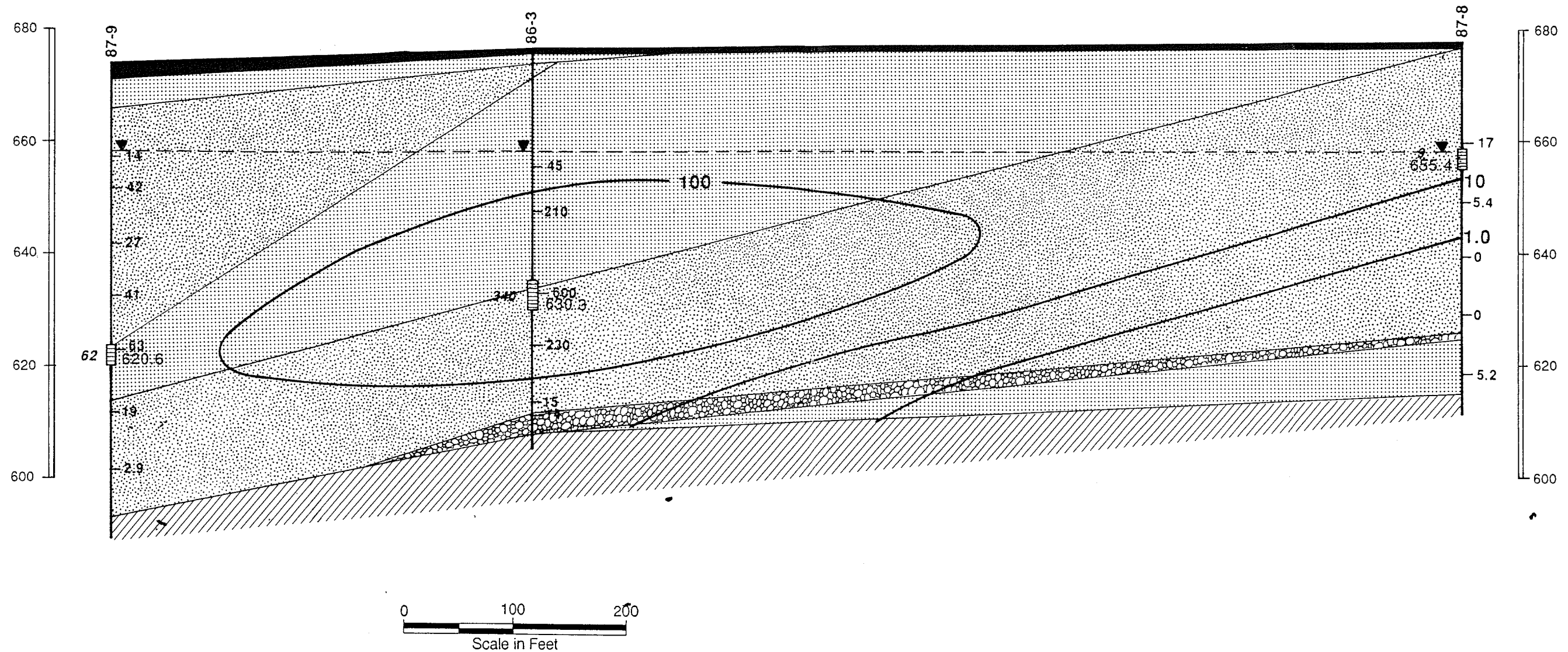
General Motors Corp./CPC Group
Grand Rapids, Michigan

June, 1987

20676

West

East



LEGEND

- Concrete
- Fine Sand
- Sand
- Sand & Gravel
- Gravel
- Silt
- Clay
- Water Level

- Well Screen
- TCE in Permanent Well Concentration ug/l
- TCE in Temp. Well Concentration ug/l
- TCE in Soil Concentration ug/kg

- Soil Vapor Location Number
- TCE in Soil Vapor Concentration mg/m³
- TCE Concentration in Groundwater ug/l
- Horizontal Scale 1" = 40'
- Vertical Scale 1" = 20'
- Elevations NGVD

Figure 8

Geological Cross-Section Z-Z'
TCE Concentrations
in Groundwater

General Motor Corp./CPC Group
Grand Rapids, Michigan

June, 1987

20676

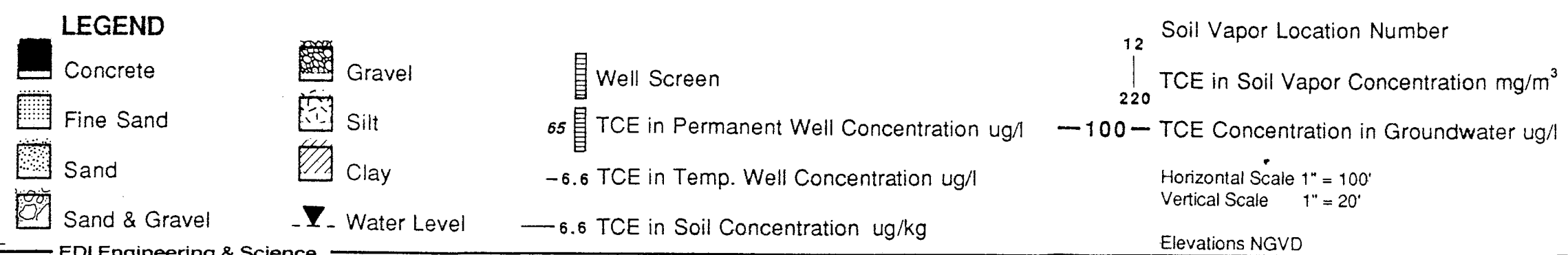
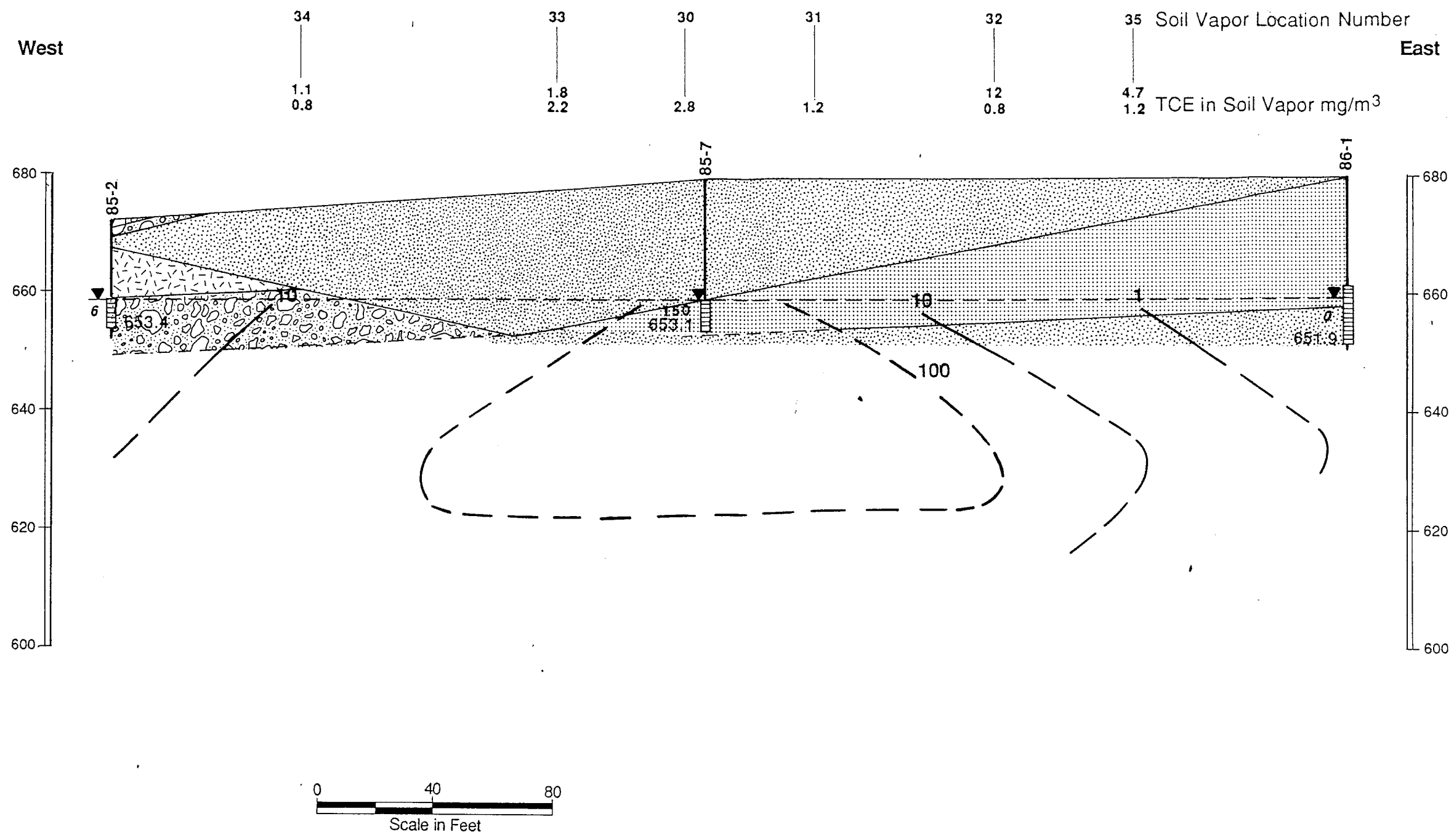


