Worldwide Facilities Group
Remediation Team

March 9, 2009

Mr. Nate Nemani
Project Coordinator for MID 041 793 340
RCRA Enforcement Branch (DE-9J)
U.S. EPA, Region 5
77 West Jackson Boulevard
Chicago, Illinois 60604-3590

RE: GMC Powertrain Saginaw Metal Casting Operations, MID-041-793-340
RCRA Facility Investigation
Monthly Progress Report for the Month of February 2009

Dear Mr. Nemani:

Enclosed please find two copies of the Monthly Progress Report for the month of February 2009 for the RCRA Facility Investigation (RFI) at the GMC Powertrain Saginaw Metal Casting Operations (SMCO) Facility, MID-041-793-340, in Saginaw, Michigan.

Please call me at 313-510-4328 if you have any questions regarding this report.

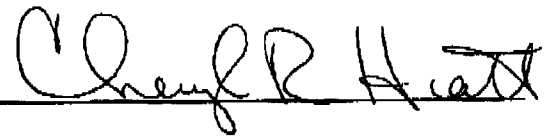
Sincerely,

Cheryl R. Hiatt
Project Coordinator for General Motors

cc: Mr. Peter Ramanauskas, U. S. EPA
Mr. George Bruchmann, MDEQ-WMD Lansing
Mr. Terry Walkington, MDEQ-WMD Bay City
Ms. Rhonda Klann, MDEQ-RRD Bay City
Dr. Lisa Williams, U.S. DOI, Fish and Wildlife
Ms. Jean Caufield, GM
Mr. James Walle, GM
Mr.Moh Kumar/ Mr. Ray Ilkka, GM
Mr. Mike Tomka, CRA

Engineering West•30200 Mound Road•Mail Code 480-111-W60• Warren •MI 48090•Fax 586-986-2281

"I certify that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Signature: 

Name: Cheryl R. Hiatt

Title: Project Coordinator

Date: March 9, 2009

GENERAL MOTORS CORPORATION

SAGINAW METAL CASTING OPERATIONS
WASHINGTON AVENUE AND VETERANS MEMORIAL PARKWAY
SAGINAW, MICHIGAN
EPA ID #MID041793340

RCRA FACILITY INVESTIGATION

MONTHLY PROGRESS REPORT

March 9, 2009

CONESTOGA-ROVERS & ASSOCIATES
8615 WEST BRYN MAWR AVENUE
CHICAGO, ILLINOIS 60631
PHONE: (773) 380-9933
FAX NO.: (773) 380-6421

CERTIFICATION STATEMENT

"I certify that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

SEE ATTACHED CERTIFICATION LETTER

_____ _____

Cheryl R. Hiatt
GM Remediation Project Coordinator

Date

General Motors Corporation
Worldwide Facilities Group
Remediation Team

DISTRIBUTION LIST

U.S. EPA RCRA Enforcement Branch, Project Coordinator	Nate Nemani
MDEQ Waste Management Division, Chief	George Bruchmann
MDEQ Waste Management Division, District Supervisor	Terry Walkington
MDEQ Remediation and Redevelopment	Rhonda Klann
USDOI, East Lansing Field Office	Dr. Lisa Williams
GM Remediation Project Coordinator	Cheryl R. Hiatt
GM SMCO Environmental Dept.	Ray Ilkka
GM Legal Counsel	James Walle, Esq.
CRA Project Manager	William K. Steinmann, CPG
CRA Document Coordinator	Rosanne Cadetto
Exponent	Pieter Booth
ENVIRON International Corporation, Inc.	Stephen Song, Ph.D.

LIST OF ATTACHMENTS

Attachment A – City of Saginaw Consent Order – January 2009 Monthly Report, GM Saginaw Metal Casting Operations, Saginaw, Michigan

Attachment B – 2nd Semiannual 2008 Environmental Monitoring Report, GMPT Saginaw Metal Casting Operations Landfill, URS, January 2009

Attachment C – Tier Two Emergency and Hazardous Chemical Inventory Submission – General Motors - Saginaw Metal Casting Operations, February 20, 2009

1.0 INTRODUCTION

This Monthly Progress Report is submitted in accordance with the RCRA Section 3008(h) Unilateral Administrative Order (U.S. EPA Docket No. V-W-003-95) issued to General Motors Corporation, July 9, 1995 (effective August 9, 1995).

The next monthly progress report will be submitted on or before April 10, 2009.

2.0 DESCRIPTION AND ESTIMATE OF THE PERCENTAGE OF THE RFI COMPLETED

Each of the submissions identified in the Order has been submitted on or before its due date. The following is a list of those submissions and the date submitted.

- Designation of GM's Project Manager and Project Consultant - July 7, 1995.
- Description of Current Conditions (DOCC) Report (Task I) - August 22, 1995.
- Notification of Laboratories to be used for the RFI - September 6, 1995.
- Supplemental data submission package - October 6, 1995.
- Pre-Investigation Evaluation of Corrective Measure Technologies (Task II) - October 6, 1995.
- RFI Workplan (Task III) for Phase 1 - November 3, 1995.
- Addendum to the DOCC - October 10, 1997. Technical Memorandum: Saginaw River Sediment Chemistry in the Vicinity of the Saginaw Metals Casting Operations - March 13, 1998, Revised: December 17, 1998.
- RFI Workplan (Task III) for Phase IA - Revision 2, June 9, 1998 (Approved June 30, 1998).
- Addendum to the June 1998 (Revision 2) Phase 1A RCRA Facility Investigation Workplan, Saginaw Metal Casting Operations, Saginaw, Michigan, December 9, 1998.
- Addendum to the Description of Current Conditions Report, Area West of 6th Street, January 14, 1999.
- Phase 1A RCRA Facility Investigation (RFI) Report and Phase 1B RFI Workplan, June 7, 1999 and April 19, 2000.
- Amendment to the June 1999 Phase 1A RCRA Facility Investigation (RFI) Report and Phase 1B RFI Workplan, June 4, 2001.
- RFI Phase 1B Amendment No. 2 to the April 19, 2000 Phase 1A RFI Report and Phase 1B RFI Work Plan, August 21, 2002.
- Environmental Indicators Report, September 17, 2003.
- RFI Phase 1C Investigation Work Plan, December 9, 2004.

- Interim Measures Work Plan for PCB-Impacted Areas, December 9, 2004.
- Interim Measures Work Plan for LNAPL-Impacted Soil in IU B, December 9, 2004.
- Amendment to the Interim Measures Work Plan for PCB-Impacted Areas, January 21, 2006.
- Amendment to Interim Measures Work Plan for LNAPL-Impacted Soil in IU B, January 21, 2006.
- Interim Measures Completion Report for PCB-Impacted Soil, August 9, 2006.
- RCRA Facility Investigation – Phase 1C Report, January 5, 2007.
- RCRA Facility Investigation – Phase 1C Report – Revised, March 9, 2007.
- Interim Measures Work Plan for pH-Impacted Soil, February 27, 2009.

GM currently estimates that all of the RFI field work has been completed.

3.0 SUMMARIES OF ALL FINDINGS

GM has continued sewer investigation activities as part of a Consent Order with the City of Saginaw. The Consent Order currently requires the submittal of monthly reports detailing the sampling of Outfall 008 and any cleaning activities that took place during the previous month. The Monthly Report (January 1 – January 31, 2009) is presented in Attachment A.

No LNAPL excavation as described in the original IM work plan will be completed at this time as the monitoring of MW-00305, MW-00304, MW-00303, MW-00304A, MW-00304B and MW-00305A reported no measurable LNAPL on February 25, 2009. GM believes that agreement has been reached with U.S. EPA and MDEQ to no longer require the excavation in the LNAPL area and is anticipating written confirmation that this issue has been resolved and monthly monitoring is no longer required.

U.S. EPA and GM participated in a monthly project status call on February 23, 2009.

On January 29, 2009, GM submitted the 2nd Semiannual Environmental Monitoring Report for 2008 for the General Motors Powertrain – Saginaw Metal Casting Operations (GMPT – SMCO) Landfill to Michigan Department of Environmental Quality (MDEQ). The submittal is a requirement of Solid Waste Disposal Operating License No. 9126. A copy of the semiannual report is presented in Attachment B.

On February 20, 2009, GM submitted a copy of the Tier Two Emergency and Hazardous Chemical Inventory reporting for GMPT – SMCO to MDEQ. The submittal is a requirement under Section 312, Title III of the Superfund Amendments and Reauthorization Act of 1986. A copy of the submission notification letter for the inventory is presented in Attachment C.

4.0 SUMMARIES OF ALL CHANGES MADE IN THE RFI DURING THE REPORTING PERIOD

No changes occurred during the reporting period.

5.0 SUMMARIES OF ALL CONTACTS WITH REPRESENTATIVES OF LOCAL COMMUNITY, PUBLIC INTEREST GROUPS OR STATE GOVERNMENT DURING THE REPORTING PERIOD

GM has continued monthly sampling of sewer outfall 008 as part of the Consent Order with the City of Saginaw regarding compliance of the wastewater discharge at Outfall 008. GM submitted the monthly report (January 1 – January 31, 2009) (Attachment A) to the City in accordance with the Consent Order.

On January 29, 2009, GM submitted the 2nd Semiannual Environmental Monitoring Report for 2008 for the GMPT Landfill to MDEQ. A copy of the semiannual report is presented in Attachment B.

On February 20, 2009, GM submitted a copy of the Tier Two Emergency and Hazardous Chemical Inventory reporting for GMPT to MDEQ. A copy of the submission notification letter for the inventory is presented in Attachment C.

On February 27, 2009, GM submitted the Interim Measures Work Plan for pH-Impacted Soil to U.S. EPA.

6.0 SUMMARIES OF ALL PROBLEMS OR POTENTIAL PROBLEMS ENCOUNTERED DURING THE REPORTING PERIOD

Excavation of soil in the area of LNAPL has not been completed and GM has requested that the original IM work plan be withdrawn. Based on discussions with U.S. EPA on November 24, 2008, January 22 and February 23, 2009, GM believes all questions have been answered and that U.S. EPA will be issuing a letter accepting GM's withdrawal request.

7.0 ACTIONS BEING TAKEN TO RECTIFY PROBLEMS

GM submitted a request to withdraw the LNAPL IM Work Plan and U.S. EPA is reviewing the request. Based on discussions with U.S. EPA on November 24, 2008, January 22 and February 23,

2009, GM believes that all questions have been answered and that U.S. EPA will be issuing a letter accepting GM's withdrawal request. The last questions by MDEQ concerning the residual risk of the soils in the former LNAPL Area were answered by Environ on the February 23, 2009 monthly status call.

8.0 CHANGES IN PERSONNEL DURING THE REPORTING PERIOD

No changes in personnel occurred during the reporting period.

9.0 PROJECTED WORK FOR THE NEXT REPORTING PERIOD

The next monthly progress report will be completed by April 10, 2009.

A monthly telephone update between U.S. EPA and GM is scheduled for March 23, 2009.

GM will submit the EI monitoring results.

10.0 COPIES OF DAILY REPORTS, INSPECTION REPORTS, LABORATORY/MONITORING DATA

Attachment A – City of Saginaw Consent Order – January 2009 Monthly Report, GM Saginaw Metal Casting Operations, Saginaw, Michigan

Attachment B – 2nd Semiannual 2008 Environmental Monitoring Report, GMPT Saginaw Metal Casting Operations Landfill, URS, January 2009

Attachment C – Tier Two Emergency and Hazardous Chemical Inventory Submission – General Motors - Saginaw Metal Casting Operations, February 20, 2009

ATTACHMENT A

GM POWERTRAIN

Saginaw Metal Casting Operations
1629 N. Washington, Saginaw MI 48605-5073

MONTHLY REPORT

TO:	Jason Casteel, City of Saginaw	REF. NO.:	GM008 -1-2009
FROM:	Renee Mietz, GMPT SMCO	DATE:	February 12, 2009
C.C.:	Jeanette Best, City of Saginaw Moh Kumar, GM Jim Walle, GM Dave Kwasny, GM	Cheryl Hiatt, GM Ray Ilkka, GM Mike Tomka, CRA	

RE: March 24, 2006 Consent Order revised by Addendum dated December 10, 2007:
Monthly Report - Sewer Investigation – January 1 to January 31, 2008
GM Saginaw Metal Casting Operations, Saginaw, Michigan

This Monthly Report presents a summary of work completed from January 1 to January 31, 2008.

1. **Summary of Activities Completed During January 1 to January 31, 2008 Under Significant Industrial User Permit #2004-11**

   - No additional activities were completed during this reporting period.

2. **Summary of Activities Completed During January 1 to January 31, 2008 (per March 24, 2006 Consent Order, Section 8.a)**

   - Sampling of Outfall on January 13, 2009

3. **Summary of Activities Completed During January 1 to January 31, 2008 (per March 24, 2006 Consent Order, Section 8.b)**

   - Cleaned out sediment in Sump prior to Outfall 008 on January 9th, & 29th, 2008

4. **Summary of Activities Scheduled for the next Month (January, 2009)**

   - Monthly sampling at Outfall 008 for PCBs
   - Sediment removal at Outfall 008.

5. **Other Information**

   - Flow Probe is on back order. An incorrect model Probe was shipped and without the appropriate amount of connecting cable. Probe returned and reordered. After probe is received, it will be reinstalled.

TABLE 1

ANALYTICAL DATA SUMMARY
PCB 24-HOUR COMPOSITE WATER SAMPLING
AT OUTFALL 008
JANUARY 2009

GMPT - SAGINAW METAL CASTING OPERATIONS
SAGINAW, MICHIGAN

Sample Date:	*Daily Outfall 008 Flow Gal*	*Aroclor-1016 (PCB-1016) µg/L*	*Aroclor-1016 (PCB-1028) µg/L*	*Aroclor-1232 (PCB-1232) µg/L*	*Aroclor-1242 (PCB-1242) µg/L*	*Aroclor-1248 (PCB-1248) µg/L*	*Aroclor-1254 (PCB-1254) µg/L*	*Aroclor-1260 (PCB-1260) µg/L*	*Total PCBs µg/L*
1/13/2008	*	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)

*No Flow Recorded due to malfunctioning flow meter
Flow probe is on order

TABLE 2

ANALYTICAL DATA SUMMARY
PCB Grab Split Sample
Sediment Evacuation Water from OUTFALL 008
JANUARY 2009
GMPT - SAGINAW METAL CASTING OPERATIONS
SAGINAW, MICHIGAN

Sample Date:	*Sample Container Number*	*Aroclor-1016 (PCB-1016) µg/L*	*Aroclor-1016 (PCB-1028) µg/L*	*Aroclor-1232 (PCB-1232) µg/L*	*Aroclor-1242 (PCB-1242) µg/L*	*Aroclor-1248 (PCB-1248) µg/L*	*Aroclor-1254 (PCB-1254) µg/L*	*Aroclor-1260 (PCB-1260) µg/L*	*Total PCBs µg/L*

ATTACHMENT B

URS

January 29, 2009

CERTIFIED MAIL
7007 2680 0001 3709 4268

Mr. Terry Walkington
Waste and Hazardous Materials Division
Michigan Department of Environmental Quality
503 N. Euclid Avenue
Bay City, MI 48706-2956

Subject: **GM Powertrain – Saginaw Metal Casting Operations Landfill**
2nd Semiannual 2008 Environmental Monitoring Report

Dear Mr. Walkington:

Per the requirement of Solid Waste Disposal Operating License No. 9126, enclosed is the 2nd Semiannual Environmental Monitoring Report for 2008 for the General Motors Powertrain – Saginaw Metal Casting Operations (GMPT-SMCO) Landfill. Per the Monitoring Program, only hydraulic monitoring was conducted on the monitoring wells in the study area.

For the 3rd and 4th Quarters 2008, the groundwater elevations of the Bedrock Aquifer were compared to the potentiometric surface of the Glacial Clay monitoring wells. Additionally, shallow and deep monitoring wells within the Glacial Clay were compared to each other. The monitoring indicated that a significant upward vertical gradient continues to exist between the Bedrock Aquifer and the potentiometric surface of the Glacial Clay wells. An upward vertical gradient was also noted within the Glacial Clay. These observations, coupled with the level of liquids in the leachate collection system indicate the landfill is operating such that an inward gradient exists.

If you have any questions regarding the enclosed report, or require any additional information, please contact Mr. Ray Ilkka at (989) 757-1473, or myself at (989) 638-4703.

Sincerely,
URS Corporation

Lori Hoevemeyer
Project Manager

Enclosure
cc: S. Alworden, Saginaw County Health Department
B. Kocsis, MDEQ-WHMD, Lansing

URS

2nd SEMIANNUAL 2008 ENVIRONMENTAL MONITORING REPORT

GENERAL MOTORS POWERTRAIN SAGINAW METAL CASTING OPERATIONS LANDFILL

URS 41567634.10000

2nd SEMIANNUAL 2008 ENVIRONMENTAL MONITORING REPORT

GENERAL MOTORS POWERTRAIN SAGINAW METAL CASTING OPERATIONS LANDFILL

URS 41567634.10000

2nd SEMIANNUAL 2008
ENVIRONMENTAL MONITORING REPORT

GENERAL MOTORS POWERTRAIN
SAGINAW METAL CASTING OPERATIONS
LANDFILL

Prepared for:

General Motors Powertrain
Saginaw Metal Casting Operations
1629 N. Washington Avenue
Saginaw, Michigan 48605

Prepared by:

URS Corporation
Midland, Michigan

January 2009

Table of Contents

List of Tables

List of Figures

List of Appendices

1.0 Introduction

General Motors Powertrain – Saginaw Metal Casting Operations Landfill (GMPT-SMCO Landfill, or the Landfill), Saginaw, Michigan, requested a waiver from chemical monitoring under R 299.4318(2)(a)[5] and Solid Waste Disposal Area Operating License No. 8963 Special Condition 20(c)[6]. The waiver (for interim monitoring) was granted on February 7, 2005[4] by the Michigan Department of Environmental Quality. The information contained in this report constitutes the second semi-annual environmental monitoring report for the third and forth quarters of 2008. The monitoring program for the landfill has been modified following the waiver approval to conduct quarterly static water level measurements of the glacial clay and bedrock aquifer monitoring wells, and reporting the data semiannually. On September 10, 2008 and on November 11, 2008, URS Corporation (URS) measured the static water levels in the selected four bedrock and nine glacial till monitoring wells. The annual maintenance of the glacial wells was performed by purging each well of standing groundwater after the static water levels were collected on November 11th. URS also collected samples from the leachate sump for analysis on November 11, 2008.

Groundwater monitoring at the Landfill was conducted as a requirement of Part 115 of the Michigan Natural Resources and Environmental Protection Act, 1994 PA 451 (Act 451), as amended, and the Solid Waste Disposal Area Operating License No. 9126 (issued October 28, 2005). On June 3, 1999, the Michigan Department of Environmental Quality (MDEQ) approved the *Hydrogeologic Monitoring Plan Amendment*[1,3], which was submitted to update the October 1995 *Hydrogeologic Monitoring Plan*[2]. On October 24, 2005, GMPT-SMCO submitted a *Summary of the Hydrogeologic Monitoring Plan for Sampling and Analysis*[7]. The MDEQ approved the new Monitoring Plan by issuance of the Landfill Operating License, No. 9126.

This report presents the field methods, monitoring results, and any summaries or recommendations derived from the data generated during the third and fourth quarters of 2008.

2.0 Field Methods

The following sections present the field methods conducted during the sampling events at the Landfill. Static groundwater levels were measured in all of the monitoring wells, and the leachate sump, per the approved monitoring program.

2.1 Static Groundwater Level Measurements

On September 10th and on November 11th, 2008, URS measured static groundwater levels in the nine glacial clay groundwater monitoring wells, and four bedrock aquifer monitoring wells. Copies of the field forms containing data obtained during the groundwater monitoring events are included in Appendix A, Table 1, and Table 2.

All static groundwater measurements were taken to the nearest 0.01 foot, using a Solinst electronic water level meter, and were recorded on field forms. The water level meter was thoroughly rinsed with distilled water prior to and following each use to minimize the potential for cross-contamination of the monitoring wells.

2.2 Water Level Measurements in the Leachate Sump

On September 10th, and November 11th, 2008, URS measured the water level in the leachate sump. Copies of the field forms are included in Appendix A; the results are contained in Table 1 and Table 2.

The static water measurement was taken to the nearest 0.01 foot, using a Solinst electronic water level meter, and recorded on field forms. The water level meter was thoroughly rinsed with distilled water prior to use to minimize the potential for cross-contamination.

