



January 14, 2010

**ADMINISTRATIVE ORDER ON CONSENT
U.S. EPA DOCKET NO: RCRA-05-2007-0008
2009 ANNUAL REPORT**

**12950 ECKLES ROAD
13000 ECKLES ROAD
LIVONIA, MICHIGAN**

U.S. EPA No. MID 005 356 621

Prepared for:

**Motors Liquidation Company (MLC)
Remediation and Liability Management Company, Inc. (REALM)**

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TABLE OF CONTENTS

	<u>Page</u>
1.0 INTRODUCTION	1
1.1 BACKGROUND	1
1.2 ORGANIZATION	2
2.0 SCOPE OF OMM ACTIVITIES	3
2.1 INSTITUTIONAL CONTROLS.....	3
2.1.1 RESTRICTIVE COVENANT	3
2.1.2 PERMANENT MARKER	3
2.1.3 CITY OF LIVONIA ORDINANCE	4
2.2 ENGINEERING CONTROLS	4
2.2.1 AREA 1 COVER AND BARRIER WALL.....	4
2.2.2 GROUNDWATER COLLECTION AND TREATMENT SYSTEM.....	4
2.2.3 GROUNDWATER MONITORING PLAN (GMP)	5
2.2.3.1 GROUNDWATER ELEVATION AND LNAPL MONITORING.....	5
2.2.4 DUST CONTROL PLAN	6
2.2.5 MONITORING WELL SUMMARY	6
3.0 RESULTS	7
3.1 GMP RESULTS	7
3.1.1 AREA 1 GMP SAMPLING RESULTS.....	7
3.1.2 AOI 31 GMP SAMPLING RESULTS	8
3.1.3 GROUNDWATER ELEVATION AND LNAPL MONITORING.....	8
3.1.3.1 LNAPL MONITORING.....	9
4.0 EVALUATION OF GROUNDWATER MONITORING PLAN	10

LIST OF FIGURES
(Following Text)

FIGURE 1.1	SITE LOCATION
FIGURE 1.2	SITE PLAN
FIGURE 3.1	GROUNDWATER SAMPLE RESULTS - AREA 1
FIGURE 3.2	GROUNDWATER SAMPLE RESULTS - AOI 31
FIGURE 3.3	GROUNDWATER ELEVATION CONTOURS - SEPTEMBER 15, 2009
FIGURE 3.4	LNAPL THICKNESS MEASUREMENTS - AOI 21

LIST OF TABLES
(Following Text)

TABLE 2.1	GROUNDWATER CRITERIA FOR VERIFYING PLUME STABILITY AND EVALUATING HEALTH SIGNIFICANCE
TABLE 2.2	GMP SAMPLE SUMMARY
TABLE 2.3	GMP GROUNDWATER ELEVATION MONITORING LOCATIONS
TABLE 2.4	MONITORING WELL STATUS SUMMARY
TABLE 3.1	ANALYTICAL RESULTS OF GROUNDWATER SAMPLES
TABLE 3.2	GROUNDWATER ELEVATION DATA
TABLE 3.3	LNAPL THICKNESS MONITORING RESULTS

LIST OF APPENDICES

APPENDIX A	GM AND REALM PERMANENT MARKER PLANS
APPENDIX B	CITY OF LIVONIA ORDINANCES
APPENDIX C	DWSD SPECIAL DISCHARGE PERMIT
APPENDIX D	DATA VALIDATION MEMORANDUM
APPENDIX E	AOI 39 SOIL DUST CONTROL PLAN

LIST OF PLANS

PLAN 1	MONITORING WELL SUMMARY
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1.0 INTRODUCTION

Conestoga-Rovers & Associates (CRA) has prepared this 2009 Annual Report (Report), on behalf of Remediation and Liability Management Company, Inc. (REALM), a subsidiary of Motors Liquidation Corporation (MLC) (formerly General Motors Corporation), to describe the Operation, Monitoring, and Maintenance (OMM) activities for the MLC properties located at 13000 and 12950 Eckles Road, Livonia, Michigan (Site).

The OMM activities described herein were conducted under an Administrative Order on Consent (AOC), voluntarily executed May 21, 2007 by MLC and the United States Environmental Protection Agency (U.S. EPA), (U.S. EPA, Docket No: RCRA 05-2007-0008, May 2007). Based on the AOC, a draft Operation, Maintenance, and Monitoring Plan (OMM Plan) was submitted to the U.S. EPA and approved by the U.S. EPA in a letter dated July 5, 2007. The OMM Plan set forth requirements for operation, maintenance, and monitoring of institutional and engineering controls to ensure the continued effectiveness and integrity of final corrective measures. The Site locations are presented on Figure 1.1. Figure 1.2 presents the current Site Plan.

1.1 BACKGROUND

At the time of MLC's purchase in 1953, the Site was used for agricultural activities. Additional development at the Site continued until 1989. The Site was used for the fabrication of coil springs, bumpers, and strut assemblies for vehicles from the Site's development in 1953/54 to approximately July 2000.

All Site structures, except the groundwater collection and treatment operation buildings on the southwest corner of the Site, have been environmentally decommissioned and demolished. Former building concrete floor slabs remain in place, with the exception of the Marshalling Building slab that has been removed. A six-foot high security fence topped with barbed wire is located along the perimeter of the Site and all gates are locked when the Site is inactive (e.g., when groundwater treatment plant operators are not on Site, no field work is being conducted, etc.).

The groundwater collection and treatment operation in the southwest corner of the Site collects groundwater impacted by the historical chrome plating operations through a French drain system. Groundwater is collected and treated by pH adjustment, through the addition of sulfuric acid, sodium bisulfite, lime, a polymer flocculent, settling, and sand filter polishing. The water is treated at a maximum rate of approximately 70 gallons per minute, then batch discharged to the Detroit Water and Sewerage Department

(DWSD) under a special discharge permit from the DWSD. No other activities are currently conducted at the Site.

Resource Conservation and Recovery Act (RCRA) Corrective Action began in October 2001 and included investigation and remediation activities to address soil and groundwater conditions.

1.2 ORGANIZATION

The remainder of the Report is organized as follows

- Section 2.0 - presents the scope of OMM activities conducted at the Site
- Section 3.0 - presents the results of the OMM activities conducted at the Site
- Section 4.0 - presents an evaluation of the Groundwater Monitoring Plan (GMP)

2.0 SCOPE OF OMM ACTIVITIES

The following sections summarize activities related to the OMM Plan conducted during 2009.

2.1 INSTITUTIONAL CONTROLS

2.1.1 RESTRICTIVE COVENANT

A Declaration of Restrictive Covenant was recorded with the Wayne County Register of Deeds for both the 13000 Eckles Road and 12950 Eckles Road properties during 2007. Both Restrictive Covenants are an essential part of the corrective measures for the Site and will be maintained unless otherwise agreed to by MLC, U.S. EPA, and in consultation with MDEQ.

The Declaration of Restrictive Covenant for the 13000 Eckles Road property was recorded to: 1) prohibit groundwater use on the Property for any purpose; 2) restrict the uses of the Property for any purpose other than those characterized by the Michigan Department of Environmental Quality (MDEQ) as Limited Commercial II, Limited Commercial III, Limited Commercial IV, and Limited Industrial, unless otherwise agreed to by MLC and U.S. EPA and in consultation with MDEQ; 3) maintain the barrier wall and cover in Area 1; and 4) control particulate emissions from surface soil at the North Boundary Area (AOI 39), as described in the Dust Control Plan (13000 Eckles Road Site only).

The Declaration of Restrictive Covenant for the 12950 Eckles Road property was recorded to: 1) prohibit groundwater use on the Property for any purpose; 2) restrict the uses of the Property for any purpose other than those characterized by the MDEQ as Limited Commercial II, Limited Commercial III, Limited Commercial IV, and Limited Industrial, unless otherwise agreed to by MLC and U.S. EPA and in consultation with MDEQ; and 3) maintain the barrier wall in Area 1.

2.1.2 PERMANENT MARKER

As specified in the Restrictive Covenants, three permanent markers were installed at the Site during December 2007. The permanent markers were installed in 2007 at the locations noted in the Permanent Marker Plans presented in Appendix A. The permanent markers were inspected on September 16, 2009 and they remain intact.

2.1.3 CITY OF LIVONIA ORDINANCE

The City of Livonia enacted a prohibition on the use of groundwater on July 20, 2009. The groundwater use prohibition, Ordinance No. 2823, is presented in Appendix B. The City of Livonia subsequently enacted an additional ordinance on September 23, 2009 including a section on *Protection of Potable Water Supply*. The supplemental ordinance, Ordinance No. 2843, has been enacted but not codified and is also presented in Appendix B. Together, these ordinances prevent any unauthorized use of groundwater within the City of Livonia, including downgradient of the Site.

2.2 ENGINEERING CONTROLS

2.2.1 AREA 1 COVER AND BARRIER WALL

As described in the OMM Plan, the concrete slab has remained in place inside the perimeter of the Area 1 barrier wall to limit the infiltration of precipitation into the subsurface.

2.2.2 GROUNDWATER COLLECTION AND TREATMENT SYSTEM

The Site maintains an on-Site groundwater collection and treatment system which treats water from the on-Site French Drain and discharges the treated groundwater under permit with the DWSD. Effluent from the treatment system is sampled pursuant to the DWSD permit. An Operations and Maintenance Manual (O&M Manual) was developed detailing procedures for operating the on-Site groundwater treatment system. The O&M Manual provides information regarding the treatment system components, operation and maintenance of such components, startup and shutdown procedures, information management procedures, sampling and analysis requirements, laboratory requirements, training and awareness requirements, health and safety requirements, emergency response procedures, and waste management requirements. The O&M Manual provides guidance and reference for the proper operation and maintenance of the treatment system by Site operating personnel, and will be used and maintained as long as the groundwater collection and treatment system is operating at the Site. As modifications are made to the system (e.g., for system optimization), the O&M Manual will be modified accordingly. The groundwater collection and treatment system will be operated such that the plume remains stable in accordance with Section 11 of the AOC. Plume stability criteria are presented in Table 2.1.

The groundwater collection and treatment system operated under Special Discharge Permits DWSD-SD-0092165, effective through August 30, 2009, and SD6-92165, effective through June 30, 2010, for the discharge of treated groundwater from the treatment system effective through June 30, 2010. The permit requirements include: monthly collection of a discharge sample for laboratory analysis; completion of a maintenance log detailing daily discharge amounts and system breakdowns or repairs; and submittal of a report every 3 months. Special Discharge Permit SD6-92165 is presented in Appendix C. The discharge sample results have continued to meet the Permit's criteria.

2.2.3 GROUNDWATER MONITORING PLAN (GMP)

A Groundwater Monitoring Plan (GMP) Addendum was submitted to and approved with changes by the U.S. EPA on March 4, 2008. A revised GMP dated April 2008 was submitted which incorporated the approved changes. The GMP Addendum added two monitoring wells in Area 1 and a monitoring well in AOI 31 to the annual sampling program. It also included the monitoring of three newly installed monitoring wells in AOI 21 for the presence of LNAPL. Groundwater samples and water level measurements were collected from monitoring wells described in the GMP on September 15 and 16, 2009. A sample summary is presented in Table 2.2.

The groundwater purging and sampling was conducted in accordance with GM Procedure No. SOP-6.4 provided in the GMP. Laboratory analysis and data validation were conducted in accordance with the Quality Assurance Project Plan (QAPP) (RFI Work Plan Appendix C). A data validation memorandum is provided in Appendix D.

2.2.3.1 GROUNDWATER ELEVATION AND LNAPL MONITORING

Groundwater elevation data was collected from monitoring wells at on-Site and off-Site locations, as described in the GMP. Site-wide water levels were measured from on-Site and off-Site monitoring wells to confirm groundwater flow directions and evaluate the effectiveness of the Area 1 barrier wall. Groundwater elevations were measured on September 15, 2009.

In accordance with the GMP, additional monitoring activities in AOI 21 to monitor the presence and extent of LNAPL have continued. LNAPL thicknesses were measured quarterly, if present, in the seven monitoring wells associated with AOI 21 on March 3, June 16, September 23, and November 25, 2009.

The monitoring wells identified for groundwater elevation and LNAPL monitoring are presented in Table 2.3.

2.2.4 DUST CONTROL PLAN

A Dust Control Plan was submitted and approved by the U.S. EPA on January 30, 2007. The AOI 39 Soil Dust Control Plan is presented in Appendix E. No construction activities requiring dust control were performed in 2009.

2.2.5 MONITORING WELL SUMMARY

Table 2.4 presents a list of monitoring wells in the GMP, including construction details, current use, and planned action. The locations of all currently existing GMP monitoring wells at on-Site and off-Site locations are presented on Plan 1.

3.0 RESULTS

3.1 GMP RESULTS

3.1.1 AREA 1 GMP SAMPLING RESULTS

During September 2009, groundwater samples were collected from HA-16, MW-OS-5D, MW-OS-6D, MW-OS-7D, and MW-OS-8D and submitted for the analysis of nickel. In addition, in accordance with the GMP Addendum, groundwater samples were collected from HA-14 and OW-24 and submitted for the analysis of nickel, total chromium, hexavalent chromium, and trivalent chromium to evaluate groundwater conditions on-Site and at the Site perimeter as required in the AOC.

Nickel was detected in groundwater samples collected from an off-Site monitoring well, HA-16, which is located south of Area 1, at a concentration of 173 mg/L (184 mg/L duplicate sample) which is significantly lower than historical concentrations detected in this monitoring well. Although the nickel concentration remains higher than the drinking water criteria; the concentration is lower than the site-specific, risk-based criteria for the non-potable groundwater exposures that are reasonably expected for this area (i.e., construction worker ingestion of and dermal contact with groundwater), as discussed in the RFI Report. Additionally, the City of Livonia has enacted an ordinance prohibiting the use of groundwater as described in Section 2.1.3. Nickel concentrations in OW-24, located inside the Area 1 barrier wall, and HA-14, located immediately south of the Area 1 barrier wall at the property boundary have decreased slightly.

Chromium was not detected in the groundwater sample collected from monitoring well HA-14, located at the property boundary. Hexavalent chromium was detected at a concentration of 100 mg/L (94.5 mg/L duplicate sample) in the groundwater sample from on-Site monitoring well, OW-24. This concentration is much lower than the 633 mg/L detected in February 2004. And although this concentration is greater than the site-specific groundwater contact criteria presented in Table 2.1, the monitoring well is located within the area contained by the Area 1 Barrier Wall and all intrusive activities in this area are restricted unless specifically approved in writing by MLC and U.S. EPA and in consultation with the MDEQ.

The results of the 2009 GMP samples show that Area 1 groundwater concentrations are stable or decreasing and remain below site-specific, risk-based criteria at off-Site locations. The extent of off-Site nickel identified in groundwater remains delineated by MW-OS-5D, MW-OS-6D, MW-OS-7D, and MW-OS-8D. Groundwater in this area is not

being used as a drinking water supply and all properties in this area are serviced by a municipal water supply.

Analytical results of Area 1 groundwater samples are presented on Figure 3.1 and summarized in Table 3.1.