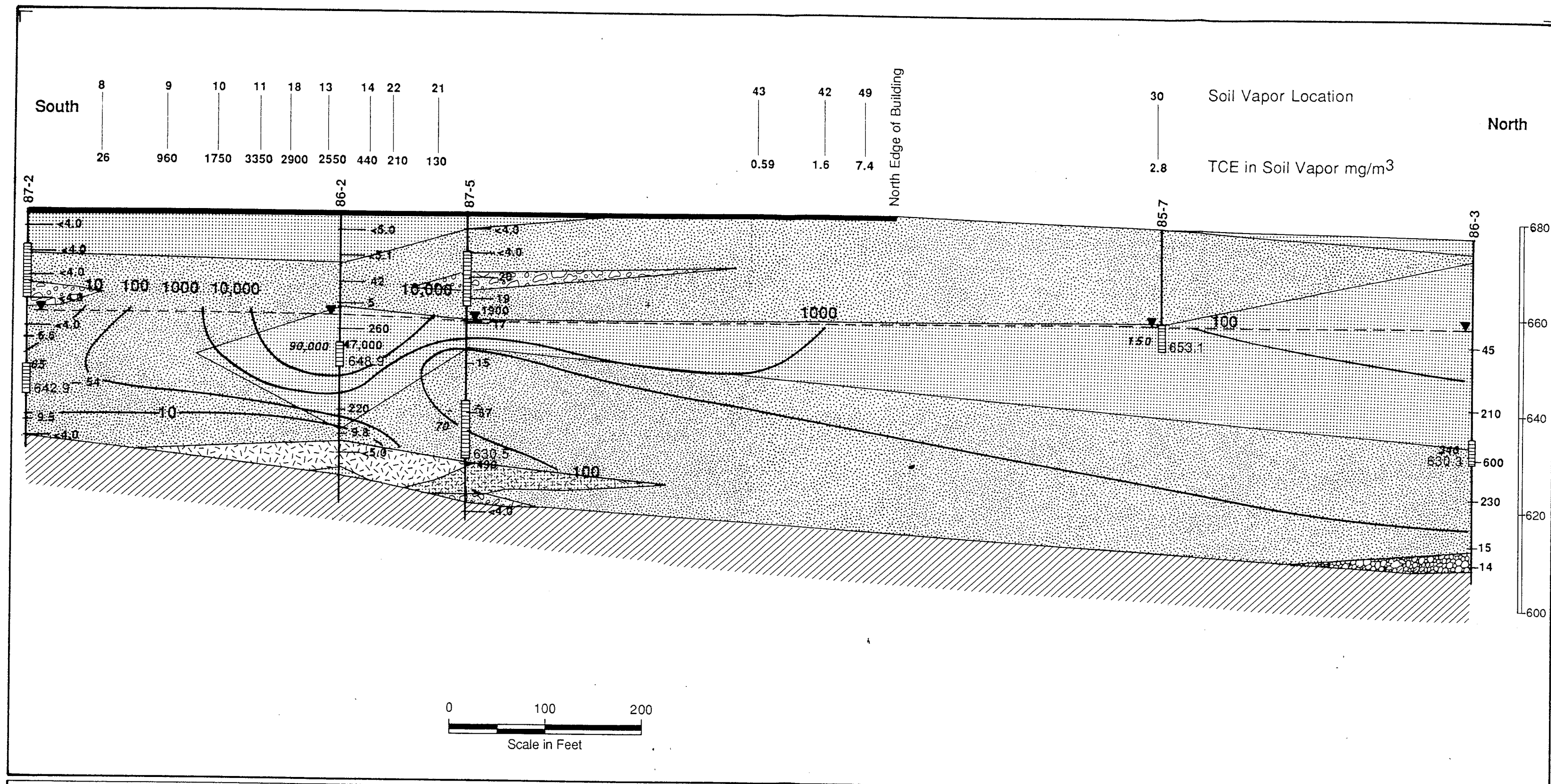
Figure 9

Geological Cross-Section C-C'
TCE Concentration in Soil Vapor,
Bulk Soil and Groundwater

General Motors Corp./CPC Group
Grand Rapids, Michigan

June, 1987

20676



LEGEND

- Concrete
- Fine Sand
- Sand
- Sand & Gravel
- Gravel
- Silt
- Clay
- Water Level

- Well Screen
- TCE in Permanent Well Concentration ug/l
- TCE in Temp. Well Concentration ug/l
- TCE in Soil Concentration ug/kg

- Soil Vapor Location Number
- TCE in Soil Vapor Concentration mg/m³
- TCE Concentration in Groundwater ug/l

Horizontal Scale 1" = 100'

Vertical Scale 1" = 20'

Elevations NGVD

Figure 10

Geological Cross-Section B-B'

TCE Concentrations

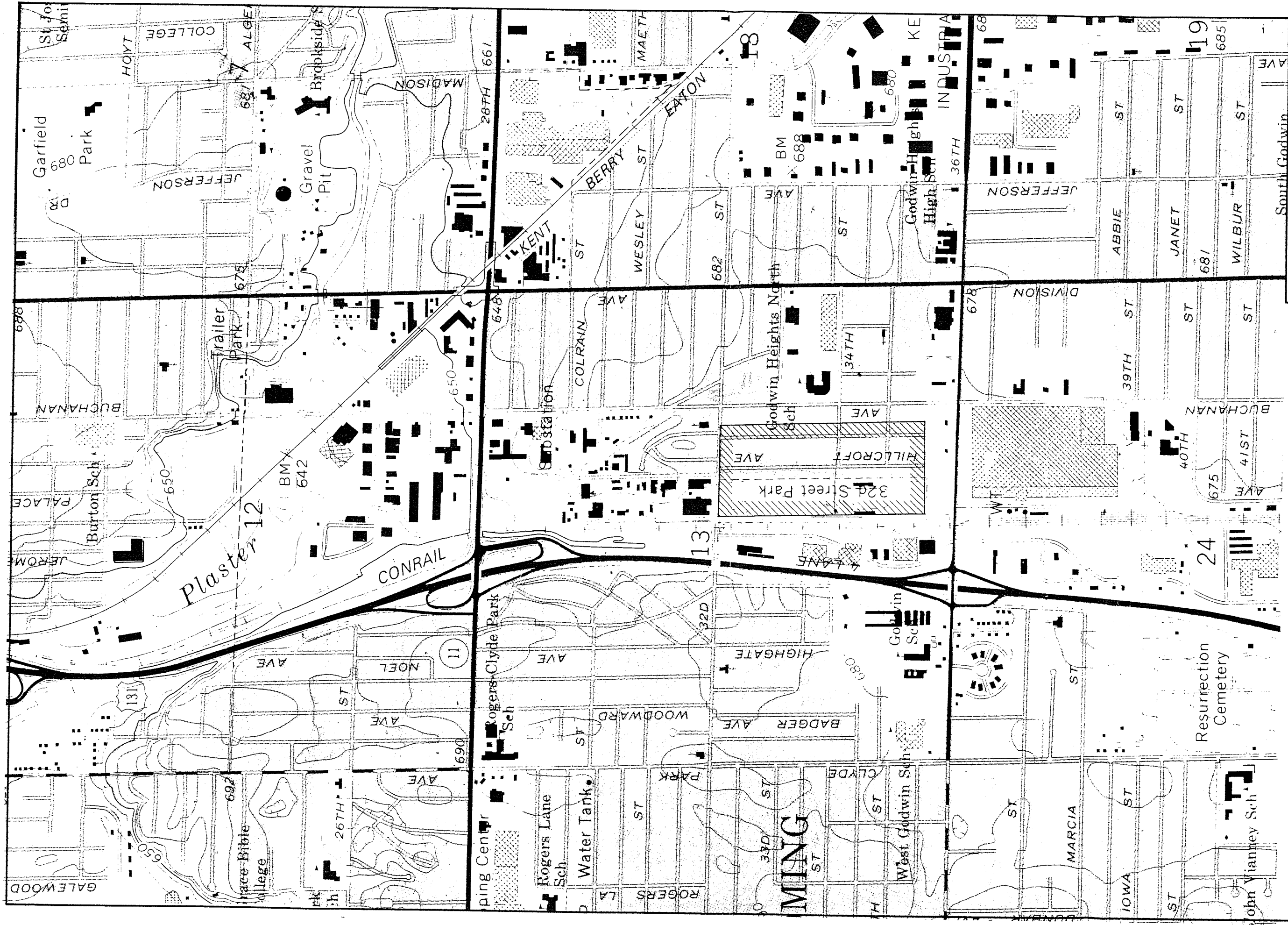
in Soil Vapor, Bulk Soil, Groundwater

General Motors Corp./CPC Group

Grand Rapids, Michigan

June, 1987

20676



Legend
 Soil Vapor Study Area

Figure 11

Proposed Study Area
 Phase IV-C

General Motor Corp./CPC Grand Rapids

June, 1987

20676

APPENDIX A
WELL LOGS

County KENT	Township CITY OF WYOMING	Fraction 1/4 NE 1/4 NW 1/4	Section 18	T 6N	R 12W