2.3 Monitoring Well Purging

On November 11th, 2008, URS purged the landfill monitoring well network using the dedicated stainless steel bailers as described in the Sampling and Analysis Plan. A copy of the field form containing this data is included in Appendix A.

2.4 Routine Well Inspection and Maintenance

The 2008 third and forth quarter inspections by the Saginaw County Department of Public Health were conducted on September 19th, 2008 and on December 10th, 2008.

No maintenance was needed on the monitoring wells during the third or fourth quarter 2008 event. During the third quarter event it was noted that well tags were missing on a few of the wells. It is anticipated that the tags will be replaced when the static water levels are collected for first quarter 2009.

2.5 Sample Collection

No samples were collected from either the monitoring wells, stormwater outfalls, or the leachate system sump during the third quarter 2008. Samples were collected from the leachate system sump during the fourth quarter 2008. A copy of the field form is included in Appendix A; analytical results of the fourth quarter 2008 sampling event are contained in Appendix B.

2.5.1 Leachate Sump Sample Collection and Flow Volumes

On November 11th 2008, URS collected samples of the leachate sump water as described in the Sampling and Analysis Plan. The results are in Table 3. Leachate volumes from the landfill for 2008 were estimated, and are presented in Table 4 and Figure 9. The leachate pump hour meter readings were not consistently collected in 2008. The monthly leachate volumes are an average estimate of the total yearly leachate pumped. The volume of leachate pumped in 2008 is estimated at 37.6 million gallons versus the estimated volume pumped in 2007 of 28.2 million gallons.

2.5.2 Annual Stormwater Sampling

A stormwater sample was obtained by URS from Outfall 010 on June 23rd , 2008 (second quarter). The sample was analyzed by Merit Laboratories, Inc. of East Lansing, Michigan for the constituents listed in Table 1 of the *Hydrogeologic Monitoring Plan Summary – Sampling and Analysis* (October 2005) and the Short Term Storm Water Characterization Study (February 2007).

3.0 Monitoring Results

The following sections contain the results from the 2nd semiannual 2008 monitoring period. Figures 2 through 5 were created to show the potentiometric gradient at the Landfill.

3.1 Potentiometric Surface Gradients and Velocities

3.1.1 Glacial Clay

A potentiometric surface gradient contour map (generated from the static groundwater level measurements) and the general direction of the potentiometric surface gradient (represented by the arrow) for the third and fourth quarter 2008 monitoring events are presented in Figure 2 and Figure 3, respectively. It should be noted that a potentiometric surface is a pressure surface that applies to confined aquifers under artesian pressure. Static head measurements are a representative measurement of the equilibrium head in the confining clay, not a true potentiometric surface. Calculation of groundwater flow based on static head elevations in the confining clay do not necessarily comply with standard assumptions of the velocity calculation and may over estimate actual groundwater velocity. The direction of the gradient for this monitoring event (based on static groundwater elevations from all of the Landfill monitoring wells) was generally toward the northwest (Figures 2, and 3). The gradient from monitoring well MW-13 toward MW-16 was calculated to be 3.3×10^{-3} feet/ foot for the third quarter monitoring event. The gradient from monitoring well MW-13 toward MW-16 was calculated to be 3.0×10^{-3} feet/foot for the fourth quarter monitoring event.

The flow velocity was calculated to be 1.18×10^{-4} feet/year for the third quarter and 1.05×10^{-4} feet/year for the fourth quarter based on an actual effective porosity of 22% and an actual hydraulic conductivity of 7.56×10^{-9} centimeters/second[1]. Gradient and flow velocity are extremely slow across the site and there is very little groundwater movement in general throughout the clays.

Two vertical pairs of monitoring wells are available in the north and northwest perimeter of the Landfill to evaluate vertical gradients within the clay. The Bedrock Aquifer well, MW-96080 located within the Landfill, can be compared to other clay wells nearby to evaluate the vertical gradient with respect to the Bedrock. A hydrograph comparing the groundwater elevations of seven of the glacial clay monitoring wells to MW-96080 is shown in Figure 8.

Static head measurements from MW-9 (shallow) and MW-8 (deeper) during the third and fourth quarters 2008 monitoring events indicate an upward vertical gradient within the clay. Static head measurements from MW-11B (shallow) and MW-11C (deeper) during the third and fourth Quarters 2008 monitoring events indicate slight upward vertical gradients. Small differences are typically observed in vertical gradient at MW-11B and MW-11C because the depth of these wells are very similar. Groundwater elevations measured in the bedrock wells during the third and fourth quarters were observed to be higher than all of the glacial clay wells indicating an overall upward vertical gradient from the bedrock aquifer to the overlying clay, consistent with previous observations.

Overall, measured water levels in all of the Landfill clay monitoring wells are consistent with previous observations. No apparent trends were identified.

3.1.2 Bedrock Aquifer

A bedrock aquifer potentiometric surface gradient contour map (generated from the static groundwater level measurements) and the general direction of the potentiometric surface gradient (represented by the arrows) for the third and fourth quarter monitoring events are presented in Figure 4 and Figure 5. The direction of the gradient for this monitoring event (based on static groundwater elevations from the four bedrock aquifer monitoring wells) was generally toward the north, following the contour of the Saginaw River. The gradient from monitoring well MW-97948 toward MW-96080 for the third quarter was calculated to be 1.35×10^{-4} feet/foot and 1.8×10^{-4} feet/foot for the fourth quarter.

The flow velocity was calculated to be 1.44 feet/year for the third quarter and 1.92 feet/year for the fourth quarter based on an effective porosity of 30% and an average hydraulic conductivity of 3.1×10^{-3} centimeters/second[8]. Measured water levels in the bedrock aquifer monitoring wells are consistent with previous observations. No apparent trends were identified.

3.2 Water Level Measurements in the Leachate Sump

Liquid levels measured in the Landfill sump are significantly lower than perimeter groundwater head (38 to 40 feet), indicating a pervasive "inward" hydraulic potential along the entire Landfill perimeter. (See Tables 1 and 2, and Figure 10).

3.3 Well Purging

Approximately 1.0 to 4.0 gallons of groundwater were removed as described in the Sampling and Analysis Plan. No excessive turbidity or visual evidence of well malfunction was identified (Appendix A).

3.4 Leachate Analysis and Flow Volumes

The monthly volumes of pumped leachate, as measured at the Landfill sump are presented in Figure 9. Metals concentrations in the sample obtained from the Landfill sump are consistent with past data. No apparent concentration trends or new detections can be identified for metals detected since 2003 in Landfill leachate. Time series plots for detected constituents are presented in Appendix C.

3.5 Annual Stormwater Sampling

Results of stormwater sampling are summarized in the *1st Semiannual 2008 Environmental Monitoring Report*, dated July 2008. Results were consistent with previous findings.

4.0 Summary and Recommendations

Hydraulic monitoring for the 2nd semiannual 2008 monitoring event of the GMPT-SMCO Landfill was performed on September 10th and November 11th , 2008. Static water levels were collected from the nine glacial clay monitoring wells and four bedrock aquifer monitoring wells. The monitoring indicated that the water elevation in the bedrock aquifer continues to be at a higher elevation than the potentiometric surface of the glacial clay wells. The leachate collection system has continued to operate during the third and fourth quarters producing an inward gradient relative to the leachate system, the glacial clay, and bedrock aquifers. This indicates that the Landfill continues to operate with an effective inward gradient.

Due to the favorable hydraulic conditions, continued hydraulic monitoring is recommended at the GMPT-SMCO Landfill. The quarterly groundwater hydraulic monitoring program and annual leachate chemical monitoring proposed in the Waiver Request Report[5] and the Hydrogeologic Monitoring Plan[3], Summary for Sampling and Analysis[7] is proving adequate to insure that there is no potential for migration of hazardous constituents from the unit to the uppermost aquifer during the active life of the unit and post-closure care period.

5.0 References

1. *General Motors Powertrain, Hydrogeologic Monitoring Plan Amendment, Saginaw Metal Casting Operations Landfill*, prepared by Radian International, March 1999.

2. *General Motors Powertrain, Hydrogeologic Monitoring Plan, Saginaw Metal Casting Operations Landfill*, prepared by Radian International LLC, October 1995, revised October 1996 and January 1997.

3. "Hydrogeologic Monitoring Plan Amendment" (written correspondence), prepared by Mr. Robert Wolfe, Michigan Department of Environmental Quality, May 3, 1999.

4. "Groundwater Sampling and Monitoring Program Proposal for Interim Monitoring", letter prepared by Mr. Joseph S. Toth, GM Powertrain, January 27, 2005.

5. "Waiver Request Report", prepared by URS Corporation, March 2005.

6. "Groundwater Sampling and Monitoring Program Proposal for Interim Monitoring", letter prepared by Terry Walkington, MDEQ-WHMD, February 7, 2005.

7. *GMPT-SMCO Landfill Hydrogeologic Monitoring Plan Summary, Sampling and Analysis*, prepared by URS Corporation, October 24, 2005.

8. *Phase 1A RCRA Facility Investigation (RFI) Report* and *Phase 1B RFI Workplan*, prepared by EMCON, April 19, 2000.

Table 1

Groundwater and Leachate Elevations
Third Quarter 2008

Table 1
General Motors Powertrain
Saginaw Metal Casting Operations Landfill
2nd Semiannual Report 2008 Groundwater and Leachate Elevations

September 10th, 2008

Landfill Monitoring Well	Top of Casing[1] (U.S.G.S. Datum)	Static Groundwater Level from Top of Casing (feet)	Groundwater Elevation (U.S.G.S. Datum)
MW-05	584.09	7.66	576.43
MW-08	586.03	4.83	581.20
MW-09	586.03	9.99	576.04
MW-11B	590.84	16.32	574.52
MW-11C	590.83	16.21	574.62
MW-12	596.94	19.29	577.65
MW-13	586.46	4.20	582.26
MW-14	588.48	7.83	580.65
MW-16	587.34	9.58	577.76

Leachate Sump	Top of Casing (U.S.G.S. Datum)	Static Sump Water Level from Top of Sump (feet)	Sump Water Elevation (U.S.G.S. Datum)
	564.00+/-	26.95	537.05

Bedrock Aquifer Monitoring Well	Top of Casing (U.S.G.S. Datum)	Static Groundwater Level from Top of Casing (feet)	Groundwater Elevation (U.S.G.S. Datum)
MW-93205	589.98	3.87	586.11
MW-96939	592.04	7.12	584.92
MW-96080	586.38	2.25	584.13
MW-97948	589.74	5.10	584.64

Note:
1. Top of Casing surveyed in June 2004 by McDowell & Associates.

Table 2

Groundwater and Leachate Elevations
Fourth Quarter 2008

Table 2
General Motors Powertrain
Saginaw Metal Casting Operations Landfill
2nd Semiannual Report 2008 Groundwater and Leachate Elevations

November 11th, 2008

Landfill Monitoring Well	Top of Casing[1] (U.S.G.S. Datum)	Static Groundwater Level from Top of Casing (feet)	Groundwater Elevation (U.S.G.S. Datum)
MW-05	584.09	7.94	576.15
MW-08	586.03	4.84	581.19
MW-09	586.03	9.93	576.10
MW-11B	590.84	16.62	574.22
MW-11C	590.83	16.50	574.33
MW-12	596.94	18.75	578.19
MW-13	586.46	4.60	581.86
MW-14	588.48	7.54	580.94
MW-16	587.34	9.50	577.84

Leachate Sump	Top of Casing (U.S.G.S. Datum)	Static Sump Water Level from Top of Sump (feet)	Sump Water Elevation (U.S.G.S. Datum)
	564.00+/-	27.18	536.82

Bedrock Aquifer Monitoring Well	Top of Casing (U.S.G.S. Datum)	Static Groundwater Level from Top of Casing (feet)	Groundwater Elevation (U.S.G.S. Datum)
MW-93205	589.98	3.75	586.23
MW-96939	592.04	7.03	585.01
MW-96080	586.38	2.20	584.18
MW-97948	589.74	4.88	584.86

Note:
1. Top of Casing surveyed in June 2004 by McDowell & Associates.

Table 3

Leachate Chemical Monitoring Results
2008

Table 3
Leachate Chemical Monitoring Results
General Motors Powertrain
Saginaw Metal Casting Operations Landfill

Rule 452 Heavy Metals	Laboratory Method	Reportable Detection Limit**	Analytical Results
Aluminum*	200.8	0.005 mg/L	0.028 mg/L
Arsenic	200.8	0.001 mg/L	0.021 mg/L
Barium	200.8	0.005 mg/L	0.066 mg/L
Beryllium	200.8	0.001 mg/L	Not Detected
Cadmium	200.8	0.02 mg/L	Not Detected
Chromium	200.8	0.001 mg/L	Not Detected
Cobalt	200.8	0.005 mg/L	Not Detected
Copper	200.8	0.001 mg/L	0.030 mg/L
Lead	200.8	0.001 mg/L	0.002 mg/L
Magnesium*	200.8	0.05 mg/L	22.6 mg/L
Manganese*	200.8	0.005 mg/L	0.296 mg/L
Nickel	200.8	0.005 mg/L	Not Detected
Selenium	200.8	0.001 mg/L	0.002 mg/L
Silver	200.8	0.0005 mg/L	0.0031 mg/L
Thallium	200.8	0.001 mg/L	Not Detected
Vanadium	200.8	0.005 mg/L	Not Detected
Zinc	200.8	0.005 mg/L	0.070 mg/L

*Note: Additional metal not listed in Rule 452; selected from Rule 451 and based on waste characterization.

** Reportable Detection Limit from MDEQ Operational Memo Gen-8, Revision 6, August 7, 2002

Table 4

Leachate Volumes Removed, 2004 - 2008

Table 4
General Motors Powertrain
Saginaw Metal Casting Operations Landfill
Leachate Volumes Removed, 2004 – 2008
(gallons)

Month	2004	2005	2006	2007	2008
January	1,944,000	2,727,000	4,935,000	3,190,000	3,800,000
February	1,320,000	3,201,000	3,228,000	1,370,000	3,800,000
March	6,273,000	5,466,000	6,411,000	3,770,000	3,800,000
April	1,752,000	2,034,000	3,162,000	3,700,000	3,800,000
May	3,996,000	2,391,000	5,028,000	2,550,000	2,800,000
June	2,046,000	2,493,000	2,256,000	2,220,000	2,800,000
July	1,407,000	1,611,000	896,000	2,300,000	2,800,000
August	933,000	1,335,000	5,169,000	1,410,000	2,800,000
September	777,000	813,000	1,899,000	3,420,000	2,800,000
October	930,000	1,041,000	7,479,200	1,230,000	2,800,000
November	1,785,000	1,461,000	2,613,000	1,090,000	2,800,000
December	2,001,000	2,691,000	3,150,000	1,971,000	2,800,000

***Note:** Leachate pump hour meter readings were not consistently collected in 2008. The monthly leachate volumes are an average estimate from data in January, May and December 2008.

Figure 1

Site Location GM-SMCO Landfill
Buena Vista Twp., MI

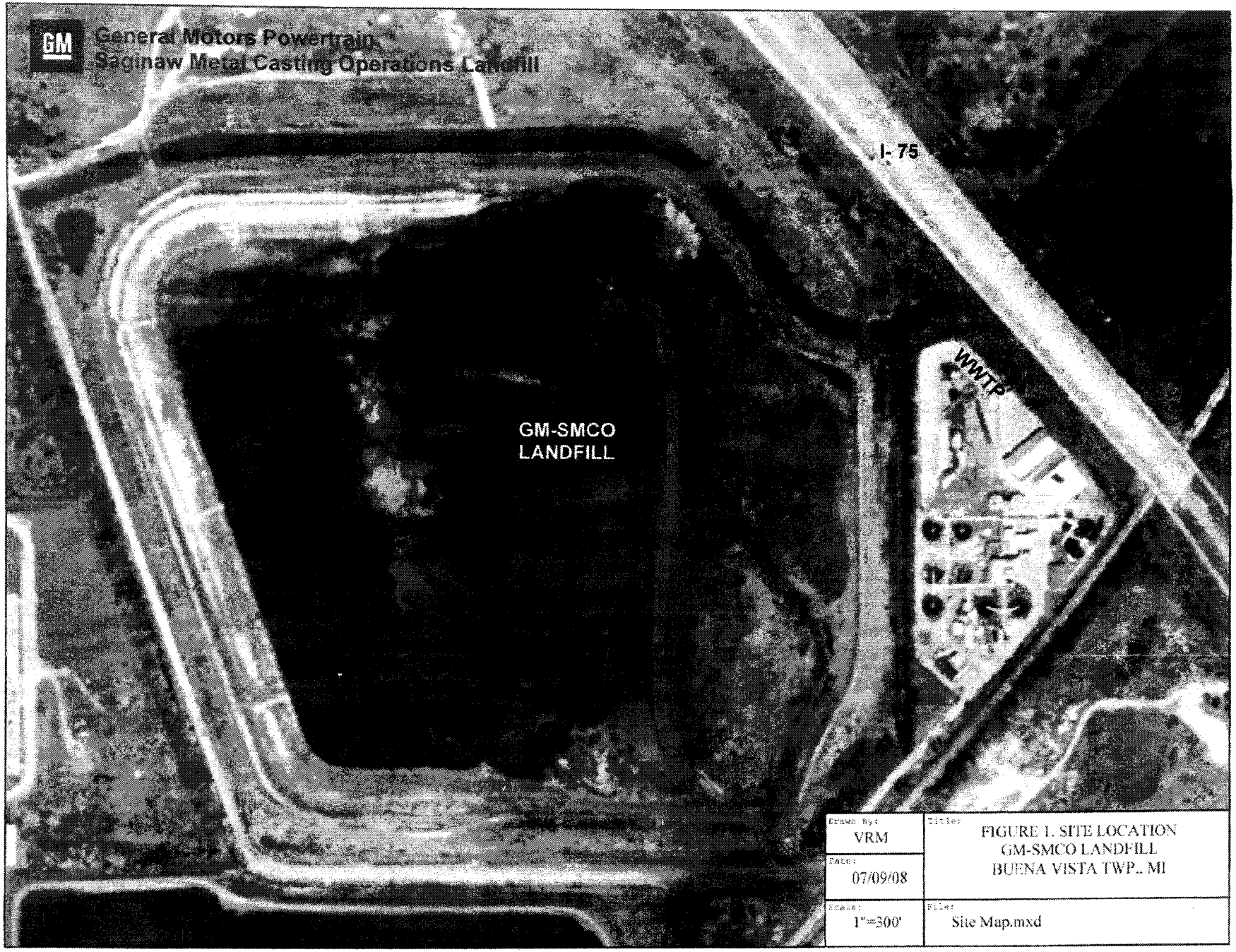

General Motors Powertrain
Saginaw Metal Casting Operations Landfill
I- 75
GM-SMCO
LANDFILL
WWTP
Drawn By:
VRM
Date:
07/09/08
Scale:
1"=300'
Title:
FIGURE 1. SITE LOCATION
GM-SMCO LANDFILL
BUENA VISTA TWP., MI
File:
Site Map.mxd

