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Site-Wide Groundwater Monitoring Report for 2006

General Motors Corporation
Moraine, Ohio

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DRAFT

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1. Introduction

This Site-Wide Groundwater Monitoring Report presents the groundwater monitoring activities completed in 2006 at the following General Motors Corporation (GM) facilities located in Moraine, Ohio (Figure 1): former Delphi Harrison Thermal Systems Moraine Plant (former Delphi Thermal Moraine [leased to Delphi Corporation between January 1999 and September 2003]), former General Motors Powertrain Group, Moraine Engine Plant (former Moraine Engine), and General Motors Truck Group, Moraine Assembly Plant (Moraine Assembly). A multi-phased Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI) was completed for these facilities and approved by the United States Environmental Protection Agency (U.S. EPA) in June 2000 (ARCADIS Geraghty & Miller, Inc. 2000a and b, ENVIRON 2000a and b). The RFI identified that the primary source area of volatile organic compounds (VOCs) in shallow groundwater at the three facilities is located at the Area of Interest (AOI) 7 - Former Oil House Area, in the northern portion of the former Moraine Engine facility (Figure 2). The Baseline Risk Assessment (BRA) concluded that, under current conditions, there was no unacceptable risk associated with constituents detected in soil/waste at the AOIs and Solid Waste Management Units (SWMUs) investigated in the RFI. However, the BRA also concluded that constituents detected in groundwater at the Former Oil House Area may migrate to the extent that reasonably expected future uses of groundwater might be affected. Therefore, the focus of the Interim Measures/Corrective Measures Report (ARCADIS Geraghty & Miller, Inc. 2001) was a site-wide remedy that addressed the source of the VOCs in groundwater and the downgradient plume. The proposed final corrective measures incorporates:

- The Former Oil House Area corrective measures (in-situ remediation of groundwater in the Oil House Area and downgradient of the Oil House Area, Figure 2);
- The capture zone corrective measures (hydraulic control with a pump and treat system for the upper aquifer and hydraulic control for the lower aquifer, Figure 2);
- Institutional actions (the site will remain industrial and groundwater use will be restricted to nonpotable purposes); and
- A site-wide groundwater monitoring program.

This report addresses several components of the final remedy, including the site-wide groundwater monitoring program (Table 1) and the performance of the corrective

measures. All groundwater monitoring for the facilities was conducted in accordance with the approved Site-Wide Groundwater Monitoring Plan (ARCADIS G&M, Inc. 2002) and as modified in the Site-Wide Groundwater Monitoring Report for 2005 (ARCADIS G&M, Inc. 2006).

In addition, GM conducted supplemental data collection to further refine the available information on groundwater flow and quality in the following study areas: upper aquifer well GM-16 located downgradient of the GM Moraine Facilities, the southeastern side of the Former Oil House Area, lower aquifer well GM-41 located south of the Moraine Assembly Paint Building, and north and south of Holes Creek. The wells are shown on Figure 2. The scope of these supplemental field data collection activities were presented in several work plans that were submitted to the U.S. EPA (BOW Environmental Solutions, Inc. 2005b, 2006a, 2006b). The Corrective Measures Supplemental Groundwater Investigation Report (ARCADIS Inc. 2007) describes these supplemental investigations and presents the data from these supplemental investigations. As described in the Corrective Measures Supplemental Groundwater Investigation Report, GM has utilized these data to further develop the current understanding of groundwater chemistry and flow conditions across the site. The refined site model is then used in this Report to better assess the current corrective measures, including the Site-Wide Groundwater Monitoring Program.

1.1 Site Description

The former Moraine Engine and Moraine Assembly facilities occupy approximately 300 acres, while the adjacent former Delphi Thermal Moraine facility occupies approximately 165 acres. The facilities are located in the City of Moraine in Montgomery County in southwestern Ohio. A small portion of the Moraine Assembly facility is located in the City of Kettering. Figure 1 presents the location of each facility, property boundaries, and site features.

The GM site has been used for industrial purposes since the property was acquired in the mid-1920's. Frigidaire (a former division of GM) produced appliances from the late 1920's until 1979. GM announced the shut down of all Frigidaire operations in January 1979. During 1980 and 1981, the majority of the former Frigidaire Plant 2 was converted to the former Moraine Engine facility, and the former Frigidaire Plant 3 and the northeast corner of former Frigidaire Plant 2 were converted to the Moraine Assembly facility. Since 1981, former Moraine Engine operations have included the machining, painting (this operation was discontinued in September 1995), and assembly of diesel truck engines. Former Moraine Engine operations ceased in the fall

of 2000. The plant building has undergone decommissioning and demolition, and the majority of this site has been covered with a parking surface. GM operates a regional haulaway at the location of the former Moraine Engine plant, which is now referred to as the Vehicle Distribution Center. Since 1981, Moraine Assembly operations included the manufacture, assembly, and painting of small trucks. Currently Chevrolet TrailBlazers, GM Envoys, Buick Rainiers, Isuzu Ascenders, and SAAB 9-7x's are produced at this facility. Former Delphi Thermal Moraine's major operations, which began in 1941, included the machining and assembly of automotive air conditioning compressors, accumulator dehydrators, and miscellaneous air conditioning valves. Delphi Corporation leased the property from GM from January 1999 through October 2003. Operations at the former Delphi Thermal Moraine Building 14 ceased in September 2003 and the building was decommissioned. As of October 1, 2003, management of the property has reverted to GM and GM remains the property owner. Demolition of Building 14 was completed in 2005.

1.2 Groundwater Monitoring Program Objectives

The objectives of groundwater monitoring at the GM Moraine Facilities are as follows:

1. Monitor groundwater quality upgradient and downgradient of the closed North and South Settling Lagoons;

2. Monitor groundwater quality upgradient and downgradient of Landfills L1, L2, and L3;

3. Monitor the effectiveness of and the need for current groundwater capture systems in the upper and lower aquifers at the southern, downgradient property boundary;

4. Monitor the effectiveness of corrective measures activities in In-Situ Reactive Zones (RZ) RZ-1, RZ-2 (inactive since 2002), RZ-3, and RZ-4 (installed in 2006), to address VOCs related to the Former Oil House Area; and

5. Monitor an appropriate list of wells once corrective measures objectives (defined in the Draft Interim Measures/Corrective Measures Report [ARCADIS Geraghty & Miller, Inc. 2001] and the Revised Corrective Measures Proposal – Addendum [BOW Environmental Solutions, Inc., 2005a]) have been met to verify that these objectives continue to be met without active measures.

1.3 Baseline Groundwater Monitoring Program Sampling Event

To provide a basis for evaluating the performance of the Corrective Measures, a comprehensive site-wide groundwater sampling event for VOCs was conducted in September 1999 to establish a baseline data set. The next site-wide groundwater sampling event was completed between September and October 2000. During the 2000 sampling event, at the request of U.S. EPA, groundwater samples were analyzed for Appendix IX VOCs by Method 8260 and cis-1,2-dichloroethene (cis-1,2-DCE), semi-volatile organic compounds (SVOCs) and metals to verify that current groundwater conditions were consistent with previous site conditions. The results of this one-time sampling event confirmed that VOCs were the only constituents of potential concern in groundwater at the site. SVOCs were not detected and metals were not detected above levels of concern during the 2000 sampling event. The analytical results from the 1999 baseline event and the 2000 site-wide event are presented in the Draft Interim Measures/Corrective Measures Report (ARCADIS Geraghty & Miller, Inc. 2001).