Screen: _____
Manufacturer: Johnson
Material: stainless steel
Model: 936
Slot/Gauze: 7 slot **Dia.:** 2"
Length: 3'
Depth Set: 19.7' **To:** 22.7'

[illegible]

Casing

Dia.	Type	Depth Set
<u>2"</u>	<u>Galv.</u>	<u>0.3 To 19.7</u>
		To

Depth	To	Material
0.0	0.4'	Concrete
0.4	18.0'	Nat'l Soils & Bentonite

Elevation
Casing: 677.62'
Ground: 677.9'
Ref. Pt.: NGVD

Remarks (include here, other data available)		DEVELOPMENT:	
Temporary Wells @	18.7 - 19.7'	Bailed	
	28.0 - 31.0'	Rod Pump	45 gal
	38.0 - 41.0'	Rod Pump	45 gal
	48.0 - 51.0'	Rod Pump	75 gal
	58.0 - 61.0'	Rod Pump	30 gal

Water Level: 18.7 Ft. Below: GD
Measured On: _____

Samples Taken w/Teflon Bailer

DEVELOPMENT:

Bailed	
Rod Pump	45 gal
Rod Pump	45 gal
Rod Pump	75 gal
Rod Pump	30 gal

S = Soil / W = Water

Remarks

*Sample
Type:

Sample	Depth (ft)

[illegible]

Well / Boring Log Sheet

County KENT	Township CITY OF WYOMING	Fraction 1/4 NE 1/4 NW 1/4	Section 18	T 6N	R 12W

Contractor: Stearns Drilling

Address: Dutton, MI

Equipment: Acker AD 11

Equipment: 8" HSA

Supervisor: E. Culver

Drilling Method(s)	Depth
8" HSA	7 - 50'

Grouting/Seal

Depth	To	Material
0.0	0.6'	Concrete

Development: Permanent Well
Developed w/Centrifugal
Pump @ 20 gpm

Water Level: 16.0 Ft. Below: GD
Measured On: 1/15/87

Screen:

Manufacturer: Johnson

Material: stainless steel

Model: 936

Slot/Gauze: 7 slot Dia.: 2"

Length: 3'

Depth Set: 50.5' To: 53.5'

Casing

Dia. 2 R Type Galv. Depth Set 0.3 To 50.3
To _____

Elevation

Elevation 673.87'

Casing: _____
Ground: 674.1

Ref. Pt: NGVD

Remarks (include here, other data available)

Temporary Wells @ 16 - 17.5'

22 - 25.0'

32 - 35.0'

41 - 44.0'

Samples Taken w/Teflon Bailers

T.D. = 53.49' T.O.C.

Development:

Bailed 10 gals

Centrifugal Pump 30 gals

Rod Pump 75 gals.

Rod Pump 75 gals

*S = Soil / W = Water

(FEET) (FEET)

Remarks

Thick- ness	Depth To Base

Description

*Sample

Type:

Sample Depth (ft)	Temperature (°C)	Salinity (ppt)	Density (g/cm³)	Specific Gravity
0	15.5	35.2	1.023	1.023
10	14.8	35.1	1.022	1.022
20	14.2	35.0	1.021	1.021
30	13.5	34.9	1.020	1.020
40	12.8	34.8	1.019	1.019
50	12.1	34.7	1.018	1.018
60	11.4	34.6	1.017	1.017
70	10.7	34.5	1.016	1.016
80	10.0	34.4	1.015	1.015
90	9.3	34.3	1.014	1.014
100	8.6	34.2	1.013	1.013

0.25	0.25	ASPHALT	3½	5	S/REP
2.75	3.0	RUBBLE - black, metal, concrete	8½	10	S/REP
2.0	5.0	SAND - fine, black, rubble	13½	15	S/REP
3.0	8.0	SAND - fine, brown	16	17½	W/VOA
8.0	16.0	SAND - fine to medium, brown	22	25	W/VOA
34.0	50.0	SAND - fine to medium, brown, wet	32	35	W/VOA
10.0	60.0	SAND - fine, brown, wet	41	44	W/VOA
21.0	81.0	SAND - medium, brown, wet	52	55	W/VOA
4.0+	85.0	CLAY - gray, sandy, pebbles	62	65	W/VOA
			72	75	W/QVA
			83½	85	W/QVA
		NOTE: Well caps have been stamped with ID # and			
		locked with #506 padlock.			

APPENDIX B
HYDRAULIC CONDUCTIVITY

Methods
Raw Data

IN-SITU HYDRAULIC CONDUCTIVITY TEST

Hydraulic conductivity can be estimated by a variety of techniques. One of the most common techniques is to subject a water well to stress by changing the water level and then monitoring how the water level responds to this stress. The stress is often applied by pumping water from the well. In a slug test (or "in-situ" permeability test), a known quantity of water is injected (or withdrawn) "instantaneously" into the well. After the well has been injected, the water level is monitored as it returns to the original static or pre-stress level.

Of the various methods for stressing the water level in a well, EDI has found that application of a vacuum which draws water into the well is very efficient. After a constant vacuum has been applied and flow into the well has been stabilized, the vacuum can be released creating the effect of an instantaneous slug.

Rapid measurement of the water level decline is mandatory for some test situations. Normally, such measurements are not possible with measuring tapes or electronic sounding devices. However, a pressure transducer instrument linked to a data logger allows accurate measurement and recording of water levels. With this instrumentation, measurements begin upon release of the vacuum. Subsequent measurements are recorded thereafter. The resulting water level records are accurate to ± 0.01 foot.

The degree of well development may affect test results. Wells should be developed to insure that the well screen freely transmits water, but overdevelopment should be avoided.

Methods

An understanding of the subsurface conditions is a prerequisite to proper interpretation of test results. This includes knowledge of the type of geologic materials being tested, the thickness of the test zone, the type of geologic materials overlying and underlying the test zone, and the position of the well screen within the test zone. In addition, the physical dimensions of the well must be known.

The Bouwer and Rice (1976) solution to water level decay after stress is applicable to unconfined conditions, but the authors note that the technique is applicable to confined aquifers if the water enters the aquifer through the upper confining layer through compression or leakage. Their equations are based on a modification of the Thiem equation and assumes:

1. Drawdown of the water table around the well is negligible.
2. Flow above the water table can be ignored.
3. Head losses as water enters the well are negligible.
4. The aquifer is homogeneous and isotropic.

The equations of importance are:

$$K = \frac{r_w^2 \ln(R_e/r_w) \ln(Y_o/Y_t)}{2 l t}$$

and (for partially penetrating wells):

$$\ln(R_e/r_w) = \frac{1.1}{\ln(h/r_w)} + \frac{A + B \ln(D-h)/r_w}{l/r_w}$$

Where:

l = screen length

Y_o, Y_t = water level, static, and at time t

R_e = effective radius over which Y is dissipated
 r_w = horizontal distance from well center to original aquifer
 t = time between measurements
 H = distance between static water level and base of screen
 D = aquifer thickness
 A, B = dimensionless coefficients that are a function of $1/r_w$
and determined graphically

Values of time and water level are selected from the straight-line portion of the plot of water level (log scale) versus time (arithmetic scale). These values plus the values for well construction and aquifer thickness are substituted into the above equations to determine horizontal hydraulic conductivity.