3.1.2 AOI 31 GMP SAMPLING RESULTS

During September 2009, groundwater samples were collected from MW-103S, MW-202S, MW-211S, MW-213S, MW-215S, MW-216S, and MW-217S and submitted for the analysis of 1,1,1-trichloroethane, cis-1,2-dichloroethylene, trichloroethylene, and vinyl chloride to evaluate groundwater conditions on-site, at the Site perimeter, and at off-site monitoring wells, as required in the AOC.

Trichloroethylene has been detected in groundwater samples collected from some off-site monitoring wells southeast of AOI 31 at concentrations higher than the drinking water standard; however, the concentrations are lower than the site-specific, risk-based criteria for the non-potable groundwater exposure that are reasonably expected for this area since all properties within the neighborhood located southeast of AOI 31 are connected to a municipal water supply, as discussed in the RFI Report. The analytical results of the 2009 GMP samples show that AOI 31 groundwater concentrations are stable or decreasing and remain below site-specific, risk-based criteria. The extent of off-Site VOCs identified in groundwater remains delineated by MW-211S, MW-215S, MW-216S, and MW-217S.

Analytical results of AOI 31 groundwater samples are presented on Figure 3.2 and summarized in Table 3.1.

3.1.3 GROUNDWATER ELEVATION AND LNAPL MONITORING

Groundwater flow directions remain consistent with previous investigations. Groundwater generally flows to the southeast, except in the vicinity of the Area 1 barrier wall and French drain collection system. Generally, water levels have remained consistent with previous results at locations within the Area 1 barrier wall. Groundwater elevation data is presented in Table 3.2. Groundwater elevation contours based on groundwater elevation measurements collected September 15, 2009 are presented on Figure 3.3.

3.1.3.1 LNAPL MONITORING

LNAPL thicknesses were measured in all seven AOI 21 monitoring wells, if present, on March 3, June 16, September 23, and November 25, 2009.

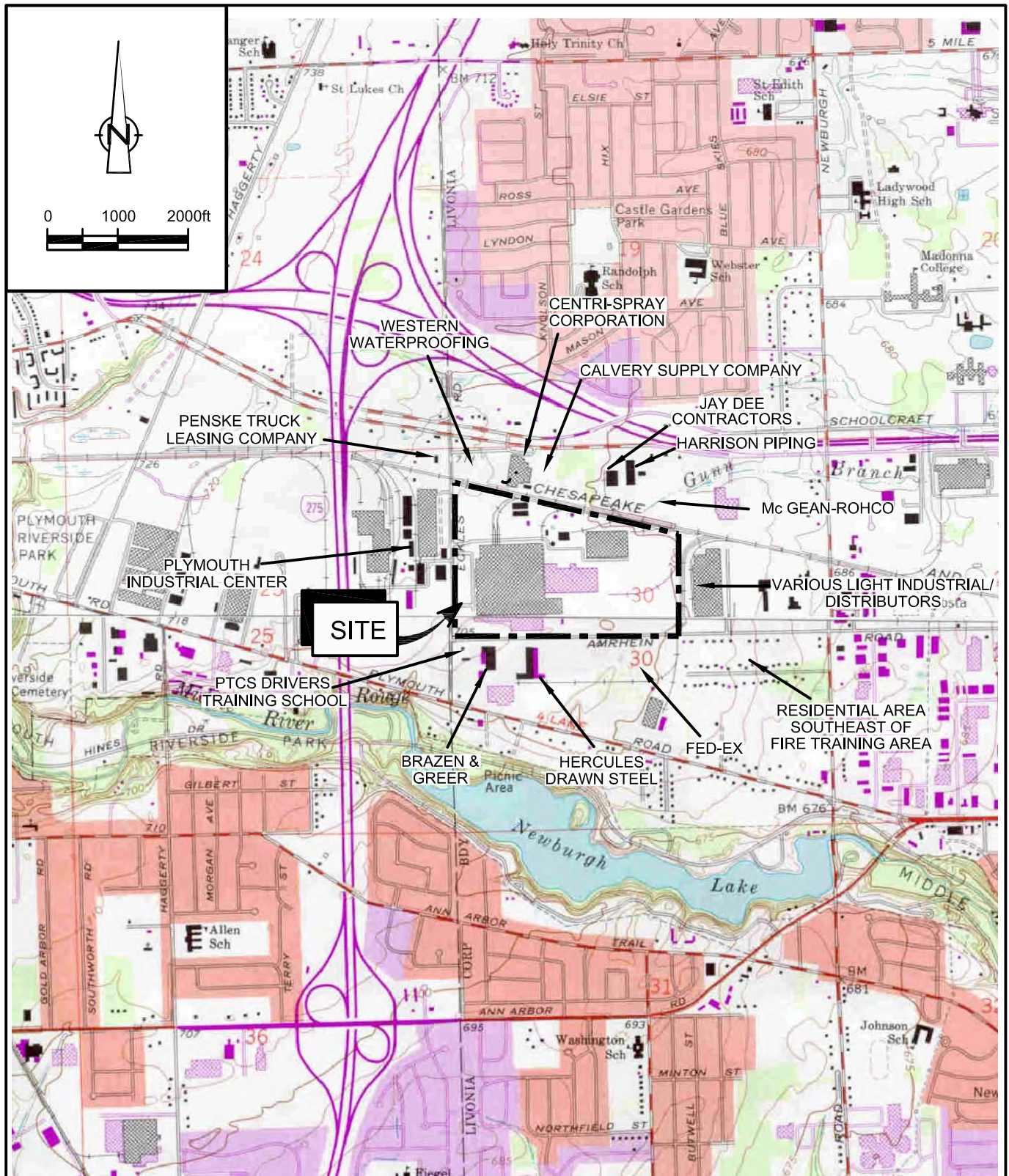
LNAPL was not detected in MW-21-2S, MW-21-5S, or MW-A1-16S during 2009. LNAPL was identified in MW-21-1S with a thickness of 0.12 feet and in MW-21-3S with a thickness of 0.01 feet on March 3, 2009. LNAPL was identified in MW-21-6S with a thickness of 0.01 feet on September 23, 2009. LNAPL was identified in MW-21-4S during three monitoring events in 2009, with thickness of 0.20, 0.19, and 0.32 feet on June 16, September 23, and November 25, 2009, respectively. LNAPL was not detected in MW-21-4S in March 2009.

LNAPL thickness measurements are summarized in Table 3.3. LNAPL thickness measurements are presented on Figure 3.4.

MW-21-3S is located at least 300 feet upgradient of the southern boundary of the Site. MW-21-6S was installed approximately 5 feet downgradient of MW-21-3S to determine if the extent of the LNAPL is stable. LNAPL has not been detected in MW-21-6S since being installed in December 2007, until a trace amount of 0.01 feet was detected in September 2009. LNAPL was not subsequently detected in MW-21-6S when measured in November 2009. The LNAPL periodically detected in AOI 21 monitoring wells appear to fluctuate seasonally. The LNAPL in AOI 21 monitoring wells is delineated by MW-21-2S, MW-21-5S, and MW-21-6S.

4.0 EVALUATION OF GROUNDWATER MONITORING PLAN

The results of the 2009 GMP sampling confirm that off-Site nickel and TCE remain stable and below site-specific, risk-based criteria. The nickel-impacted groundwater south of Area 1 and TCE-impacted groundwater southeast of AOI 31 continue to be delineated by downgradient monitoring wells.



SOURCE: USGS QUADRANGLE MAPS;
NORTHVILLE AND WAYNE, MICHIGAN

figure 1.1
SITE LOCATION

12950 ECKLES ROAD SITE
13000 ECKLES ROAD SITE
Livonia, Michigan



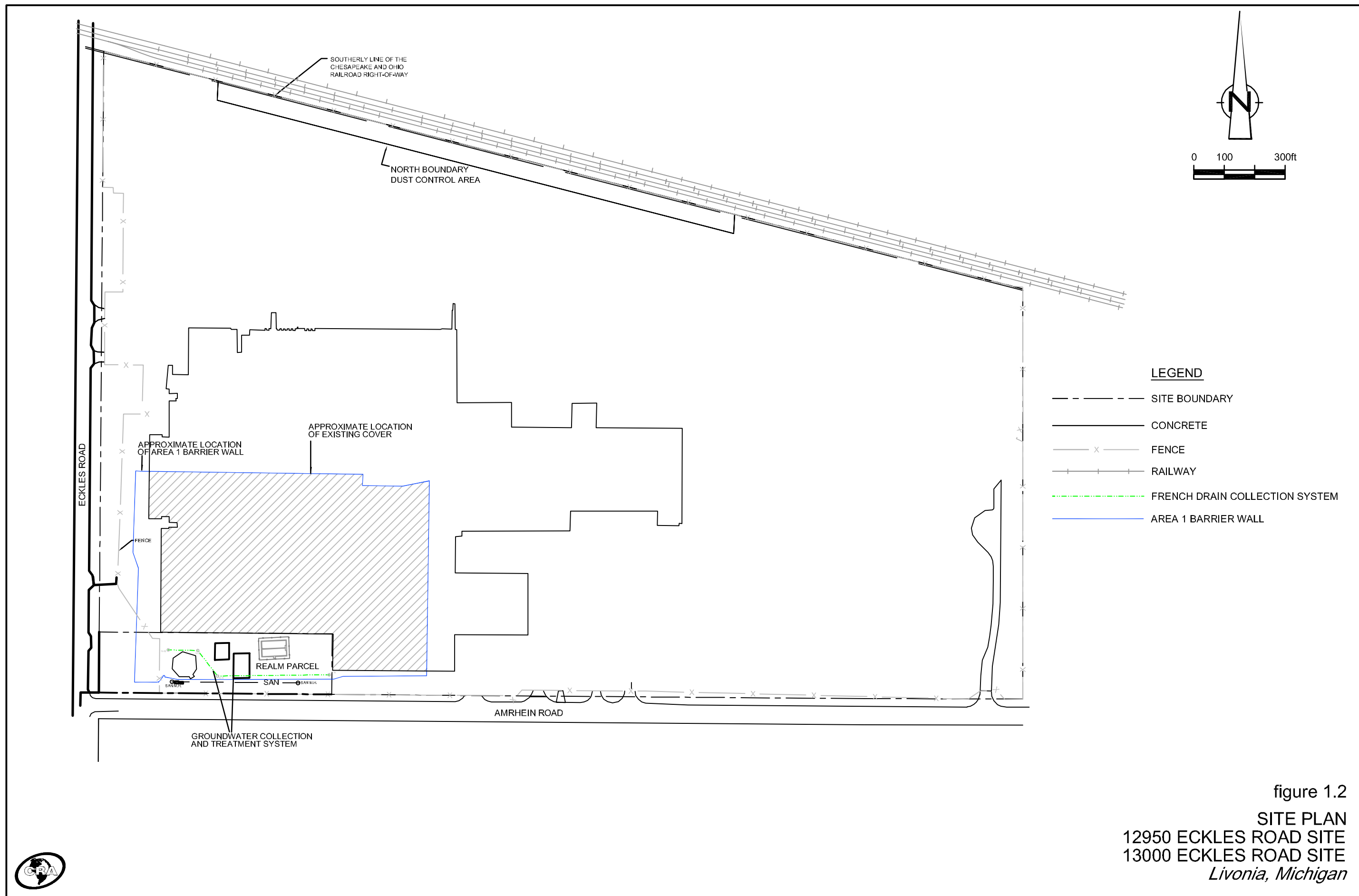


figure 1.2
 SITE PLAN
 12950 ECKLES ROAD SITE
 13000 ECKLES ROAD SITE
 Livonia, Michigan



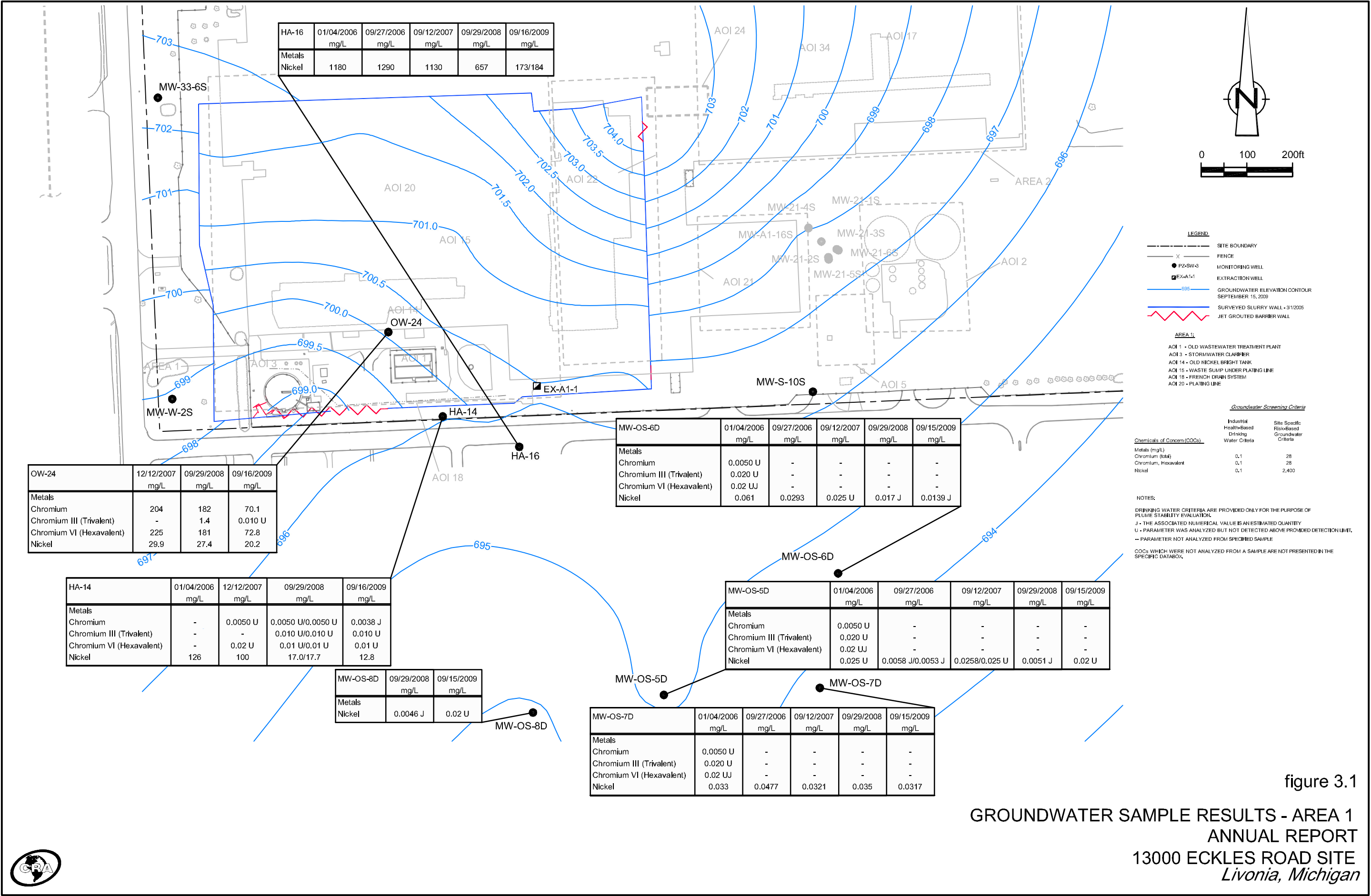


figure 3.1
GROUNDWATER SAMPLE RESULTS - AREA 1
ANNUAL REPORT
13000 ECKLES ROAD SITE
Livonia, Michigan