1.4 Corrective Measures Supplemental Investigations

In addition to conducting the annual groundwater monitoring program, GM has implemented supplemental investigations of localized groundwater conditions within the existing contaminant plume in order to gather additional data for use in assessing the performance of active corrective measures. These supplemental investigations have consisted of the following activities:

- Installation and sampling of upper and lower aquifer wells (BOW Environmental Solutions, Inc. 2005b, 2006a, 2006b);
- Completion of additional water level gauging events in February and June 2006; and
- Design and installation of Reactive Zone 4 (RZ-4).

2. Groundwater Monitoring Summary

In accordance with the Site-Wide Groundwater Monitoring Plan (ARCADIS G&M, Inc. 2002), annual groundwater sampling was conducted in 2001 through 2005. The analytical results from these sampling events are presented in the Site-Wide Groundwater Monitoring Report for 2005 (ARCADIS G&M, Inc. 2006). The 1999 baseline through 2005 groundwater quality data for the site-specific VOC parameter list are reproduced in tables in Appendix A of this report to support the evaluation of the on-going remedial activities.

The latest groundwater monitoring was conducted in 2006 to evaluate groundwater quality upgradient and downgradient of the closed lagoons, performance of the RZs and the performance of the capture zones (as discussed in Section 3.2). A summary of the activities and methodologies that were completed in 2006 are presented in Section 2.1 and the groundwater monitoring results are presented in Section 2.2.

2.1 Groundwater Monitoring Activities/Methodologies

In order to meet the objectives of the groundwater monitoring program, the scope of work presented in Section 3.0 of the Site-Wide Groundwater Monitoring Plan and Section 5.0 of the Site-Wide Groundwater Monitoring Report for 2005, was implemented during 2006. The following sections summarize the collection of water-level measurements, the monthly groundwater monitoring, and the annual site-wide groundwater monitoring.

2.1.1 Water-Level Measurements

Water-level elevations were measured three times in 2006. The first well gauging event occurred on February 27 and 28 the second event occurred on June 21 and 22 and the third event occurred on September 12 and 13. The measured wells included all on-site and off-site monitoring wells at the three facilities as shown on Figure 3 (upper aquifer wells) and Figure 4 (lower aquifer wells). Water-level elevations were also measured in Moraine Assembly production wells (where accessible), Moraine Assembly fire wells, two lower aquifer wells (MT596M, and MT576M) located east of the Moraine Assembly and the former Moraine Engine plants, and one lower aquifer well (MT69) located south of the Dryden Road North Wellfield. Water-level measurements were collected in accordance with procedures defined in the RFI Sampling and Analysis Plan, Standard Operating Procedure (SOP) #4 (Geraghty & Miller, Inc. 1997a) and recorded on a field data sheet.

Prior to the June 2006 well gauging event, seven off-site locations were surveyed to allow surface water elevations to be measured. As shown on Figure 2, five locations were selected for measuring surface water elevations in the Great Miami River (SG1 to SG5) and two locations were selected in Holes Creek (SG6 and SG7). During the June and September 2006 gauging events, surface water levels were also recorded.

2.1.2 Monthly Groundwater Recovery System Monitoring

The National Pollution Discharge Elimination System (NPDES) Permit issued to GM for the groundwater recovery and treatment system requires periodic monitoring and reporting of water quality in the effluent stream and pumping flow rates. Samples of groundwater being pumped through the air stripping treatment tower were collected and analyzed monthly for the parameters required in the permit. GM's air permit for the air stripper tower expired on June 20, 2003 and the Regional Air Pollution Control Agency approved renewal of this permit through June 20, 2008 as a registration status permit due to the negligible organic compound emissions from the tower. GM continued to collect influent tower samples during the 2006 sampling events to evaluate the tower performance. Table 2 summarizes the VOC results for the monthly air stripper tower influent stream during 2006. The monthly air stripper influent data are also presented in Figure 5, for the period from the initial start-up in January 1996 through December 2006. Table 3 summarizes the VOC results for the monthly air stripper tower effluent stream during 2006. Table 4 summarizes the VOC results for the monthly DN-13 sampling during 2006. All analyses were conducted in accordance with methods specified in the Final Interim Measures Design Plans (Geraghty & Miller, Inc. 1995). Since the influent concentration levels in TW-2 have dropped significantly, GM completed some modifications to the air stripper tower operations in 2006. These modifications are discussed in Section 3.

2.1.3 Site-Wide Groundwater Monitoring

In accordance with the Site-Wide Groundwater Monitoring Plan (ARCADIS G&M, Inc. 2002), monitoring wells were sampled in September 2006. A summary of the 2006 sampling events, including number of wells and analytical parameters are presented on Table 1. Well construction and survey data for the wells used in the site-wide program are presented in Table 5.

Groundwater samples were collected from specified wells using low-flow or bailing sampling procedures. Field parameters including pH, specific conductance, temperature, oxidation/reduction potential, and dissolved oxygen were measured

during purging of each well using a multi-parameter flow-through cell. SOP #21 was followed when sampling monitoring wells (ARCADIS G&M, Inc., 2002). One groundwater sample from well DN-13 was collected through the sampling valve according to SOP #28 (ARCADIS G&M, Inc., 2002).

All groundwater samples were collected and managed under standard chain-of-custody procedures, and validated in accordance with the approved Supplemental RFI Work Plan and the RFI Quality Assurance Project Plan (Geraghty & Miller, Inc., 1997a). The Supplemental RFI Quality Assurance Project Plan will be followed until the Draft Quality Assurance Project Plan for RCRA Corrective Action is approved by the U.S. EPA (draft report was submitted to the U.S. EPA on December 23, 2003). All pertinent field data were recorded on groundwater sampling logs. The sampling logs for 2006 are presented in Appendix B. Analytical results are presented and discussed in Section 2.2.3.

2.1.4 Laboratory Analytical Methods

Groundwater samples were analyzed for the site-specific parameter list using SW 846 Method 8260. This parameter list was developed after evaluating data from the September 1999 baseline groundwater sampling event and the one-time sampling event conducted in September/October 2000 (which included analysis of Appendix IX VOCs and cis-1,2-DCE, SVOCs, and metals), conducted as part of the Former Oil House Area corrective measures. The site-specific parameter list includes: benzene, 1,1-dichloroethane (1,1-DCA), 1,1-dichloroethene (1,1-DCE), cis-1,2-DCE, trans-1,2-dichloroethene (trans-1,2-DCE), ethylbenzene, tetrachloroethene (PCE), toluene, 1,1,1-trichloroethane (1,1,1-TCA), trichloroethene (TCE), vinyl chloride, and xylenes. Select groundwater samples from upper aquifer monitoring wells were also analyzed for the biogeochemical indicator parameters manganese (total and dissolved), iron (total and dissolved), sulfate, sulfide, total organic carbon (TOC), chlorides, light hydrocarbons (ethane and ethene), and methane. Groundwater samples from select upper aquifer wells were analyzed for arsenic and barium in both 2003 and 2004 to demonstrate that the isolated detection of these two metals does not pose a concern at the site; therefore, as discussed in the Site-Wide Groundwater Monitoring Report for 2004, these metals were not analyzed in 2006. Table 1 lists specific field, laboratory, and biogeochemical indicator parameters, and field and laboratory analytical methods. All samples were submitted to Severn Trent Laboratory in North Canton, Ohio (STL North Canton) or Microseeps in Pittsburgh, Pennsylvania for ethene, ethane, and methane analysis only. The complete set of groundwater results, including quality assurance/quality control (QA/QC) samples, is presented in Appendix C.