IN SITU PERMEABILITY CALCULATIONS

BOUWER-RICE METHOD

GMC/CPC/MFP

20676

UNITS OF LENGTH: FEET

UNITS OF TIME: SEC

WELL -----	K (LENGTH/TIME) -----	K (GPD/FT^2) -----	DEPTH -----
87-8	0.115E-02	745.98	22.70
87-9	0.181E-02	1167.14	53.50

WELL 87-8

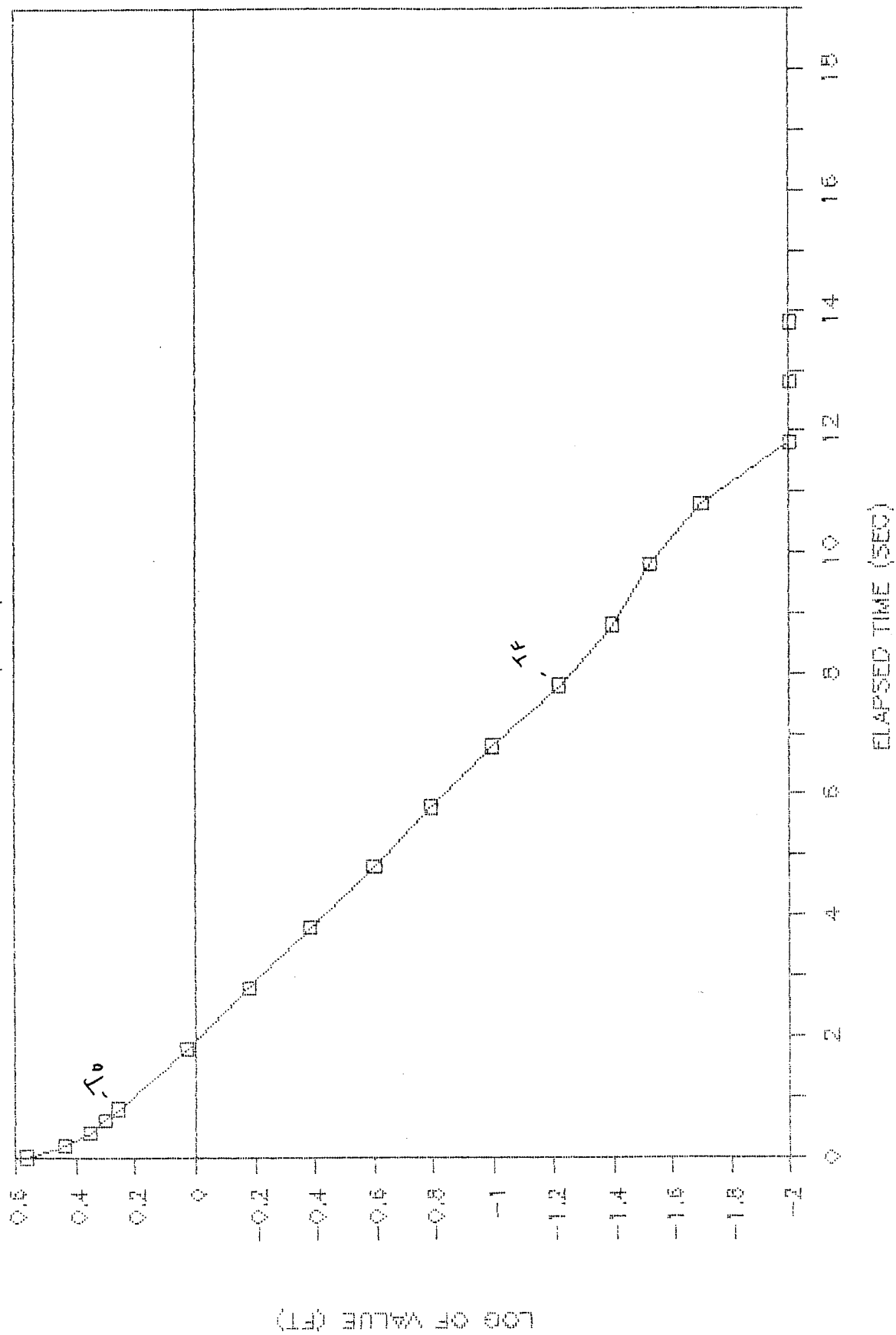
IN-SITU PERMEABILITY TEST

TIME (MIN)	VALUE (FT)	CORRECT TIME (SEC)	LOG OF VALUE (FT)	H/H ₀	LOG OF H/H ₀
0	0				
0.0033	0				
0.0066	0				
0.0099	0				
0.0133	-0.19				
0.0166	-2.77				
0.02	-3.68	0	0.565847	1	0
0.0233	-2.73	0.198	0.436162	0.741847	-0.12968
0.0266	-2.24	0.396	0.350248	0.608695	-0.21559
0.03	-2.01	0.6	0.303196	0.546195	-0.26265
0.0333	-1.81	0.798	0.257678	0.491847	-0.30816
0.05	-1.07	1.8	0.029383	0.290760	-0.53646
0.0666	-0.66	2.796	-0.18045	0.179347	-0.74630
0.0833	-0.41	3.798	-0.38721	0.111413	-0.95306
0.1	-0.25	4.8	-0.60205	0.067934	-1.16790
0.1166	-0.16	5.796	-0.79588	0.043478	-1.36172
0.1333	-0.1	6.798	-1	0.027173	-1.56584
0.15	-0.06	7.8	-1.22184	0.016304	-1.78769
0.1666	-0.04	8.796	-1.39794	0.010869	-1.96378
0.1833	-0.03	9.798	-1.52287	0.008152	-2.08872
0.2	-0.02	10.8	-1.69897	0.005434	-2.26481
0.2166	-0.01	11.796	-2	0.002717	-2.56584
0.2333	-0.01	12.798	-2	0.002717	-2.56584
0.25	-0.01	13.8	-2	0.002717	-2.56584
0.2666	0	14.796	ERR	0	ERR
0.2833	0	15.798	ERR	0	ERR
0.3	0	16.8	ERR	0	ERR
0.3166	0	17.796	ERR	0	ERR
0.3333	0	18.798	ERR	0	ERR
0.4167	0	23.802	ERR	0	ERR
0.5	0	28.8	ERR	0	ERR
0.5833	0	33.798	ERR	0	ERR
0.6667	0	38.802	ERR	0	ERR
0.75	0	43.8	ERR	0	ERR
0.8333	0	48.798	ERR	0	ERR
0.9167	0	53.802	ERR	0	ERR
1	0	58.8	ERR	0	ERR
1.0833	0	63.798	ERR	0	ERR
1.1667	0	68.802	ERR	0	ERR
1.25	0	73.8	ERR	0	ERR
1.3333	0	78.798	ERR	0	ERR
1.4166	0	83.796	ERR	0	ERR