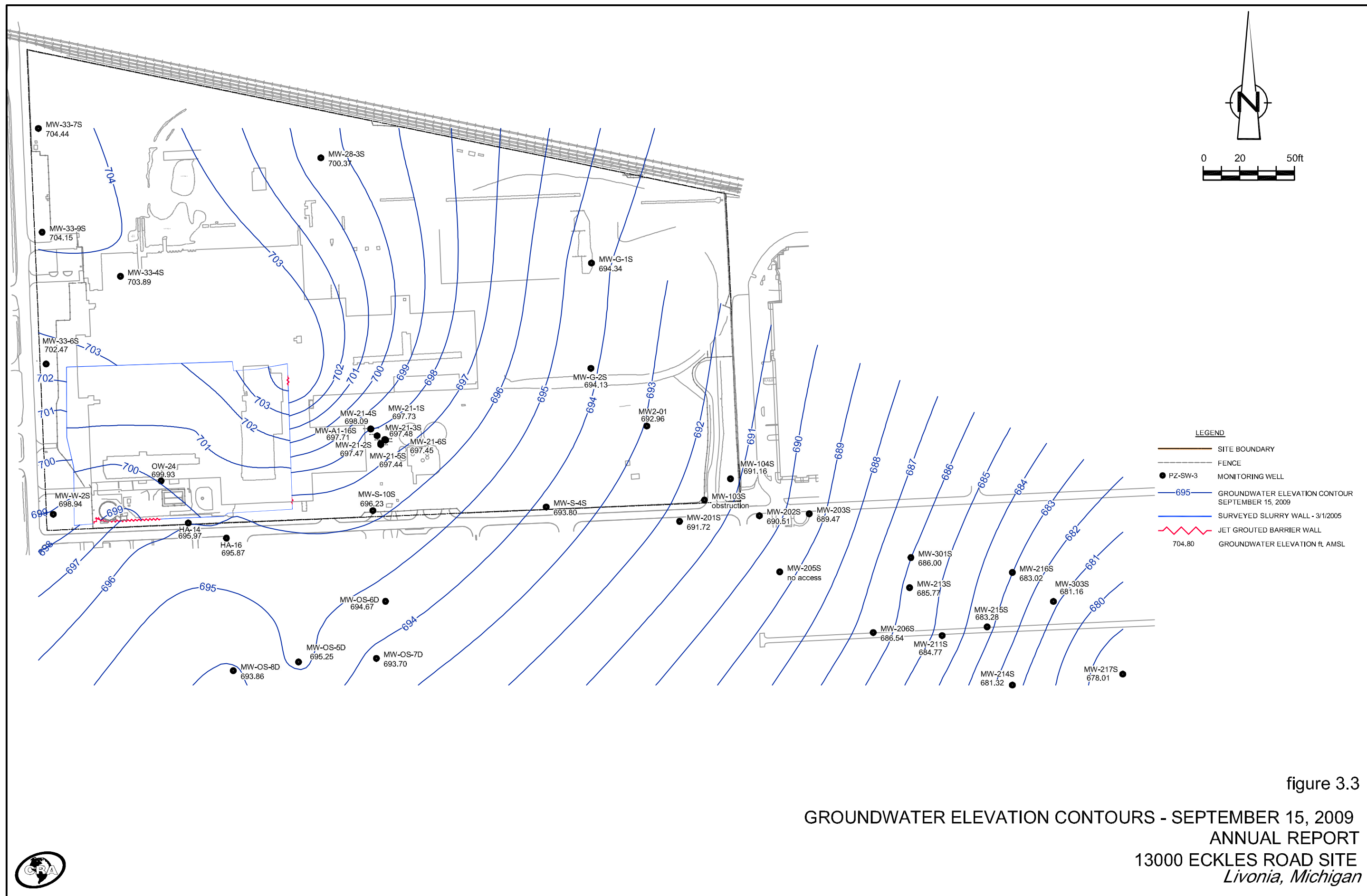


figure 3.3

GROUNDWATER ELEVATION CONTOURS - SEPTEMBER 15, 2009
 ANNUAL REPORT
 13000 ECKLES ROAD SITE
 Livonia, Michigan



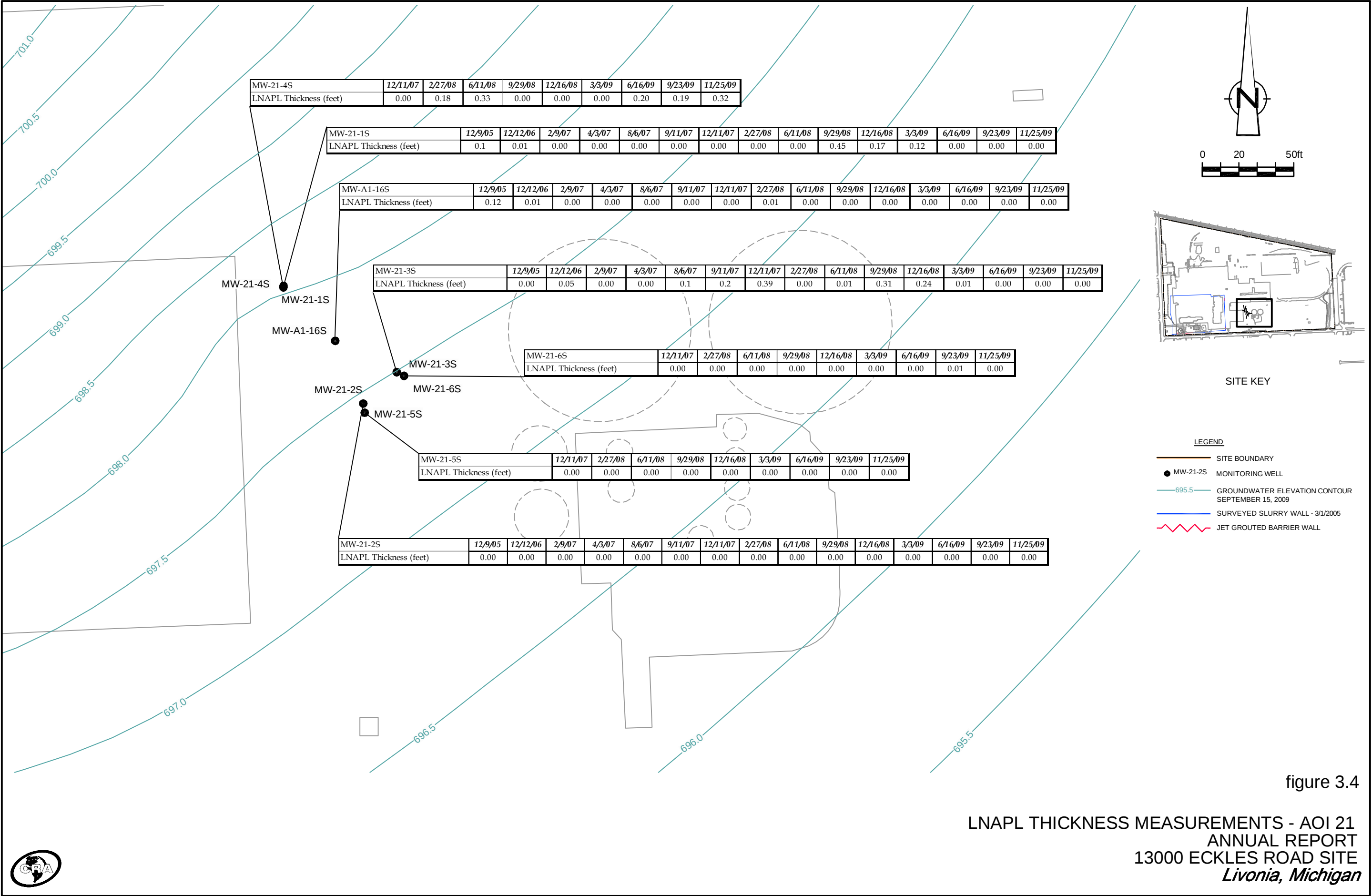


TABLE 2.1

January 14, 2010

Page 1 of 1

**GROUNDWATER CRITERIA FOR VERIFYING PLUME STABILITY
AND EVALUATING HEALTH SIGNIFICANCE
ANNUAL REPORT
13000 ECKLES ROAD SITE
LIVONIA, MICHIGAN**

<i>Chemical</i>	<i>CAS Registry Number</i>	<i>Plume Stability Criteria (mg/L)</i>	<i>Risk-Based Criteria (mg/L)</i>
<i>Metals</i>			
Chromium (Total)	7440-47-3	0.1	28
Chromium VI (Hexavalent)	18540-29-9	0.1	28
Nickel	7440-02-0	0.1	2400
<i>Volatile Organic Compounds</i>			
cis-1,2-Dichloroethene	156-59-2	0.07	1.8
1,1,1-Trichloroethane	71-55-6	0.2	130
Trichloroethylene	79-01-6	0.005	0.79
Vinyl Chloride	75-01-4	0.002	0.079

Notes:

- 1) Criteria for verifying plume stability are drinking water criteria
- 2) The risk-based criterion for evaluating health significance for Area 1 is based on construction worker contact with groundwater
- 3) The risk-based criterion for evaluating health significance for AOI 31 are based on the most potential significant exposure among construction worker contact, residential vapor intrusion, and residential nonpotable groundwater uses

TABLE 2.2

January 14, 2010

Page 1 of 1

**GMP SAMPLE SUMMARY
ANNUAL REPORT
13000 ECKLES ROAD SITE
LIVONIA, MICHIGAN**

<i>Area of Interest</i>	<i>On-Site/ Off-Site</i>	<i>Sample Matrix</i>	<i>Sample Location</i>	<i>Sample ID</i>	<i>Sample Date</i>	<i>Analysis</i>	<i>Notes</i>
AOI 31	Off-Site	Groundwater	MW-215S	GW-12607-091509-JY-093	9/15/2009	Select VOCs	
AOI 31	Off-Site	Groundwater	MW-213S	GW-12607-091509-EV-094	9/15/2009	Select VOCs	
AOI 31	Off-Site	Groundwater	MW-216S	GW-12607-091509-EV-095	9/15/2009	Select VOCs	
AOI 31	Off-Site	Groundwater	MW-216S	GW-12607-091509-EV-096	9/15/2009	Select VOCs	Duplicate (095)
AOI 31	Off-Site	Groundwater	MW-211S	GW-12607-091509-JY-097	9/15/2009	Select VOCs	
AOI 31	Off-Site	Groundwater	MW-217S	GW-12607-091509-EV-098	9/15/2009	Select VOCs	
AOI 31	Area 01	Groundwater	MW-202S	GW-12607-091509-JY-099	9/15/2009	Select VOCs	
Area 01	Off-Site	Groundwater	MW-OS-5D	GW-12607-091509-JY-100	9/15/2009	Nickel	
Area 01	Off-Site	Groundwater	MW-OS-8D	GW-12607-091509-JY-101	9/15/2009	Nickel	
Area 01	Off-Site	Groundwater	MW-OS-6D	GW-12607-091509-EV-102	9/15/2009	Nickel	
Area 01	Off-Site	Groundwater	MW-OS-7D	GW-12607-091509-EV-103	9/15/2009	Nickel	
AOI 31	On-Site	Groundwater	MW-103S	GW-12607-091609-JY-104	9/16/2009	Select VOCs	
Area 01	Off-Site	Groundwater	HA-16	GW-12607-091609-EV-105	9/16/2009	Nickel	
Area 01	Off-Site	Groundwater	HA-16	GW-12607-091609-EV-106	9/16/2009	Nickel	Duplicate
Area 01	On-Site	Groundwater	OW-24	GW-12607-091609-EV-107	9/16/2009	Nickel, Total Chromium, Hexavalent Chromium	
Area 01	On-Site	Groundwater	HA-14	GW-12607-091609-EV-108	9/16/2009	Nickel, Total Chromium, Hexavalent Chromium	

Notes:

Select VOCs - 1,1,1-Trichloroethane, cis-1,2-Dichloroethene, Trichloroethylene, Vinyl Chloride

TABLE 2.3

January 14 , 2010

Page 1 of 1

GMP GROUNDWATER ELEVATION MONITORING LOCATIONS
ANNUAL REPORT
13000 ECKLES ROAD SITE
LIVONIA, MICHIGAN

<i>Well ID.</i>	<i>Top of Riser Elevation (ft AMSL)</i>	<i>Top of Screen Depth (ft BGS)</i>	<i>Bottom of Screen Elevation (ft BGS)</i>
AOI 21 - Former Pickling Machines/Flat Polish Area			
MW-A1-16S	702.6	5	15
MW-21-1S	704.0	4	14
MW-21-2S	702.4	5	15
MW-21-3S	702.5	5	15
MW-21-4S	704.1	3	13
MW-21-5S	702.5	3	13
MW-21-6S	702.7	3	13
AOI 31 - Former Fire Training Area			
MW-104S	702.1	8.0	18
MW-201S	702.1	6.8	16.8
MW-203S	697.7	5.1	15.1
MW-205S	697.4	4.8	14.8
MW-206S	695.6	4.8	14.8
MW-214S	687.8	3.0	13
MW-301S	696.9	10.0	20.0
MW-303S	687.4	5.0	15.0
Site-wide Monitoring Wells			
MW-33-4S	706.3	6.0	16.0
MW-33-6S	707.2	6.0	16.0
MW-33-7S	710.4	6.5	16.5
MW-33-9S	709.1	4.0	14.0
MW-28-3S	705.6	5.0	15.0
MW-S-10S	702.7	7.5	17.5
MW-S-4S	700.4	7.0	17.0
MW-W-2S	705.2	6.5	16.5
MW-G-1S	700.0	6.5	16.5
MW-G-2S	705.3	11.5	21.5
MW2-01	702.3	10.0	15.0

Notes:

ft AMSL - feet above mean sea level.