2.2 Groundwater Monitoring Program Results

2.2.1 Groundwater Elevation Monitoring

As part of the site-wide assessment of current groundwater conditions, water-level elevations were measured to determine groundwater flow directions in the upper and lower aquifers and to determine vertical gradients between the two aquifers. Water-level measurements from 2006 are presented on Tables 6, 7, and 8.

2.2.1.1 Upper Aquifer

The upper aquifer potentiometric surfaces on February 27-28, 2006 (Figure 6), June 21-22, 2006 (Figure 7), and on September 12-13, 2006 (Figure 8) show that flow in the upper aquifer is generally from northeast to southwest. Figure 8 includes additional wells installed during the Supplemental Groundwater Investigation and shows 0.5-foot contour intervals. TW-2 was not in operation during February water-level elevation measurements, was operating but had recently been restarted prior to the June water-level elevation measurements, and was in operation during the September water-level elevation measurements. The September measurements show the water level in TW-2 was lower than the water levels in nearby wells (GM-16, GM-17, and WSU-24) indicating capture in the vicinity of well TW-2. A comparison of the September 2006 groundwater flow conditions to the October 2005 groundwater flow map for the upper aquifer (ARCADIS G&M, Inc. 2006) indicates a slightly steeper gradient across the site in 2005 than in 2006. The 2006 upper aquifer flow patterns are generally consistent with groundwater flow conditions since TW-2 operation was initiated in January 1996.

Table 9 presents the 2006 monthly precipitation totals, recorded by the National Weather Service, and the deviation from calculated average amounts. The 2006 annual total precipitation recorded at the Dayton, Ohio monitoring station was 45.34 inches, which was 1.74 inches above average. Precipitation for the months of February, March, April, July, September, October and December was above normal, while precipitation for all other months was below normal.

The average hydraulic gradient of the upper aquifer, calculated from site-wide groundwater elevation measurements in February, June, and September 2006 were 0.0006, 0.0005, and 0.0005 foot/foot (ft/ft), respectively. The groundwater flow velocity for the upper aquifer was calculated using the following equation:

$$V_w = Ki/N_e$$

where

V_w = groundwater flow velocity (feet per day [ft/day])

K = hydraulic conductivity (ft/day)

i = hydraulic gradient (ft/ft)

N_e = effective porosity

Hydraulic characteristics of the upper aquifer were determined by evaluation of data from pumping tests conducted in 1985 and in 1989. The median hydraulic conductivity value estimated from pumping test data was 1,650 ft/day, and effective porosity was assumed to be 0.3 to 0.5. Using hydraulic gradients for February, June, and September 2006, groundwater flow velocities in the upper aquifer ranged from 2.0 ft/day to 3.3 ft/day, 1.6 ft/day to 2.8 ft/day, and 1.6 ft/day to 2.8 ft/day, respectively. Assuming the most extreme condition (i.e., no retardation or retardation factor [R_d] equal to 0), the rate of VOC migration could equal the rate of groundwater flow. However, some soil-VOC interaction is occurring, and, therefore, the actual VOC migration rates are slower than that of groundwater flow. Most of the VOCs detected in the upper aquifer at the GM facilities are likely to have a R_d ranging from 2 to 10 (Walton 1985), so the rate of migration of the VOCs in the upper aquifer in February, June, and September 2006 could be as low as 0.20 ft/day, 0.16 ft/day, and 0.16 ft/day, respectively.

During the Supplemental RFI, conducted in August 1998 at the Former Oil House Area, slug tests were conducted on three monitor wells (GM-23, GM-27 and GM-28) to assess aquifer characteristics in this area of the site. These slug tests determined that hydraulic conductivity in the upper aquifer in this area is lower than the hydraulic conductivity calculated on a site-wide basis. Hydraulic conductivity of the portion of the aquifer above the upper clay till at the Former Oil House Area was determined to be approximately 43 ft/day. Below the upper clay till, the hydraulic conductivity was determined to be 54 ft/day. Using hydraulic gradients from September 2006, the groundwater flow velocities in the upper aquifer above the upper clay till ranged from 0.043 ft/day to 0.072 ft/day.

2.2.1.2 Lower Aquifer

The lower aquifer potentiometric surfaces February 27-28, 2006 (Figure 9), June 21-22, 2006 (Figure 10), and on September 12-13, 2006 (Figure 11) show groundwater

flow in the lower aquifer to be generally from northeast to southwest. County Well DN-13, located south of the former Delphi Thermal facility in the Dryden Road North Wellfield, was in operation during water-level elevation measurement collections in 2006. Due to limitations associated with well construction and pump installation, water levels cannot be measured in DN-13. Monitoring wells in the vicinity of DN-13 are more than 150 ft away and did not show an apparent drawdown from pumping and could not be used to reflect the DN-13 cone of depression; however, as discussed in Section 2.2.2, downward vertical gradients are noted in well pairs located near DN-13.

No significant change in the overall flow conditions across the northern to central portion of the site were noted in the 2006 lower aquifer groundwater elevation data. It should be noted that GM was using production wells for Moraine Assembly in 2006 (production wells 11B and 12A). At the time of the February gauging event, production well 11B was in operation and a localized cone-of-depression associated with this well was likely present. During the June 2006 gauging event, production wells 11B and 12A were in operation and localized cones-of-depression associated with these wells were likely present. During the September 2006 gauging event, production well 12A was in operation and a localized cone-of-depression associated with this well was likely present as well.

The average hydraulic gradients of the potentiometric surface in the lower aquifer, calculated from groundwater elevation measurements in February, June, and September 2006 were 0.00065 ft/ft, 0.00047 ft/ft, and 0.00052 ft/ft, respectively. Using a hydraulic conductivity of 400 ft/day, assuming a porosity of 0.3 to 0.5, and using the equation presented earlier ($V_w = Ki/N_e$), groundwater flow velocity in the lower aquifer for February 2006 ranged between 0.52 ft/day and 0.87 ft/day. For June 2006, the groundwater flow velocity in the lower aquifer ranged from 0.38 ft/day to 0.63 ft/day. For September 2006, the groundwater flow velocity in the lower aquifer ranged from 0.42 ft/day to 0.69 ft/day. As discussed above, most of the VOCs detected in the upper aquifer groundwater at the GM facilities are likely to have an R_d ranging from 2 to 10 (Walton 1985), so the rate of migration of the VOCs in the lower aquifer in February could be as low as 0.05 ft/day and in June/September as low as 0.04 ft/day.