T = 1.3 sec

WELL 87-8

CPC/GMC/MFP



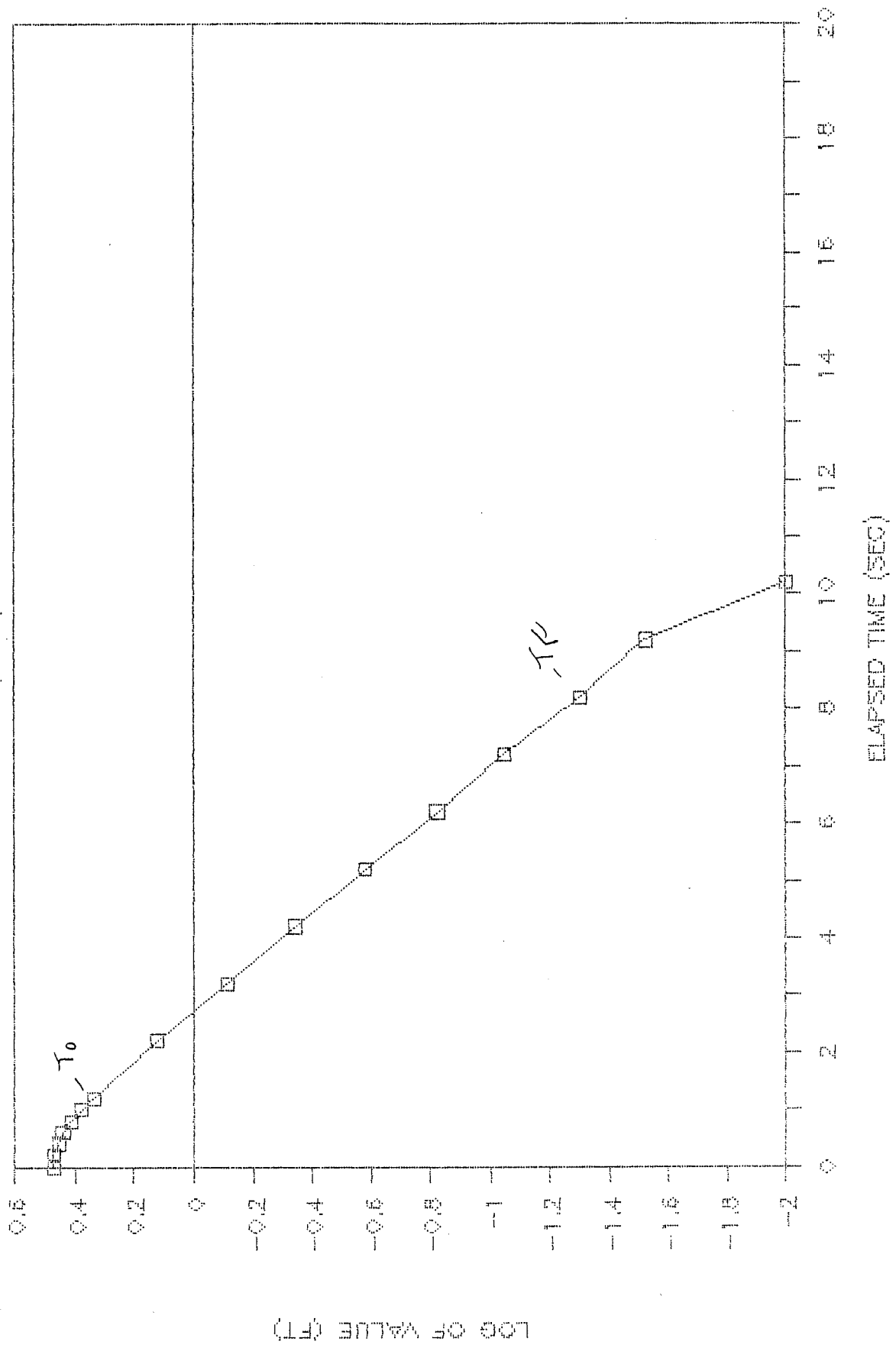
WELL 87-9
IN-SITU PERMEABILITY TEST

TIME (MIN)	VALUE (FT)	CORRECT TIME (SEC)	LOG OF VALUE (FT)	H/H ₀	LOG OF H/H ₀
0	0				
0.0033	0.01				
0.0066	-2.88				
0.0099	-2.82				
0.0133	-2.98	0	0.474216	1	0
0.0166	-2.98	0.198	0.474216	1	0
0.02	-2.87	0.402	0.457881	0.963087	-0.01633
0.0233	-2.77	0.6	0.442479	0.929530	-0.03173
0.0266	-2.59	0.798	0.413299	0.869127	-0.06091
0.03	-2.39	1.002	0.378397	0.802013	-0.09581
0.0333	-2.18	1.2	0.338456	0.731543	-0.13575
0.05	-1.32	2.202	0.120573	0.442953	-0.35364
0.0666	-0.77	3.198	-0.11350	0.258389	-0.58772
0.0833	-0.45	4.2	-0.34678	0.151006	-0.82100
0.1	-0.26	5.202	-0.58502	0.087248	-1.05924
0.1166	-0.15	6.198	-0.82390	0.050335	-1.29812
0.1333	-0.09	7.2	-1.04575	0.030201	-1.51997
0.15	-0.05	8.202	-1.30102	0.016778	-1.77524
0.1666	-0.03	9.198	-1.52287	0.010067	-1.99709
0.1833	-0.01	10.2	-2	0.003355	-2.47421
0.2	0	11.202	ERR	0	ERR
0.2166	0	12.198	ERR	0	ERR
0.2333	0	13.2	ERR	0	ERR
0.25	0	14.202	ERR	0	ERR
0.2666	0	15.198	ERR	0	ERR
0.2833	0	16.2	ERR	0	ERR
0.3	0	17.202	ERR	0	ERR
0.3166	0	18.198	ERR	0	ERR
0.3333	0	19.2	ERR	0	ERR
0.4167	0	24.204	ERR	0	ERR
0.5	0	29.202	ERR	0	ERR
0.5833	0	34.2	ERR	0	ERR
0.6667	0	39.204	ERR	0	ERR
0.75	0	44.202	ERR	0	ERR
0.8333	0.01	49.2	ERR	-0.00335	ERR
0.9167	0	54.204	ERR	0	ERR
1	0.01	59.202	ERR	-0.00335	ERR
1.0833	0.01	64.2	ERR	-0.00335	ERR
1.1667	0	69.204	ERR	0	ERR
1.25	0.01	74.202	ERR	-0.00335	ERR
1.3333	0.01	79.2	ERR	-0.00335	ERR
1.4166	0	84.198	ERR	0	ERR
1.5	0.01	89.202	ERR	-0.00335	ERR
1.5833	0	94.2	ERR	0	ERR
1.6667	0	99.204	ERR	0	ERR
1.75	0.01	104.202	ERR	-0.00335	ERR
1.8333	0	109.2	ERR	0	ERR
1.9167	0.01	114.204	ERR	-0.00335	ERR
2	0.01	119.202	ERR	-0.00335	ERR

$T = 2.5$ sec

WELL 87-9

CPC/GMC/MFP



APPENDIX C
COLE DRAIN TCE
TEMPORARY WELL TCE
PERMANENT WELL ANALYSES

ANALYTICAL SERVICES
EDI LABORATORY REPORT

CLIENT: CPC-GR METAL FAB PLANT
PROJECT NO.: 25615
LOCATION: COLE DRAIN
SAMPLED BY: DIRK DOORENBOS
DESCRIPTION: WASTEWATER ANALYSIS

DATE SAMPLED: 01/07/87 TIME: PM
DATE RECEIVED: 01/07/87 TIME: 4:40 PM
DATE COMPLETED: 010787
SCHEDULED COMPLETION: 01/21/87
ANALYST: PT
QUALITY CONTROL REVIEW BY: JE
WORKSHEET NO: 1

	C.D. #1	C.D. #2	C.D. #3	C.D. #4	DETECTION LIMIT	UNITS
EDI SAMPLE NO:	70424	70425	70426	70427		
TRICHLOROETHYLENE	4.4	3.6	4.8	2.7	1.0	ug/l

ANALYSIS BY "METHODS FOR ORGANIC CHEMICAL ANALYSIS OF
MUNICIPAL AND INDUSTRIAL WASTEWATER", USEPA-600/4-82-057.



ANALYTICAL SERVICES
PRIORITY POLLUTANT ANALYSIS

VOLATILE FRACTION

CLIENT: GM CPC 36TH ST.
PROJECT NO.: 25554
SAMPLE: RETENTION POND OUTLET

DATE SAMPLED: 06-15-1987 TIME: 09:10 AM
DATE RECEIVED: 06-15-1987 TIME: 11:40 AM
TEST DATE: 06-16-1987

SAMPLE NO. 76551

COMPOUND	RESULT
	(mg/L)
Benzene	< 0.001
Bromodichloromethane	< 0.002
Bromoform	< 0.015
Bromomethane	< 0.010
Carbon Tetrachloride	< 0.004
Chlorobenzene	< 0.001
Chlorodibromomethane	< 0.003
Chloroethane	< 0.010
2-Chloroethyl Vinyl Ether	< 0.010
Chloroform	0.003
Chloromethane	< 0.010
1,1-Dichloroethane	< 0.002
1,2-Dichloroethane	< 0.002
1,1-Dichloroethylene	< 0.002
trans-1,2-Dichloroethylene	< 0.002
1,2-Dichloropropane	< 0.003
cis-1,3-Dichloropropylene	< 0.004
trans-1,3-Dichloropropylene	< 0.004
Ethyl Benzene	< 0.001
Methylene Chloride	< 0.002
1,1,2,2-Tetrachloroethane	< 0.002
Tetrachloroethylene	< 0.002
Toluene	< 0.001
1,1,1-Trichloroethane	0.004
1,1,2-Trichloroethane	< 0.003
Trichloroethylene	0.002
Trichlorofluoromethane	< 0.003
Vinyl Chloride	< 0.010

** A less than (<) sign indicates that the compound was nondetectable at the specified detection limit.



ANALYTICAL SERVICES
PRIORITY POLLUTANT ANALYSIS

VOLATILE FRACTION

CLIENT: GM CPC 36TH ST.
PROJECT NO.: 25554
SAMPLE: COLE DRAIN UPSTREAM

DATE SAMPLED: 06-15-1987 TIME: 09:15 AM
DATE RECEIVED: 06-15-1987 TIME: 11:40 AM
TEST DATE: 06-16-1987

SAMPLE NO. 76552

COMPOUND	RESULT (mg/L)
Benzene	< 0.001
Bromodichloromethane	< 0.002
Bromoform	< 0.015
Bromomethane	< 0.010
Carbon Tetrachloride	< 0.004
Chlorobenzene	< 0.001
Chlorodibromomethane	< 0.003
Chloroethane	< 0.010
2-Chloroethyl Vinyl Ether	< 0.010
Chloroform	< 0.001
Chloromethane	< 0.010
1,1-Dichloroethane	< 0.002
1,2-Dichloroethane	< 0.002
1,1-Dichloroethylene	< 0.002
trans-1,2-Dichloroethylene	< 0.002
1,2-Dichloropropane	< 0.003
cis-1,3-Dichloropropylene	< 0.004
trans-1,3-Dichloropropylene	< 0.004
Ethyl Benzene	< 0.001
Methylene Chloride	< 0.002
1,1,2,2-Tetrachloroethane	< 0.002
Tetrachloroethylene	0.011
Toluene	< 0.001
1,1,1-Trichloroethane	< 0.002
1,1,2-Trichloroethane	< 0.003
Trichloroethylene	0.004
Trichlorofluoromethane	< 0.003
Vinyl Chloride	< 0.010