Figure 2

Glacial Clay Potentiometric Surface Gradient Map
Third Quarter 2008

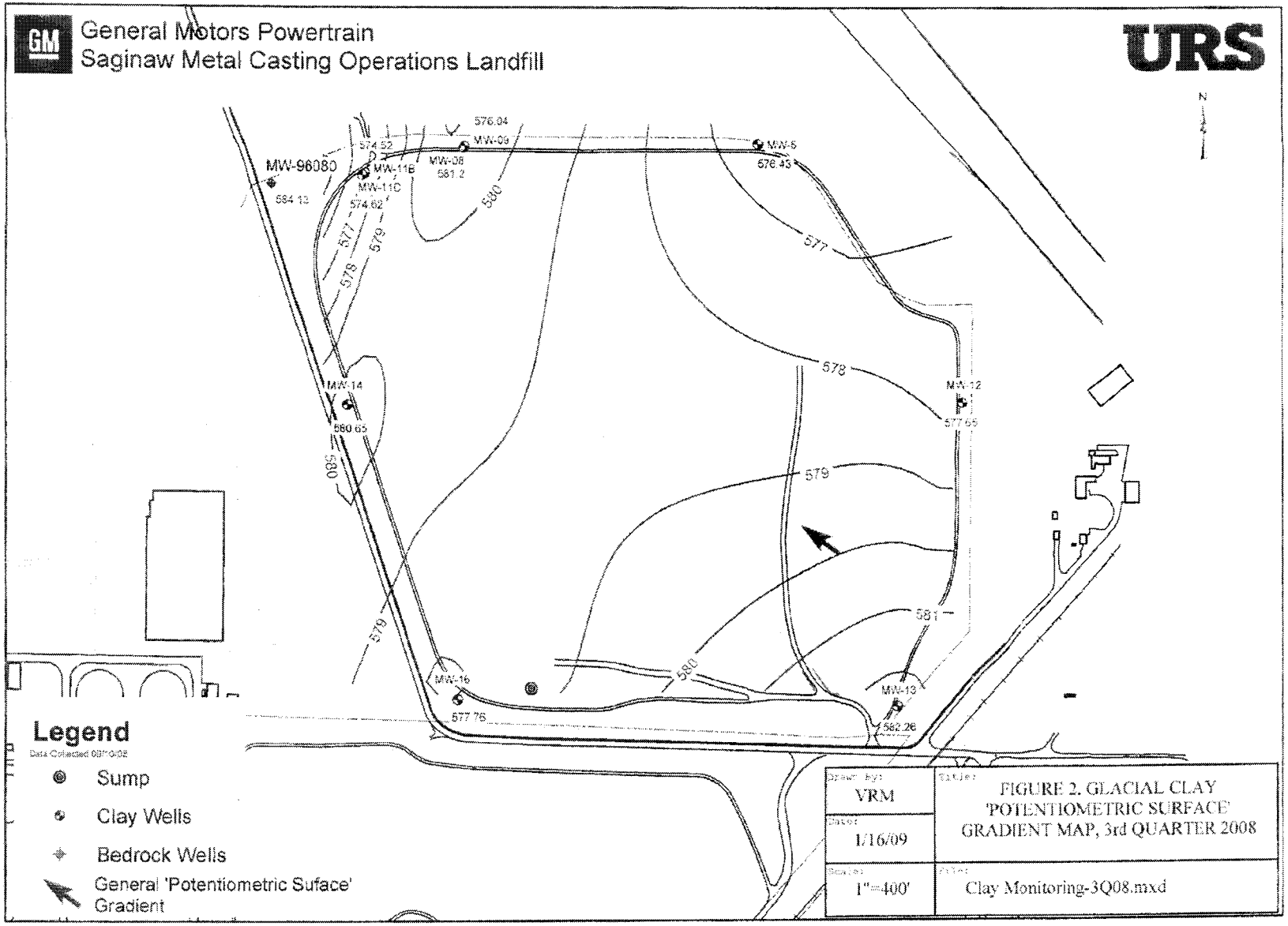

General Motors Powertrain
Saginaw Metal Casting Operations Landfill
URS
N
MW-96080
584.13
574.52
MW-11B
MW-11C
574.62
576.94
MW-09
MW-08
581.2
MW-5
576.43
580
577
579
578
577
578
MW-14
580.65
MW-12
577.65
579
581
579
580
MW-16
577.76
MW-13
582.26
Legend
Data Collected 03/10/08
Sump
Clay Wells
Bedrock Wells
General 'Potentiometric Suface' Gradient
Drawn By:
VRM
Date:
1/16/09
Scale:
1"=400'
FIGURE 2. GLACIAL CLAY 'POTENTIOMETRIC SURFACE' GRADIENT MAP, 3rd QUARTER 2008
File:
Clay Monitoring-3Q08.mxd

Figure 3

Glacial Clay Potentiometric Surface Gradient Map
Fourth Quarter 2008

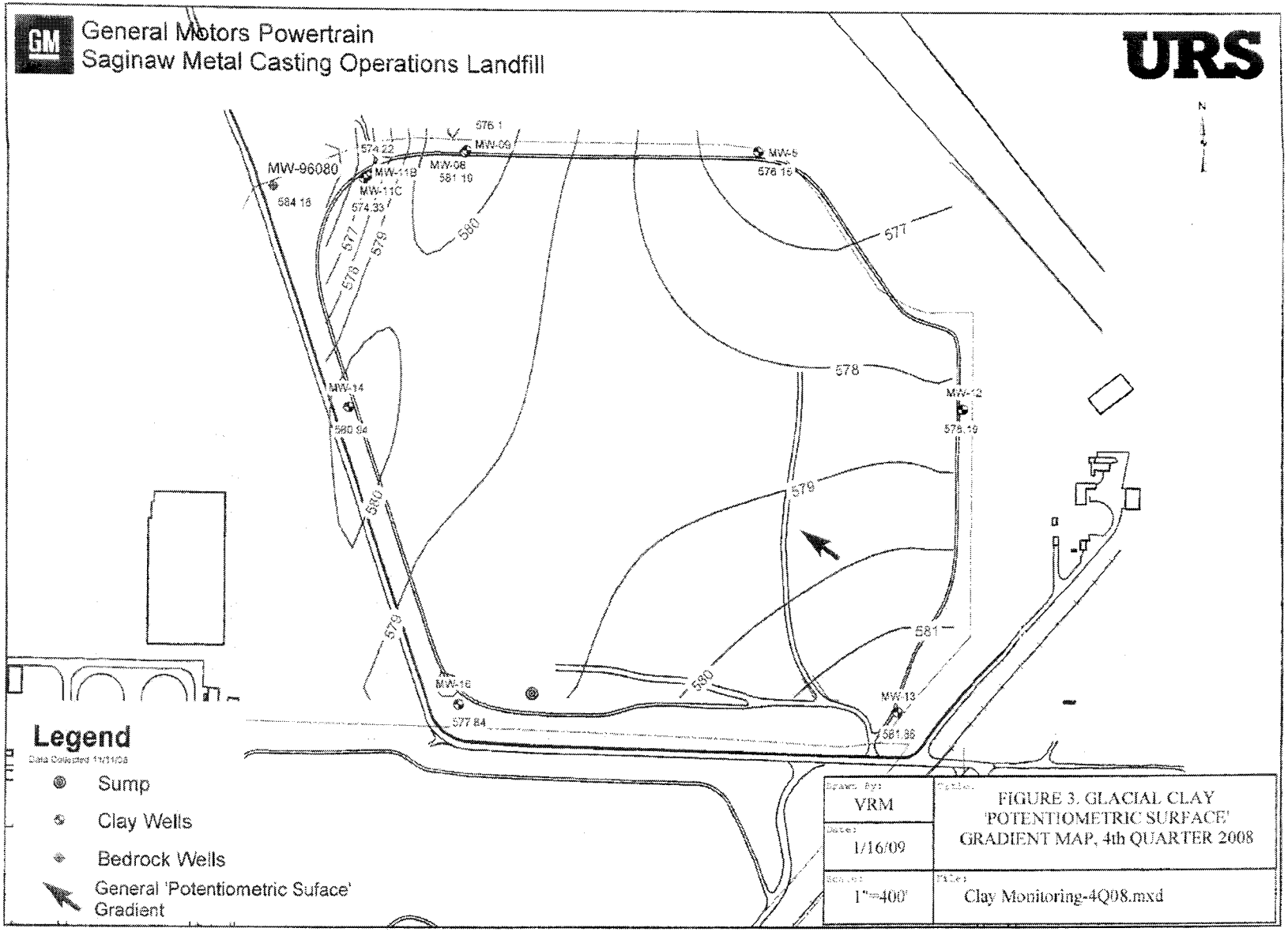

General Motors Powertrain
Saginaw Metal Casting Operations Landfill
URS
N
MW-96080
584.18
574.23
MW-11B
MW-11C
574.33
MW-09
576.1
MW-08
581.10
MW-5
576.16
MW-14
580.94
MW-12
576.19
MW-10
577.84
MW-13
581.36
577
578
579
580
581
Legend
Data Collected 11/31/08
Sump
Clay Wells
Bedrock Wells
General 'Potentiometric Suface' Gradient
Drawn By: VRM
Date: 1/16/09
Scale: 1"=400'
Project: FIGURE 3. GLACIAL CLAY 'POTENTIOMETRIC SURFACE' GRADIENT MAP, 4th QUARTER 2008
Clay Monitoring-4Q08.mxd

Figure 4

Bedrock Aquifer Potentiometric Surface Gradient Map
Third Quarter 2008

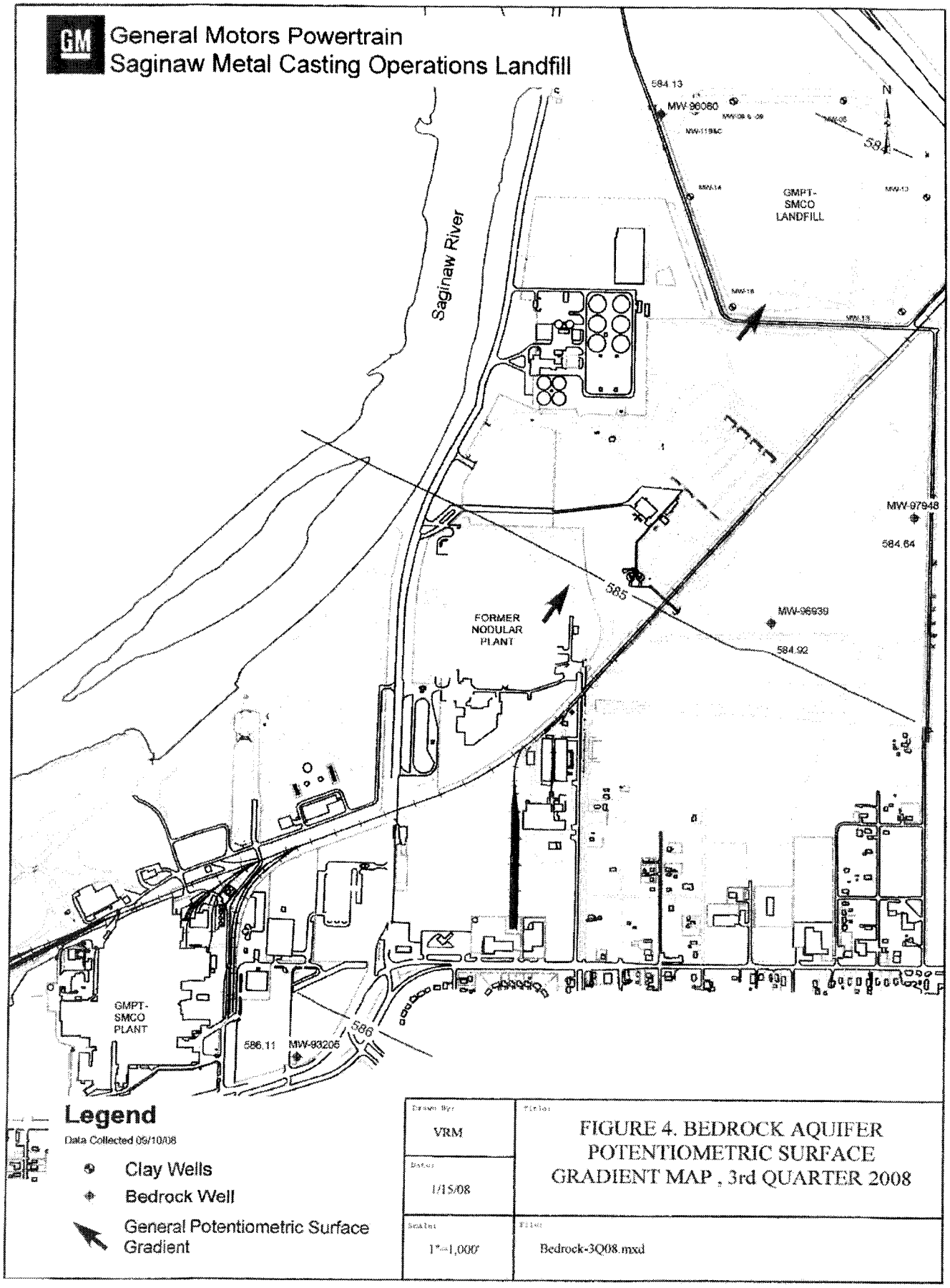

General Motors Powertrain
Saginaw Metal Casting Operations Landfill
584.13
MW-96060
N
GMPT-
SMCO
LANDFILL
Saginaw River
MW-97948
584.64
585
FORMER
NODULAR
PLANT
MW-96939
584.92
GMPT-
SMCO
PLANT
586.11
MW-93206
586
Legend
Data Collected 09/10/08
Clay Wells
Bedrock Well
General Potentiometric Surface Gradient
Drawn By:
VRM
Date:
1/15/08
Scale:
1"=1,000'
Title:
FIGURE 4. BEDROCK AQUIFER POTENTIOMETRIC SURFACE GRADIENT MAP , 3rd QUARTER 2008
File:
Bedrock-3Q08.mxd

Figure 5

Bedrock Aquifer Potentiometric Surface Gradient Map
Fourth Quarter 2008

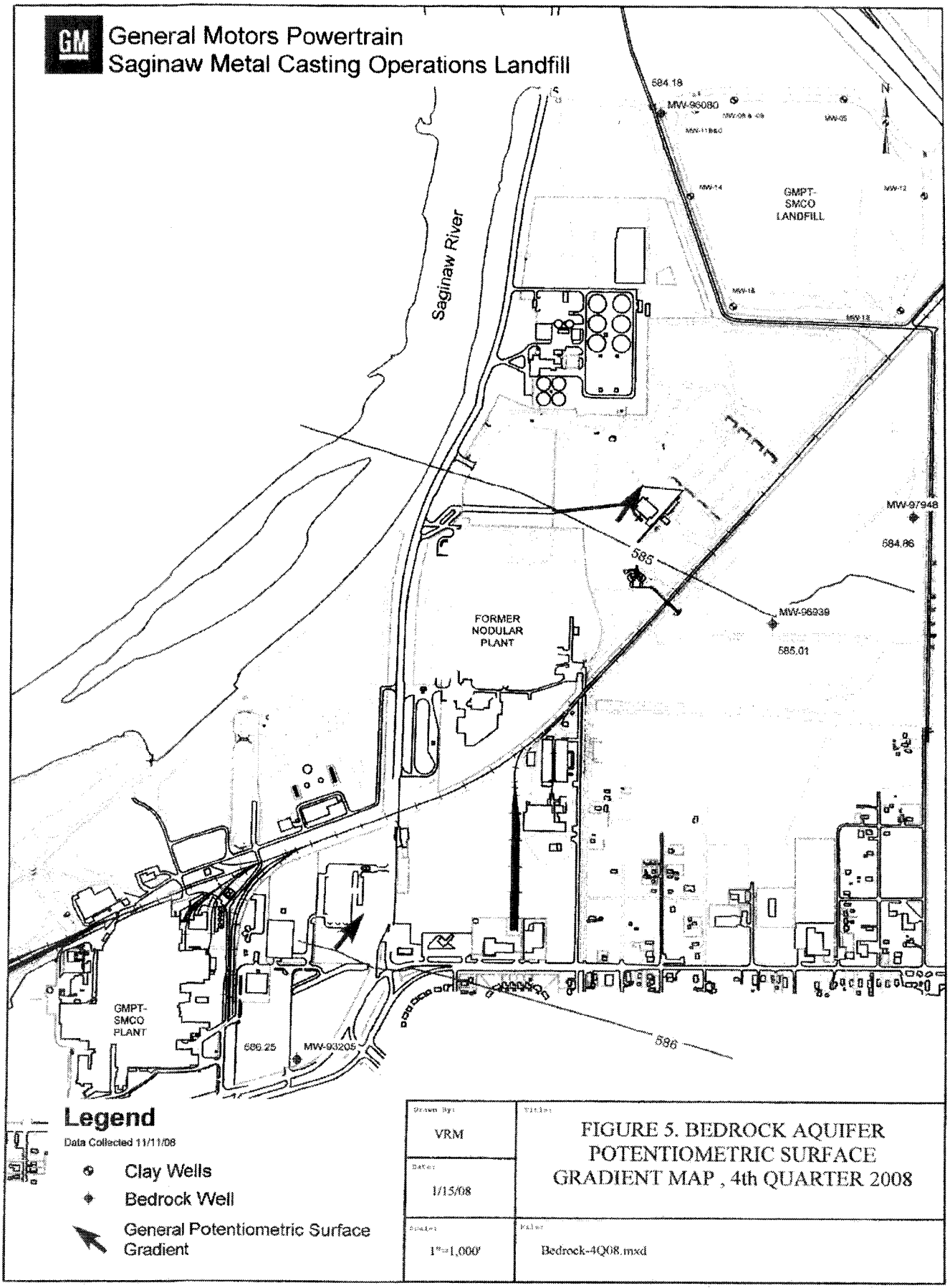

General Motors Powertrain
Saginaw Metal Casting Operations Landfill
584.18
MW-96080
MW-05
MW-14
MW-12
GMPT-
SMCO
LANDFILL
MW-18
MW-13
Saginaw River
MW-97948
584.86
585
MW-96939
585.01
FORMER
NODULAR
PLANT
GMPT-
SMCO
PLANT
586.25
MW-93205
586
Legend
Data Collected 11/11/08
Clay Wells
Bedrock Well
General Potentiometric Surface Gradient
Drawn By:
VRM
Date:
1/15/08
Scale:
1"=1,000'
Title:
FIGURE 5. BEDROCK AQUIFER POTENTIOMETRIC SURFACE GRADIENT MAP , 4th QUARTER 2008
Folder:
Bedrock-4Q08.mxd