2.2.2 Vertical Gradients

The water-level measurements collected February 27-28, June 21-22, and on September 12-13, 2006 were used to determine the direction and magnitude of vertical gradients between the upper and lower aquifers (Table 10). The vertical gradients were calculated using the following equation:

$i = h_2-h_1/d$

where

h_2 = hydraulic head of lower well A (ft)

h_1 = hydraulic head of upper well B (ft)

d = distance between midpoint of screen for well A and B (ft)

i = vertical gradient

The magnitude and direction of vertical gradients indicate whether the potential exists for groundwater to move from one aquifer to another through a confining unit, and which direction it may move (positive for an upward gradient and negative for a downward gradient). Calculated vertical gradients ranged from 0.013 ft/ft upward (GM-23/GM-27 in February 2006) to 0.013 ft/ft downward (GM-16/GM-15 in June 2006).

At the northern (upgradient) end of the site, vertical gradients were downward in shallow/deep monitoring well pairs HR- 9/HR-10 and HR-11/HR-12 during all gauging events except for an upward gradient for HR-9/HR-10 in September 2006.

During the three gauging events in 2006 (February 27-28, June 21-22, and September 12-13), the well pairs immediately downgradient (south) of the closed North Settling Lagoon (W-3-N/HR-15 and W-4-N/HR-14) had downward vertical gradients. The vertical gradient at well pair HR-3/HR-13 (side gradient to the closed North Settling Lagoon) was also downward in June and September but upward in February. Well pairs in the vicinity of Landfill L1 (GM-16/GM-15, GM-2/GM-1, GM-18/GM-13, GM-17/GM-11, GM-6/GM-3, 4S/GM-5) all had downward vertical gradients, with the exception of well pair GM-8/GM-7R which had upward gradients (since June 1995 the vertical gradient in this well pair was upward 50 percent of the time and downward 50 percent of the time). The downward vertical gradient at the other six well pairs near Landfill L1 was likely due to the proximity of these well pairs to lower aquifer extraction well DN-13. Downgradient of the site, the vertical gradient was downward for all events in well pair GM-10/GM-9 and for all events in well pair GM-26/MT-69 except for September when the gradient was upward.

At the Former Oil House Area, water-level measurements in upper aquifer well pair GM-23/GM-27 (above the upper clay till/beneath the upper clay till) were used to evaluate the vertical gradient in the upper aquifer. An upward vertical gradient was

present in the upper aquifer across the upper clay till present at the Former Oil House Area in February and September 2006, and downward in June 2006. Well pair GM-23/GM-39 was used to evaluate the vertical gradient in the lower aquifer compared to the upper aquifer. An upward vertical gradient was present across both the upper clay till and regional clay till in February and September 2006, and it was downward in June 2006.

2.2.3 Groundwater Monitoring Analytical Results

As described in Section 2.1.4, groundwater at the site was evaluated for the presence of the site-specific list of VOCs. Tables 11 through 16 present the VOC results upgradient and downgradient of the RZs. Tables 17 through 22 present the bioattenuation parameter results upgradient and downgradient of the RZs. These results are discussed in Section 3.2.1 as they pertain to the performance of the RZ corrective measures. Table 23 presents the VOC results for the site-wide groundwater sampling event completed in September 2006 for the upper and lower aquifer wells. Data for 1999 through 2006 groundwater sampling events are presented on Figures 12 and 13 for the upper and lower aquifer wells, respectively. The groundwater results are presented in this section and evaluated based on groundwater quality upgradient of the site, on site, and downgradient of the site. The complete set of groundwater results, including QA/QC samples, is presented in Appendix C. The 1999 baseline sampling data, used as a point of comparison for the September 2006 groundwater results, are presented in Appendix A.

2.2.3.1 Upper Aquifer Groundwater Quality

The following sections include a discussion of the groundwater quality in upper aquifer monitoring wells shown on Figure 3 that are part of the site-wide program.

2.2.3.1.1 Upgradient Groundwater Quality

In 2006, two upgradient upper aquifer monitoring wells exhibited the presence of VOCs:

- HR-9, total VOCs were 83.15 micrograms per liter (ug/L) in 2006, compared to a 1999 baseline total VOC concentration of 116 ug/L.
- HR-11, total VOCs were 7.01 ug/L in 2006, compared to a 1999 baseline total VOC concentration of 17.3 ug/L.

Two key observations can be made relative to upgradient groundwater quality. First, the detected VOCs are consistent with historical values for upgradient groundwater quality as indicated in the Description of Current Conditions (DOCC) (Geraghty & Miller, Inc. 1991 and 1997b) and RFI Reports (ARCADIS Geraghty & Miller, Inc. 2000a and 2000b) for the GM Moraine facilities (including the 1999 baseline sampling results). This confirms that upgradient sources of VOCs not related to GM operations continue to exist in the local area. The highest VOC concentrations upgradient to the site are 1,1,1-TCA, TCE and the breakdown products 1,1-DCA, cis-1,2-DCE, and trans-1,2-DCE, suggesting that the upgradient releases have been migrating long enough to allow for degradation of the chlorinated VOCs 1,1,1-TCA and TCE to occur. Second, the types of VOCs detected upgradient are similar to those detected further downgradient beneath the site, indicating that total VOC concentrations detected beneath the site include both upgradient (off-site) and on-site contributions.

2.2.3.1.2 On-Site Groundwater Quality

To evaluate the primary source area of VOCs at the site (Former Oil House Area), five upper aquifer monitoring wells (GM-23, GM-27, GM-28, GM-29, GM-30) were sampled in 2006. With the exception of GM-27, all of these wells are screened above the upper clay till present at the Former Oil House Area.

- GM-30 (northern most Former Oil House Area well, located next to the former tank farm) - total VOC concentrations decreased from 37,350 ug/L in the 1999 baseline to 3,100.8 ug/L in 2006. This well predominantly contained ethylbenzene, xylenes, and 1,1-DCA.

- GM-23 (located next to the Former Oil House building) - total VOC concentrations decreased from 17,853.3 ug/L in the 1999 baseline sampling to 15,835 ug/L in 2006. TCE and PCE concentrations have decreased while concentrations for daughter products cis-1,2-DCE and vinyl chloride have increased. This well predominantly contained PCE, TCE, cis-1,2-DCE, and vinyl chloride. This well is upgradient to the original RZ-1 barrier and is within the zone of influence of carbon introductions conducted in the Former Oil House Area which results in solubilizing previously adsorbed VOCs to be treated by RZ-1.

- GM-27 (paired with GM-23 and screened below the upper clay till) - exhibited a decrease of total VOCs between the 1999 baseline (145.7 ug/L) and 2006 (98.6 ug/L). GM-27 predominantly contains TCE, cis-1,2-DCE, and 1,1-DCA. This well is upgradient to RZ-1.

- GM-29 (serves as an upgradient well for RZ-1) - total VOC concentrations increased from 1,256.3 ug/L in the 1999 baseline to 1,887 ug/L in 2006 primarily due to an increase in daughter products; however, TCE concentrations have decreased since the baseline sampling event. This well is upgradient to the original RZ-1 barrier and is within the zone of influence of carbon introductions conducted in the Former Oil House Area after RZ-1 was expanded in 2002, which results in solubilizing previously adsorbed VOCs to be treated by RZ-1.

- GM-28 (serves as the downgradient well for RZ-1; the VOC and bioattenuation parameter results for this well are discussed in greater detail in Section 3.3) - total VOC concentrations decreased from 1,292.4 ug/L in 1999 to 5.97 ug/L in 2006.