** A less than (<) sign indicates that the compound was nondetectable at the specified detection limit.



ANALYTICAL SERVICES
PRIORITY POLLUTANT ANALYSIS

VOLATILE FRACTION

CLIENT: GM CPC 36TH ST.
PROJECT NO.: 25554
SAMPLE: RETENTION POND INLET

DATE SAMPLED: 06-15-1987 TIME: 08:55 AM
DATE RECEIVED: 06-15-1987 TIME: 11:40 AM
TEST DATE: 06-16-1987

SAMPLE NO. 76553

COMPOUND	RESULT (mg/L)
Benzene	< 0.001
Bromodichloromethane	0.003
Bromoform	< 0.015
Bromomethane	< 0.010
Carbon Tetrachloride	< 0.004
Chlorobenzene	< 0.001
Chlorodibromomethane	< 0.003
Chloroethane	< 0.010
2-Chloroethyl Vinyl Ether	< 0.010
Chloroform	0.005
Chloromethane	< 0.010
1,1-Dichloroethane	< 0.002
1,2-Dichloroethane	< 0.002
1,1-Dichloroethylene	< 0.002
trans-1,2-Dichloroethylene	< 0.002
1,2-Dichloropropane	< 0.003
cis-1,3-Dichloropropylene	< 0.004
trans-1,3-Dichloropropylene	< 0.004
Ethyl Benzene	< 0.001
Methylene Chloride	< 0.002
1,1,2,2-Tetrachloroethane	< 0.002
Tetrachloroethylene	< 0.002
Toluene	< 0.001
1,1,1-Trichloroethane	0.008
1,1,2-Trichloroethane	< 0.003
Trichloroethylene	0.002
Trichlorofluoromethane	< 0.003
Vinyl Chloride	< 0.010

** A less than (<) sign indicates that the compound was nondetectable at the specified detection limit.



TEMPORARY WELL TCE

ANALYTICAL SERVICES
EDI LABORATORY REPORT

CLIENT: CPC-GR METAL FAB PLANT
PROJECT NO.: 25615
LOCATION: 36th ST. PLANT
SAMPLED BY: ELC
DESCRIPTION: PHASE III HYDROGEO

DATE SAMPLED: 01/13/87 TIME:
DATE RECEIVED: 01/13/87 TIME: 6:45 PM
DATE COMPLETED: 01/13/87
SCHEDULED COMPLETION: 01/27/87
ANALYST: PT
QUALITY CONTROL REVIEW BY: JE
WORKSHEET NO: 22

DETECTION UNITS
LIMIT

	87-8 18.7-19.7'	87-8 28-31'	87-8 38-41'	87-8 48-51'		
EDI SAMPLE NO:	70536	70537	70538	70583		
TRICHLOROETHYLENE	17	5.4	<1.0	<1.0	1.0	ug/l

ANALYSIS BY "METHODS FOR ORGANIC CHEMICAL ANALYSIS OF
MUNICIPAL AND INDUSTRIAL WASTEWATER", USEPA-600/4-82-057.



ANALYTICAL SERVICES
EDI LABORATORY REPORT

CLIENT: CPC-GR METAL FAB PLANT
PROJECT NO.: 25615
LOCATION: 36th ST. PLANT
SAMPLED BY: ELC
DESCRIPTION: PHASE III HYDROGEO

DATE SAMPLED: 01/13/87 TIME:
DATE RECEIVED: 01/13/87 TIME: 6:45 PM
DATE COMPLETED: 011387
SCHEDULED COMPLETION: 01/27/87
ANALYST: PT
QUALITY CONTROL REVIEW BY: JE
WORKSHEET NO: 23

DETECTION UNITS
LIMIT

87-8
58-61'

EDI SAMPLE NO: 70584

TRICHLOROETHYLENE	5.2	1.0	ug/l

ANALYSIS BY "METHODS FOR ORGANIC CHEMICAL ANALYSIS OF
MUNICIPAL AND INDUSTRIAL WASTEWATER", USEPA-600/4-82-057.



ANALYTICAL SERVICES
EDI LABORATORY REPORT

CLIENT: CPC-GR METAL FAB PLANT
PROJECT NO.: 25615
LOCATION: 36th ST. PLANT
SAMPLED BY: ELC
DESCRIPTION: PHASE III HYDROGEO

DATE SAMPLED: 01/14/87 TIME:
DATE RECEIVED: 01/14/87 TIME: 1:15 PM
DATE COMPLETED: 011487
SCHEDULED COMPLETION: 01/27/87
ANALYST: PT
QUALITY CONTROL REVIEW BY: JE
WORKSHEET NO: 24

	87-9 16-17.5'	87-9 22-25'	87-9 32-35'	87-9 41-44'	DETECTION LIMIT	UNITS
EDI SAMPLE NO:	70564	70565	70566	70567		
TRICHLOROETHYLENE	14	42	27	41	1.0	ug/l

ANALYSIS BY "METHODS FOR ORGANIC CHEMICAL ANALYSIS OF
MUNICIPAL AND INDUSTRIAL WASTEWATER", USEPA-600/4-82-057.



**ANALYTICAL SERVICES
EDI LABORATORY REPORT**

CLIENT: CPC-GR METAL FAB PLANT
PROJECT NO.: 25615
LOCATION: 36th ST. PLANT
SAMPLED BY: ELC
DESCRIPTION: PHASE III HYDROGEO

DATE SAMPLED: 01/15/87 TIME:
DATE RECEIVED: 01/15/87 TIME: 11:20 AM
DATE COMPLETED: 01/15/87
SCHEDULED COMPLETION: 01/30/87
ANALYST: PT
QUALITY CONTROL REVIEW BY: JE
WORKSHEET NO: 25

DETECTION UNITS
LIMIT

	87-9 52-55'	87-9 62-65'	87-9 72-75'		
EDI SAMPLE NO:	70590	70591	70592		
TRICHLOROETHYLENE	63	19	2.9	1.0	ug/l

ANALYSIS BY "METHODS FOR ORGANIC CHEMICAL ANALYSIS OF
MUNICIPAL AND INDUSTRIAL WASTEWATER", USEPA-600/4-82-057.



ANALYTICAL SERVICES
EDI LABORATORY REPORT

CLIENT: CPC-GR METAL FAB PLANT
PROJECT NO.: 25615
LOCATION: 36th ST. PLANT
SAMPLED BY: ELC
DESCRIPTION: PHASE III HYDROGEO

DATE SAMPLED: 01/13/87 TIME: PM
DATE RECEIVED: 01/13/87 TIME: 6:45 PM
DATE COMPLETED: 011387
SCHEDULED COMPLETION: 01/27/87
ANALYST: PT
QUALITY CONTROL REVIEW BY: JE
WORKSHEET NO: 36

DETECTION UNITS
LIMIT

87-8
65-66.5'

EDI SAMPLE NO: 70585

TRICHLOROETHYLENE <4.0 4.0 ug/kg

ANALYSIS BY "TEST METHODS FOR EVALUATING A SOLID WASTE
PHYSICAL/CHEMICAL METHODS", USEPA SW-846 SECOND EDITION,
JULY, 1982.



ANALYTICAL SERVICES
EDI LABORATORY REPORT

CLIENT: CPC-GR METAL FAB PLANT
PROJECT NO.: 25615
LOCATION: 36th ST. PLANT
SAMPLED BY: ELC
DESCRIPTION: PHASE II HYDROGEO

DATE SAMPLED: 01/15/87 TIME: 12:00
DATE RECEIVED: 01/16/87 TIME: 7:00 AM
DATE COMPLETED: 01/19/87
SCHEDULED COMPLETION: 01/30/87
ANALYST: PT
QUALITY CONTROL REVIEW BY: JE
WORKSHEET NO: 28

DETECTION UNITS
LIMIT

87-9
83.5-85'

EDI SAMPLE NO: 70609

TRICHLOROETHYLENE <4.0 4.0 ug/kg

ANALYSIS BY "TEST METHODS FOR EVALUATING A SOLID WASTE
PHYSICAL/CHEMICAL METHODS", USEPA SW-846 SECOND EDITION,
JULY, 1982.



PERMANENT WELL ANALYSES

**Volatile Fraction
Base Neutral Fraction
Acid Fraction
Iron, Hardness, pH**

ANALYTICAL SERVICES
PRIORITY POLLUTANT ANALYSIS

TABLE 1
VOLATILE FRACTION

CLIENT: CPC-GR METAL FAB PLANT
PROJECT NO.: 25615
SAMPLE: 85-7

DATE SAMPLED: 01/21/87 TIME: 6:00 PM
DATE RECEIVED: 01/26/87 TIME: 11:00 AM
DATE COMPLETED: 012687

SAMPLE NO. 70821

COMPOUND	RESULT (mg/l)	D.L.	COMPOUND	RESULT (mg/l)	D.L.
BENZENE	*	0.001	TRANS-1,2-DICHLOROETHYLENE	0.004	0.002
BROMODICHLOROMETHANE	*	0.002	1,2-DICHLOROPROPANE	*	0.003
BROMOFORM	*	0.015	CIS-1,3-DICHLOROPROPYLENE	*	0.004
BROMOMETHANE	*	0.010	TRANS-1,3-DICHLOROPROPYLENE	*	0.004
CARBON TETRACHLORIDE	*	0.004	ETHYL BENZENE	*	0.001
CHLOROBENZENE	*	0.001	METHYLENE CHLORIDE	*	0.002
CHLORODIBROMOMETHANE	*	0.003	1,1,2,2-TETRACHLOROETHANE	*	0.002
CHLOROETHANE	*	0.010	TETRACHLOROETHYLENE	*	0.002
2-CHLOROETHYL VINYL ETHER	*	0.010	TOLUENE	*	0.001
CHLOROFORM	*	0.001	1,1,1-TRICHLOROETHANE	*	0.002
CHLOROMETHANE	*	0.010	1,1,2-TRICHLOROETHANE	*	0.003
1,1-DICHLOROETHANE	*	0.002	TRICHLOROETHYLENE	0.15	0.002
1,2-DICHLOROETHANE	*	0.002	TRICHLOROFLUOROMETHANE	*	0.003
1,1-DICHLOROETHYLENE	*	0.002	VINYL CHLORIDE	*	0.010