Figure 6

GM-SMCO Landfill
Clay Monitoring Well Hydrograph

Figure 6 GM-SMCO Landfill
Clay Monitoring Well Hydrograph

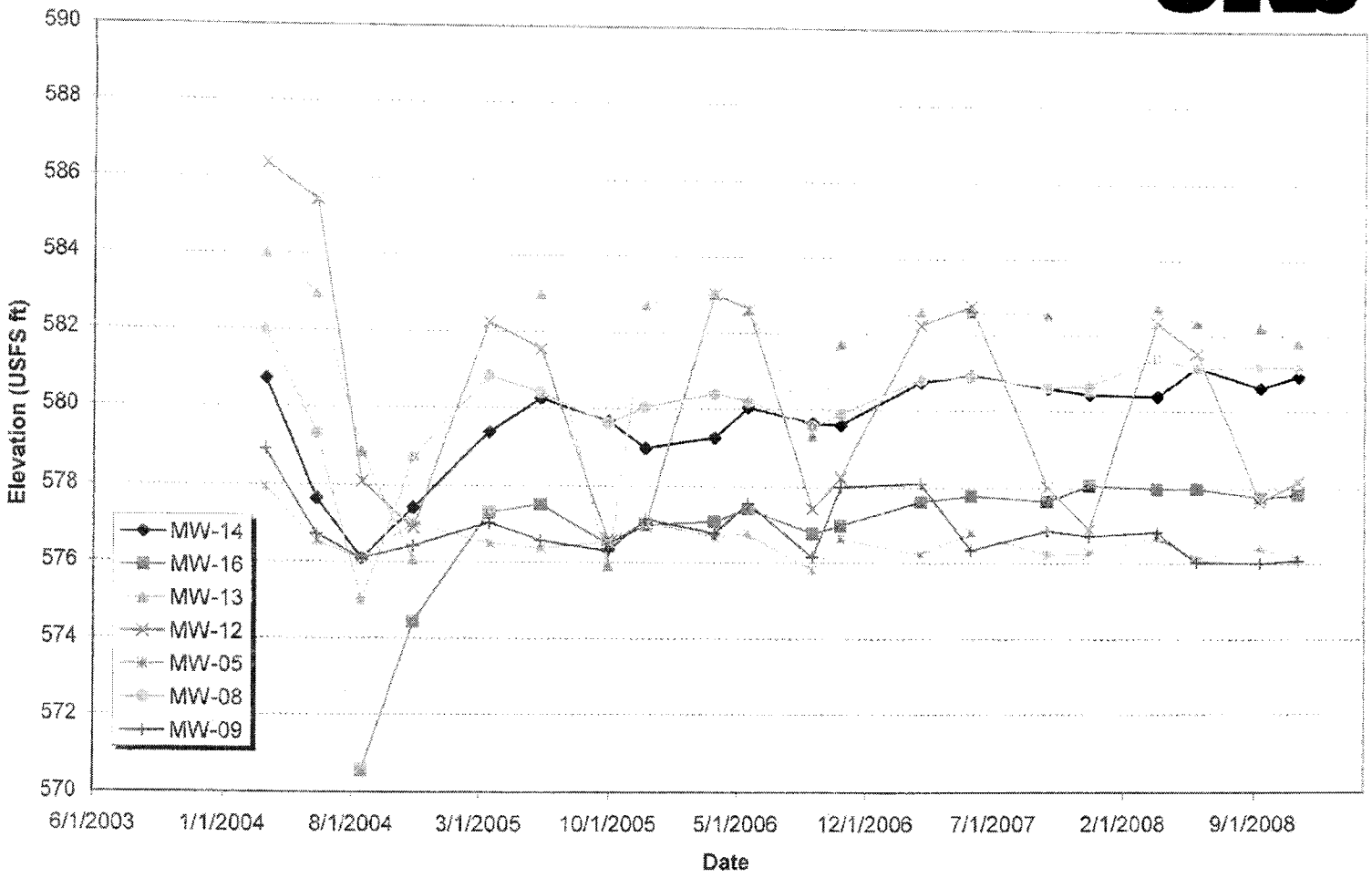


Figure 7

GM-SMCO Landfill
Bedrock Monitoring Well Hydrograph

Figure 7 GM-SMCO Landfill
Bedrock Monitoring Well Hydrograph

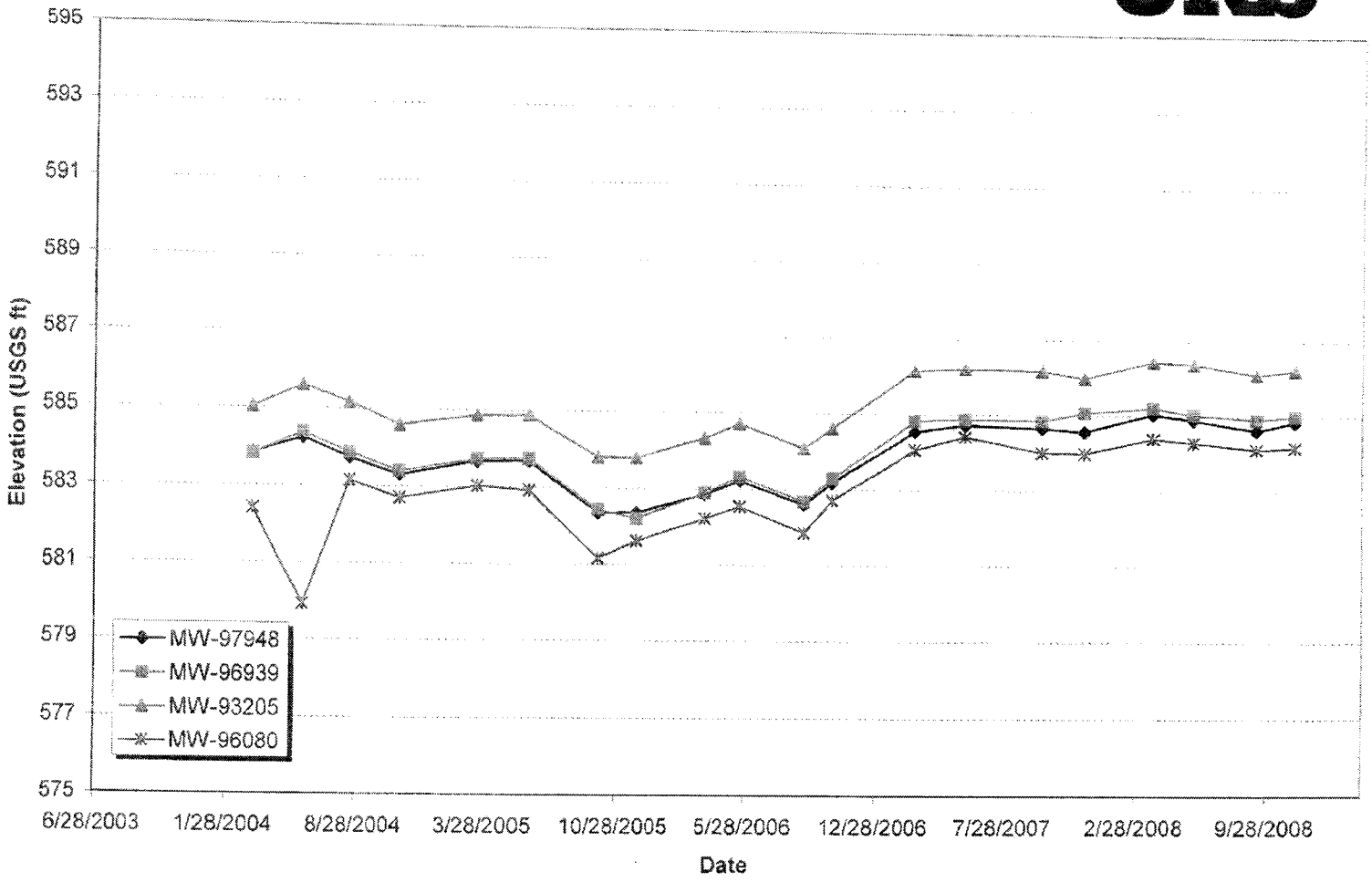


Figure 8

GM-SMCO Landfill
Comparison Monitoring Well Hydrograph

Figure 8 GM-SMCO Landfill
Comparison Monitoring Well Hydrograph

URS

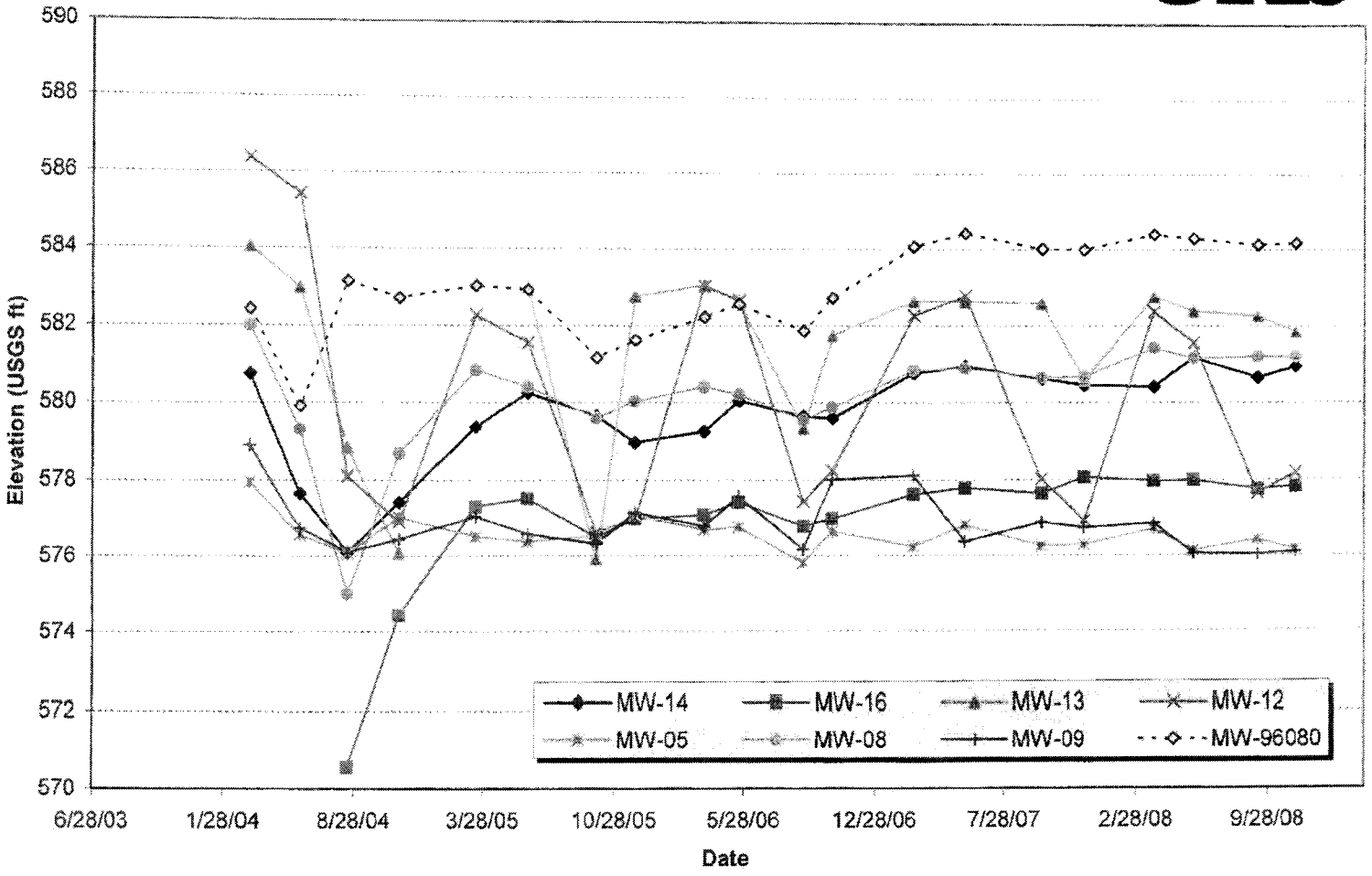
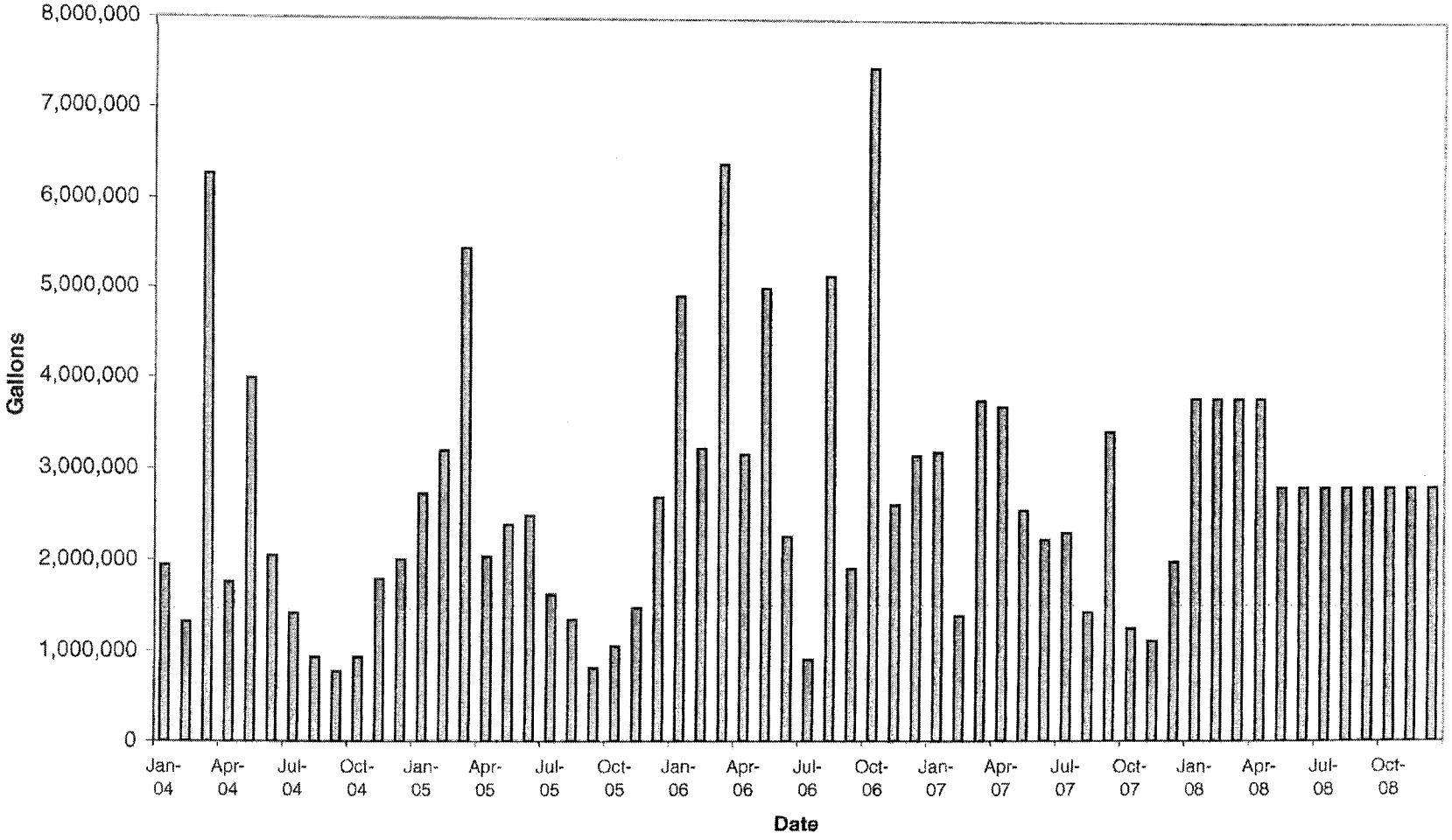


Figure 9

GM-SMCO Landfill
Monthly Leachate Volumes

Figure 9. GM-SMCO Landfill Monthly Leachate Volumes

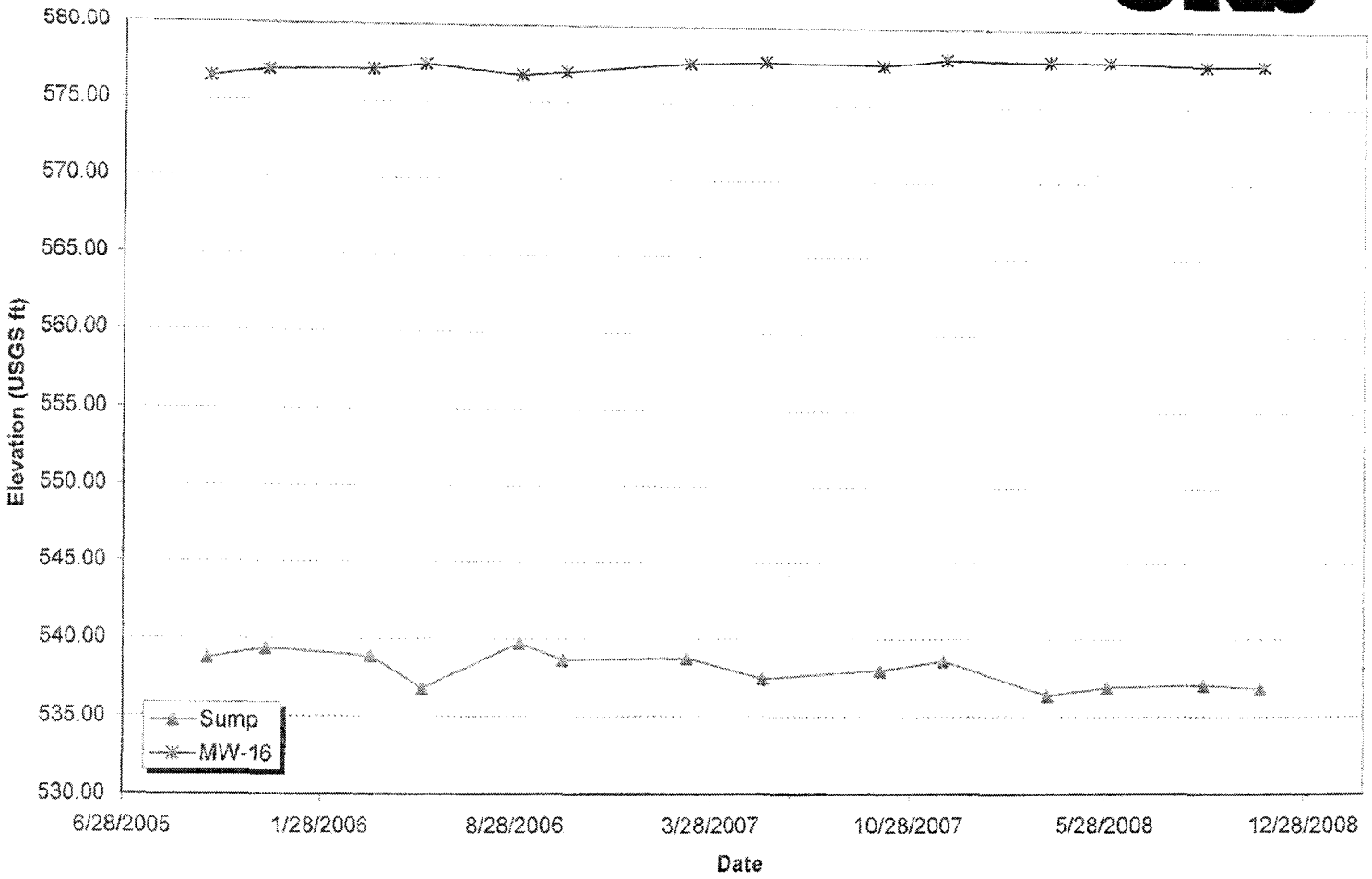


*Note: Leachate pump hour meter readings were not consistently collected in 2008. The monthly leachate volumes are an average estimate from data in January, May, and December 2008.

Figure 10

GM-SMCO Landfill
MW-16 vs. Leachate Sump Hydrograph

Figure 10 GM-SMCO Landfill
MW-16 vs. Leachate Sump Hydrograph



Appendix A

Field Forms

GM SMCO LANDFILL

WELL	SWL	TIME	DATE	OLD SWL	COMMENTS:
93205	3.87	0833	9/10/2008	3.60	
97948	5.10	0851	9/10/2008	4.84	
96939	7.12	0901	9/10/2008	7.00	
96080	2.25	0924	9/10/2008	2.08	
16080	~	—	9/10/2008	6.41	unable to open - unknown lock
MW-13	4.20	0909	9/10/2008	4.08	
MW-12	19.29	0913	9/10/2008	15.37	
MW-5	7.60	0917	9/10/2008	7.96	
MW-9	9.99	0920	9/10/2008	9.97	
MW-8	4.83	0927	9/10/2008	4.87	no tag
MW-11C	16.21	0932	9/10/2008	16.87	top of well broken - hinge side
MW-11B	16.32	0929	9/10/2008	16.93	no tag
MW-14	7.83	0936	9/10/2008	7.31	no tag
MW-16	9.58	0940	9/10/2008	9.35	no tag
SUMP	26.95	0947	9/10/2008	27.09	

Tags are on all the wells:

Wells overall condition:

4th. qtr.

GM SMCO LANDFILL

WELL	SWL	TIME	DATE	OLD SWL	COMMENTS:
93205	3.75	0940	11/16/00		
97948	4.88	0950			
96939	7.63	1005			
96080	[illegible]	1110			
~~16080~~					
MW-13	[illegible]	[illegible]			
MW-12	[illegible]	[illegible]			
MW-5	7.94	1014			
MW-9	9.93	1025			
MW-8	[illegible]	1100			
MW-11C	16.56	1115			no tag
MW-11B	16.62	1116			tag & well broken
MW-14	[illegible]	1133			no tag
MW-16	[illegible]	1144			no tag
SUMP	27.18	1156			no tag

Tags are on all the wells:

Wells overall condition:

GM SMCO LANDFILL

WELL	Temperature (°C)	D.O. (mg/L)	Cond. (mS/cm2)	pH	ORP (mV)	Turbidity (NTUs)
MW-13	10.83					
MW-12						
MW-5						
MW-9						
MW-8						
MW-11C						
MW-11B						
MW-14						
MW-16						
SUMP						

Date Collected: 11/11/08
Collected By: John Holben

Appendix B

2008 Leachate Analysis

Analytical Laboratory Report

Revised Report

Report ID: S39029.01(02)
Generated on 11/25/2008
Replaces report S39029.01(01) generated on 11/21/2008

Report to

Attention: Lori Hoevemeyer/ Ray Ilkka
URS - DOW MIOPS
Bldg. 1078
Midland, MI 48640

Phone: 989-638-4284 FAX:
Email: llhoevemeyer@dow.com/ray.ilkka@gm.com

Report produced by

Merit Laboratories
2680 East Lansing Drive
East Lansing, MI 48823

Phone: (517) 332-0167 FAX: (517) 332-6333

Report Summary

Lab Sample ID(s): S39029.01
Project: GM 4th Quarter - Landfill
Collected Date: 11/11/2008
Submitted Date/Time: 11/12/2008 14:50
Sampled by: John Holber
P.O. #: 4010020

Report Notes

Results relate only to items tested as received by the laboratory.
Methods may be modified for improved performance.
Results reported on a dry weight basis where applicable.
"Not detected" indicates that parameter was not found at a level equal to or greater than the RL.

Violetta F. Murshak

Violetta F. Murshak
Laboratory Director

Sample Summary (1 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S39029.01	GM-Sump	Liquid	11/11/2008 12:05

Merit Laboratories, Inc.