Depth to LNAPL and Depth to Groundwater levels were measured in AOI 21 MWs

TABLE 2.4

January 14, 2010

Page 1 of 2

**MONITORING WELL STATUS SUMMARY
ANNUAL REPORT
13000 ECKLES ROAD SITE
LIVONIA, MICHIGAN**

<i>AOI</i>	<i>On-Site/ Off-Site</i>	<i>ID</i>	<i>Constructed DTB</i>	<i>Screen Length</i>	<i>Assumed Diameter</i>	<i>Use</i>	<i>Status</i>
Area 1	off-Site	HA-16	30	10	2 inch	GMP - Sampling	Existing
AOI 31	off-Site	MW-202S	15	10	2 inch	GMP - Sampling	Existing
AOI 31	off-Site	MW-211S	16	10	2 inch	GMP - Sampling	Existing
AOI 21	on-Site	MW-21-2S	15	10	2 inch	GMP - LNAPL Levels	Existing
AOI 31	off-Site	MW-213S	15	10	2 inch	GMP - Sampling	Existing
AOI 21	on-Site	MW-21-3S	15	10	2 inch	GMP - LNAPL Levels	Existing
AOI 31	off-Site	MW-215S	13	10	2 inch	GMP - Sampling	Existing
AOI 31	off-Site	MW-216S	13	10	2 inch	GMP - Sampling	Existing
AOI 31	off-Site	MW-217S	13	10	2 inch	GMP - Sampling	Existing
Area 1/AOI 21	on-Site	MW-A1-16S	15	10	2 inch	GMP - LNAPL Levels	Existing
Area 1	off-Site	MW-OS-5D	27	10	2 inch	GMP - Sampling	Existing
Area 1	off-Site	MW-OS-6D	28	10	2 inch	GMP - Sampling	Existing
Area 1	off-Site	MW-OS-7D	28	10	2 inch	GMP - Sampling	Existing
Area 1	off-Site	MW-OS-8D	27	10	2 inch	GMP - Sampling	Existing
AOI 21	on-Site	MW-21-1S	15	10	2 inch	GMP - LNAPL Levels	Existing
AOI 21	on-Site	MW-21-4S	13	10	2 inch	GMP - LNAPL Levels	Existing
AOI 21	on-Site	MW-21-5S	13	10	2 inch	GMP - LNAPL Levels	Existing
AOI 21	on-Site	MW-21-6S	13	10	2 inch	GMP - LNAPL Levels	Existing
Area 1	on-Site	HA-14	29	10	2 inch	GMP - Sampling	Existing
General	on-Site	MW2-01	15	5	2 inch	GMP - Water levels	Existing
AOI 31	on-Site	MW-103S	18	10	2 inch	GMP - Sampling	Existing
AOI 31	on-Site	MW-104S	18	10	2 inch	GMP - Water Levels	Existing
AOI 31	off-Site	MW-201S	17	10	2 inch	GMP - Water Levels	Existing
AOI 31	off-Site	MW-203S	15	10	2 inch	GMP - Water Levels	Existing
AOI 31	off-Site	MW-205S	15	10	2 inch	GMP - Water Levels	Existing
AOI 31	off-Site	MW-206S	15	10	2 inch	GMP - Water Levels	Existing
AOI 31	off-Site	MW-214S	13	10	2 inch	GMP - Water Levels	Existing
AOI 31	off-Site	MW-301S	20	10	2 inch	GMP - Water Levels	Existing
AOI 31	off-Site	MW-303S	15	10	2 inch	GMP - Water Levels	Existing

TABLE 2.4

January 14, 2010

Page 2 of 2

**MONITORING WELL STATUS SUMMARY
ANNUAL REPORT
13000 ECKLES ROAD SITE
LIVONIA, MICHIGAN**

<i>AOI</i>	<i>On-Site/ Off-Site</i>	<i>ID</i>	<i>Constructed DTB</i>	<i>Screen Length</i>	<i>Assumed Diameter</i>	<i>Use</i>	<i>Status</i>
AOI 28	on-Site	MW-28-3S	15	10	2 inch	GMP - Water Levels	Existing
AOI 33	on-Site	MW-33-4S	15	10	2 inch	GMP - Water levels	Existing
AOI 33	on-Site	MW-33-6S	16	10	2 inch	GMP - Water levels	Existing
AOI 33	on-Site	MW-33-7S	16.5	10	2 inch	GMP - Water levels	Existing
AOI 33	on-Site	MW-33-9S	14	10	2 inch	GMP - Water levels	Existing
General	on-Site	MW-G-1S	16.5	10	2 inch	GMP - Water levels	Existing
General	on-Site	MW-G-2S	21.5	10	2 inch	GMP - Water levels	Existing
General	on-Site	MW-S-10S	17.5	10	2 inch	GMP - Water levels	Existing
General	on-Site	MW-S-4S	17	10	2 inch	GMP - Water levels	Existing
Area 1	on-Site	MW-W-2S	16.5	10	2 inch	GMP - Water levels	Existing
Area 1	on-Site	OW-24	25	10	2 inch	GMP - Sampling	Existing

TABLE 3.1

January 14, 2010

Page 1 of 3

**ANALYTICAL RESULTS OF GROUNDWATER SAMPLES
ANNUAL REPORT
13000 ECKLES ROAD SITE
LIVONIA, MICHIGAN**

AOI:		AOI 31	AOI 31	AOI 31	AOI 31	AOI 31	AOI 31
Sample Location:		MW-103S	MW-202S	MW-211S	MW-213S	MW-215S	MW-216S
Sample ID:		GW-12607-091609-JY-104	GW-12607-091509-JY-099	GW-12607-091509-JY-097	GW-12607-091509-EV-094	GW-12607-091509-JY-093	GW-12607-091509-EV-095
Sample Date:		9/16/2009	9/15/2009	9/15/2009	9/15/2009	9/15/2009	9/15/2009
Sample Type:							
Parameters:	Units						
Metals							
Chromium	mg/L	--	--	--	--	--	--
Chromium III (Trivalent)	mg/L	--	--	--	--	--	--
Chromium VI (Hexavalent)	mg/L	--	--	--	--	--	--
Nickel	mg/L	--	--	--	--	--	--
Volatile Organic Compounds							
1,1,1-Trichloroethane	ug/L	29	22	8.7	26	11	1.0 U
cis-1,2-Dichloroethene	ug/L	2.5 U	2.0 U	1.0 U	6.7 U	2.0 U	0.31 J
Trichloroethylene	ug/L	58	51	1.0 U	140	50	1.0 U
Vinyl chloride	ug/L	2.5 U	2.0 U	1.0 U	6.7 U	2.0 U	1.0 U

Notes:

U - Not present at or above the associated value.

J - Estimated concentration.

TABLE 3.1

January 14, 2010

Page 2 of 3

**ANALYTICAL RESULTS OF GROUNDWATER SAMPLES
ANNUAL REPORT
13000 ECKLES ROAD SITE
LIVONIA, MICHIGAN**

AOI:		AOI 31	AOI 31	Area 01	Area 01	Area 01	Area 01
Sample Location:		MW-216S	MW-217S	HA-14	HA-16	HA-16	MW-OS-5D
Sample ID:		GW-12607-091509-EV-096	GW-12607-091509-EV-098	GW-12607-091609-EV-108	GW-12607-091609-EV-105	GW-12607-091609-EV-106	GW-12607-091509-JY-100
Sample Date:		9/15/2009	9/15/2009	9/16/2009	9/16/2009	9/16/2009	9/15/2009
Sample Type:		Duplicate				Duplicate	
Parameters:	Units						
Metals							
Chromium	mg/L	--	--	0.0038 J	--	--	--
Chromium III (Trivalent)	mg/L	--	--	0.010 U	--	--	--
Chromium VI (Hexavalent)	mg/L	--	--	0.01 U	--	--	--
Nickel	mg/L	--	--	12.8	173	184	0.02 U
Volatile Organic Compounds							
1,1,1-Trichloroethane	ug/L	1.0 U	59	--	--	--	--
cis-1,2-Dichloroethene	ug/L	0.28 J	2.5 U	--	--	--	--
Trichloroethylene	ug/L	1.0 U	2.5 U	--	--	--	--
Vinyl chloride	ug/L	1.0 U	2.5 U	--	--	--	--

Notes:

U - Not present at or above the associated value.

J - Estimated concentration.

TABLE 3.1

January 14, 2010

Page 3 of 3

**ANALYTICAL RESULTS OF GROUNDWATER SAMPLES
ANNUAL REPORT
13000 ECKLES ROAD SITE
LIVONIA, MICHIGAN**

AOI:		<i>Area 01</i>	<i>Area 01</i>	<i>Area 01</i>	<i>Area 01</i>
Sample Location:		<i>MW-OS-6D</i>	<i>MW-OS-7D</i>	<i>MW-OS-8D</i>	<i>OW-24</i>
Sample ID:		<i>GW-12607-091509-EV-102</i>	<i>GW-12607-091509-EV-103</i>	<i>GW-12607-091509-JY-101</i>	<i>GW-12607-091609-EV-107</i>
Sample Date:		<i>9/15/2009</i>	<i>9/15/2009</i>	<i>9/15/2009</i>	<i>9/16/2009</i>
Sample Type:					
Parameters:	Units				
Metals					
Chromium	mg/L	--	--	--	70.1
Chromium III (Trivalent)	mg/L	--	--	--	0.010 U
Chromium VI (Hexavalent)	mg/L	--	--	--	72.8
Nickel	mg/L	0.0139 J	0.0317	0.02 U	20.2
Volatile Organic Compounds					
1,1,1-Trichloroethane	ug/L	--	--	--	--
cis-1,2-Dichloroethene	ug/L	--	--	--	--
Trichloroethylene	ug/L	--	--	--	--
Vinyl chloride	ug/L	--	--	--	--

Notes:

U - Not present at or above the associated value.

J - Estimated concentration.

TABLE 3.2

January 14, 2010

Page 1 of 1

**GROUNDWATER ELEVATION DATA
ANNUAL REPORT
13000 ECKLES ROAD SITE
LIVONIA, MICHIGAN**

<i>Well ID</i>	<i>Groundwater Elevation 3/3/2009</i>	<i>Groundwater Elevation 6/16/2009</i>	<i>Groundwater Elevation 9/15/2009</i>	<i>Groundwater Elevation</i>
HA-14	-	-	695.97	-
HA-16	-	-	695.87	-
MW-103S	-	-	Obstruction	-
MW-104S	-	-	691.16	-
MW2-01	-	-	692.96	-
MW-201S	-	-	691.72	-
MW-202S	-	-	690.51	-
MW-203S	-	-	689.47	-
MW-205S	-	-	No Access	-
MW-206S	-	-	686.54	-
MW-211S	-	-	684.77	-
MW-213S	-	-	685.77	-
MW-214S	-	-	681.32	-
MW-215S	-	-	683.28	-
MW-216S	-	-	683.02	-
MW-217S	-	-	678.01	-
MW-21-1S	699.08	699.35	697.73*	697.23
MW-21-2S	698.4	698.99	697.47*	696.98
MW-21-3S	698.45	699.02	697.48*	696.97
MW-21-4S	698.95	699.70	698.09*	697.45
MW-21-5S	698.36	698.95	697.44*	696.95
MW-21-6S	698.42	699.01	697.45*	696.96
MW-A1-16S	698.69	699.28	697.71*	697.19
MW-28-3S	-	-	700.37	-
MW-301S	-	-	686.00	-
MW-303S	-	-	681.16	-
MW-33-4S	-	-	703.89	-
MW-33-6S	-	-	702.47	-
MW-33-7S	-	-	704.44	-
MW-33-9S	-	-	704.15	-
MW-G-1S	-	-	694.34	-
MW-G-2S	-	-	694.13	-
MW-OS-5D	-	-	695.25	-
MW-OS-6D	-	-	694.67	-
MW-OS-7D	-	-	693.70	-
MW-OS-8D	-	-	693.86	-
MW-S-10S	-	-	696.23	-
MW-S-4S	-	-	693.80	-
MW-W-2S	-	-	698.94	-
OW-24	-	-	699.93	-

Notes:

Groundwater Elevation measured in feet above mean sea level

- Groundwater Elevation was not measured

* Groundwater Elevation measured on 9/23/09

TABLE 3.3

January 14, 2010

Page 1 of 3

**LNAPL THICKNESS MONITORING RESULTS
ANNUAL REPORT
13000 ECKLES ROAD SITE
LIVONIA, MICHIGAN**

<i>Area of Interest:</i>		<i>AOI 21</i>	<i>AOI 21</i>	<i>AOI 21</i>	<i>AOI 21</i>	<i>AOI 21</i>	<i>AOI 21</i>	<i>AOI 21</i>	<i>AOI 21</i>	<i>AOI 21</i>	<i>AOI 21</i>	<i>AOI 21</i>	<i>AOI 21</i>
<i>Location:</i>		<i>MW-21-1S</i>	<i>MW-21-1S</i>	<i>MW-21-1S</i>	<i>MW-21-1S</i>	<i>MW-21-2S</i>	<i>MW-21-2S</i>	<i>MW-21-2S</i>	<i>MW-21-2S</i>	<i>MW-21-3S</i>	<i>MW-21-3S</i>	<i>MW-21-3S</i>	<i>MW-21-3S</i>
<i>Date:</i>		<i>3/3/2009</i>	<i>6/16/2009</i>	<i>9/23/2009</i>	<i>11/25/2009</i>	<i>3/3/2009</i>	<i>6/16/2009</i>	<i>9/23/2009</i>	<i>11/25/2009</i>	<i>3/3/2009</i>	<i>6/16/2009</i>	<i>9/23/2009</i>	<i>11/25/2009</i>
<i>LNAPL Monitoring</i>	<i>Units</i>												
Depth to Product	feet	4.80	--	--	--	--	--	--	--	4.14	--	--	--
Depth to Water	feet	4.92	4.65	6.27	6.77	4.17	3.58	5.12	5.59	4.15	3.58	5.12	5.63
LNAPL Thickness (feet)	feet	0.12	--	--	--	--	--	--	--	0.01	--	--	--

Notes:

- LNAPL not identified in Monitoring Well

TABLE 3.3

January 14, 2010

Page 2 of 3

**LNAPL THICKNESS MONITORING RESULTS
ANNUAL REPORT
13000 ECKLES ROAD SITE
LIVONIA, MICHIGAN**

<i>Area of Interest:</i>		<i>AOI 21</i>	<i>AOI 21</i>	<i>AOI 21</i>	<i>AOI 21</i>	<i>AOI 21</i>	<i>AOI 21</i>	<i>AOI 21</i>	<i>AOI 21</i>	<i>AOI 21</i>	<i>AOI 21</i>
<i>Location:</i>		<i>MW-A1-16S</i>	<i>MW-A1-16S</i>	<i>MW-A1-16S</i>	<i>MW-A1-16S</i>	<i>MW-21-4S</i>	<i>MW-21-4S</i>	<i>MW-21-4S</i>	<i>MW-21-4S</i>	<i>MW-21-5S</i>	<i>MW-21-5S</i>
<i>Date:</i>		<i>3/3/2009</i>	<i>6/16/2009</i>	<i>9/23/2009</i>	<i>11/25/2009</i>	<i>3/3/2009</i>	<i>6/16/2009</i>	<i>9/23/2009</i>	<i>11/25/2009</i>	<i>3/3/2009</i>	<i>6/16/2009</i>
<i>LNAPL Monitoring</i>	<i>Units</i>										
Depth to Product	feet	--	--	--	--	--	4.24	5.86	6.37	--	--
Depth to Water	feet	4.01	3.42	4.99	5.51	5.19	4.44	6.05	6.69	4.17	3.58
LNAPL Thickness (feet)	feet	--	--	--	--	--	0.2	0.19	0.32	--	--

Notes:

- LNAPL not identified in Monitoring Well

TABLE 3.3

January 14, 2010
Page 3 of 3

**LNAPL THICKNESS MONITORING RESULTS
ANNUAL REPORT
13000 ECKLES ROAD SITE
LIVONIA, MICHIGAN**

<i>Area of Interest:</i>	<i>AOI 21</i>	<i>AOI 21</i>	<i>AOI 21</i>	<i>AOI 21</i>	<i>AOI 21</i>	<i>AOI 21</i>
<i>Location:</i>	<i>MW-21-5S</i>	<i>MW-21-5S</i>	<i>MW-21-6S</i>	<i>MW-21-6S</i>	<i>MW-21-6S</i>	<i>MW-21-6S</i>
<i>Date:</i>	<i>9/23/2009</i>	<i>11/25/2009</i>	<i>3/3/2009</i>	<i>6/16/2009</i>	<i>9/23/2009</i>	<i>11/25/2009</i>