As part of the Corrective Measures Supplemental Groundwater Investigation (described in Section 1.4 and in the Corrective Measures Supplemental Groundwater Investigation Report), an additional monitoring well (GM-46) was installed in 2006. GM-46 is located east of and side gradient to RZ-1. Groundwater data from this well has been evaluated to ensure that impacted groundwater downgradient of the primary source area of VOCs and above the upper clay till is being treated by RZ-1. As presented in the Corrective Measures Supplemental Groundwater Investigation Report, total VOC (1,1-DCA, cis-1,2-DCE, trans-1,2-DCE, TCE, PCE, and vinyl chloride) concentrations from the 2006 sampling events ranged from 33.75 ug/L (March 2006) to 9.3 ug/L (November 2006). Based on these results from GM-46, it is concluded that impacted groundwater migrating from the primary source area is treated by RZ-1; the VOC concentrations side gradient to RZ-1 and above the upper clay till are not significant enough to warrant an expansion of RZ-1 to the east.

Based on historical and current groundwater flow directions, on-site wells located south of the Former Oil House Area, including wells ME-6, ME-3, GM-22, EAST, GM-21 and GM-2, are potentially hydraulically downgradient of GM-23. In addition, historical flow could have had a southwesterly trend under the influence of Montgomery County pumping which may make impacts to HR-1, W-1-S and HR-17 from the Former Oil House Area possible. Of the wells identified as downgradient from the Former Oil House Area in the southerly direction toward the property boundary, the total VOC concentrations have decreased, as discussed below.

- ME-6, total VOCs were 944.9 ug/L in the 1999 baseline sampling event, decreasing to 92 ug/L in 2006.

- ME-3, total VOCs were 159.7 ug/L in the 1999 baseline sampling event, decreasing to 19.94 ug/L in 2006.
- EAST, total VOCs were 152.6 ug/L in the 1999 baseline sampling event, decreasing to 87.89 ug/L in 2006.
- GM-33, total VOCs were 292.1 ug/L in 2001 (this well was installed after the 1999 baseline sampling event), decreasing to 131.94 ug/L in 2006.
- GM-35, total VOCs were 732.8 ug/L in 2001 (this well was installed after the 1999 baseline sampling event), decreasing to 359.5 ug/L in 2006.
- GM-8, total VOCs were 150.3 ug/L in the 1999 baseline sampling event, decreasing to 26.4 ug/L in 2006.
- GM-6, total VOCs were 275.1 ug/L in the 1999 baseline sampling event, decreasing to 43.25 ug/L in 2006.
- GM-2, total VOCs were 82.9 ug/L in the 1999 baseline sampling event, decreasing to 18.45 ug/L in 2006.

These data indicate that VOC concentrations in monitoring wells hydraulically downgradient of the Former Oil House Area and RZ-1 decreased from the 1999 baseline to 2006. Wells GM-21 and GM-22, located south of and sidegradient to the Former Oil House Area, exhibited a decrease and slight increase in total VOC concentrations, respectively. In well GM-22, total VOCs were 7.6 ug/L in 1999 baseline and slightly increased to 8.05 ug/L in 2006. In well GM-21, total VOCs were 168.9 ug/L in 1999 baseline and decreased to 54.29 ug/L in 2006. The significance of these concentrations is further discussed in Section 4.0 and Appendix E.

The following total VOC concentrations are noted in monitor wells hydraulically downgradient of the Former Oil House Area to the southwest and upgradient of the closed South Settling Lagoon:

- GM-43, total VOCs were 344.4 ug/L in 2004 (this well was installed after the 1999 baseline sampling event), and 248.4 ug/L in 2006.
- HR-1, total VOCs were 114 ug/L in the 1999 baseline event, decreasing to 67.67 ug/L in 2006.

- GM-45, total VOCs were 536.8 ug/L in 2004 (this well was installed after the 1999 baseline sampling event), and 523.3 ug/L in 2006.

- HR-17, total VOCs were 29.1 ug/L in the 1999 baseline event, increasing to 45.26 ug/L in 2006.

The following total VOC concentrations are noted in monitor wells hydraulically side-gradient of the Former Oil House Area to the west and east of the closed North Settling Lagoon:

- HR-2, total VOC concentrations were 15 ug/L in the 1999 baseline event and 12.07 ug/L in 2006.

- HR-3, total VOC concentrations were 12.3 ug/L in the 1999 baseline event and 26.39 ug/L in 2006.

- HR-4, total VOC concentrations were 2.6 ug/L in the 1999 baseline event and 2.61 ug/L in 2006.

Wells downgradient of the closed North (W-2-N, W-3-N, W-4-N) and South (W-2-S, W-3-S, W-4-S) Settling Lagoons (closed through in-situ solidification and installation of a cover system in 2001, after the 1999 baseline sampling event) were sampled for both the site-wide groundwater monitoring and post-closure monitoring programs. Total VOC concentrations in wells downgradient of the closed North Settling Lagoon, ranged from 3.3 ug/L to 308.9 ug/L in the 1999 baseline event and ranged from 3.12 ug/L to 151.5 ug/L in 2006. The detected VOCs included 1,1-DCA, cis-1,2-DCE, trans-1,2-DCE, 1,1,1-TCA, TCE, PCE, and vinyl chloride. Total VOC concentrations in wells downgradient of the closed South Settling Lagoon, ranged from 6.5 ug/L to 52.9 ug/L in the 1999 baseline event and 6.5 ug/L to 38.3 ug/L in 2006. The detected VOCs included 1,1-DCA, cis-1,2-DCE, trans-1,2-DCE, 1,1,1-TCA, TCE, and PCE. The significance of these concentrations is further discussed in Section 4.0.

2.2.3.1.3 Downgradient Groundwater Quality

On-site downgradient wells (GM-6, TW-2, 4S, GM-2) and off-site downgradient wells (GM-16, GM-17, GM-18, WSU-24, GM-10) in the upper aquifer exhibited concentrations of PCE, TCE, 1,1,1-TCA and their associated daughter products. In the 1999 baseline event, total VOC concentrations in these wells ranged from 16.5 ug/L to 266.3 ug/L. In 2006, total VOC concentrations in these wells ranged from 7.82 ug/L to

157 ug/L. The off-site downgradient well GM-26, serves as the point of compliance (POC) well for the upper aquifer. In 1999 no VOCs were detected, while in 2006, PCE (0.91J ug/L) was detected in GM-26. The decreasing concentrations in the wells downgradient of the site (GM-6, TW-2, GM-2, GM-17, GM-18, GM-10, and WSU-24) compared to the RFI data (ARCADIS Geraghty & Miller, Inc. 2000a) and the 1999 baseline conditions, is likely attributable to the effects of corrective measures pumping at TW-2 which began in January 1996, pumping at DN-13, the effects of the RZs and on-going natural attenuation of the VOCs. Concentrations in well 4S increased slightly in 2006 compared to baseline conditions in 1999. PCE and TCE concentrations in GM-16 decreased in 2006 but are still greater than the 1999 baseline concentrations.