*COMPOUND NOT PRESENT AT DETECTION LIMIT

ANALYTICAL SERVICES
PRIORITY POLLUTANT ANALYSIS

TABLE 1
VOLATILE FRACTION

CLIENT: CPC-GR METAL FAB PLANT
PROJECT NO.: 25615
SAMPLE: 85-7

DATE SAMPLED: 01/21/87 TIME: 6:00 PM
DATE RECEIVED: 01/26/87 TIME: 11:00 AM
DATE COMPLETED: 012687

SAMPLE NO. 70821

COMPOUND	RESULT (mg/l)	D.L.
XYLENE	<0.010	0.010



ANALYTICAL SERVICES
PRIORITY POLLUTANT ANALYSIS

TABLE 1
VOLATILE FRACTION

CLIENT: CPC-GR METAL FAB PLANT
PROJECT NO.: 25615
SAMPLE: 86-3

DATE SAMPLED: 01/21/87 TIME: 4:40 PM
DATE RECEIVED: 01/26/87 TIME: 11:00 AM
DATE COMPLETED: 012787

SAMPLE NO. 70824

COMPOUND	RESULT (mg/l)	D.L.	COMPOUND	RESULT (mg/l)	D.L.
BENZENE	*	0.001	TRANS-1,2-DICHLOROETHYLENE	0.004	0.002
BROMODICHLOROMETHANE	*	0.002	1,2-DICHLOROPROPANE	*	0.003
BROMOFORM	*	0.015	CIS-1,3-DICHLOROPROPYLENE	*	0.004
BROMOMETHANE	*	0.010	TRANS-1,3-DICHLOROPROPYLENE	*	0.004
CARBON TETRACHLORIDE	*	0.004	ETHYL BENZENE	*	0.001
CHLOROBENZENE	*	0.001	METHYLENE CHLORIDE	*	0.002
CHLORODIBROMOMETHANE	*	0.003	1,1,2,2-TETRACHLOROETHANE	*	0.002
CHLOROETHANE	*	0.010	TETRACHLOROETHYLENE	*	0.002
2-CHLOROETHYL VINYL ETHER	*	0.010	TOLUENE	*	0.001
CHLOROFORM	*	0.001	1,1,1-TRICHLOROETHANE	0.006	0.002
CHLOROMETHANE	*	0.010	1,1,2-TRICHLOROETHANE	*	0.003
1,1-DICHLOROETHANE	*	0.002	TRICHLOROETHYLENE	0.34	0.002
1,2-DICHLOROETHANE	*	0.002	TRICHLOROFLUOROMETHANE	*	0.003
1,1-DICHLOROETHYLENE	*	0.002	VINYL CHLORIDE	*	0.010

*COMPOUND NOT PRESENT AT DETECTION LIMIT



ANALYTICAL SERVICES
PRIORITY POLLUTANT ANALYSIS

TABLE 1
VOLATILE FRACTION

CLIENT: CPC-GR METAL FAB PLANT
PROJECT NO.: 25615
SAMPLE: 87-8

DATE SAMPLED: 01/21/87 TIME: 2:15 PM
DATE RECEIVED: 01/26/87 TIME: 11:00 AM
DATE COMPLETED: 012787

SAMPLE NO. 70829

COMPOUND	RESULT	D.L.	COMPOUND	RESULT	D.L.
	(mg/l)			(mg/l)	
BENZENE	*	0.001	TRANS-1,2-DICHLOROETHYLENE	*	0.002
BROMODICHLOROMETHANE	*	0.002	1,2-DICHLOROPROPANE	*	0.003
BROMOFORM	*	0.015	CIS-1,3-DICHLOROPROPYLENE	*	0.004
BROMOMETHANE	*	0.010	TRANS-1,3-DICHLOROPROPYLENE	*	0.004
CARBON TETRACHLORIDE	*	0.004	ETHYL BENZENE	*	0.001
CHLOROBENZENE	*	0.001	METHYLENE CHLORIDE	*	0.002
CHLORODIBROMOMETHANE	*	0.003	1,1,2,2-TETRACHLOROETHANE	*	0.002
CHLOROETHANE	*	0.010	TETRACHLOROETHYLENE	*	0.002
2-CHLOROETHYL VINYL ETHER	*	0.010	TOLUENE	*	0.001
CHLOROFORM	*	0.001	1,1,1-TRICHLOROETHANE	*	0.002
CHLOROMETHANE	*	0.010	1,1,2-TRICHLOROETHANE	*	0.003
1,1-DICHLOROETHANE	*	0.002	TRICHLOROETHYLENE	0.009	0.002
1,2-DICHLOROETHANE	*	0.002	TRICHLOROFLUOROMETHANE	*	0.003
1,1-DICHLOROETHYLENE	*	0.002	VINYL CHLORIDE	*	0.010

*COMPOUND NOT PRESENT AT DETECTION LIMIT



ANALYTICAL SERVICES
PRIORITY POLLUTANT ANALYSIS

TABLE 1
VOLATILE FRACTION

CLIENT: CPC-GR METAL FAB PLANT
PROJECT NO.: 25615
SAMPLE: 87-8

DATE SAMPLED: 01/21/87 TIME: 2:15 PM
DATE RECEIVED: 01/26/87 TIME: 11:00 AM
DATE COMPLETED: 012787

SAMPLE NO. 70829

COMPOUND	RESULT (mg/l)	D.L.
XYLENE	<0.010	0.010



ANALYTICAL SERVICES
PRIORITY POLLUTANT ANALYSIS

TABLE 1
VOLATILE FRACTION

CLIENT: CPC-GR METAL FAB PLANT
PROJECT NO.: 25615
SAMPLE: 87-9

DATE SAMPLED: 01/21/87 TIME: 3:30 PM
DATE RECEIVED: 01/26/87 TIME: 11:00 AM
DATE COMPLETED: 012787

SAMPLE NO. 70830

COMPOUND	RESULT	D.L.	COMPOUND	RESULT	D.L.
	(mg/l)			(mg/l)	
BENZENE	*	0.001	TRANS-1,2-DICHLOROETHYLENE	*	0.002
BROMODICHLOROMETHANE	*	0.002	1,2-DICHLOROPROPANE	*	0.003
BROMOFORM	*	0.015	CIS-1,3-DICHLOROPROPYLENE	*	0.004
BROMOMETHANE	*	0.010	TRANS-1,3-DICHLOROPROPYLENE	*	0.004
CARBON TETRACHLORIDE	*	0.004	ETHYL BENZENE	*	0.001
CHLOROBENZENE	*	0.001	METHYLENE CHLORIDE	*	0.002
CHLORODIBROMOMETHANE	*	0.003	1,1,2,2-TETRACHLOROETHANE	*	0.002
CHLOROETHANE	*	0.010	TETRACHLOROETHYLENE	*	0.002
2-CHLOROETHYL VINYL ETHER	*	0.010	TOLUENE	*	0.001
CHLOROFORM	*	0.001	1,1,1-TRICHLOROETHANE	*	0.002
CHLOROMETHANE	*	0.010	1,1,2-TRICHLOROETHANE	*	0.003
1,1-DICHLOROETHANE	*	0.002	TRICHLOROETHYLENE	0.062	0.002
1,2-DICHLOROETHANE	*	0.002	TRICHLOROFLUOROMETHANE	*	0.003
1,1-DICHLOROETHYLENE	*	0.002	VINYL CHLORIDE	*	0.010