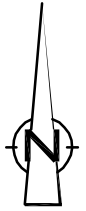
<i>LNAPL Monitoring</i>	<i>Units</i>						
Depth to Product	feet	--	--	--	--	5.27	--
Depth to Water	feet	5.09	5.58	4.31	3.72	5.28	5.77
LNAPL Thickness (feet)	feet	--	--	--	--	0.01	--

Notes:

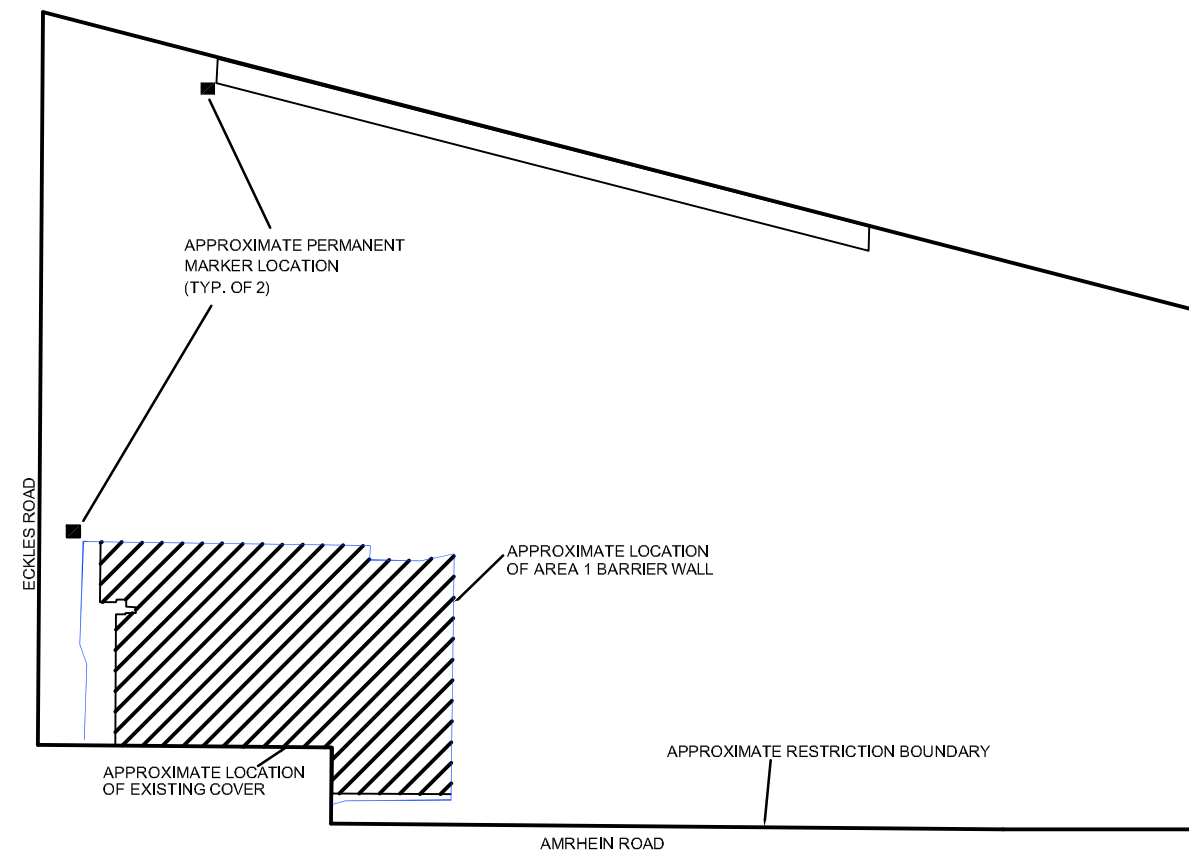
- LNAPL not identified in Monitoring Well

APPENDIX A

GM AND REALM PERMANENT MARKER PLANS



NOT TO SCALE



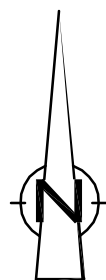
PERMANENT MARKER PLAN

THIS IS A SITE OF ENVIRONMENTAL CONTAMINATION. RESTRICTIONS ARE IN PLACE TO PREVENT UNACCEPTABLE EXPOSURE TO SUBSURFACE CONTAMINATION THAT IS PRESENT. THESE RESTRICTIONS GENERALLY: 1) PROHIBIT GROUNDWATER USE FOR ANY PURPOSE; 2) RESTRICT THE USES OF THE SITE INCLUDING PROHIBITING RESIDENTIAL USE; 3) RESTRICT THE USES OF THE SITE FOR ANY PURPOSE WHICH WILL INTERFERE WITH THE PERFORMANCE OF THE GROUNDWATER EXTRACTION SYSTEM AND TREATMENT OPERATIONS; 4) REQUIRE A DUST CONTROL PLAN FOR THE DISTURBANCE OF SURFACE AND SUBSURFACE SOILS WHICH COULD CAUSE AN UNACCEPTABLE DUST EXPOSURE IN THE NORTH BOUNDARY AREA; AND 5) PROHIBIT THE DISTURBANCE OF THE EXISTING COVER OR BARRIER WALL IDENTIFIED IN THE SOUTHWEST CORNER OF THE SITE WITHOUT THE EXPRESSED WRITTEN APPROVAL FROM GENERAL MOTORS CORPORATION. DETAILS CONCERNING THESE LAND AND RESOURCE RESTRICTIONS CAN BE FOUND AT THE WAYNE COUNTY REGISTER OF DEEDS, LIBER 45871, PAGES 446-461.

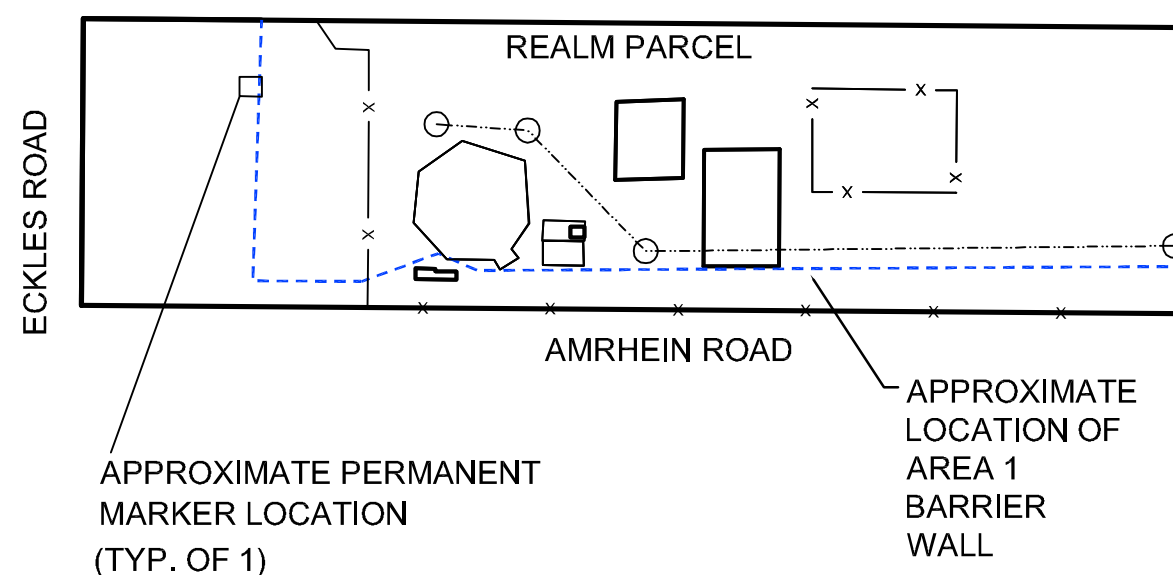
figure A.1

PERMANENT MARKER PLAN
RESTRICTIVE COVENANT
13000 ECKLES ROAD SITE
Livonia, Michigan





NOT TO SCALE



PERMANENT MARKER PLAN

THIS IS A SITE OF ENVIRONMENTAL CONTAMINATION. RESTRICTIONS ARE IN PLACE TO PREVENT UNACCEPTABLE EXPOSURE TO SUBSURFACE CONTAMINATION THAT IS PRESENT. THESE RESTRICTIONS GENERALLY: 1) PROHIBIT GROUNDWATER USE FOR ANY PURPOSE; 2) RESTRICT THE USES OF THE SITE INCLUDING PROHIBITING RESIDENTIAL USE; 3) RESTRICT THE USES OF THE SITE FOR ANY PURPOSE WHICH WILL INTERFERE WITH THE PERFORMANCE OF THE GROUNDWATER EXTRACTION SYSTEM AND TREATMENT OPERATIONS; AND 4) PROHIBIT THE DISTURBANCE OF THE BARRIER WALL WITHOUT THE EXPRESSED WRITTEN APPROVAL FROM GENERAL MOTORS CORPORATION. DETAILS CONCERNING THESE LAND AND RESOURCE RESTRICTIONS CAN BE FOUND AT THE WAYNE COUNTY REGISTER OF DEEDS, LIBER 46089, PAGE 412-426.

figure A.2

PERMANENT MARKER PLAN
RESTRICTIVE COVENANT
12950 ECKLES ROAD
Livonia, Michigan



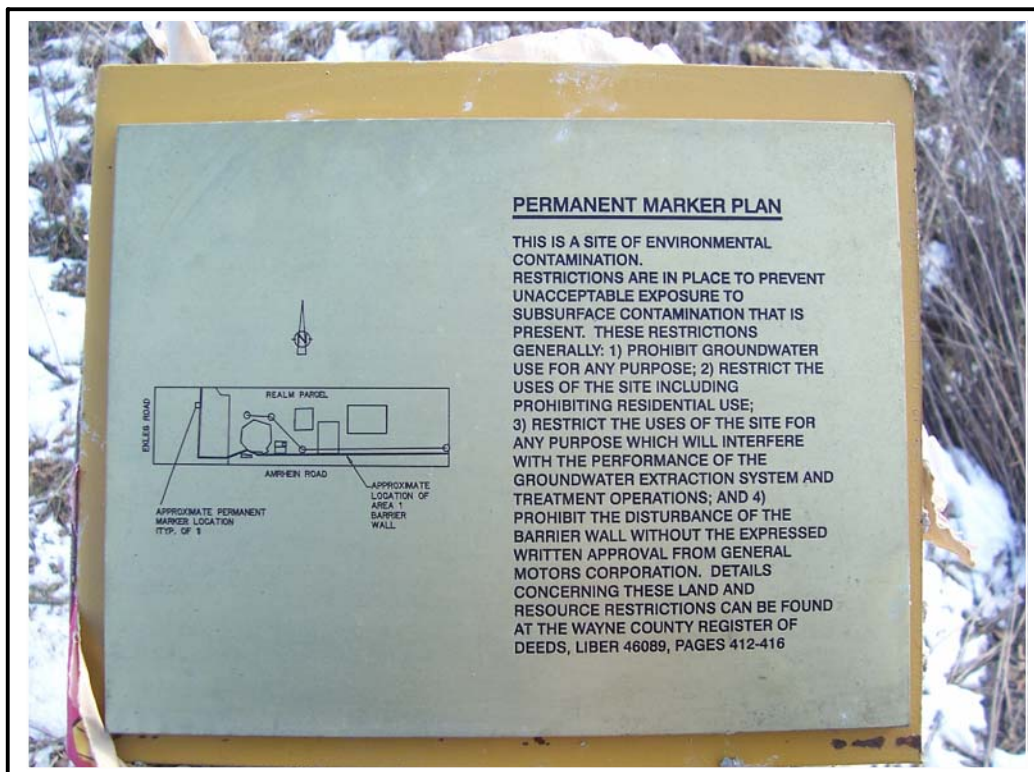


PHOTO 1: PERMANENT MARKER, 12950 ECKLES ROAD SITE.



PHOTO 2: PERMANENT MARKER, 13000 ECKLES ROAD SITE.

figure A.3

SITE PHOTOGRAPHS
12950 ECKLES ROAD
13000 ECKLES ROAD
Livonia, Michigan



APPENDIX B

CITY OF LIVONIA ORDINANCES

NO. 2823

AN ORDINANCE ADDING CHAPTER 40 (PROHIBITION ON USE OF GROUNDWATER) TO TITLE 13 OF THE LIVONIA CODE OF ORDINANCES, AS AMENDED.
--

THE CITY OF LIVONIA ORDAINS:

Section 1. Chapter 40 is hereby added to Title 13 of the Livonia Code of Ordinances, as amended, which chapter shall read as follows:

CHAPTER 13.40

PROHIBITION ON USE OF GROUNDWATER

Sections:

13.40.010	Purpose.
13.40.020	Definitions.
13.40.030	Prohibitions.
13.40.040	Exceptions.
13.40.050	Analysis Compilation/Costs.
13.40.060	Sources of Water Supplied for Human Consumption.
13.40.070	Wells Affecting Contaminated Groundwater.
13.40.080	Existing Non-Confirming Wells.
13.40.090	Enforcement.
13.40.100	Permit, Denial, Remedies.
13.40.110	Effective Date.

13.40.010 Purpose. The City Council finds that water received from the Detroit Water and Sewer Department and delivered by the City of Livonia is the best source of potable water. Therefore, this ordinance is enacted to protect the health, safety, and welfare of the residents of the City of Livonia as well as the public at large.

13.40.020 Definitions. For the purpose of this ordinance, the following definitions shall apply:

A. "Contaminated groundwater" means groundwater in which there is present concentrations of materials that exceed the residential drinking water criteria established by the MDEQ by rule or operational memoranda pursuant to Part 201 of

Michigan's Natural Resources and Environmental Protection Act, 1994 PA 451, as amended.

B. "DWRPD" means Drinking Water and Radiological Protection Division of the MDEQ.

C. "Groundwater" means underground water within the zone of saturation.

D. "Inspection Department" means the City of Livonia Inspection Department.

E. "Irrigation well" shall mean any well that is used for irrigation of the lawns, shrubs, trees and other ornamental plantings that are not intended to provide water to be consumed by humans or domestic animals.

F. "MDEQ" means the Michigan Department of Environmental Quality, or its successor agency.

G. "Well" means an opening in the surface of the earth for the purpose of removing water through non-mechanical or mechanical means for any purpose.

H. A reference to any City official shall be deemed a reference to the individual duly appointed to such position and that individual's designee.

13.40.030 Prohibitions. Except as provided in Section 13.40.040, no person shall install, allow, permit, or provide for the installation of a well in the City.

13.40.040 Exceptions. The Inspection Department may issue a permit to a person to install, utilize, allow, permit, or provide for the installation or utilization of a well within the City if one of the following prerequisites are met:

A. Determination of Non-contamination. If the MDEQ determines that the use of a well is not influenced or potentially influenced by contaminated groundwater, the use of a well will not influence the migration of contaminated groundwater, and the use of that well will remain unaffected by the future migration of contaminated groundwater, and proof of those determinations is delivered to the Inspection Department;

B. Groundwater monitoring. The well is used only for groundwater monitoring and remediation as part of a response activity or remedial activity approved by a regulatory agency;

C. Construction De-watering. The well is used for construction de-watering, and the following conditions are satisfied:

1. The use of the de-watering well will not result in unacceptable exposure to contaminated groundwater, possible cross-contamination between saturated zones, or hydrogeological effects on contaminated groundwater plumes; and

2. The water generated by that activity is properly handled and disposed of in compliance with all applicable laws, rules, regulations, permit and license requirements, orders and directives of any governmental entity or agency of competent jurisdiction. Any exacerbation caused by the use of the well under this exception shall be the responsibility of the person operating the de-watering well, as provided in Part 201 of the Natural Resources and Environmental Protection Act, being MCL 324.20101 to 324.20142.