2.2.3.2 Lower Aquifer Groundwater Quality

This section includes a discussion of the groundwater quality in lower aquifer monitoring wells shown on Figure 4 that are part of the site-wide program. In 1999 and 2006, the upgradient lower aquifer monitor well HR-12 exhibited the presence of VOCs (total VOCs of 7.4 ug/L and 3.4 ug/L, respectively). The detected VOCs included 1,1-DCA and cis-1,2-DCE, suggesting that degradation of the chlorinated VOCs from upgradient releases has occurred. The detected VOCs in HR-12 are consistent with historical values for upgradient groundwater quality as indicated in the DOCC (Geraghty & Miller, Inc. 1991 and 1997b) and RFI Reports (ARCADIS Geraghty & Miller, Inc. 2000a and 2000b) for the GM Moraine facilities. This confirms that upgradient sources of VOCs, not related to GM operations, continue to exist in the lower aquifer in the local area. Additionally, the types of VOCs detected upgradient are similar to those detected further downgradient beneath the site, indicating that total VOC concentrations detected beneath the site include both upgradient (off-site) and on-site contributions. VOCs were not detected in upgradient lower aquifer well HR-10 in 2006.

On-site lower-aquifer monitor wells that were part of the site-wide monitoring program in September 2006 included HR-15, HR-13, GM-39, GM-40, GM-41, GM-42 and GM-19D. Wells GM-39, GM-40, GM-41, and GM-42 were installed in November 2003, after the 1999 baseline sampling event. Detected VOCs included PCE, TCE, 1,1,1-TCA and their associated daughter products. In 1999 (baseline conditions) the total VOC concentrations in these wells ranged from 13.5 ug/L to 70.3 ug/L. In 2006, total VOC concentrations in these wells ranged from 1.7 ug/L to 221 ug/L. The increase in the concentration range in 2006 compared to the baseline conditions is due to the sampling data from GM-41, which was installed after the baseline sampling event.

On-site downgradient wells (GM-3, GM-1) and off-site downgradient wells (GM-15, GM-11, GM-20D, DN-13, GM-9) exhibited similar concentrations of total VOCs when compared to the on-site groundwater quality. In 1999 (baseline conditions) the total VOC concentrations in these wells ranged from non-detect to 115 ug/L. In 2006, total VOC concentrations in these wells decreased (total VOCs ranged from 8.37 ug/L to 36.86 ug/L). VOCs were not detected in off-site, downgradient well MT-69 in 1999 and 2006. The off-site downgradient wells GM-15, GM-11, and GM-20D, serve as the POC wells for the lower aquifer. The MCL for TCE was slightly exceeded in wells GM-15, GM-11, and GM-20D in 2006. However, groundwater downgradient of these wells is captured in the lower aquifer capture zone well, DN-13. All other detected VOCs in these POC wells were below MCLs.

3. Corrective Measures Implementation and Performance

To address the source of VOCs in groundwater (Former Oil House Area Source Area) and the associated downgradient plume, GM continued to operate the corrective measures systems in 2006. This involved operation of the RZs and capture zones, as presented in Section 3.1. To meet the objectives defined in Section 4.0 of the Site-Wide Groundwater Monitoring Plan, the data collected in 2006 (described in Section 2.0 of this report) are evaluated in Sections 3.2 and 4.0 to assess the ongoing effectiveness of and the need for continuation of these corrective measures. The corrective measures performance is summarized in Section 3.2 and presented in more detail in Appendix E.

3.1 Corrective Measures Implementation

3.1.1 In-Situ Reactive Zones

The reductive dechlorination of chlorinated VOCs can be enhanced by the introduction of a carbon source that stimulates activity of indigenous microorganisms. The high carbon loading triggers a succession of microbial species. Initially, aerobic electron acceptors such as oxygen and nitrate are consumed. Then, the microbial succession leads to a consortium of species that survive by sulfate reduction, methanogenesis and other similar metabolic pathways, supporting the highly reducing conditions necessary for the dechlorination of PCE, TCE, cis-1,2-DCE, and vinyl chloride. This enhanced reductive dechlorination process has been developed at the GM Moraine site through the use of RZs for introduction of a degradable carbon source necessary to develop the desired reducing conditions.

Enhanced reductive dechlorination was implemented in 1999 as a component of the Former Oil House Area corrective measures at three zones: 1) at the southern boundary of the Former Oil House Area (RZ-1); 2) at an intermediate downgradient location south of the Former Oil House Area in the ME well series area (RZ-2 was in operation from 1999 to 2002); and 3) at a downgradient location south of former Delphi Thermal Moraine (RZ-3 West) and the former Moraine Engine plant (RZ-3 East). Using the data obtained from the Supplemental Groundwater Investigation conducted in 2006, RZ-4 was designed and installed to address VOC concentrations present west of RZ-3 West. The RZ locations are shown on Figure 2. The actual layouts of each RZ are shown on Figures 14 to 16, and discussed below:

- At RZ-1, the molasses solution was introduced into the upper aquifer, above the upper clay till. The carbon injection level was set by screening the injection wells in the lower 10 ft of the upper aquifer, which is 4 ft to 12 ft thick. RZ-1 has 21 introduction wells, of which 12 wells were added in 2002 to the original 9 wells, to expand RZ-1. Several monthly carbon introductions were completed in existing wells upgradient of GM-23 (OW-1, OW-2, and OW-3) to demonstrate the ability to solubilize and biodegrade the previously adsorbed VOCs in this area.

- RZ-2 consists of four existing monitoring wells, located along the western edge of the former Moraine Engine Plant 3 building. The RZ-2 wells were screened within the upper 3 ft of the upper aquifer. RZ-2 was operated from 1999 to 2002.

- RZ-3 consists of 46 introduction wells, 30 wells in RZ-3 West and 16 wells in RZ-3 East. At RZ-3, the carbon injection wells were screened from the aquifer surface to a depth of 46 ft to 68 ft bls, allowing carbon introduction through the entire thickness of the upper aquifer. In April 2005, an additional five introduction wells were installed in RZ-3 East making a total of 16 wells in this area. The additional introduction wells were screened from 34 ft to 54 ft bls. Wells RZ-3RR through RZ-3VV replaced existing wells RZ-3MM through RZ-3QQ; therefore, of the 16 wells, only 11 are active.

- RZ-4 consists of 15 introduction wells, 7 wells in RZ-4 West and 8 wells in RZ-4 East. These wells were installed in July 2006. The RZ-4 West wells are located in the southeast corner of the closed South Settling Lagoon and the RZ-4 East wells are located north of Landfill L1 and west of the Waste Pile/Staging Area. At RZ-4, the carbon injection wells were screened from the aquifer surface to a depth of 57 ft to 62 ft bls, allowing carbon introduction through the entire thickness of the upper aquifer. Soil boring and well construction logs for the introduction wells, RZ-4A through RZ-4O, are included in Appendix D.

To sustain dechlorinating conditions within RZ-1, RZ-2, and RZ-3, a readily degradable carbon source solution (molasses) was periodically introduced during a 6-month period from December 1999 to May 2000. The molasses solution consisted of either a 10 to 1 or 20 to 1 mixture of potable water to feed-grade molasses that was pumped into each RZ well. The initial event, conducted in December 1999, consisted of two consecutive rounds of carbon source introductions in each RZ well. After the initial introduction event, the carbon source solution introductions were scheduled twice per month through May 2000. Due to the success during the first six months of implementing this technology, carbon source introduction activities (using a 10 to 1 mixture) continued in

October, November, and December 2000, and subsequently from June 2001 through December 2006. Carbon source introductions in RZ-4 began in August 2006.