Analytical Laboratory Report

Revised Report

Lab Sample ID: S39029.01
Sample Tag: GM-Sump
Collected Date/Time: 11/11/2008 12:05
Matrix: Liquid
COC Reference: 045545

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	125ml Plastic	HNO3	Yes	4.3	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Analyst	CAS #	Flags
Extraction / Prep.								
Metal Digestion	Completed			3015A	11/20/08 12:00	SLS		
Metals								
Aluminum	0.028	mg/L	0.005	200.8	11/20/08 13:39	SLS	7429-90-5	
Arsenic	0.021	mg/L	0.001	200.8	11/20/08 13:39	SLS	7440-38-2	
Barium	0.066	mg/L	0.005	200.8	11/20/08 13:39	SLS	7440-39-3	
Beryllium	Not detected	mg/L	0.001	200.8	11/21/08 13:46	SLS	7440-41-7	
Cadmium	Not detected	mg/L	0.02	200.8	11/20/08 13:39	SLS	7440-43-9	
Chromium	Not detected	mg/L	0.001	200.8	11/20/08 13:39	SLS	7440-47-3	
Cobalt	Not detected	mg/L	0.005	200.8	11/20/08 13:39	SLS	7440-48-4	
Copper	0.030	mg/L	0.001	200.8	11/20/08 13:39	SLS	7440-50-8	
Lead	0.002	mg/L	0.001	200.8	11/20/08 13:39	SLS	7439-92-1	
Magnesium	22.6	mg/L	0.05	200.8	11/21/08 13:21	SLS	7439-95-4	
Manganese	0.296	mg/L	0.005	200.8	11/20/08 13:39	SLS	7439-96-5	
Nickel	Not detected	mg/L	0.005	200.8	11/20/08 13:39	SLS	7440-02-0	
Selenium	0.002	mg/L	0.001	200.8	11/21/08 13:46	SLS	7782-49-2	
Silver	0.0031	mg/L	0.0005	200.8	11/20/08 13:39	SLS	7440-22-4	
Thallium	Not detected	mg/L	0.001	200.8	11/20/08 13:39	SLS	7440-28-0	
Vanadium	Not detected	mg/L	0.005	200.8	11/20/08 13:39	SLS	7440-62-2	
Zinc	0.070	mg/L	0.005	200.8	11/20/08 13:39	SLS	7440-66-6	

Merit Laboratories, Inc.

2680 East Lansing Dr., East Lansing, MI 48823
Phone (517) 332-0167 Fax (517) 332-6333
www.meritlabs.com

C.O.C. PAGE # 1 OF 1

045545

CHAIN OF CUSTODY RECORD

REPORT TO	
CONTACT NAME	Lori Hevemeyer – Ray Miller
COMPANY	URS Corp.
ADDRESS	
CITY	Midland
STATE	Mi
ZIP CODE	
PHONE NO.	989-636-4763
FAX NO	
P.O. NO.	
E-MAIL ADDRESS	
QUOTE NO.	

INVOICE TO	
CONTACT NAME	Ray Miller
SAME	
COMPANY	
ADDRESS	
CITY	
STATE	
ZIP CODE	
PHONE NO.	
FAX NO.	
P.O. NO	

PROJECT NO./NAME: GM 4th Quarter – Landfill

SAMPLER(S) - PLEASE PRINT/SIGN NAME: John Hellyer

TURNAROUND TIME REQUIRED: ☐ 24 HR ☐ 48 HR ☐ 72 HR ☒ STANDARD ☐ OTHER

DELIVERABLES REQUIRED: ☐ STANDARD ☐ LEVEL II ☐ LEVEL III ☐ OTHER

MATRIX CODE: GW=GROUNDWATER SL=SLUDGE WW=WASTEWATER O=OIL S=SOIL A=AIR L=LIQUID W=WASTE SD=SOLID M=MISC

ANALYSIS (ATTACH LIST IF MORE SPACE REQUIRED)

MERIT LAB NO.	DATE	TIME	SAMPLE TAG IDENTIFICATION-DESCRIPTION	MATRIX	# OF BOTTLES	NONE	HCL	HNO_3	H_2SO_4	NaOH	MeOH	OTHER	Metals - See attached	SPECIAL INSTRUCTIONS/NOTES
39029.01	11/11/08	1205	GM - Sump	GW	1			✓					X	

		DATE	TIME
RELINQUISHED BY: SIGNATURE/ORGANIZATION	[signature] URS	11/11/08	1230
RECEIVED BY: SIGNATURE/ORGANIZATION	[signature]	11/12/08	1045
RELINQUISHED BY: SIGNATURE/ORGANIZATION			
RECEIVED BY: SIGNATURE/ORGANIZATION	[signature] / Merit	11-12-08	1200
RELINQUISHED BY: SIGNATURE/ORGANIZATION	[signature] / Merit	11-12-08	1950
RECEIVED BY: SIGNATURE/ORGANIZATION	Barbara Richards	11-12-08	1430

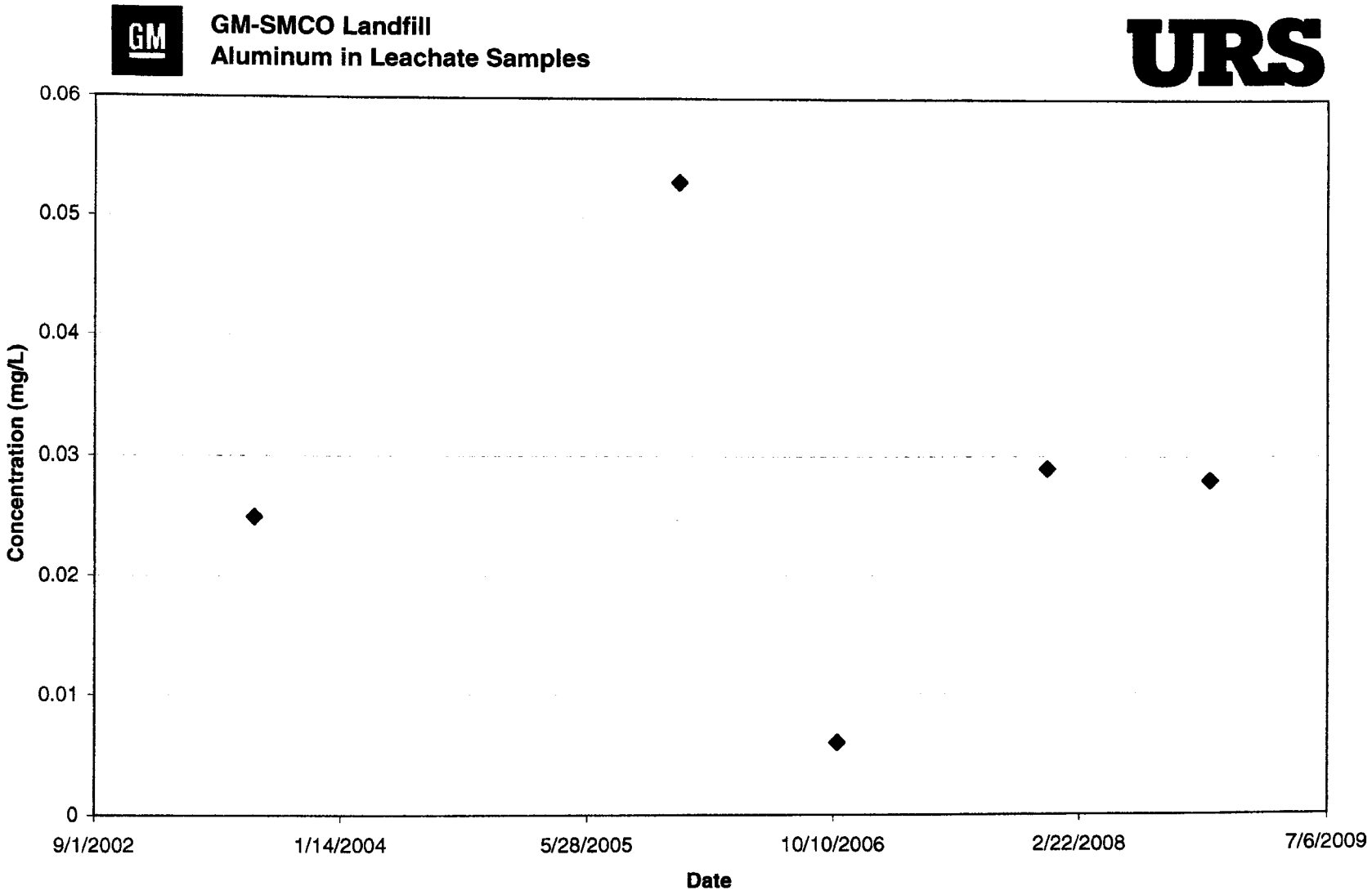
SEAL NO. | SEAL INTACT YES ☐ NO ☐ | INITIALS | NOTES: | TEMP. ON ARRIVAL 4.3

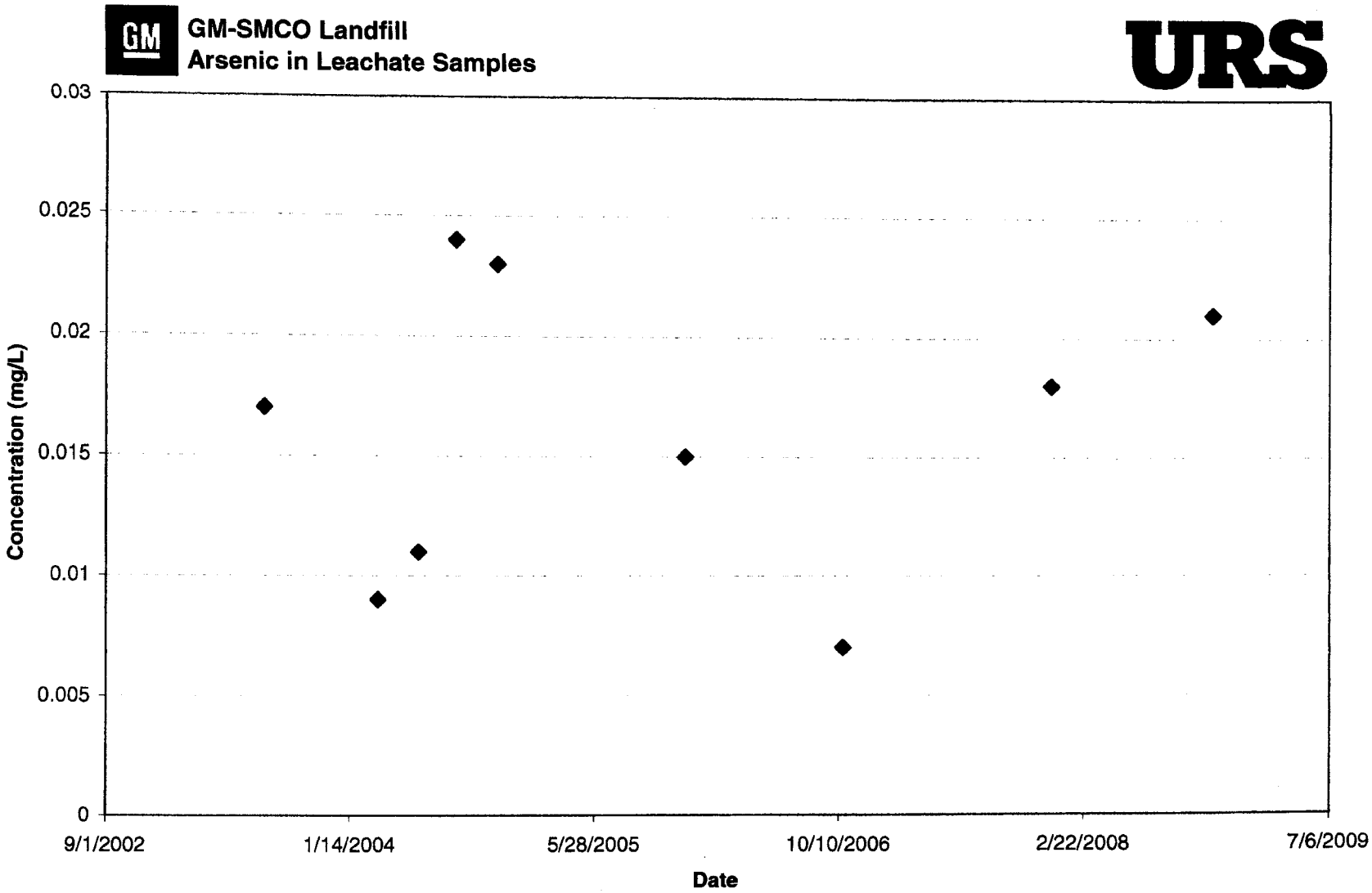
SEAL NO. | SEAL INTACT YES ☐ NO ☐ | INITIALS

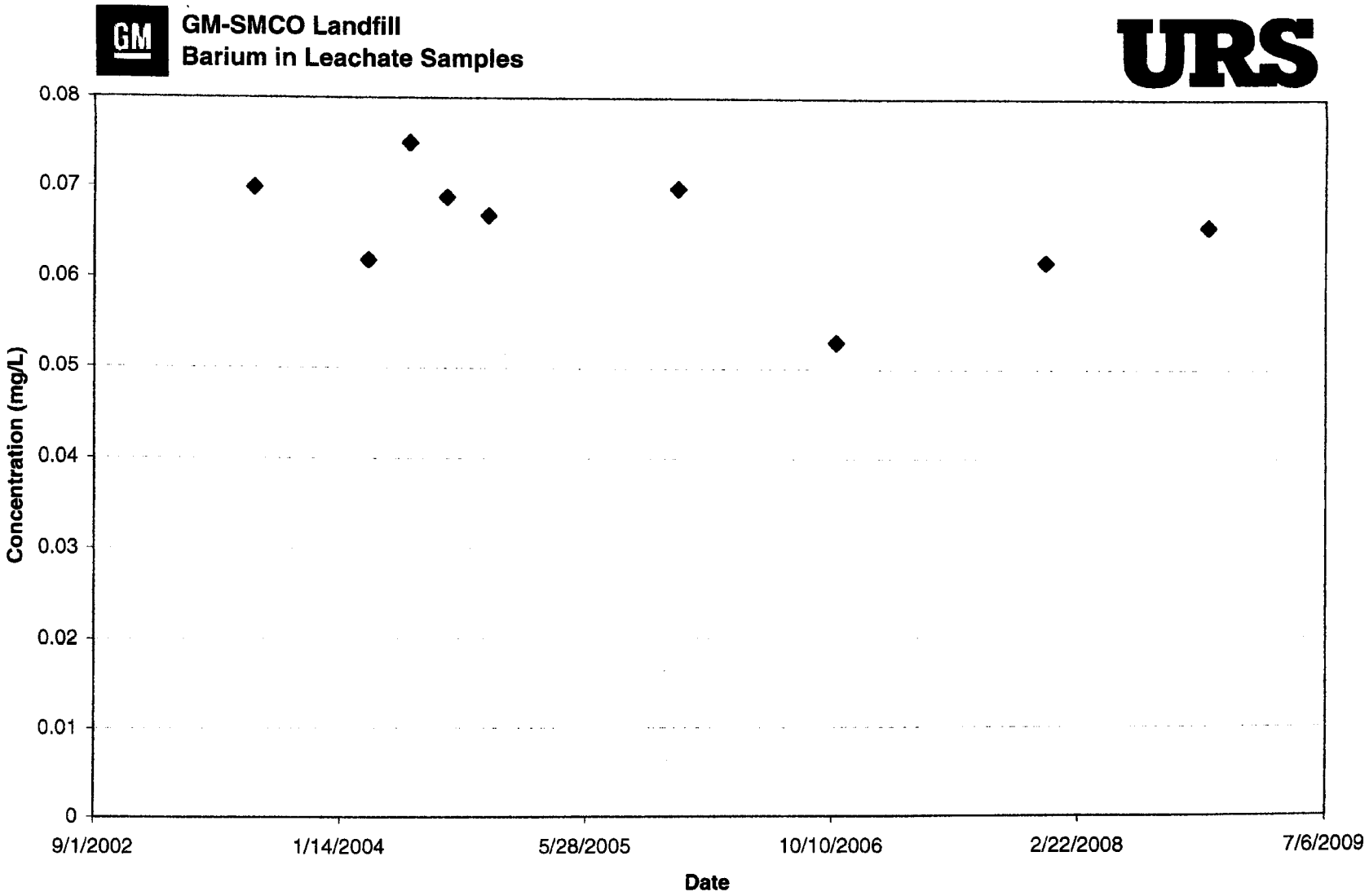
PLEASE NOTE: SIGNING ACKNOWLEDGES ACCEPTANCE OF TERMS & CONDITIONS ON REVERSE SIDE