D. Processing Activities. If the MDEQ determines that the use of a well for non-contact heating, cooling or processing activities will not cause the future migration of contaminated groundwater, and proof of that determination is delivered to the Inspection Department, and the well is used for the permitted purposes upon such terms and conditions as the MDEQ identifies;

E. Irrigation Wells. If the MDEQ determines that the use of an irrigation well will not cause the future migration of contaminated groundwater and that the intended use is protective of public health, safety, and welfare, and proof of that determination is delivered to the Inspection Department, and the well is used for the permitted purposes upon such terms that MDEQ identifies; or

F. Public Emergencies. A well may be used in the event of a public emergency.

13.40.050 Analysis Compilation/Costs. The party proposing an exception to the well prohibition shall conduct all appropriate inquiry and prepare a compliance analysis which shall demonstrate that the proposed exception is protective of public health, safety, welfare, and the environment and will not cause exacerbation. The party proposing an exception to this ordinance provision shall document compliance with this subpart by assembling an analysis pursuant to then current MDEQ guidelines in accordance with Part 201 and applicable administrative rules. All costs associated with performing appropriate inquiry and preparing a compliance analysis shall be borne by the party seeking the exception.

13.40.060 Sources of Water Supplied for Human Consumption. Except as provided in Section 13.40.040, water supplied for human consumption in the City shall be delivered only from the City water system or by the use of bottled water purchased at a retail food establishment as that term is defined in Public Act 92 of 2000, as amended, being MCL 289.1101, et seq., or delivered or purchased in containers under conditions approved by the DWRPD or other appropriate agency.

13.40.070 Wells Affecting Contaminated Groundwater. No well may be used or installed at any place in the City if the use of the well will have the effect of causing the migration of contaminated groundwater or a contaminated groundwater plume to previously unimpacted groundwater, or adversely impacting any groundwater treatment system, unless the well is part of an MDEQ or United States Environmental Protection Agency approved groundwater monitoring or remediation system.

13.40.080 Existing Non-Conforming Wells. Any well installed and in use prior to the date of the enactment of this ordinance shall not be governed by this ordinance.

13.40.090 Enforcement. The Inspection Department shall be responsible for the enforcement of this ordinance.

13.40.100 Permit, Denial, Remedies.

A. Misdemeanor. Any violation of this ordinance shall be a misdemeanor punishable by a fine not to exceed five hundred dollars (\$500.00) and costs of prosecution or by imprisonment in the county jail for not to exceed ninety (90) days, or by both such fine and imprisonment in the discretion of the court. Each act of violation and each day upon which such violation shall occur or shall continue shall constitute a separate offense.

B. Injunctive Relief. The City may further enforce this ordinance by action seeking injunctive relief. Any well in violation of this ordinance shall be deemed a nuisance subject to abatement.

C. Building or Improvement Permit. No permit for building, alteration, or other required permit for a premises or improvement thereon shall be issued by the City for any premises found in violation of this ordinance, or where it is proposed to install or use a well in violation of this ordinance.

D. Permit Fee and Costs. The person or entity seeking a permit (Petitioner) to install a well shall pay a fee of one hundred dollars (\$100) and, in accordance with 13.40.050 shall also be responsible to pay retail costs incurred by the Inspection Department or Engineering Department to ensure that the Petitioner should be issued a permit pursuant to an exception set forth in 13.40.040(A) through (E).

E. Severability. If any subsection, sentence, clause, phrase, or portion of this ordinance is held invalid or unconstitutional by any court of competent jurisdiction, such portion shall be deemed a separate, distinct, and independent provision and such holding shall not affect the validity of the remaining portions of this ordinance.

13.40.110 Effective Date. This ordinance shall become effective ten (10) days after its passage and publication of the ordinance as required by law.

Section 2. All ordinances or parts of ordinances in conflict herewith are hereby repealed only to the extent necessary to give this ordinance full force and effect.

Section 3. Should any portion of this ordinance be held invalid for any reason, such holding shall not be construed as affecting the validity of any of the remaining portions of this ordinance.

The above ordinance was passed at the regular meeting of the Council of the City of Livonia held Monday, July 20, 2009, at 8:00 p.m.

Linda Grimsby, City Clerk

The foregoing ordinance was authenticated by me on this 21st day of July, 2009.

Jack Kirksey, Mayor

Approved as to form:

Donald L. Knapp, Jr., City Attorney
Dated: July 21, 2009

NO. 2843

AN ORDINANCE ADDING SECTIONS 090, 100, 110, 120, 130, 140, AND 150 OF TITLE 13, CHAPTER 04 (GENERAL USE REGULATIONS) OF THE LIVONIA CODE OF ORDINANCES, AS AMENDED.

THE CITY OF LIVONIA ORDAINS:

Section 1. Section 090 is hereby added to Title 13, Chapter 04 of the Livonia Code of Ordinances, as amended, which section shall read as follows:

13.04.090 State Water Supply Cross Connection Rules Adopted by Reference. The Water Supply Cross Connection Rules of the Michigan Department of Environmental Quality, being R 325.11401 to R 325.11407 of the Michigan Administrative Code, are hereby adopted by reference.

Section 2. Section 100 is hereby added to Title 13, Chapter 04 of the Livonia Code of Ordinances, as amended, which section shall read as follows:

13.04.100 Cross Connection Inspections. It shall be the duty of the Wayne County Environmental Health Division, any successor agency, or an approved contractor to cause inspections to be made of all properties served by the public water supply where cross connections with the public water supply are deemed possible. The frequency of inspections and re-inspections based on potential health hazards involved shall be as established by the Wayne County Environmental Health Division, any successor agency, or an approved contractor, and as approved by the Michigan Department of Environmental Quality.

Section 3. Section 110 is hereby added to Title 13, Chapter 04 of the Livonia Code of Ordinances, as amended, which section shall read as follows:

13.04.110 Right of Entry for Cross Connection Inspections. The representative of the Wayne County Environmental Health Division, any successor agency, or an approved contractor shall have the right to enter at any reasonable time any property served by a connection to the public water supply system of the city for the purpose of inspecting the piping system or systems thereof for cross connections. On request, the owner, lessees, or occupants of any property so served shall furnish to the inspection agency any pertinent information regarding the piping system or systems on such property. The refusal of such information or

refusal of access, when requested, shall give rise to a rebuttable presumption of the presence of a cross connection.

Section 4. Section 120 is hereby added to Title 13, Chapter 04 of the Livonia Code of Ordinances, as amended, which section shall read as follows:

13.04.120 Discontinuance of Water Service where Cross Connections are Discovered. The Wayne County Environmental Health Division, any successor agency, or an approved contractor is hereby authorized and directed to discontinue water service after reasonable notice to any property wherein any connection in violation of this ordinance exists and to take such other precautionary measures deemed necessary to eliminate any danger of contamination of the public water supply system. Water service to such property shall not be restored until the cross connection(s) has been eliminated in compliance with the provisions of this ordinance.

Section 5. Section 130 is hereby added to Title 13, Chapter 04 of the Livonia Code of Ordinances, as amended, which section shall read as follows:

13.04.130 Testing of Back Flow Devices. All testable backflow prevention devices shall be tested initially upon installation to be sure that the device is working properly. Subsequent testing of devices shall be conducted at a time interval specified by the Wayne County Environmental Health Division, any successor agency, or an approved contractor and in accordance with Michigan Department of Environmental Quality requirements. Only individuals approved by the Wayne County Environmental Health Division, any successor agency, or an approved contractor shall be qualified to perform such testing. Such individual must hold a valid Michigan plumbing license and have successfully passed an approved backflow testing class prior to conducting any such test. That individual(s) shall certify the results of his/her testing.

Section 6. Section 140 is hereby added to Title 13, Chapter 04 of the Livonia Code of Ordinances, as amended, which section shall read as follows:

13.04.140 Protection of Potable Water Supply. Except for grandfathered water wells or wells previously issued permits by Wayne County allowing use of water from such wells for human consumption, any water outlet which could be used for potable or domestic purposes and which is not supplied by the potable system must be labeled in a conspicuous manner as:

**WATER UNSAFE
FOR DRINKING**

Section 7. Section 150 is hereby added to Title 13, Chapter 04 of the Livonia Code of Ordinances, as amended, which section shall read as follows:

13.04.150 Violation Deemed a Misdemeanor. Any person or customer found guilty of violating any of the provisions of this ordinance or any written order of the Wayne County Environmental Health Division or approved contractor, in pursuance thereof, shall be deemed guilty of a misdemeanor and upon conviction thereof shall be punished by a fine of not less than \$100.00 nor more than \$500.00 for each violation. Each day upon which a violation of the provisions of this act shall occur shall be deemed a separate and additional violation for the purpose of this ordinance.

Section 8. All ordinances or parts of ordinances in conflict herewith are hereby repealed only to the extent necessary to give this ordinance full force and effect.

Section 9. Should any portion of this ordinance be held invalid for any reason, such holding shall not be construed as affecting the validity of any of the remaining portions of this ordinance.

The above ordinance was passed at the regular meeting of the Council of the City of Livonia held Wednesday, September 23, 2009, at 8:00 p.m.

Linda Grimsby, City Clerk

The foregoing ordinance was authenticated by me on this 24th day of September, 2009.

Jack E. Kirksey, Mayor

Approved as to form:

Donald L. Knapp, Jr., City Attorney
Dated: September 24, 2009

APPENDIX C

DWSD SPECIAL DISCHARGE PERMIT



CITY OF DETROIT
WATER AND SEWERAGE DEPARTMENT
INDUSTRIAL WASTE CONTROL DIVISION

303 S. LIVERNOIS AVENUE
DETROIT, MICHIGAN 48209-3070
PHONE: 313.297.9400
FAX: 313.297-5860
WWW.DETROITMI.GOV

CERTIFIED MAIL

August 28, 2009

Mr. Robert Hare
General Motors Tech Center
2000 Centerpoint Parkway, MC 483-520-190
Pontiac, MI 48341-3147

Dear Mr. Hare:

Re: Special Discharge Permit No. SD6-92165
Site: GM/REALM - Livonia
12950 Eckles Road in Livonia, MI 48150

Enclosed is your Special Discharge Permit issued by the Detroit Water and Sewerage Department (DWSD) to discharge remediated groundwater from the above site and treated storm water collected in the pits on the east side of the treatment building, into the Detroit sewer system. The DWSD based this permit on the data and other related information your company submitted to Industrial Waste Control Division.

Your permit contains specific discharge limitations, flow rate, self-monitoring and reporting requirements. The DWSD can rescind this permit at any time if the discharge shows noncompliance with the discharge limitations or if the DWSD determines that the effluent has an adverse effect on the Detroit Wastewater Treatment Plant. Failure to comply with these terms and conditions may result in the immediate permit revocation and appropriate enforcement action.

Should you have any questions, please contact Mr. Tahseen Ansari at (313) 297-5814 or myself at (313) 297-5882.

Sincerely,

Jayakumar Pallegar, P.E.
Sr. Assoc. Engineer
Industrial Waste Control Division

JP/TA/bc

cc: Mr. Christopher Meincke
Conestoga-Rovers & Associates
14496 Sheldon Road, Suite 200
Plymouth, MI 48170-6026



SPECIAL DISCHARGE PERMIT
PERMIT NO.: SD6-92165

SECTION A: GENERAL INFORMATION

Site Information: GM/REALM - Livonia
12950 Eckles Road
Livonia, MI 48150

Consultant Information: Conestoga-Rovers & Associates
14496 Sheldon Road, Suite 200
Plymouth, MI 48170-6026

Mr. Christopher Meincke
Tel: (734) 453-5123

The Detroit Water and Sewerage Department (DWSD) hereby authorizes GM/REALM to discharge remediated groundwater from the said site into the Detroit sewer system. The DWSD grants this permit in accordance with the company's application and in conformity with plans, specifications, and other substantial data submitted to the DWSD.

All parameters listed in the permit must be analyzed. If there is a need to extend the permit, the company must submit a written request for an extension to the DWSD at least ninety (90) days before the permit's expiration date.

Effective Date: August 28, 2009

Expiration Date: June 30, 2010

Issued by:

Authorized by:

Jayakumar Pallegar, P.E.
Sr. Assoc. Engineer
Industrial Waste Control Division

Jose Belén, P.E.
Chemical Engineer
Industrial Waste Control Division

SECTION B: DISCHARGE LIMITATIONS

1. Representative Sampling Location/Discharge Point:

Sampling Location: At effluent sampling port, after final pH adjustment tank, T12

Discharge Point: MH located 42.5 feet N. of Amrhein Road and 715 feet E. of Eckles Road

The following parameters shall be analyzed and reported as per reporting requirements.

PARAMETER		Daily Max. (mg/l)	Self-Monitoring Required (Y/N)
Arsenic	As	1	No
Biochemical Oxygen Demand	BOD	7500	No
Cadmium	Cd	1	No
Chromium	Cr	2.77	Yes
Copper	Cu	2.5	No
Cyanide (Available)	AVCN	1	No
Fats, Oil or Grease	FOG	1500	Yes
Iron	Fe	1000	No
Lead	Pb	0.69	Yes
Mercury	Hg	Non-detect	Yes
Nickel	Ni	3.98	Yes
Phosphorus	P	250	No
Silver	Ag	1	No
Total PCB	PCB	Non-detect	Yes
Total Phenolic Compounds	PHENOL	1	No
Total Suspended Solids	TSS	7500	Yes
Zinc	Zn	2.61	Yes
Acidity/Alkalinity (pH)	pH	5.0 - 11.5 Units	Yes
Total Toxic Organics (TTO) *		2.13	Yes

* A minimum of one (1) sample per year shall be analyzed. The Toxic Organics is listed in attachment A.

Limitations are based on grab samples. All parameters must be analyzed according to methods outlined by EPA in 40 CFR Part 136.

The toxic organics must be analyzed with detection limit of 10 µg/l or less. The detection limit must be indicated in the wastewater analytical report. Matrix interference must be specified where applicable.

2. Permit Definition

The site is the former Delphi Chassis Livonia Plant. The plant is demolished and there is no metal finishing categorical operation at the site. The site is being remediated and the only wastewater discharge from this site is treated groundwater and storm water collected in the pits on the east side of the treatment building. The groundwater is treated for pH adjustment, clarification and filtration before discharge into the City sewer.

3. Discharge Flow Rate

The maximum discharge rate from the remediation site shall not exceed 100,000 gallons per day (batch discharge). The treatment system operates 24 hours per day, seven (7) days per week. Any plans to increase the flow rate must be approved in writing by the DWSD prior to implementation.

SECTION C: MONITORING REQUIREMENTS

1. Analytical Requirements

The company shall monitor and analyzed the discharge once per month for all parameters.

2. The DWSD may collect independent samples for analysis, or may request "split" portion of the sample the company collected.