Introductions in RZ-1 were modified in the fall of 2003 after review of the site-wide groundwater results. Due to the success of RZ-1, GM implemented an every other month introduction routine and periodically monitored GM-28 to ensure reducing conditions are sustaining the dechlorination process. In May 2005, the introduction routine was changed to two injections every quarter to ensure reducing conditions are maintained and sufficient carbon is available to allow for complete degradation of the VOCs. This injection schedule of two per quarter was followed in 2006.

Carbon source introductions in RZ-2 were not completed in 2006 based on the operational data that was collected in 2005. Continuation of or enhancements to RZ-2 will be further evaluated in 2007 after completion of the Corrective Measures Supplemental Groundwater Investigation.

Introductions continued throughout 2006 on a monthly introduction schedule in RZ-3. Desired reduction in VOC concentrations in 2005 and 2006 monitoring data were noted in well GM-21, which serves as the downgradient monitoring well for RZ-3 East. Monthly carbon introductions in RZ-4 began in August 2006 and continued throughout the remaining months of 2006. Wells GM-63, GM-64, and GM-19S will serve as downgradient performance monitoring wells for RZ-4.

In November 2005, a more dilute molasses solution (20:1 water to molasses ratio) was used during the introduction event. Previously a 10:1 water to molasses ratio was used in the solution. Adjustments to the introduction procedures were made based upon evaluation of monitoring results and the variability in acceptance rates of the more concentrated solution into the formation. ARCADIS has observed at other sites utilizing ERD technology, that a lower solution concentration of molasses in the injectate is sufficient, and in many cases better, to achieve distribution of carbon in the subsurface. A more dilute molasses solution will reduce fermentation by-products, such as carbon dioxide and organic acids that causes reduction in pH, and in some instances may limit distribution of the carbon solution due to gas building up in soil pore space. By lowering the molasses concentration a reduction in fermentation by-products is achieved, which is shown to improve the delivery of organic carbon to the desired locations. The decreased concentration was coupled with an increase in the volume introduced with the intent of "pushing" the carbon solution further away radially from the introduction wells, where deemed necessary. This modification was made

prior to the November 2005 event and as a result, an improvement in the delivery of the carbon solution has been noted.

ARCADIS completed the carbon introductions from January through December 2006. The molasses is stored on-site and mixed with potable water prior to injections. Details regarding the frequency and strength of carbon source introductions are provided in Table 24 for 2006. Additional discussion is presented in Appendix E.

3.1.2 Capture Zones

The capture zone corrective measure for the upper aquifer consists of groundwater extraction at the property boundary using well TW-2; treatment through an air stripper tower; and discharge through GM's NPDES permitted outfall to the Great Miami River. Groundwater recovery from TW-2 began on January 31, 1996. During the 11 years of operation (January 31, 1996 through December 31, 2006), the system has recovered and treated a total of 728,763,339 gallons of groundwater at an average flowrate of 144.2 gallons per minute (gpm). Annual total gallons recovered and average flow rate during 2006 were 49,407,177 gallons and approximately 147.5 gpm, respectively. The location of recovery well TW-2 is shown on Figure 2.

From November 1996 through the end of this reporting period, GM has monitored the water level in TW-2 and adjusted the TW-2 flow rate as recommended in the October 1996 Monthly Technical Progress Report (Geraghty & Miller, Inc. 1996) and approved by U.S. EPA (Personal Communication, 1996). This procedure was implemented to avoid excessive drawdown within the well, which could cause damage to the well screen and/or the pump. The flow rate from TW-2 is adjusted as necessary to maintain the water level in TW-2 at least 0.5 feet above the top of the well screen.

Between January 1, 2006 and December 31, 2006, the TW-2 component of the remediation system was in operation except for the following shutdowns: January 1 to 4 for review of analytical data; January 14 for repairs to the flowmeter; January 31 to May 5 to address computer issues, additional flowmeter repairs, schedule tower cleaning, and design the treatment test (described below); May 8 to 10 for system maintenance; May 27 to June 22 to repair the pump motor starter and replace the thermal overload heaters; August 21 for a power outage due to a thunderstorm; October 31 for cleaning of the distributor tray; November 30 for system maintenance; and December 7 to 11 to complete electrical work near the tower. In conjunction with the May 4 to 5 for cleaning, a treatment test on the air stripper tower was completed following cleaning of the tower but prior to replacement of the packing material to

evaluate the treatment efficiency of the stripper tower when operated with no packing material. During this test all effluent water was containerized and disposed at the GM on-site wastewater treatment plant. The results of the treatment test were evaluated to determine if future system modifications are warranted to improve system performance. Following the treatment test the stripper tower packing material was replaced with 3.5 inch polypropylene balls.

Well DN-13 is a lower aquifer well that Montgomery County has been using in a Pump-to-Waste Program since March 1990. The capture zone corrective measure for the lower aquifer consists of continued pumping of DN-13 at a rate of 2.7 million gallons per day. Well DN-13 was operational throughout 2006 except for the following shutdowns: a temporary shutdown from April 25 to May 2; from May 8 to May 14; from September 8 to 10; from October 4 to 5; October 19; and October 20 to 21. As further discussed in Section 3.2.2, these temporary shut downs did not have long-term effects on the capture zone around well DN-13. The location of well DN-13 is shown on Figure 2.

3.2 Corrective Measures Performance

3.2.1 In-Situ Reactive Zone Performance Results

As described earlier in Section 3.1.1, the carbon solution delivery network consists of four reactive zones, RZ-1, RZ-2 (in operation from 1999 to 2002), RZ-3 (West and East), and RZ-4 (West and East). Molasses was introduced in 2006 into the groundwater through introduction points shown on Figures 14 and 16 for RZ-1, RZ-3, and RZ-4, respectively. Operation of the RZs was monitored through the collection of field parameter measurements, and laboratory analyses of biogeochemical indicator parameters and VOCs, according to the Site-Wide Groundwater Monitoring Plan (ARCADIS G&M, Inc. 2002). A detailed assessment of the effectiveness of the In-situ Reactive Zones and the results of this monitoring are presented in Appendix E and summarized below:

- Existing aquifer conditions have been converted to more reducing conditions within and downgradient of the reactive zones through the introduction of a carbon source, as evidenced by the changes in field and bioattenuation parameters;

- The target compounds (PCE and TCE) have been effectively reduced to daughter products (cis-1,2-DCE and vinyl chloride) and ultimately to end products (ethene and ethane) based on a review of the VOC results;

- Levels of vinyl chloride were consistently low to non-detect in all downgradient wells, indicating degradation of cis-1,2-DCE to ethene and ethane, without production of significant vinyl chloride peaks;

- The primary and secondary operational monitoring data from RZ-2 will continue to be evaluated, along with the results of the Corrective Measures Supplemental Groundwater Investigation, to determine if the carbon source introductions are necessary; and

- VOC concentrations at RZ-3 East (GM-21) have decreased in response to carbon introductions, since the enhanced design of the introduction system in RZ-3 East in 2005. TOC levels, as well as other primary and secondary operational monitoring data, indicate that the effects of carbon introductions have reached the area monitored by GM-21.

- VOC concentrations at RZ-4, as well as other operational monitoring data, will continue to be evaluated in 2007 as reducing conditions are established and the desired results are achieved.