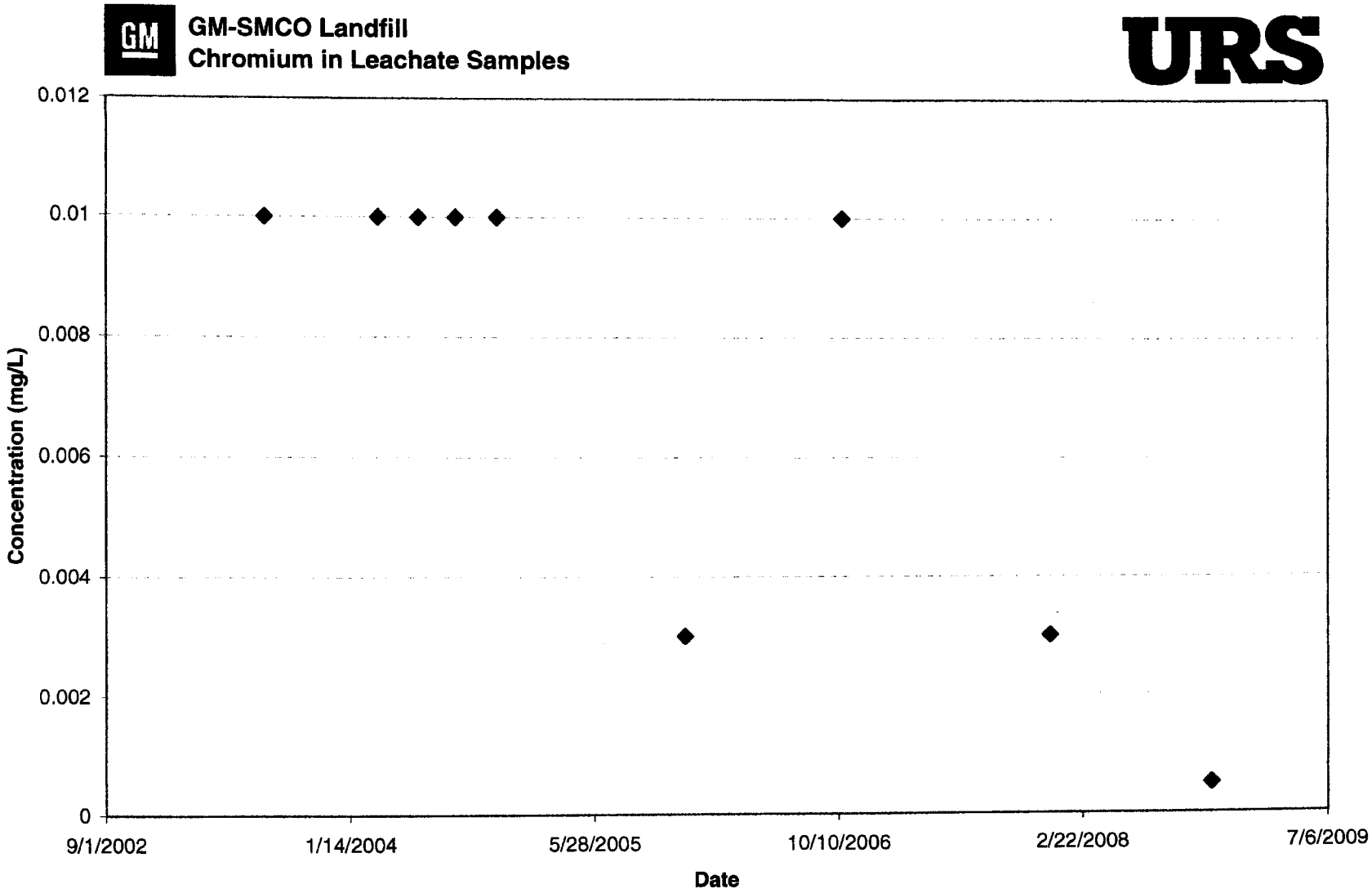
Appendix C

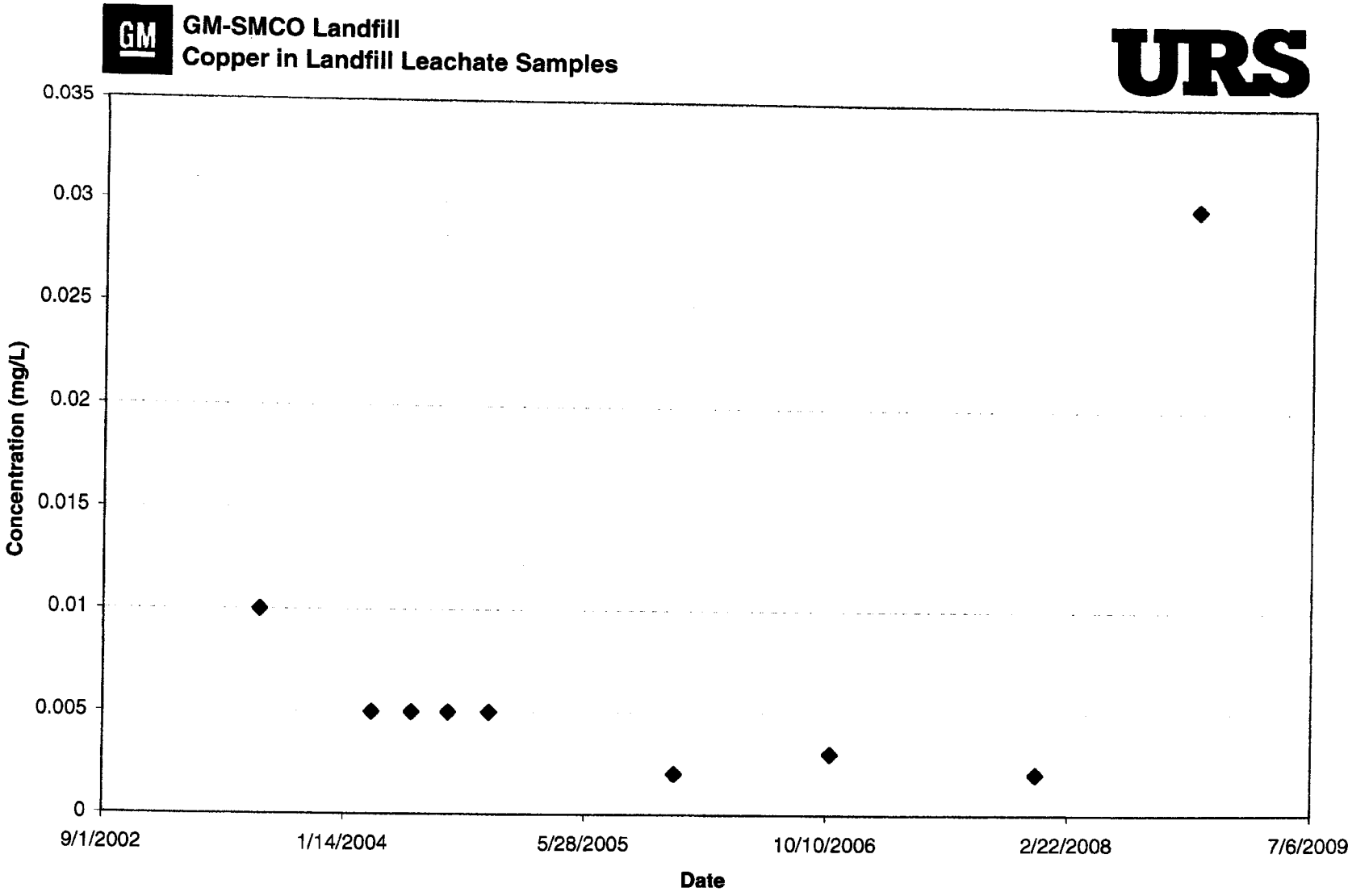
Summary Charts of Leachate Analyses

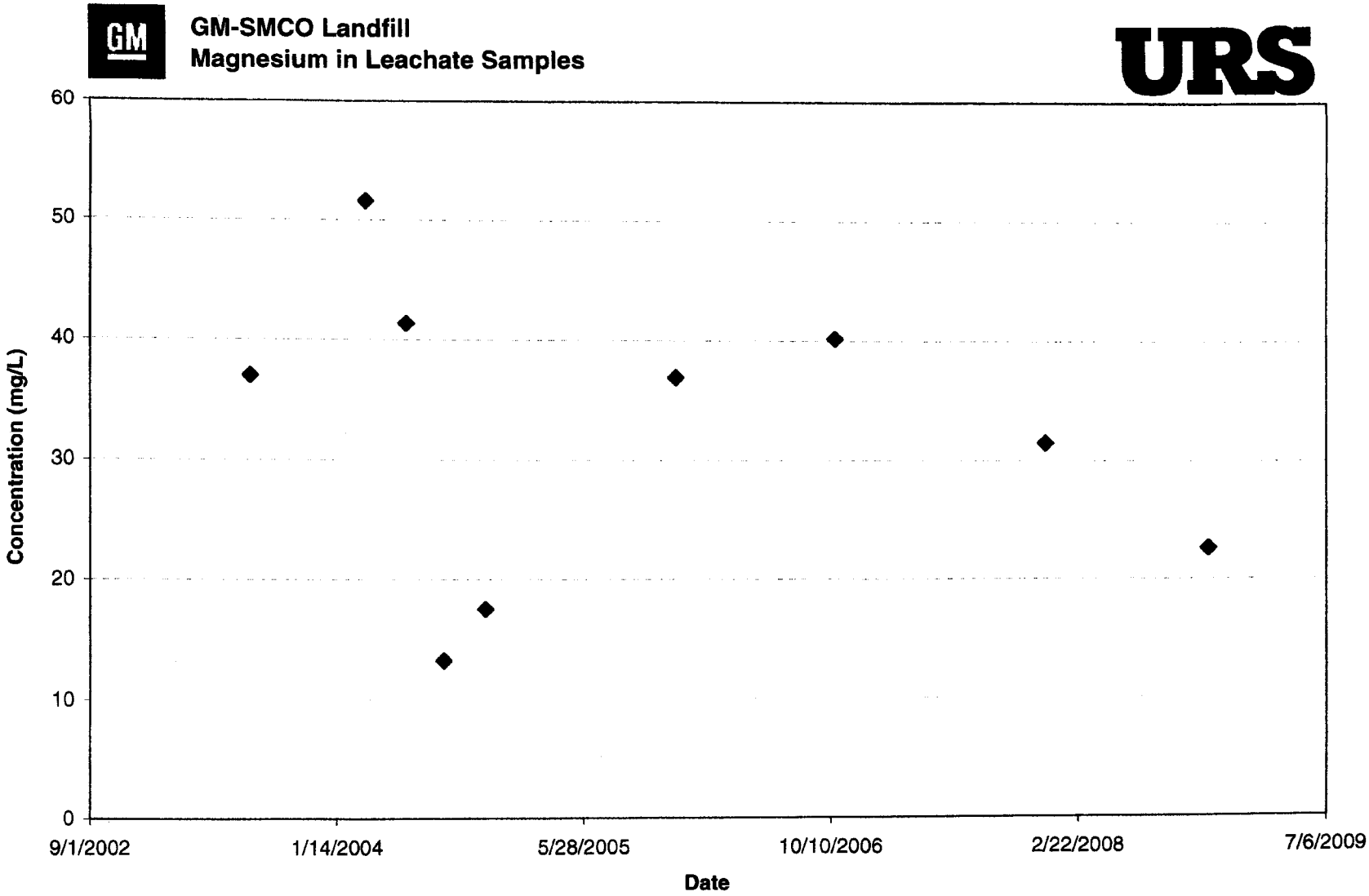

GM-SMCO Landfill
Aluminum in Leachate Samples
URS
0.06
0.05
0.04
0.03
0.02
0.01
0
Concentration (mg/L)
9/1/2002
1/14/2004
5/28/2005
10/10/2006
2/22/2008
7/6/2009
Date

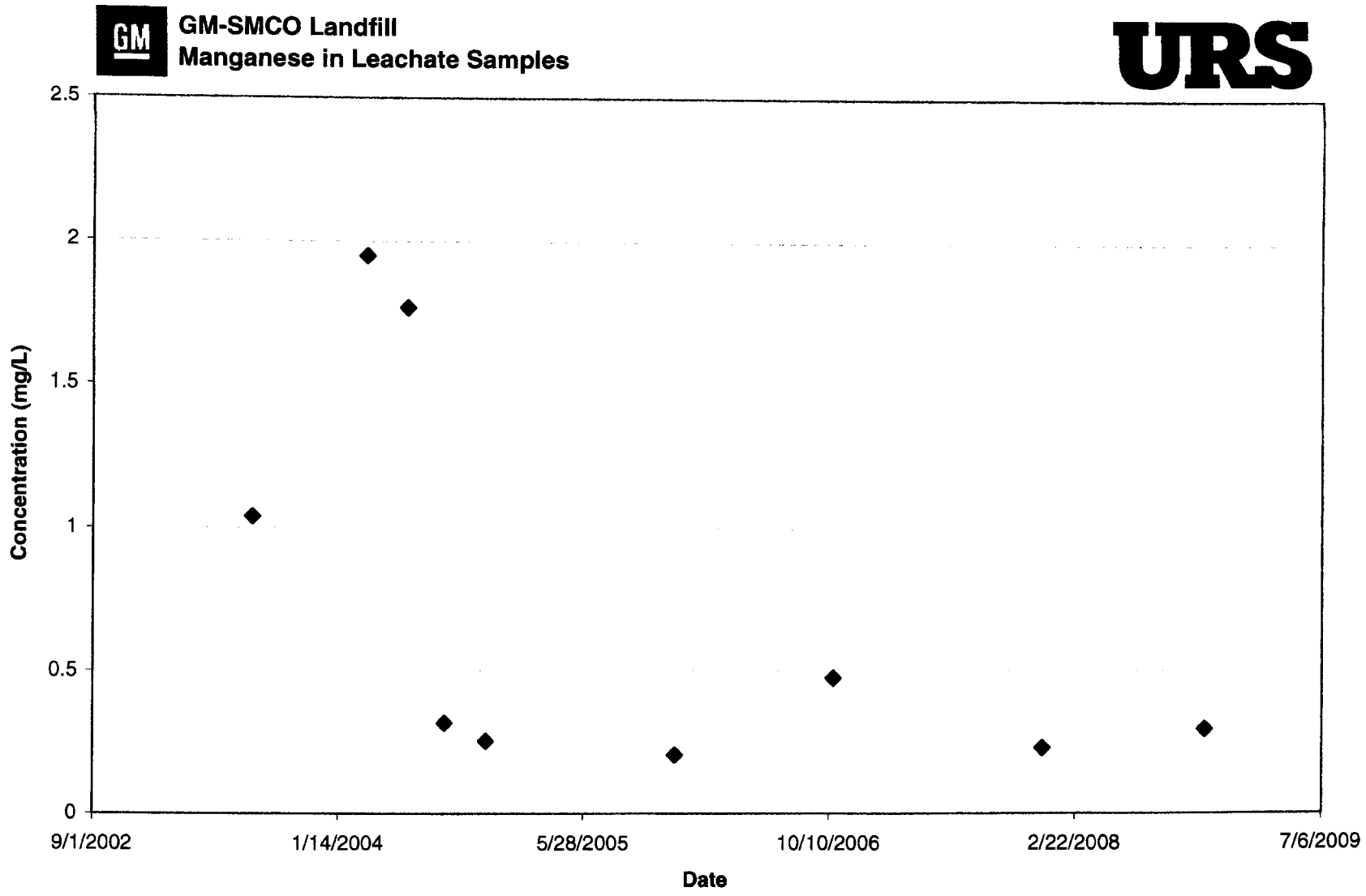

GM-SMCO Landfill
Arsenic in Leachate Samples
URS
0.03
0.025
0.02
0.015
0.01
0.005
0
Concentration (mg/L)
9/1/2002
1/14/2004
5/28/2005
10/10/2006
2/22/2008
7/6/2009
Date

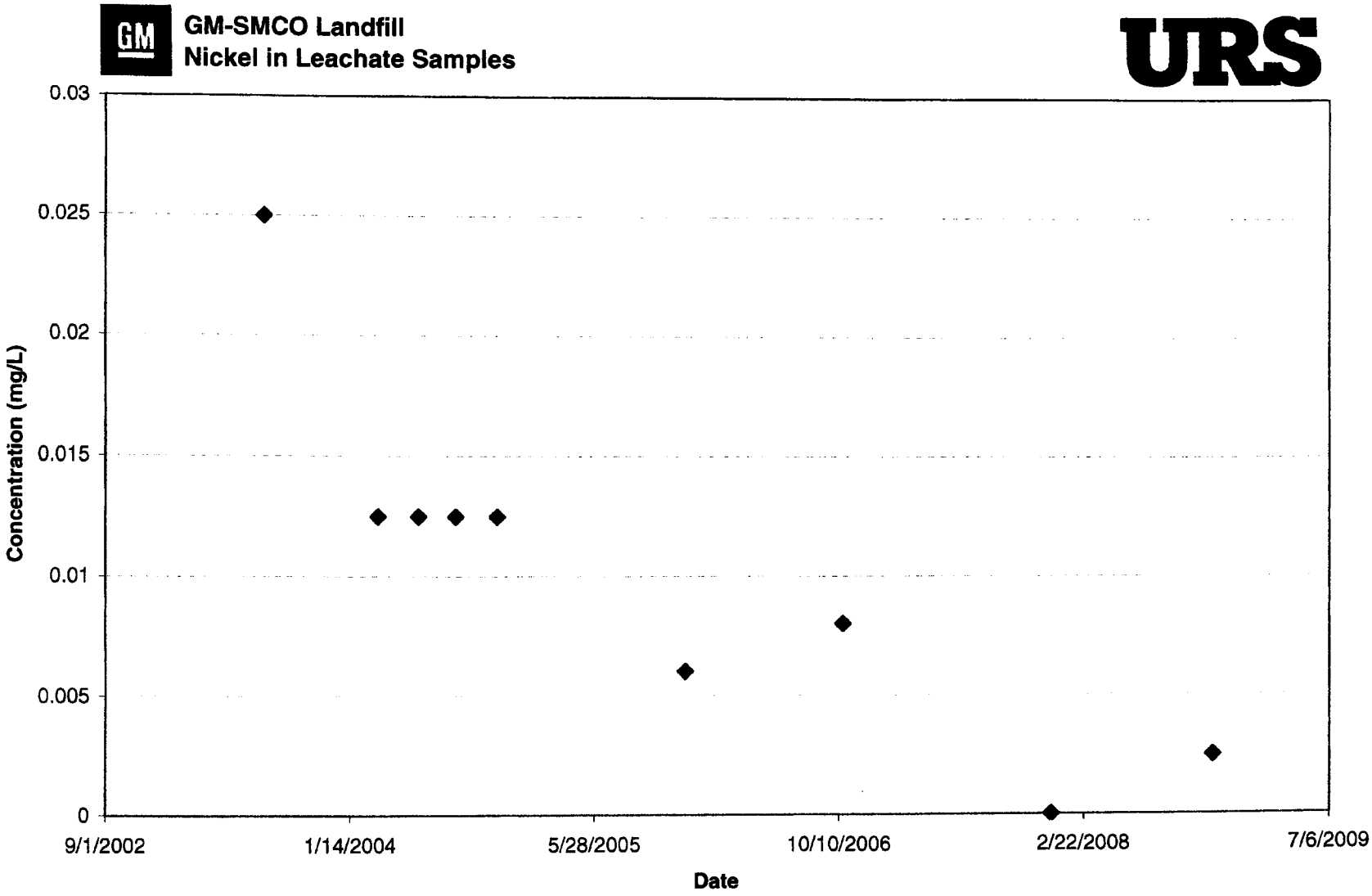

GM
GM-SMCO Landfill
Barium in Leachate Samples
URS
0.08
0.07
0.06
0.05
0.04
0.03
0.02
0.01
0
Concentration (mg/L)
9/1/2002
1/14/2004
5/28/2005
10/10/2006
2/22/2008
7/6/2009
Date

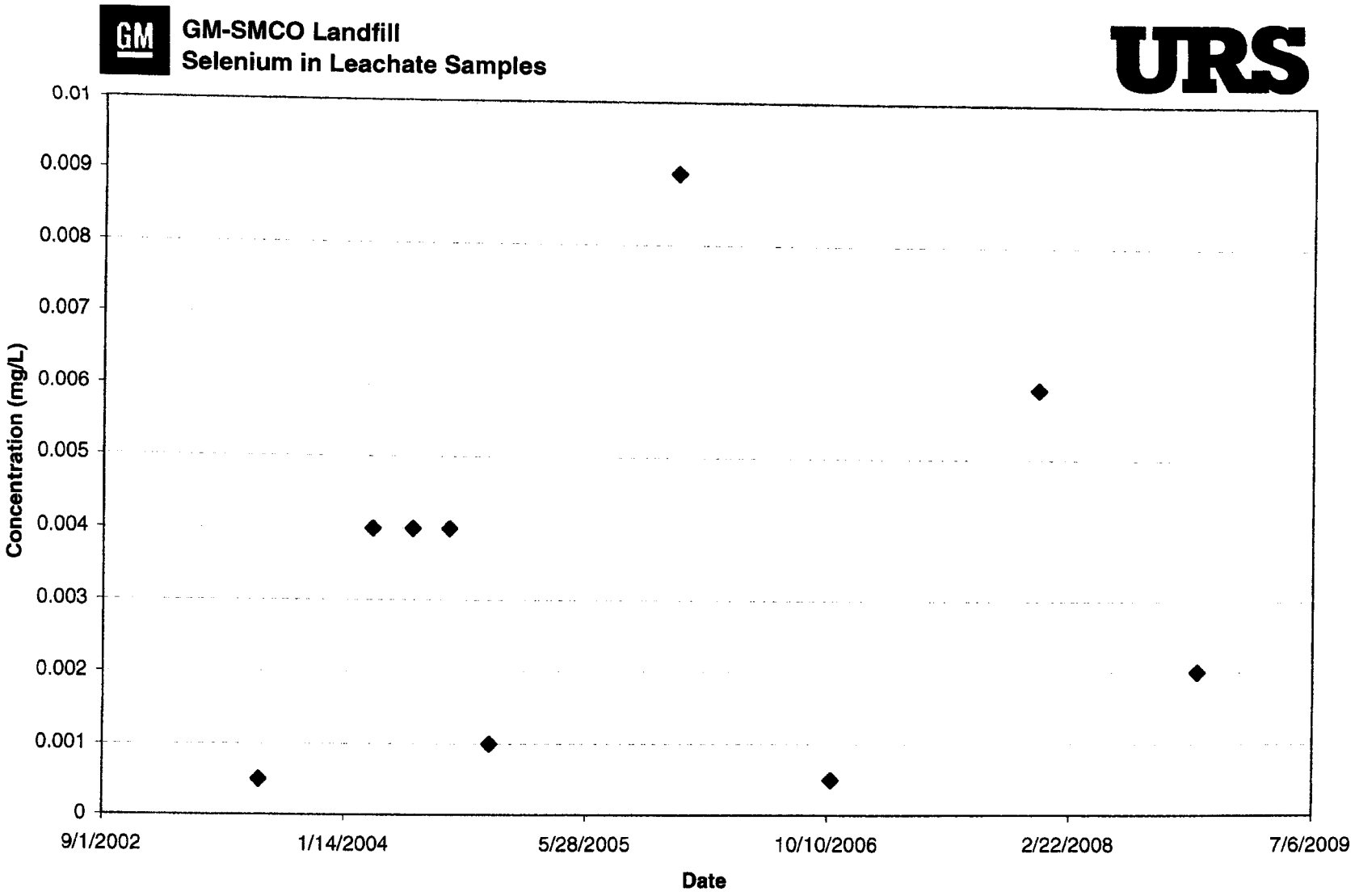

GM-SMCO Landfill
Chromium in Leachate Samples
URS
0.012
0.01
0.008
0.006
0.004
0.002
0
Concentration (mg/L)
9/1/2002
1/14/2004
5/28/2005
10/10/2006
2/22/2008
7/6/2009
Date