SECTION D: REPORTING REQUIREMENTS

1. a) The company shall submit to the analytical data to the DWSD every three (3) months.

b) In addition to the laboratory analysis, each report shall include the following information:
 - i) Reporting period, date of sampling, sampling location and total flow to date
 - ii) Certification that the analyzed discharge is, or is not in compliance with the permit discharge limits
 - iii) Copy of the maintenance logbook. (Refer to Section E, paragraph 8)
 - iv) Signature of the company's authorized representative

SECTION A: GENERAL CONDITIONS AND REQUIREMENTS

1. If the sampling performed indicates non-compliance of the permit limitations; the company must:
 - a) Cease the discharge to the Detroit sewer system,
 - b) Notify the Department within 24 hours of becoming aware of the violation, and
 - c) Arrange a meeting with the Industrial Waste Control Division to discuss corrective actions prior to resumption of discharge.

2. The company shall report all interruptions and shutdowns due to rainfall, mechanical breakdowns or other major causes within 24 hours of becoming aware of the event.
3. The company must comply with the General and Specific Pollutant Prohibitions described in the City of Detroit Ordinance 08-05.
4. No other discharge beyond those described and authorized by this permit shall occur without written approval from the DWSD.
5. Non-compliance with any term or condition of this permit shall constitute a violation of the City of Detroit sewer use ordinance, and may result in immediate revocation of the permit and appropriate enforcement action.
6. The requirements and conditions established in this permit do not relieve the company of its obligation to comply with any applicable pretreatment regulations, standards, requirements, or laws that may become effective during the term of this permit.
7. The company shall take all necessary precautions to avoid the obstruction of the normal flow of traffic customary to the street(s).
8. The company must maintain a maintenance log. This log shall at least contain dated and timed records of all:
 - a) Inspection visits
 - b) Changes or replacements of the Activated Carbon Units
 - c) Samples taken
 - d) Breakdown of operations with:
 - i) Reason for breakdown
 - ii) Actions taken to prevent reoccurrence of breakdown
9. The company shall notify the DWSD in writing or by telephone at least twenty-four (24) hours prior to initial discharge.
10. The company shall pay applicable fees to the DWSD. The fees are subject to change annually, based upon the sewerage disposal rates set by The Board of Water Commissioners. For billing purposes, the company shall submit a report to the DWSD for the previous quarter's total volume of wastewater discharge into the sewer. This information shall be submitted on or before the 5th day of January, April, July and October of every year.
11. Any violations of the permit, conditions, requirements and limitation shall be subjected to a penalty of \$500.00 per violation per day.

Attachment A

Purgeable Compounds	Limit	Extractable Compounds	Limit
1,1,1-Trichloroethane	20 ppb	Benzo (k) Fluoranthene or (11,12-Benzofluoranthene)	20 ppb
1,1,2,2-Tetrachloroethane	20 ppb	Bis (2-Chloroethoxy) Methane	20 ppb
1,1,2-Trichloroethane	20 ppb	Bis (2-Chloroethyl) Ether	20 ppb
1,1-Dichloroethane	20 ppb	Bis (2-Chloroisopropyl) Ether	20 ppb
1,1-Dichloroethylene	20 ppb	Bis (2-Ethylhexyl) Phthalate	20 ppb
1,2-Dichlorobenzene	20 ppb	Butyl benzyl phthalate or (Benzyl butyl phthalate)	20 ppb
1,2-Dichloroethane	20 ppb	Chrysene	20 ppb
1,2-Dichloropropane	20 ppb	Dibenzo (a,h) Anthracene or (1,2,5,6-Dibenzanthracene)	20 ppb
1,2-Dichloropropylene or (1,2-Dichloropropene)	20 ppb	Diethyl Phthalate	20 ppb
1,2-Trans-Dichloroethylene or (Trans-1,2-Dichloroethene)	20 ppb	Dimethyl Phthalate	20 ppb
1,3-Dichlorobenzene	20 ppb	Di-N-Butyl Phthalate	20 ppb
1,4-Dichlorobenzene	20 ppb	Di-N-Octyl Phthalate	20 ppb
2-Chloroethylvinyl Ether	20 ppb	Fluorene	20 ppb
Acrolein	20 ppb	Hexachlorobenzene	20 ppb
Acrylonitrile	20 ppb	Hexachlorobutadiene	20 ppb
Benzene	20 ppb	Hexachlorocyclopentadiene	20 ppb
Bromoform (Tribromomethane)	20 ppb	Hexachloroethane	20 ppb
Carbon Tetrachloride or (Tetrachloromethane)	20 ppb	Indeno (1,2,3-cd) Pyrene or (2,3-o-Phenylene Pyrene)	20 ppb
Chlorobenzene	20 ppb	Isophorone	20 ppb
Chlorodibromomethane or (Dibromochloromethane)	20 ppb	Naphthalene	20 ppb
Chloroethane	20 ppb	Nitrobenzene	20 ppb
Chloroform or (Trichloromethane)	20 ppb	N-Nitrosodimethylamine	20 ppb
Dichlorobromomethane or (Bromodichloromethane)	20 ppb	N-Nitrosodi-N-Propylamine	20 ppb
Ethylbenzene	20 ppb	N-Nitrosodiphenylamine	20 ppb
Methyl Bromide or (Bromomethane)	20 ppb	p-Chloro-m-Cresol or (4-chloro-3-methyl phenol)	20 ppb
Methyl Chloride or (Chloromethane)	20 ppb	Pentachlorophenol	20 ppb
Methylene Chloride or (Dichloromethane)	20 ppb	Phenanthrene	20 ppb
Tetrachloroethylene or (Tetrachloroethene)	20 ppb	Phenol	20 ppb
Toluene	20 ppb	Pyrene	20 ppb
Trichloroethylene or (Trichloroethene)	20 ppb	Pesticides & PCB	
Vinyl Chloride or (Chloroethylene)	20 ppb	2,3,7,8-Tetrachlorodibenzo-p-Dioxin	20 ppb
Xylene	20 ppb	4,4-DDD or (p,p-TDE)	20 ppb
Extractable Compounds		4,4-DDE or (p,p-DDX)	20 ppb
		4,4-DDT	20 ppb
1,2,4-Trichlorobenzene	20 ppb	Aldrin	20 ppb
1,2-Diphenylhydrazine	20 ppb	Alpha-BHC	20 ppb
2,4,6-Trichlorophenol	20 ppb	Alpha-Endosulfan or (Endosulfan I)	20 ppb
2,4-Dichlorophenol	20 ppb	Beta-BHC	20 ppb
2,4-Dimethylphenol	20 ppb	Beta-Endosulfan or (Endosulfan II)	20 ppb
2,4-Dinitrophenol	20 ppb	Chlordane	20 ppb
2,4-Dinitrotoluene	20 ppb	Delta-BHC	20 ppb
2,6-Dinitrotoluene	20 ppb	Dieldrin	20 ppb
2-Chloronaphthalene	20 ppb	Endosulfan sulfate	20 ppb
2-Chlorophenol	20 ppb	Endrin	20 ppb
2-Nitrophenol	20 ppb	Endrin Aldehyde	20 ppb
3,3-Dichlorobenzidine	20 ppb	Fluoranthene	20 ppb
4,6-Dinitro-O-Cresol	20 ppb	Gamma-BHC	20 ppb
4-Bromophenyl Phenyl Ether	20 ppb	Heptachlor	20 ppb
4-Chlorophenyl Phenyl Ether	20 ppb	Heptachlor Epoxide or (BHC-Hexachlorocyclohexane)	20 ppb
4-Nitrophenol	20 ppb	Toxaphene	20 ppb
Acenaphthene	20 ppb	PCB-1016 (Arochlor 1016)	0.5 ppb
Acenaphthylene	20 ppb	PCB-1221 (Arochlor 1221)	0.5 ppb
Anthracene	20 ppb	PCB-1232 (Arochlor 1232)	0.5 ppb
Benzidine	20 ppb	PCB-1242 (Arochlor 1242)	0.5 ppb
Benzo (a) Anthracene or (1,2-Benzanthracene)	20 ppb	PCB-1248 (Arochlor 1248)	0.5 ppb
Benzo (a) Pyrene or (3,4-Benzopyrene)	20 ppb	PCB-1254 (Arochlor 1254)	0.5 ppb
Benzo (b) Fluoranthene or (3,4-Benzofluoranthene)	20 ppb	PCB-1260 (Arochlor 1260)	0.5 ppb
Benzo (ghi) Perylene or (1,12-Benzoperylene)	20 ppb		

APPENDIX D

DATA VALIDATION MEMORANDUM



**CONESTOGA-ROVERS
& ASSOCIATES**

14496 Sheldon Road, Suite #200

Plymouth, Michigan 48170

Telephone: (734) 453-5123

Fax: (734) 453-5201

www.CRAworld.com

MEMORANDUM

TO: Chris Meincke

REF. NO.: 12607

FROM: Cindy Zadorozny/ma/1/Det

DATE: October 19, 2009

RE: Data Quality Assessment and Full Validation
Groundwater Sampling – September 2009
13000 Eckles Road Site - Livonia, Michigan

SSOW NO: 12650-007024

The following details a quality assessment and validation of the analytical data resulting from the September 15 and 16, 2009 collection of 14 groundwater and three (3) quality control samples from the 13000 Eckles Road Site in Livonia, 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 following guidance documents:

- i. "USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review", EPA-540/R-99/008, October 1999; and
- ii. "USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Review", EPA-540/R-94/013, February 1994.

These guidelines are collectively referred to as "NFGs" in this Memorandum.

Sample Quantitation

The laboratory reported detected concentrations of volatile organic compounds (VOC) and inorganics 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" or a "B" for organics and inorganics, respectively. These concentrations should be qualified as estimated (J) values unless qualified otherwise in this memorandum. The laboratory "B" flags may be disregarded.

Sample Preservation and Holding Times

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

Sample Preservation and Holding Times (continued)

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

Two samples submitted for metal analysis were preserved upon receipt by the laboratory. No action was required. The remaining 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) was checked at the beginning of each 12-hour period using bromofluorobenzene (BFB). 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 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 minimum of 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 ; and
- 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.

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

CRA MEMORANDUM

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; and
- 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.

Initial Calibration – Inorganic Analyses

The initial calibration includes a blank and at least one standard for inductively coupled plasma (ICP) to establish the analytical curve. The coefficient of variation for calibration curves must exceed 0.995.

Initial calibration is verified with an initial calibration verification (ICV) standard which must recover within 90 to 110 percent for metals by ICP.

A review of the laboratory data showed that the inorganic initial calibration curves and ICVs were analyzed at the appropriate frequency and were within the acceptance criteria.

Continuing Calibration – Inorganic Analyses

Continuing calibration verification (CCV) standards are analyzed at method specified frequency (one every 10 samples). The CCVs must meet the percent recovery control limits specified above for the ICVs. Criteria for inorganic analyses are the same criteria as used for assessing the initial calibration data.

A review of the laboratory data showed that CCVs were analyzed at the appropriate frequency and the data were within the acceptance criteria.

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 method blank samples did not contain target compounds with concentrations that impacted the investigative samples.

Laboratory Blank Samples – Inorganic Analyses

Metals analyses include the analysis of initial calibration blanks (ICB) and continuing calibration blanks (CCB) to assess the presence and the magnitude of sample contamination introduced during sample analysis. The CCBs are analyzed at a minimum frequency of one every 10 samples and target analytes should be non-detect.

A CCB was reported with detectable concentrations of target analytes. The sample presented in Table 3 should be qualified due to CCB contamination above the laboratory MDLs. The ICB and remaining CCBs did not contain elements 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 VOC surrogate recoveries could not be measured or evaluated in a sample due to the dilution required to successfully analyze the sample. No qualification of this sample was required. The surrogate recovery acceptance criteria were met for all samples that could be evaluated.

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 MS/MSD percent recoveries and associated RPD acceptance criteria were met or did not warrant qualification for each of the 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.

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.

Inductively Coupled Plasma (ICP) Interference Check Sample Analysis – Inorganic Analyses

To verify that proper inter-element and background correction factors had been established by the laboratory for metals analyses, the ICP interference check samples (ICS) are analyzed. The ICSs are evaluated against recovery control limits of 80 to 120 percent.

The ICS analysis results were evaluated for all samples and were within the control limits.

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 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 internal standard data showed that the IS area counts and retention time data were within the acceptance criteria.

Serial Dilution – Inorganic Analyses

The percent difference (D) between a serial dilution of a sample for each matrix was monitored to determine physical or chemical interference. A minimum of one sample per 20 investigative samples is analyzed at a five-fold dilution. The serial dilution results must agree within 10 percent D of the original results for samples with detected concentrations greater than 50 times the instrument detection limit.

The percent D acceptance criteria was met.

Contract Required Detection Limit (CRDL) Analyses – Inorganic Analyses

The instrument calibration near the Contract Required Detection Limit (CRDL) must be verified for each analyte reported. An ICP standard solution at the CRDL (CRI) is evaluated against the control limits provided.

The CRI analysis results were evaluated for all samples and were within the control limits.

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.

CRA MEMORANDUM

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 two (2) field duplicate sample sets and one (1) trip blank sample.

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 for water samples. 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 for water samples.

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.

No target analytes were reported as detected in the trip blank sample.