*COMPOUND NOT PRESENT AT DETECTION LIMIT



ANALYTICAL SERVICES
PRIORITY POLLUTANT ANALYSIS

TABLE 1
VOLATILE FRACTION

CLIENT: CPC-GR METAL FAB PLANT
PROJECT NO.: 25615
SAMPLE: 87-9

DATE SAMPLED: 01/21/87 TIME: 3:30 PM
DATE RECEIVED: 01/26/87 TIME: 11:00 AM
DATE COMPLETED: 012787

SAMPLE NO. 70830

COMPOUND	RESULT (mg/l)	D.L.
XYLENE	<0.010	0.010



ANALYTICAL SERVICES
PRIORITY POLLUTANT ANALYSIS

TABLE 2
BASE-NEUTRAL FRACTION

CLIENT: CPC-GR METAL FAB PLANT
PROJECT NO.: 25615
SAMPLE: 85-7

DATE SAMPLED: 01/21/87 TIME: 6:00 PM
DATE RECEIVED: 01/26/87 TIME: 11:00 AM
DATE COMPLETED: 013087

SAMPLE NO. 70821

COMPOUND	RESULT (mg/l)	D.L.	COMPOUND	RESULT (mg/l)	D.L.
ACENAPHTHENE	*	0.002	3,3'-DICHLOROBENZIDINE	*	0.020
ACENAPHTHYLENE	*	0.001	DIETHYL PHTHALATE	*	0.002
ANTHRACENE	*	0.001	DIMETHYL PHTHALATE	*	0.002
BENZIDINE	*	0.050	2,4-DINITROTOLUENE	*	0.010
BENZO (A) ANTHRACENE	*	0.005	2,6-DINITROTOLUENE	*	0.009
BENZO (K) FLUORANTHENE	*	0.005	DI-N-OCTYLPHTHALATE	*	0.002
BENZO (A) PYRENE	*	0.005	1,2-DIPHENYLHYDRAZINE	*	0.001
BENZO (G,H,I) PERYLENE	*	0.010	FLUORANTHENE	*	0.001
BIS-(2-CHLOROETHYL) ETHER	*	0.004	FLUORENE	*	0.002
BIS(2-CHLOROETHOXY) METHANE	*	0.004	HEXACHLOROBENZENE	*	0.005
BIS(2-CHLOROISOPROPYL)- ETHER	*	0.001	HEXACHLOROBUTADIENE	*	0.005
BIS-(2-ETHYL HEXYL)- PHTHALATE	0.068	0.002	HEXACHLOROETHANE	*	0.007
4-BROMOPHENYL PHENYL ETHER	*	0.007	HEXACHLOROCYCLOPENTADIENE	*	0.005
BUTYL BENZYL PHTHALATE	*	0.003	INDENO (1,2,3-CD) PYRENE	*	0.010
2-CHLORONAPHTHALENE	*	0.002	ISOPHORONE	*	0.002
4-CHLOROPHENYL PHENYL ETHER	*	0.003	NAPHTHALENE	*	0.001
CHRYSENE	*	0.005	NITROBENZENE	*	0.004
DIBENZO (A,H) ANTHRACENE	*	0.010	N-NITROSODI-N-PROPYLAMINE	*	0.004
DI-N-BUTYL PHTHALATE	*	0.001	N-NITROSODIPHENYLAMINE	*	0.003
1,2-DICHLOROBENZENE	*	0.003	PHENANTHRENE	*	0.001
1,3-DICHLOROBENZENE	*	0.003	PYRENE	*	0.001
1,4-DICHLOROBENZENE	*	0.003	1,2,4-TRICHLOROBENZENE	*	0.003

*COMPOUND NOT PRESENT AT DETECTION LIMIT

**ANALYTICAL SERVICES
PRIORITY POLLUTANT ANALYSIS**

**TABLE 2
BASE-NEUTRAL FRACTION**

CLIENT: CPC-GR METAL FAB PLANT
PROJECT NO.: 25615
SAMPLE: 86-3

DATE SAMPLED: 01/23/87 TIME: 3:15 PM
DATE RECEIVED: 01/26/87 TIME: 11:00 AM
DATE COMPLETED: 013087

SAMPLE NO. 70824

COMPOUND	RESULT (mg/l)	D.L.	COMPOUND	RESULT (mg/l)	D.L.
ACENAPHTHENE	*	0.002	3,3'-DICHLOROBENZIDINE	*	0.020
ACENAPHTHYLENE	*	0.001	DIETHYL PHTHALATE	*	0.002
ANTHRACENE	*	0.001	DIMETHYL PHTHALATE	*	0.002
BENZIDINE	*	0.050	2,4-DINITROTOLUENE	*	0.010
BENZO (A) ANTHRACENE	*	0.005	2,6-DINITROTOLUENE	*	0.009
BENZO (K) FLUORANTHENE	*	0.005	DI-N-OCTYLPHTHALATE	*	0.002
BENZO (A) PYRENE	*	0.005	1,2-DIPHENYLHYDRAZINE	*	0.001
BENZO (G,H,I) PERYLENE	*	0.010	FLUORANTHENE	*	0.001
BIS-(2-CHLOROETHYL) ETHER	*	0.004	FLUORENE	*	0.002
BIS(2-CHLOROETHOXY) METHANE	*	0.004	HEXACHLOROBENZENE	*	0.005
BIS(2-CHLOROISOPROPYL)- ETHER	*	0.001	HEXACHLOROBUTADIENE	*	0.005
BIS-(2-ETHYL HEXYL)- PHTHALATE	*	0.002	HEXACHLOROETHANE	*	0.007
4-BROMOPHENYL PHENYL ETHER	*	0.007	HEXACHLOROCYCLOPENTADIENE	*	0.005
BUTYL BENZYL PHTHALATE	0.026	0.003	INDENO (1,2,3-CD) PYRENE	*	0.010
2-CHLORONAPHTHALENE	*	0.002	ISOPHORONE	*	0.002
4-CHLOROPHENYL PHENYL ETHER	*	0.003	NAPHTHALENE	*	0.001
CHRYSENE	*	0.005	NITROBENZENE	*	0.004
DIBENZO (A,H) ANTHRACENE	*	0.010	N-NITROSODI-N-PROPYLAMINE	*	0.004
DI-N-BUTYL PHTHALATE	*	0.001	N-NITROSODIPHENYLAMINE	*	0.003
1,2-DICHLOROBENZENE	*	0.003	PHENANTHRENE	*	0.001
1,3-DICHLOROBENZENE	*	0.003	PYRENE	*	0.001
1,4-DICHLOROBENZENE	*	0.003	1,2,4-TRICHLOROBENZENE	*	0.003

*COMPOUND NOT PRESENT AT DETECTION LIMIT

*COMPOUND NOT PRESENT AT DETECTION LIMIT

ANALYTICAL SERVICES
PRIORITY POLLUTANT ANALYSIS

TABLE 2
BASE-NEUTRAL FRACTION

CLIENT: CPC-GR METAL FAB PLANT
PROJECT NO.: 25615
SAMPLE: 87-8

DATE SAMPLED: 01/21/87 TIME: 2:15 PM
DATE RECEIVED: 01/26/87 TIME: 11:00 AM
DATE COMPLETED: 013087

SAMPLE NO. 70829

COMPOUND	RESULT	D.L.	COMPOUND	RESULT	D.L.
	(mg/l)			(mg/l)	
ACENAPHTHENE	*	0.002	3,3'-DICHLOROBENZIDINE	*	0.020
ACENAPHTHYLENE	*	0.001	DIETHYL PHTHALATE	*	0.002
ANTHRACENE	*	0.001	DIMETHYL PHTHALATE	*	0.002
BENZIDINE	*	0.050	2,4-DINITROTOLUENE	*	0.010
BENZO (A) ANTHRACENE	*	0.005	2,6-DINITROTOLUENE	*	0.009
BENZO (K) FLUORANTHENE	*	0.005	DI-N-OCTYLPHTHALATE	*	0.002
BENZO (A) PYRENE	*	0.005	1,2-DIPHENYLHYDRAZINE	*	0.001
BENZO (G,H,I) PERYLENE	*	0.010	FLUORANTHENE	*	0.001
BIS-(2-CHLOROETHYL) ETHER	*	0.004	FLUORENE	*	0.002
BIS(2-CHLOROETHOXY) METHANE	*	0.004	HEXACHLOROBENZENE	*	0.005
BIS(2-CHLOROISOPROPYL) - ETHER	*	0.001	HEXACHLOROBUTADIENE	*	0.005
BIS-(2-ETHYL HEXYL) - PHTHALATE	*	0.002	HEXACHLOROETHANE	*	0.007
4-BROMOPHENYL PHENYL ETHER	*	0.007	HEXACHLOROCYCLOPENTADIENE	*	0.005
BUTYL BENZYL PHTHALATE	*	0.003	INDENO (1,2,3-CD) PYRENE	*	0.010
2-CHLORONAPHTHALENE	*	0.002	ISOPHORONE	*	0.002
4-CHLOROPHENYL PHENYL ETHER	*	0.003	NAPHTHALENE	*	0.001
CHRYSENE	*	0.005	NITROBENZENE	*	0.004
DIBENZO (A,H) ANTHRACENE	*	0.010	N-NITROSODI-N-PROPYLAMINE	*	0.004
DI-N-BUTYL PHTHALATE	*	0.001	N-NITROSODIPHENYLAMINE	*	0.003
1,2-DICHLOROBENZENE	*	0.003	PHENANTHRENE	*	0.001
1,3-DICHLOROBENZENE	*	0.003	PYRENE	*	0.001
1,4-DICHLOROBENZENE	*	0.003	1,2,4-TRICHLOROBENZENE	*	0.003

*COMPOUND NOT PRESENT AT DETECTION LIMIT