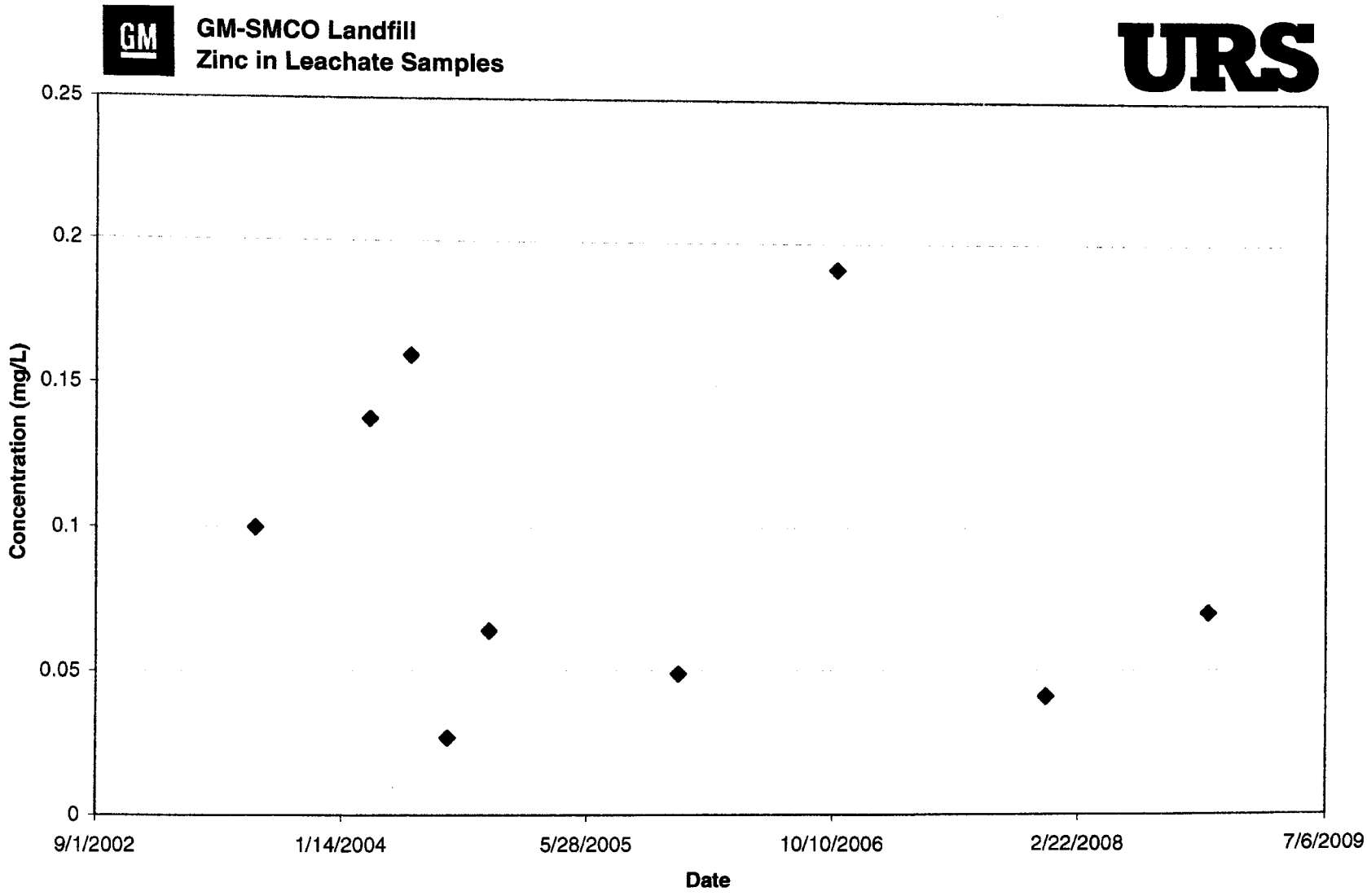

GM-SMCO Landfill
Copper in Landfill Leachate Samples
URS
0.035
0.03
0.025
0.02
0.015
0.01
0.005
0
Concentration (mg/L)
9/1/2002
1/14/2004
5/28/2005
10/10/2006
2/22/2008
7/6/2009
Date


GM
GM-SMCO Landfill
Magnesium in Leachate Samples
URS
60
50
40
30
20
10
0
Concentration (mg/L)
9/1/2002
1/14/2004
5/28/2005
10/10/2006
2/22/2008
7/6/2009
Date


GM-SMCO Landfill
Manganese in Leachate Samples
URS
Concentration (mg/L)
2.5
2
1.5
1
0.5
0
9/1/2002
1/14/2004
5/28/2005
10/10/2006
2/22/2008
7/6/2009
Date


GM-SMCO Landfill
Nickel in Leachate Samples
URS
0.03
0.025
0.02
0.015
0.01
0.005
0
Concentration (mg/L)
9/1/2002
1/14/2004
5/28/2005
10/10/2006
2/22/2008
7/6/2009
Date


GM
GM-SMCO Landfill
Selenium in Leachate Samples
URS
0.01
0.009
0.008
0.007
0.006
0.005
0.004
0.003
0.002
0.001
0
Concentration (mg/L)
9/1/2002
1/14/2004
5/28/2005
10/10/2006
2/22/2008
7/6/2009
Date


GM-SMCO Landfill
Zinc in Leachate Samples
URS
0.25
0.2
0.15
0.1
0.05
0
Concentration (mg/L)
9/1/2002
1/14/2004
5/28/2005
10/10/2006
2/22/2008
7/6/2009
Date

ATTACHMENT C

Tier II Emergency and Hazardous Chemical Inventory

Reporting Period From January 1, 2008 to December 31, 2008

☑ Annual ☐ Revision

Facility Identification

Internal Code	:	3888			
Name	:	GM-SAGINAW METAL CASTING OPERATIONS			
Company Name	:	GMPT - Saginaw Metal Casting Operations			
Street	:	1629 NORTH WASHINGTON AVE	City	:	SAGINAW
County	:	SAGINAW			
Fire Department	:	Saginaw FD	LEPC Name	:	SAGINAW COUNTY LEPC
State	:	MI	Zip	:	48605-5073
Phone	:	989-239-8413	Lat/Long	:	43.44733/-83.921583
Fax	:		Email	:	lynn.porath@gm.com

Mailing Address if different from Facility ID Address

Name 1	:	GM-SAGINAW METAL CASTING OPERATIONS			
Name 2	:	ATTN: RAY IIKKA			
Street 1	:	1629 N WASHINGTON AVE MAIL CODE: 486-629-011			
Street 2	:				
City	:	SAGINAW	State	:	MI
Zip	:	48605-5073	Phone	:	
Country	:	United States			

NAICS	:	331524	Dun & Brad No	:	005356613
SIC Code	:	3365	TRIFID	:	48605SGNWG1629N
MI SARA ID	:	3888			

Owner/Operator Details

Name	:	GENERAL MOTORS CORP.
Phone	:	313-556-5000
Street Address	:	300 RENAISSANCE CENTER
City	:	DETROIT
State	:	MI
Zip	:	48265
Country	:	United States

Emergency Contacts

Name	:	Moh Kumar			
Title	:	ENV. MANAGER			
Phone	:	248-672-9217	24 Hr.Phone	:	989-757-1801
Name	:	LYNN PORATH			
Title	:	ENV. ENGINEER			
Phone	:	989-239-8413	24 Hr.Phone	:	989-757-1801

Mixture Components are listed in the Appendix.

Certification: I certify under penalty of law that I have personally examined and am familiar with the information submitted, and that based on my inquiry of those individuals responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete.

Carolyne Watts, Plant Manager — Name and official title of owner/operator or authorized representative

2-20-09 — Date

Signature

Optional Attachments

- ☑ Site Plan
- ☐ Site Coordinate Abbreviations
- ☐ Other Safeguard measures
- ☐ Facility Plan

Chemical Description	Physical & Health Hazards	Inventory	Storage Codes & Location
Chemical ID : 607695 Check if Chemical Information has changed from the last submission : ☐ CAS : N/A Trade Secret : ☐ Chemical Name : 389 ISOCURE PART 1 FS (RESIN) EHS : ☐ Contains EHS : ☑ EHS Name : ☐ Pure ☑ Mix ☐ Solid ☑ Liquid ☐ Gas	☒ Fire ☐ Pressure ☐ Reactivity ☒ Immediate ☐ Delayed ☐ (Chronic)	14000 Max Daily Amt(lbs) 04 Max Daily Amount Code 6400 Ave. Daily Amount (lbs.) 03 Ave. Daily Amount Code 365 No of days in site	Container Type / Pressure / Temperature / Storage Location O / 1 / 4 / LINE 6 - NORTH CORE ROOM O / 1 / 4 / EAST STREET
Chemical ID : 607725 Check if Chemical Information has changed from the last submission : ☐ CAS : N/A Trade Secret : ☐ Chemical Name : 689 ISOCURE PART 2 F (RESIN) EHS : ☐ Contains EHS : ☐ EHS Name : ☐ Pure ☑ Mix ☐ Solid ☑ Liquid ☐ Gas	☒ Fire ☐ Pressure ☐ Reactivity ☒ Immediate ☐ Delayed ☐ (Chronic)	14000 Max Daily Amt(lbs) 04 Max Daily Amount Code 6400 Ave. Daily Amount (lbs.) 03 Ave. Daily Amount Code 365 No of days in site	Container Type / Pressure / Temperature / Storage Location O / 1 / 4 / LINE 6 - CORE ROOM STORAGE O / 1 / 4 / EAST STREET
Chemical ID : 290683 Check if Chemical Information has changed from the last submission : ☐ CAS : N/A Trade Secret : ☐ Chemical Name : ALUMINUM INGOTS / SOWS EHS : ☐ Contains EHS : ☐ EHS Name : ☐ Pure ☑ Mix ☑ Solid ☐ Liquid ☐ Gas	☐ Fire ☐ Pressure ☐ Reactivity ☒ Immediate ☐ Delayed ☐ (Chronic)	450000 Max Daily Amt(lbs) 05 Max Daily Amount Code 200000 Ave. Daily Amount (lbs.) 05 Ave. Daily Amount Code 365 No of days in site	Container Type / Pressure / Temperature / Storage Location R / 1 / 4 / LINE 6 R / 1 / 4 / PS MELTING AREA R / 1 / 4 / L850 STORAGE
Chemical ID : 613431 Check if Chemical Information has changed from the last submission : ☐ CAS : N/A Trade Secret : ☐ Chemical Name : ALUMINUM STRONTIUM BORON MASTER ALLOY EHS : ☐ Contains EHS : ☐ EHS Name : ☐ Pure ☑ Mix ☑ Solid ☐ Liquid ☐ Gas	☐ Fire ☐ Pressure ☐ Reactivity ☒ Immediate ☐ Delayed ☐ (Chronic)	14000 Max Daily Amt(lbs) 04 Max Daily Amount Code 6300 Ave. Daily Amount (lbs.) 03 Ave. Daily Amount Code 365 No of days in site	Container Type / Pressure / Temperature / Storage Location R / 1 / 4 / LINE 6

Chemical Description	Physical & Health Hazards	Inventory	Storage Codes & Location
Chemical ID : 290687 Check if Chemical Information has changed from the last submission : ☐ CAS : N/A Trade Secret : ☐ Chemical Name : ALUMINUM SULFATE EHS : ☐ Contains EHS : ☐ EHS Name : ☐ Pure ☑ Mix ☐ Solid ☑ Liquid ☐ Gas	☐ Fire ☐ Pressure ☐ Reactivity ☒ Immediate ☐ Delayed (Chronic)	160000 Max Daily Amt(lbs) 05 Max Daily Amount Code 54000 Ave. Daily Amount (lbs.) 04 Ave. Daily Amount Code 365 No of days in site	Container Type: C; Pressure: 1; Temperature: 4; Storage Location: WASTE WATER TREATMENT PLANT
Chemical ID : 614342 Check if Chemical Information has changed from the last submission : ☐ CAS : N/A Trade Secret : ☐ Chemical Name : AMBERLITE IRC 748 EHS : ☐ Contains EHS : ☐ EHS Name : ☐ Pure ☑ Mix ☑ Solid ☐ Liquid ☐ Gas	☐ Fire ☐ Pressure ☐ Reactivity ☒ Immediate ☐ Delayed (Chronic)	75000 Max Daily Amt(lbs) 04 Max Daily Amount Code 75000 Ave. Daily Amount (lbs.) 04 Ave. Daily Amount Code 365 No of days in site	Container Type: C; Pressure: 1; Temperature: 4; Storage Location: WASTE WATER TREATMENT PLANT
Chemical ID : 290710 Check if Chemical Information has changed from the last submission : ☐ CAS : N/A Trade Secret : ☐ Chemical Name : ARGON EHS : ☐ Contains EHS : ☐ EHS Name : ☑ Pure ☐ Mix ☐ Solid ☑ Liquid ☑ Gas	☐ Fire ☐ Pressure ☒ Reactivity ☒ Immediate ☐ Delayed (Chronic)	830000 Max Daily Amt(lbs) 05 Max Daily Amount Code 560000 Ave. Daily Amount (lbs.) 05 Ave. Daily Amount Code 365 No of days in site	Container Type: L; Pressure: 2; Temperature: 7; Storage Location: UBIQIUTOUS Container Type: L; Pressure: 2; Temperature: 7; Storage Location: OUTSIDE LINE 6 Container Type: L; Pressure: 2; Temperature: 7; Storage Location: OUTSIDE LOST FOAM
Chemical ID : 607701 Check if Chemical Information has changed from the last submission : ☐ CAS : N/A Trade Secret : ☐ Chemical Name : AW HYDRAULIC OIL ISO 46 (ANTI-WEAR) EHS : ☐ Contains EHS : ☐ EHS Name : ☐ Pure ☑ Mix ☐ Solid ☑ Liquid ☐ Gas	☒ Fire ☐ Pressure ☒ Reactivity ☐ Immediate ☐ Delayed (Chronic)	35000 Max Daily Amt(lbs) 04 Max Daily Amount Code 20000 Ave. Daily Amount (lbs.) 04 Ave. Daily Amount Code 365 No of days in site	Container Type: C; Pressure: 1; Temperature: 4; Storage Location: OIL BUILDING Container Type: P; Pressure: 1; Temperature: 4; Storage Location: UBIQUITOUS Container Type: O; Pressure: 1; Temperature: 4; Storage Location: PS MELTING STORAGE AREA Container Type: O; Pressure: 1; Temperature: 4; Storage Location: LINE 6 MAINTENANCE

Chemical Description	Physical & Health Hazards	Inventory	Storage Codes & Location
Chemical ID : 290711 Check if Chemical Information has changed from the last submission : ☐ CAS : N/A Trade Secret : ☐ Chemical Name : BATTERIES (LEAD ACID) EHS : ☐ Contains EHS : ☑ EHS Name : ☐ Pure ☑ Mix ☐ Solid ☑ Liquid ☐ Gas	☐ Fire ☐ Pressure ☒ Reactivity ☒ Immediate ☐ Delayed ☐ (Chronic)	350000 Max Daily Amt(lbs) 05 Max Daily Amount Code 350000 Ave. Daily Amount (lbs.) 05 Ave. Daily Amount Code 365 No of days in site	Container Type / Pressure / Temperature / Storage Location R / 1 / 4 / UBIQUITOUS R / 1 / 4 / BATTERY CHARGE ROOM
Chemical ID : 607705 Check if Chemical Information has changed from the last submission : ☐ CAS : N/A Trade Secret : ☐ Chemical Name : CARBO-ACCUCAST ID40 (PROPPANT - MOLDING MEDIA) EHS : ☐ Contains EHS : ☐ EHS Name : ☐ Pure ☑ Mix ☑ Solid ☐ Liquid ☐ Gas	☐ Fire ☐ Pressure ☒ Reactivity ☐ Immediate ☐ Delayed ☐ (Chronic)	150000 Max Daily Amt(lbs) 05 Max Daily Amount Code 66000 Ave. Daily Amount (lbs.) 04 Ave. Daily Amount Code 365 No of days in site	Container Type / Pressure / Temperature / Storage Location H / 1 / 4 / L850
Chemical ID : 614340 Check if Chemical Information has changed from the last submission : ☐ CAS : N/A Trade Secret : ☐ Chemical Name : CARBON DIOXIDE (DRY ICE) EHS : ☐ Contains EHS : ☐ EHS Name : ☑ Pure ☐ Mix ☑ Solid ☐ Liquid ☐ Gas	☐ Fire ☐ Pressure ☒ Reactivity ☐ Immediate ☐ Delayed ☐ (Chronic)	10000 Max Daily Amt(lbs) 04 Max Daily Amount Code 5000 Ave. Daily Amount (lbs.) 03 Ave. Daily Amount Code 365 No of days in site	Container Type / Pressure / Temperature / Storage Location O / 1 / 7 / PRECISION SAND O / 1 / 7 / NORTH STREET SUPERMARKET
Chemical ID : 290699 Check if Chemical Information has changed from the last submission : ☐ CAS : N/A Trade Secret : ☐ Chemical Name : CERAMCOTE EP9 (BLOCK AND HEAD COATINGS) EHS : ☐ Contains EHS : ☐ EHS Name : ☐ Pure ☑ Mix ☐ Solid ☑ Liquid ☐ Gas	☐ Fire ☐ Pressure ☒ Reactivity ☒ Immediate ☐ Delayed ☐ (Chronic)	61000 Max Daily Amt(lbs) 04 Max Daily Amount Code 27000 Ave. Daily Amount (lbs.) 04 Ave. Daily Amount Code 365 No of days in site	Container Type / Pressure / Temperature / Storage Location O / 1 / 4 / LOST FOAM (TOTES) C / 1 / 4 / LOST FOAM (BULK TANKS)

Chemical Description	Physical & Health Hazards	Inventory	Storage Codes & Location
Chemical ID : 290717 Check if Chemical Information has changed from the last submission : ☐ CAS : N/A Trade Secret : ☐ Chemical Name : DE-ICING ROAD SALT EHS : ☐ Contains EHS : ☐ EHS Name : ☐ Pure ☑ Mix ☑ Solid ☐ Liquid ☐ Gas	☐ Fire ☐ Pressure ☐ Reactivity ☒ Immediate ☐ Delayed (Chronic)	400000 Max Daily Amt(lbs) 05 Max Daily Amount Code 200000 Ave. Daily Amount (lbs.) 05 Ave. Daily Amount Code 365 No of days in site	Container Type / Pressure / Temperature / Storage Location R / 1 / 4 / PILE IN YARD BESIDE FACILITY D / 1 / 4 / GATE BY SECURITY
Chemical ID : 290702 Check if Chemical Information has changed from the last submission : ☐ CAS : N/A Trade Secret : ☐ Chemical Name : DICALITE/PERLITE (FINE SILICA) EHS : ☐ Contains EHS : ☐ EHS Name : ☐ Pure ☑ Mix ☑ Solid ☐ Liquid ☐ Gas	☐ Fire ☐ Pressure ☐ Reactivity ☒ Immediate ☐ Delayed (Chronic)	73000 Max Daily Amt(lbs) 04 Max Daily Amount Code 27000 Ave. Daily Amount (lbs.) 04 Ave. Daily Amount Code 365 No of days in site	Container Type / Pressure / Temperature / Storage Location H / 1 / 4 / OUTSIDE WWTP
Chemical ID : 290693 Check if Chemical Information has changed from the last submission : ☐ CAS : N/A Trade Secret : ☐ Chemical Name : DIESEL #2 UNOCAL EHS : ☐ Contains EHS : ☐ EHS Name : ☐ Pure ☑ Mix ☐ Solid ☑ Liquid ☐ Gas	☒ Fire ☐ Pressure ☐ Reactivity ☒ Immediate ☐ Delayed (Chronic)	23000 Max Daily Amt(lbs) 04 Max Daily Amount Code 20000 Ave. Daily Amount (lbs.) 04 Ave. Daily Amount Code 365 No of days in site	Container Type / Pressure / Temperature / Storage Location A / 1 / 4 / NO. 4 PUMPHOUSE A / 1 / 4 / COOLING TOWER C / 1 / 4 / INSIDE - COOLING TOWER A / 1 / 4 / WASTE WATER TREATMENT PLANT
Chemical ID : 290704 Check if Chemical Information has changed from the last submission : ☐ CAS : N/A Trade Secret : ☐ Chemical Name : EPS EXPANDABLE POLYSTYRENE (BEADS) EHS : ☐ Contains EHS : ☐ EHS Name : ☐ Pure ☑ Mix ☑ Solid ☐ Liquid ☐ Gas	☐ Fire ☐ Pressure ☐ Reactivity ☒ Immediate ☐ Delayed (Chronic)	47000 Max Daily Amt(lbs) 04 Max Daily Amount Code 21000 Ave. Daily Amount (lbs.) 04 Ave. Daily Amount Code 365 No of days in site	Container Type / Pressure / Temperature / Storage Location J / 1 / 4 / LOST FOAM AREA J / 1 / 4 / NORTH STREET SUPERMARKET R / 1 / 4 / LARGE BAGS IN BEAD ROOMS