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
GROUNDWATER SAMPLING - SEPTEMBER 2009
13000 ECKLES ROAD SITE
LIVONIA, MICHIGAN

CRA SDG No.: 24-1 ⁽¹⁾	Sample Identification	Location	Matrix	QC Samples	Collection Date (mm/dd/yyyy)	Collection Time (hr:min)	Analysis/Parameters				
							Select VOC	Chromium	Nickel	Hexavalent Chromium	Trivalent Chromium
TA-NC Lot No.: A91170152											
	TB-12607-091509-JY-092	--	water	Trip Blank	9/15/2009	--	X				
	GW-12607-091509-JY-093	MW-215S	water		9/15/2009	10:01	X				
	GW-12607-091509-EV-094	MW-213S	water		9/15/2009	10:05	X				
	GW-12607-091509-EV-095	MW-216S	water		9/15/2009	11:05	X				
	GW-12607-091509-EV-096	MW-216S	water	DUP (095)	9/15/2009	11:06	X				
	GW-12607-091509-JY-097	MW-211S	water		9/15/2009	10:46	X				
	GW-12607-091509-EV-098	MW-217S	water		9/15/2009	11:55	X				
	GW-12607-091509-JY-099	MW-202S	water		9/15/2009	12:06	X				
	GW-12607-091509-JY-100	MW-OS-5D	water		9/15/2009	15:36	X				
	GW-12607-091509-JY-101	MW-OS-8D	water		9/15/2009	14:51		X	X		
	GW-12607-091509-EV-102	MW-OS-6D	water		9/15/2009	14:40		X	X		
	GW-12607-091509-EV-103	MW-OS-7D	water		9/15/2009	15:30		X	X		
	GW-12607-091609-JY-104	MW-103S	water	MS/MSD	9/16/2009	09:21	X				
	GW-12607-091609-EV-105	HA-16	water		9/16/2009	10:05		X	X		
	GW-12607-091609-EV-106	HA-16	water	DUP (105)	9/16/2009	10:10		X	X	X	X
	GW-12607-091609-EV-107	OW-24	water	MS/MSD-P	9/16/2009	12:00		X	X	X	X
	GW-12607-091609-EV-108	HA-14	water		9/16/2009	12:05		X	X	X	X

Notes:

- DUP - Field Duplicate Sample of sample in parenthesis
- MS/MSD - Matrix Spike/Matrix Spike Duplicate
- MS/MSD-P - Matrix Spike/Matrix Spike Duplicate (Partial parameters)
- QC - Quality Control
- VOC - Volatile Organic Compounds
- (1) - Additional review per Tier 3 requirements

TABLE 2

SUMMARY OF ANALYTICAL METHODS, HOLDING TIME PERIODS, AND PRESERVATIVES
GROUNDWATER SAMPLING - SEPTEMBER 2009
13000 ECKLES ROAD SITE
LIVONIA, MICHIGAN

<i>Parameter</i>	<i>Method</i> ¹	<i>Matrix</i>	<i>Holding Time</i>	<i>Preservation</i>
Select VOC	SW-846 8260	Water	- 14 days from sample collection to completion of analysis.	pH < 2 and Iced, 4 ± 2° C
Metals				
Chromium	SW-846 6010B	Water	- 180 days from sample collection to completion of analysis	pH < 2 and Iced, 4 ± 2° C
Nickel	SW-846 6010B			
General Chemistry				
Hexavalent Chromium	SW-846 7196	Water	- 24 hours from sample collection to completion of analysis.	Iced, 4 ± 2° C
Trivalent Chromium	Calculation	Water	- Not applicable (NA)	NA

*Notes*¹ Method References:

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

VOC - Volatile Organic Compounds

TABLE 3

SUMMARY OF QUALIFIED SAMPLE DATA DUE TO LABORATORY BLANK CONTAMINATION
GROUNDWATER SAMPLING - SEPTEMBER 2009
13000 ECKLES ROAD SITE
LIVONIA, 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>
Metals	Nickel	09/22/09	1.7 B	GW-12607-091509-JY-100	20.0 U	µg/L

Notes:

- B (inorganics) - Estimated Results. Results less than Report Limit (RL)
- U - Qualified as Not Detected at the report limit

APPENDIX E

AOI 39 SOIL DUST CONTROL PLAN

**AOI 39 Soil Dust Control Plan
Former General Motors Delphi Chassis Systems Plant
13000 Eckles Road
Livonia, Michigan
USEPA No. MID005356621**

INTRODUCTION

This Dust Control Plan (Plan) sets forth requirements for institutional and engineering controls to be implemented in Area Of Interest (AOI) 39 – North Boundary Area under an Administrative Order on Consent (Consent Order), signed by General Motors Corporation (“GM”) and United States Environmental Protection Agency (“USEPA”). This Plan is part of the final corrective measures per the Consent Order under the Resource Conservation and Recovery Act (“RCRA”) by GM at its Former Delphi Chassis Systems Plant (Property).

On June 27, 2005, GM submitted to USEPA a Revised RCRA Corrective Measures Proposal (“CMP”) that proposed final corrective measures for the Property. The June 27, 2005, CMP described and documented the investigations, corrective action activities, and proposed controls for contamination remaining at the Property. USEPA reviewed GM’s CMP, inspected the Property, and issued a RCRA Final Decision and Response to Comments dated March 13, 2006, determining that the proposed corrective measures at the Property are approved as long as an enforceable mechanism is in place to ensure that the controls proposed by GM are implemented and remain in place. The Restrictive Covenant and the Administrative Order on Consent are collectively the mechanism to ensure controls remain in place.

This Plan addresses activities required to ensure the continued effectiveness of corrective measures in AOI 39.

OBJECTIVES

The objective of establishing this Plan is to ensure that control of dust generated during activities in AOI 39 (such as vehicular traffic, site redevelopment, or other excavation activities) is conducted in a way that is protective of human health and the environment as well as being in compliance with applicable laws. The Plan is specifically applicable to AOI 39 – Northern Boundary of the Site identified in the RCRA Facility Investigation (RFI), which requires engineering and institutional controls as described in the RCRA Final Decision and shown on Plan 1.

This plan does not supersede Federal, State or Local laws regarding the excavation, movement, or grading of soil, or the national ambient air quality standards (NAAQS) for respirable particulate matter (PM₁₀), but rather presents additional considerations that need to be taken into account during activities that disturb the soil in AOI 39. It is expected that qualified and trained individuals will implement this Plan.

CONTROLS

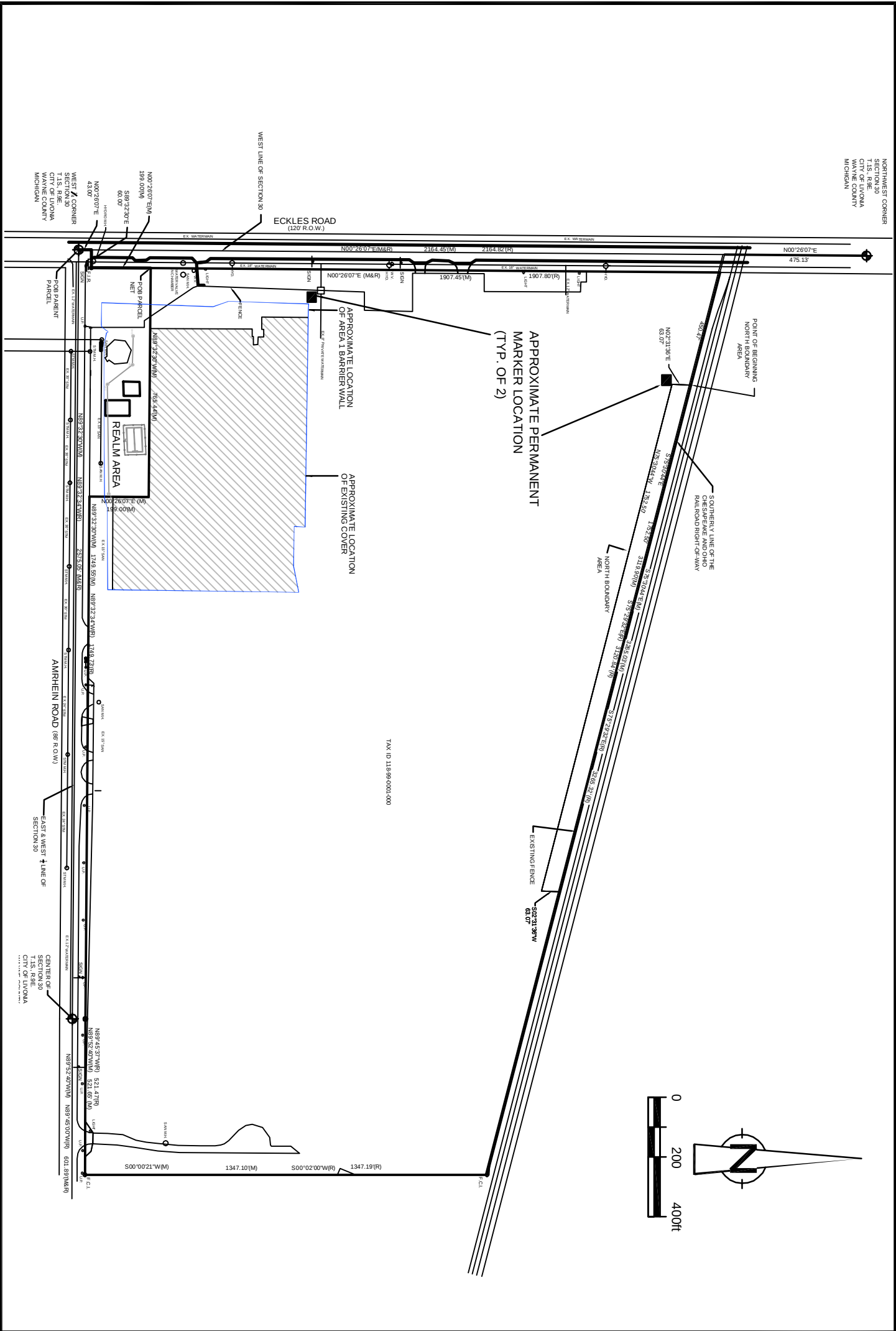
Institutional Control

AOI 39 is subject to the same Restrictive Covenant that applies to the rest of the Property. A Restrictive Covenant will be recorded with the Wayne County Register of Deeds to: 1) prohibit groundwater use on the Property for any purpose; 2) restrict the uses of the Property for any purpose other than those characterized by the Michigan Department of Environmental Quality ("MDEQ") as Limited Commercial II, Limited Commercial III, Limited Commercial IV and Limited Industrial, unless otherwise agreed to by GM and USEPA; 3) maintain the barrier wall and cover located in the area of the Property as generally shown on Exhibit 3 of the restrictive covenant; and 4) control particulate emissions from surface soil on certain areas of the Property so that there are no unacceptable inhalation risks.

Engineering Control

Manganese has been identified at AOI 39 – North Boundary Area at concentrations greater than Michigan Department of Environmental Quality (MDEQ) generic industrial particulate soil inhalation criteria (PSIC). As discussed in the Supplement to the RFI Report (Section 5.3.4), activities that generate airborne dust at AOI 39 (such as vehicular traffic, site redevelopment activities, or other construction activities) should include the use of appropriate engineering controls to limit generation and off-site transport of airborne manganese and dust, and the use of proper personal protective equipment to protect workers to prevent any unacceptable exposures. Based on the RFI baseline risk assessment presented in the Supplement to the RFI Report, dust generating activities at AOI 39 that last longer than 5 consecutive days warrant engineering controls beyond those otherwise necessary for compliance with the NAAQS for PM₁₀ (which are 150 µg/m³ as a 24-hr average and 50 µg/m³ as an annual average).

Mechanisms for controlling manganese particulate emissions from AOI 39 could include wetting of the soil, slowing the work, minimizing the disturbed area, covering with a temporary tarp or liner, covering with clean gravel, pavement, or installing other improved surfaces. Additionally, performing work on days with little or no wind could reduce the potential for off-site exposure. For any dust generating activities in AOI 39 that last longer than 5 consecutive days, a written dust control plan must be submitted to USEPA by the current owner for review at least 21 days in advance of dust generating activities and be approved by USEPA before the dust generating activities begin. The dust control plan must describe the nature and duration of the dust generating activities and the specific details of the measures that will be implemented to monitor and control manganese particulate emissions during the activities.



WEST 1/4 CORNER
SECTION 30
T.1S., R.9E.
CITY OF LIVONIA
WAYNE COUNTY
MICHIGAN



**CONESTOGA-ROVERS
& ASSOCIATES**

TITLE
PLAN 1
CORRECTIVE ACTION COMPONENTS
RESTRICTIVE COVENANT
LIVONIA, MICHIGAN

DRAWN S.S.

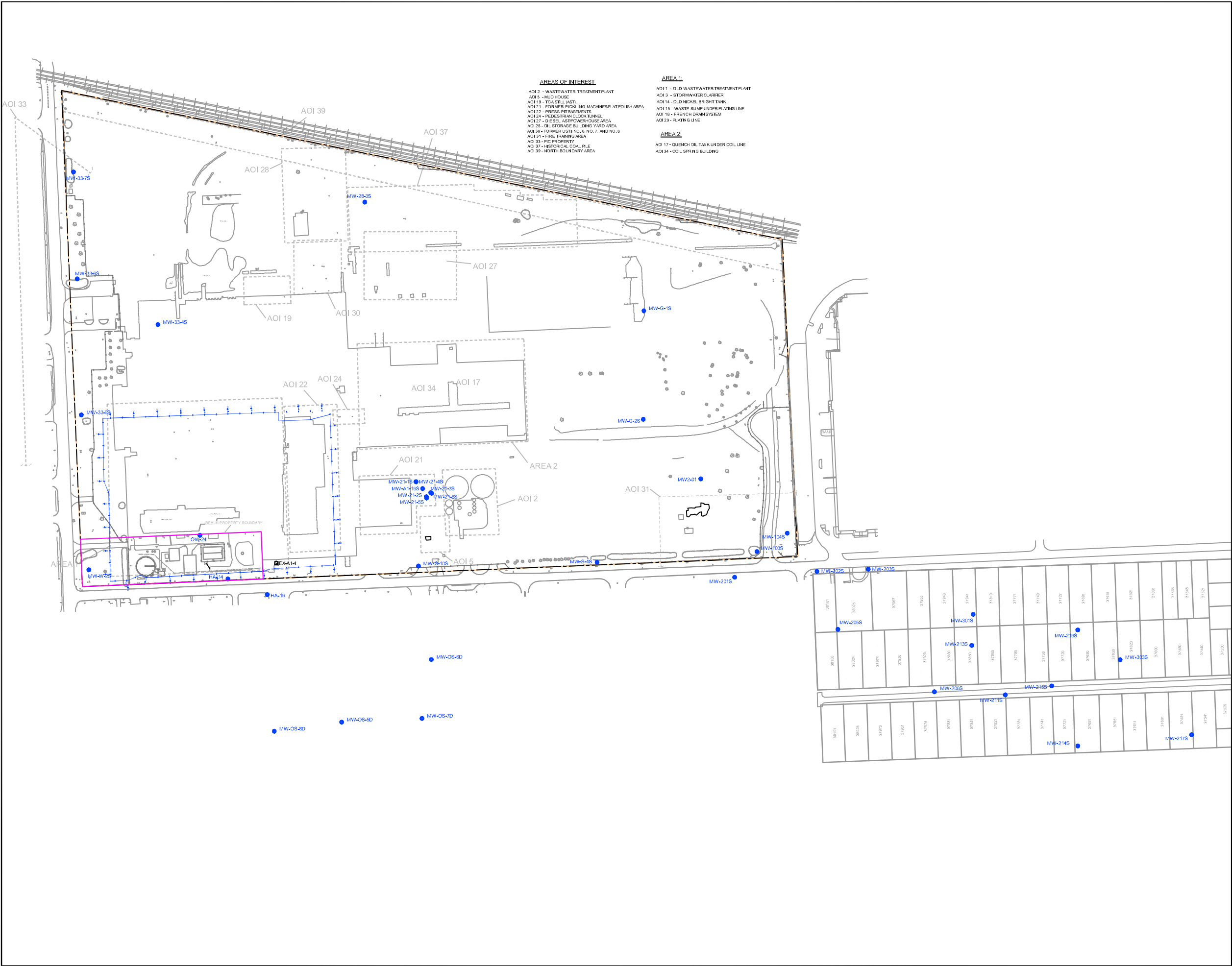
APPROVED C.M.

PROJECT No. 12607-40

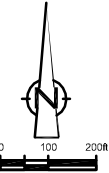
SCALE 1"=400'

DATE 01/29/07

DRAWING NUMBER SHEET 1 OF 1



NO	Revision	Date	Initial



LEGEND

- SITE BOUNDARY
- FENCE
- MW-104S GMP MONITORING WELL
- EX-A1-1 AREA 1 EXTRACTION WELL

SCALE VERIFICATION

THIS BAR MEASURES 1" ON ORIGINAL. ADJUST SCALE ACCORDINGLY.



Approved

DRAWING STATUS

Status	Date	Initial

MONITORING WELL LOCATIONS

ANNUAL REPORT

13000 ECKLES ROAD SITE
LIVONIA, MICHIGAN



CONESTOGA-ROVERS & ASSOCIATES

Source References:

Project Manager: CJM.	Reviewed By: K.A.	Date: JANUARY 8, 2010
Scale: 1"=200'	Project N#: 012607-04	Report N#: 062
		Drawing N#: PLAN 1