Chemical Description	Physical & Health Hazards	Inventory	Storage Codes & Location
Chemical ID : 613436 Check if Chemical Information has changed from the last submission : ☐ CAS : N/A Trade Secret : ☐ Chemical Name : FYRQUEL 220 (HYDRAULIC OIL) EHS : ☐ Contains EHS : ☐ EHS Name : ☐ Pure ☑ Mix ☐ Solid ☑ Liquid ☐ Gas	☐ Fire ☐ Pressure ☐ Reactivity ☒ Immediate ☐ Delayed ☐ (Chronic)	11000 Max Daily Amt(lbs) 04 Max Daily Amount Code 4900 Ave. Daily Amount (lbs.) 03 Ave. Daily Amount Code 365 No of days in site	Container Type: C, R Pressure: 1, 1 Temperature: 4, 4 Storage Location: OIL BUILDING, PLANTWIDE
Chemical ID : 290692 Check if Chemical Information has changed from the last submission : ☐ CAS : N/A Trade Secret : ☐ Chemical Name : GASOLINE 76 UNLEADED REG EHS : ☐ Contains EHS : ☐ EHS Name : ☐ Pure ☑ Mix ☐ Solid ☑ Liquid ☐ Gas	☒ Fire ☐ Pressure ☒ Reactivity ☐ Immediate ☐ Delayed ☐ (Chronic)	62000 Max Daily Amt(lbs) 04 Max Daily Amount Code 40000 Ave. Daily Amount (lbs.) 04 Ave. Daily Amount Code 365 No of days in site	Container Type: B Pressure: 1 Temperature: 4 Storage Location: GARAGE
Chemical ID : 613438 Check if Chemical Information has changed from the last submission : ☐ CAS : N/A Trade Secret : ☐ Chemical Name : GM 6733 CORE CLEANB. D (TOOL CLEANER CONCENTRATE) EHS : ☐ Contains EHS : ☐ EHS Name : ☐ Pure ☑ Mix ☐ Solid ☑ Liquid ☐ Gas	☐ Fire ☐ Pressure ☐ Reactivity ☒ Immediate ☐ Delayed ☐ (Chronic)	53000 Max Daily Amt(lbs) 04 Max Daily Amount Code 24000 Ave. Daily Amount (lbs.) 04 Ave. Daily Amount Code 60 No of days in site	Container Type: O Pressure: 1 Temperature: 4 Storage Location: TOOL CLEANING ROOM
Chemical ID : 613435 Check if Chemical Information has changed from the last submission : ☐ CAS : N/A Trade Secret : ☐ Chemical Name : GM8020 (METAL CLEANER) EHS : ☐ Contains EHS : ☐ EHS Name : ☐ Pure ☑ Mix ☐ Solid ☑ Liquid ☐ Gas	☒ Fire ☐ Pressure ☐ Reactivity ☒ Immediate ☐ Delayed ☐ (Chronic)	10000 Max Daily Amt(lbs) 04 Max Daily Amount Code 5300 Ave. Daily Amount (lbs.) 03 Ave. Daily Amount Code 365 No of days in site	Container Type: O, O Pressure: 1, 1 Temperature: 4, 4 Storage Location: RECEIVING AREA, LINE 6

Chemical Description	Physical & Health Hazards	Inventory	Storage Codes & Location
Chemical ID : 290696 Check if Chemical Information has changed from the last submission : ☐ CAS : N/A Trade Secret : ☐ Chemical Name : GMS2GI ADDITROL (BONDING CLAY) EHS : ☐ Contains EHS : ☐ EHS Name : ☐ Pure ☑ Mix ☑ Solid ☐ Liquid ☐ Gas	☐ Fire ☐ Pressure ☐ Reactivity ☐ Immediate ☒ Delayed (Chronic)	440000 Max Daily Amt(lbs) 05 Max Daily Amount Code 190000 Ave. Daily Amount (lbs.) 05 Ave. Daily Amount Code 365 No of days in site	Container Type: R; Pressure: 1; Temperature: 4; Storage Location: MELTING AREA
Chemical ID : 607712 Check if Chemical Information has changed from the last submission : ☐ CAS : 996350 Trade Secret : ☐ Chemical Name : ISOFAST CATALYST 705 - DIMETHYLISOPROPYLAMINE (DMIPA) EHS : ☐ Contains EHS : ☐ EHS Name : ☐ Pure ☑ Mix ☐ Solid ☑ Liquid ☐ Gas	☒ Fire ☐ Pressure ☐ Reactivity ☒ Immediate ☐ Delayed (Chronic)	13000 Max Daily Amt(lbs) 04 Max Daily Amount Code 5600 Ave. Daily Amount (lbs.) 03 Ave. Daily Amount Code 365 No of days in site	Container Type: L; Pressure: 2; Temperature: 4; Storage Location: LINE 6 - TEA ROOM
Chemical ID : 290682 Check if Chemical Information has changed from the last submission : ☐ CAS : N/A Trade Secret : ☐ Chemical Name : LAKE SANDS (NUGENT) EHS : ☐ Contains EHS : ☐ EHS Name : ☐ Pure ☑ Mix ☑ Solid ☐ Liquid ☐ Gas	☐ Fire ☐ Pressure ☐ Reactivity ☒ Immediate ☐ Delayed (Chronic)	1800000 Max Daily Amt(lbs) 06 Max Daily Amount Code 890000 Ave. Daily Amount (lbs.) 05 Ave. Daily Amount Code 365 No of days in site	Container Type: H; Pressure: 1; Temperature: 4; Storage Location: PRECISION SAND Container Type: H; Pressure: 1; Temperature: 4; Storage Location: LINE 6
Chemical ID : 290698 Check if Chemical Information has changed from the last submission : ☐ CAS : N/A Trade Secret : ☐ Chemical Name : LT 2988 (TOOL CLEANER) EHS : ☐ Contains EHS : ☐ EHS Name : ☐ Pure ☑ Mix ☐ Solid ☑ Liquid ☐ Gas	☐ Fire ☐ Pressure ☐ Reactivity ☒ Immediate ☐ Delayed (Chronic)	40000 Max Daily Amt(lbs) 04 Max Daily Amount Code 13000 Ave. Daily Amount (lbs.) 04 Ave. Daily Amount Code 365 No of days in site	Container Type: C; Pressure: 1; Temperature: 4; Storage Location: TOOL CLEANING ROOM Container Type: C; Pressure: 1; Temperature: 4; Storage Location: OIL BUILDING Container Type: O; Pressure: 1; Temperature: 4; Storage Location: OIL BUILDING

Chemical Description	Physical & Health Hazards	Inventory	Storage Codes & Location
Chemical ID : 607714 Check if Chemical Information has changed from the last submission : ☐ CAS : N/A Trade Secret : ☐ Chemical Name : LT PARTING SPRAY (RELEASE AGENT) EHS : ☐ Contains EHS : ☐ EHS Name : ☐ Pure ☑ Mix ☐ Solid ☑ Liquid ☐ Gas	☐ Fire ☐ Pressure ☐ Reactivity ☐ Immediate ☒ Delayed (Chronic)	10000 Max Daily Amt(lbs) 04 Max Daily Amount Code 6000 Ave. Daily Amount (lbs.) 03 Ave. Daily Amount Code 365 No of days in site	Container Type / Pressure / Temperature / Storage Location O / 1 / 4 / LINE 6 O / 1 / 4 / RECEIVING AREA O / 1 / 4 / PRECISION SAND
Chemical ID : 290694 Check if Chemical Information has changed from the last submission : ☐ CAS : N/A Trade Secret : ☐ Chemical Name : MARATHON NO.6 FUEL OIL EHS : ☐ Contains EHS : ☐ EHS Name : ☐ Pure ☑ Mix ☐ Solid ☑ Liquid ☐ Gas	☒ Fire ☐ Pressure ☐ Reactivity ☐ Immediate ☒ Delayed (Chronic)	380000 Max Daily Amt(lbs) 05 Max Daily Amount Code 380000 Ave. Daily Amount (lbs.) 05 Ave. Daily Amount Code 240 No of days in site	Container Type / Pressure / Temperature / Storage Location A / 1 / 4 / POWERHOUSE
Chemical ID : 290700 Check if Chemical Information has changed from the last submission : ☐ CAS : N/A Trade Secret : ☐ Chemical Name : MOLTEN ALUMINUM EHS : ☐ Contains EHS : ☐ EHS Name : ☐ Pure ☑ Mix ☐ Solid ☑ Liquid ☐ Gas	☒ Fire ☐ Pressure ☐ Reactivity ☐ Immediate ☒ Delayed (Chronic)	3500000 Max Daily Amt(lbs) 06 Max Daily Amount Code 800000 Ave. Daily Amount (lbs.) 05 Ave. Daily Amount Code 365 No of days in site	Container Type / Pressure / Temperature / Storage Location R / 1 / 5 / ALUMINUM MELTING (FURNACE)
Chemical ID : 290685 Check if Chemical Information has changed from the last submission : ☐ CAS : N/A Trade Secret : ☐ Chemical Name : NITROGEN EHS : ☐ Contains EHS : ☐ EHS Name : ☑ Pure ☐ Mix ☐ Solid ☐ Liquid ☑ Gas	☐ Fire ☐ Pressure ☐ Reactivity ☐ Immediate ☐ Delayed (Chronic)	78000 Max Daily Amt(lbs) 04 Max Daily Amount Code 39000 Ave. Daily Amount (lbs.) 04 Ave. Daily Amount Code 365 No of days in site	Container Type / Pressure / Temperature / Storage Location A / 2 / 7 / ADVANCED DEVELOPMENT LAB L / 2 / 7 / SOUTH CORE ROOM A / 2 / 7 / OUTSIDE RECEIVING AREA

Chemical Description	Physical & Health Hazards	Inventory	Storage Codes & Location
Chemical ID : 607716 Check If Chemical Information has changed from the last submission : ☐ CAS : N/A Trade Secret : ☐ Chemical Name : NORIT GAC 840 R (ACTIVATED CARBON) EHS : ☐ Contains EHS : ☐ EHS Name : ☐ Pure ☑ Mix ☑ Solid ☐ Liquid ☐ Gas	☐ Fire ☐ Pressure ☐ Reactivity ☐ Immediate ☑ Delayed (Chronic)	40000 Max Daily Amt(lbs) 04 Max Daily Amount Code 40000 Ave. Daily Amount (lbs.) 04 Ave. Daily Amount Code 365 No of days in site	Container Type: C; Pressure: 1; Temperature: 4; Storage Location: WATER TREATMENT PLANT
Chemical ID : 290716 Check If Chemical Information has changed from the last submission : ☐ CAS : N/A Trade Secret : ☐ Chemical Name : OCI-230 PATTERN SPRAY (MOLD RELEASE) EHS : ☐ Contains EHS : ☐ EHS Name : ☐ Pure ☑ Mix ☐ Solid ☑ Liquid ☐ Gas	☐ Fire ☐ Pressure ☐ Reactivity ☐ Immediate ☑ Delayed (Chronic)	11000 Max Daily Amt(lbs) 04 Max Daily Amount Code 6600 Ave. Daily Amount (lbs.) 03 Ave. Daily Amount Code 365 No of days in site	Container Type: O; Pressure: 1; Temperature: 4; Storage Location: OIL BUILDING Container Type: O; Pressure: 1; Temperature: 4; Storage Location: LINE 6 MOLD LINE
Chemical ID : 290686 Check If Chemical Information has changed from the last submission : ☐ CAS : N/A Trade Secret : ☐ Chemical Name : OXYGEN EHS : ☐ Contains EHS : ☐ EHS Name : ☑ Pure ☐ Mix ☐ Solid ☑ Liquid ☐ Gas	☑ Fire ☑ Pressure ☐ Reactivity ☑ Immediate ☐ Delayed (Chronic)	120000 Max Daily Amt(lbs) 05 Max Daily Amount Code 98000 Ave. Daily Amount (lbs.) 04 Ave. Daily Amount Code 180 No of days in site	Container Type: A; Pressure: 2; Temperature: 7; Storage Location: OXYGEN STORAGE TANK AREA
Chemical ID : 290709 Check If Chemical Information has changed from the last submission : ☐ CAS : N/A Trade Secret : ☐ Chemical Name : QUINTOLUBRIC 888-68 (HYDRAULIC OIL) EHS : ☐ Contains EHS : ☐ EHS Name : ☐ Pure ☑ Mix ☐ Solid ☑ Liquid ☐ Gas	☐ Fire ☐ Pressure ☐ Reactivity ☑ Immediate ☐ Delayed (Chronic)	15000 Max Daily Amt(lbs) 04 Max Daily Amount Code 10000 Ave. Daily Amount (lbs.) 04 Ave. Daily Amount Code 365 No of days in site	Container Type: O; Pressure: 1; Temperature: 4; Storage Location: LOST FOAM Container Type: R; Pressure: 1; Temperature: 4; Storage Location: LOST FOAM MOLD MACHINES Container Type: D; Pressure: 1; Temperature: 4; Storage Location: PS BASEMENT

Chemical Description	Physical & Health Hazards	Inventory	Storage Codes & Location
Chemical ID : 290721 Check if Chemical Information has changed from the last submission : ☐ CAS : N/A Trade Secret : ☐ Chemical Name : SIGMA CURE 7211 (RESIN) EHS : ☐ Contains EHS : ☑ EHS Name : ☐ Pure ☑ Mix ☐ Solid ☑ Liquid ☐ Gas	K K ☐ ☐ K Fire Pressure Reactivity Immediate Delayed (Chronic)	22000 Max Daily Amt(lbs) 04 Max Daily Amount Code 9600 Ave. Daily Amount (lbs.) 03 Ave. Daily Amount Code 365 No of days in site	Container Type / Pressure / Temperature / Storage Location O / 1 / 4 / P. SAND STORAGE AREA O / 1 / 4 / EAST STREET
Chemical ID : 607726 Check if Chemical Information has changed from the last submission : ☐ CAS : N/A Trade Secret : ☐ Chemical Name : SIGMA CURE 7706 (RESIN) EHS : ☐ Contains EHS : ☐ EHS Name : ☐ Pure ☑ Mix ☐ Solid ☑ Liquid ☐ Gas	K K K ☐ K Fire Pressure Reactivity Immediate Delayed (Chronic)	18000 Max Daily Amt(lbs) 04 Max Daily Amount Code 8000 Ave. Daily Amount (lbs.) 03 Ave. Daily Amount Code 365 No of days in site	Container Type / Pressure / Temperature / Storage Location O / 1 / 4 / EAST STREET O / 1 / 4 / PRECISION SAND STORAGE
Chemical ID : 290688 Check if Chemical Information has changed from the last submission : ☐ CAS : N/A Trade Secret : ☐ Chemical Name : SODIUM CHLORIDE & BRINE EHS : ☐ Contains EHS : ☐ EHS Name : ☐ Pure ☑ Mix ☑ Solid ☑ Liquid ☐ Gas	☐ ☐ ☐ ☐ ☐ Fire Pressure Reactivity Immediate Delayed (Chronic)	120000 Max Daily Amt(lbs) 05 Max Daily Amount Code 73000 Ave. Daily Amount (lbs.) 04 Ave. Daily Amount Code 365 No of days in site	Container Type / Pressure / Temperature / Storage Location A / 1 / 4 / LOST FOAM YARD A / 1 / 4 / POWERHOUSE (OUTSIDE) C / 1 / 4 / WASTE WATER TREATMENT PLANT
Chemical ID : 290712 Check if Chemical Information has changed from the last submission : ☐ CAS : N/A Trade Secret : ☐ Chemical Name : SODIUM HYDROXIDE 50% (CAUSTIC SODA) EHS : ☐ Contains EHS : ☐ EHS Name : ☐ Pure ☑ Mix ☐ Solid ☑ Liquid ☐ Gas	☐ K K ☐ ☐ Fire Pressure Reactivity Immediate Delayed (Chronic)	55000 Max Daily Amt(lbs) 04 Max Daily Amount Code 30000 Ave. Daily Amount (lbs.) 04 Ave. Daily Amount Code 365 No of days in site	Container Type / Pressure / Temperature / Storage Location C / 1 / 4 / WASTE WATER TREATMENT PLANT

Chemical Description	Physical & Health Hazards	Inventory	Storage Codes & Location
Chemical ID : 290697 Check if Chemical Information has changed from the last submission : ☐ CAS : N/A Trade Secret : ☐ Chemical Name : SODIUM HYPOCHLORITE (BLEACH) EHS : ☐ Contains EHS : ☐ EHS Name : ☐ Pure ☑ Mix ☐ Solid ☑ Liquid ☐ Gas	☐ Fire ☐ Pressure ☑ Reactivity ☐ Immediate ☑ Delayed (Chronic)	25000 Max Daily Amt(lbs) 04 Max Daily Amount Code 14000 Ave. Daily Amount (lbs.) 04 Ave. Daily Amount Code 365 No of days in site	Container Type / Pressure / Temperature / Storage Location C / 1 / 4 / COOLING TOWERS O / 1 / 4 / POWERHOUSE N / 1 / 4 / LOST FOAM C / 1 / 4 / WASTE WATER TREATMENT PLANT
Chemical ID : 607717 Check if Chemical Information has changed from the last submission : ☐ CAS : N/A Trade Secret : ☐ Chemical Name : STYROSHIELD 5552M (HEAD COATING) EHS : ☐ Contains EHS : ☐ EHS Name : ☐ Pure ☑ Mix ☐ Solid ☑ Liquid ☐ Gas	☑ Fire ☐ Pressure ☑ Reactivity ☐ Immediate ☑ Delayed (Chronic)	76000 Max Daily Amt(lbs) 04 Max Daily Amount Code 34000 Ave. Daily Amount (lbs.) 04 Ave. Daily Amount Code 365 No of days in site	Container Type / Pressure / Temperature / Storage Location C / 1 / 4 / LOST FOAM E / 1 / 4 / AISLE TO L850
Chemical ID : 290691 Check if Chemical Information has changed from the last submission : ☐ CAS : 7664939 Trade Secret : ☐ Chemical Name : SULFURIC ACID 50% & 90% EHS : ☑ Contains EHS : ☐ EHS Name : SULFURIC ACID ☐ Pure ☑ Mix ☐ Solid ☑ Liquid ☐ Gas	☐ Fire ☐ Pressure ☑ Reactivity ☐ Immediate ☑ Delayed (Chronic)	20000 Max Daily Amt(lbs) 04 Max Daily Amount Code 6300 Ave. Daily Amount (lbs.) 03 Ave. Daily Amount Code 365 No of days in site	Container Type / Pressure / Temperature / Storage Location N / 1 / 4 / NORTH CORE ROOM N / 1 / 4 / STOCK ROOM N / 1 / 4 / SOUTH CORE ROOM A / 1 / 4 / COOLING TOWER A / 1 / 4 / POWERHOUSE D / 1 / 4 / COOLING TOWER
Chemical ID : 290701 Check if Chemical Information has changed from the last submission : ☐ CAS : N/A Trade Secret : ☐ Chemical Name : WEDRON SAND EHS : ☐ Contains EHS : ☐ EHS Name : ☐ Pure ☑ Mix ☑ Solid ☐ Liquid ☐ Gas	☐ Fire ☐ Pressure ☑ Reactivity ☐ Immediate ☐ Delayed (Chronic)	750000 Max Daily Amt(lbs) 05 Max Daily Amount Code 670000 Ave. Daily Amount (lbs.) 05 Ave. Daily Amount Code 365 No of days in site	Container Type / Pressure / Temperature / Storage Location H / 1 / 4 / LOST FOAM

Tier II Emergency and Hazardous Chemical Inventory Appendix
MIXTURE COMPONENT FORM

Name of Substance: 389 ISOCURE PART 1 FS (RESIN) CAS: N/A Chemical ID: 607695

Chemical Name	%	CAS #	EHS	EHS Name
PHENOL	3.24	108-95-2	☑	PHENOL

Name of Substance: BATTERIES (LEAD ACID) CAS: N/A Chemical ID: 290711

Chemical Name	%	CAS #	EHS	EHS Name
SULFURIC ACID	11.00	7664-93-9	☑	SULFURIC ACID
LEAD	66.00	7439-92-1	☐	

Name of Substance: SIGMA CURE 7211 (RESIN) CAS: N/A Chemical ID: 290721

Chemical Name	%	CAS #	EHS	EHS Name
PHENOL	4.23	108-95-2	☑	PHENOL

Notes	
Notes entered by Company/Facility User	Due to production slow-downs, some areas within the facility are idle (and empty). There was an extended holiday shut-down period through the end of December 2008. Production slowing or stopping in areas within the plant will continue through much of 2009.