Overall, the process of enhanced reductive dechlorination at this site has been successful in achieving the desired reduction of VOC concentrations.

3.2.2 Capture Zone Performance Results

Figures 6 through 11 indicate that the capture zone corrective measures are appropriately located to provide hydraulic control at the southern end of the former Delphi Thermal Moraine site. Additionally, it should be noted that these flow maps are consistent with the flow conditions predicted by the capture zone modeling, presented on Figures 2 and 3 of the Final Interim Measures Design Plans (Geraghty & Miller, Inc. 1995). A comparison of the actual groundwater flow contours in the upper and lower aquifers to the predicted flow lines from the particle tracking analysis in the upper aquifer and the predicted zones of capture for DN-13 in the upper and lower aquifers indicates that the wells are appropriately located within each aquifer at the southern end of the former Delphi Thermal Moraine site for corrective measures pumping.

Seasonal weather conditions vary throughout the year and this variation will have an impact on the groundwater elevations observed at the site (Table 9). The observed elevation differences in 2006 are consistent with the above average precipitation in 2006. Water-level elevations in TW-2 are regularly monitored to ensure the water level

does not fall below the well screen. If the water level approaches the well screen, the pumping rate is reduced for protection of the pump. Due to higher groundwater elevation in 2006, pumping rate adjustments were not necessary as discussed previously in Section 3.1. The pumping rate for DN-13 was not adjusted; therefore, only seasonal variations influence water level elevations at DN-13. Effective capture has been maintained in spite of seasonal variations in both the upper and lower aquifers.

Figure 5 presents a graph of the influent concentration of total chlorinated VOCs and benzene, toluene, ethylbenzene, and xylene (BTEX) compounds in TW-2 since start up of the recovery and treatment system in January 1996. The data shows a steady decline in total chlorinated VOCs and a significant decrease in BTEX concentrations. The data indicates that the remediation at the site is continuing to provide VOC mass reduction downgradient of RZ-3 West.

4. Corrective Action Completion Strategy

4.1 Effectiveness of Corrective Measures Activities

4.1.1 Background and Objectives

The goal of the corrective measures at this Site is to reduce existing site-related groundwater concentrations to levels that are protective of reasonably expected future uses of groundwater. GM's approach for achieving this goal is being met through a combination of the corrective measures that achieve plume migration control, reduce existing plume concentrations, and monitor performance of these measures. Once on-site groundwater concentrations are reduced sufficiently by active corrective measures to ensure continued protection of reasonably expected groundwater uses, some or all of the active measures will be terminated. Groundwater monitoring as described in the Site-Wide Groundwater Monitoring Plan will continue to verify that groundwater conditions remain acceptable, and that ultimately, groundwater concentrations at the downgradient property boundary decline below appropriately protective levels (i.e., appropriate for the protection of the groundwater resource and its reasonably expected future uses). Data have been acquired during the implementation of the site-wide groundwater monitoring program to evaluate progress towards achieving this goal.

The need for continued operation of the remedial measures described in Section 2 will be determined based on achieving and maintaining the following conditions:

1. Upper aquifer: consistent with the criterion stated in the approved RCRA Corrective Action Environmental Indicator Determination – Migration of Contaminated Groundwater Under Control (CA 750), the condition to be met in the upper aquifer is no migration of VOCs at concentrations exceeding appropriately protective levels (i.e., appropriate for the protection of the groundwater resource and its reasonably expected future uses as characterized in the RFI) beyond the existing area of contaminated groundwater. Based on the groundwater conditions established during the September 1999 baseline sampling event, the existing well GM-26 will serve as the point of compliance (POC) monitoring point for ensuring that this condition is maintained.

2. Lower aquifer: consistent with the goal to maintain a usable aquifer, including off-site drinking water use, the condition to be met in the lower aquifer is no VOC concentrations exceeding appropriate protective levels (i.e., appropriate for the protection of the groundwater resource and its reasonably expected future uses as

characterized in the RFI) beyond the existing area of contaminated groundwater. Based on the groundwater conditions established during the September 1999 baseline sampling event, the existing wells GM-15, GM-11, and GM-20D will serve as the POC monitoring points for ensuring that this condition is maintained.

Once on-site groundwater concentrations are reduced sufficiently by active measures to be protective of reasonably expected future uses, some or all of these active measures will be terminated. Following termination of any active measures, GM will continue its groundwater monitoring program to confirm that the conditions in the upper and lower aquifer continue to be met without these active measures.

4.1.2 Methodology

In accordance with the Site-Wide Groundwater Monitoring Plan, groundwater data are compared to remediation target levels (RTLs) developed to ensure compliance with the above-stated conditions without active corrective measures. As defined in the Site-Wide Groundwater Monitoring Plan, these RTLs have been calculated using the groundwater assessment methods developed in the Baseline and Supplemental Baseline Risk Assessments (ENVIRON 2000a, b) taking into consideration the current pumping conditions at and in the vicinity of the facility. Specifically, the MODFLOW groundwater flow model (Geraghty & Miller, Inc. 1994) developed for Delphi Thermal Moraine and the surrounding region (including former Moraine Engine and Moraine Assembly) is used to support estimation of RTLs which are concentrations in on-site groundwater at locations downgradient of the Former Oil House Area that would not be expected to result in exceedances of the MCL at the designated monitoring points. Using this approach and considering the scope of the annual groundwater monitoring program, GM developed RTLs for the following remediation monitoring zones in both the upper and lower aquifer at and downgradient of the Former Oil House Area:

- Upper Aquifer
  - Former Oil House Area, (AOI 7 Shallow): the Former Oil House Area source area (wells GM-23, GM-29 and GM-30),
  - Zone S1: the monitoring zone immediately downgradient of RZ-1 (well GM-28),
  - Zone S1 to Zone S2: the monitoring zone between RZ-1 and RZ-2 (wells GM-28, ME-6),
  - Zone S2: the monitoring zone immediately downgradient of RZ-2 (wells ME-6, ME-3, GM-31),

- Zone S2 to Zone S3: the monitoring zone between RZ-2 and RZ-3 (wells ME-6, ME-3, GM-31, GM-22, GM-19S, EAST, GM-33, GM-35),
- Zone S3: the monitoring zone immediately downgradient of RZ-3 (wells GM-32, GM-21),
- Zone S3 to GM-10: the monitoring zone between RZ-3 and GM-10 (wells GM-32, GM-21, GM-8, GM-6, W-4-S, GM-2, GM-16, GM-18, WSU-24, and GM-10),
- GM-10: the monitoring zone downgradient of RZ-3 (well GM-10), and
- POC Shallow: monitoring at well GM-26.

- Lower Aquifer

  - Former Oil House Area, (AOI 7 Deep): the Former Oil House Area source area (wells GM-23, GM-29, and GM-30),
  - Zone GM-40/41: the monitoring zone encompassing GM-40 and GM-41,
  - Zone GM-42: the monitoring zone encompassing GM-42,
  - Zone D1: the monitoring zone encompassing GM-19D,
  - Zone D2: the monitoring zone encompassing wells GM-1 and GM-3, and
  - POC Deep: monitoring at wells GM-11, GM-15 and GM-20D.

The following steps were conducted to assess the site-wide monitoring data for the purpose of determining the extent to which each remedial measure is contributing to achievement of the conditions outlined above for the upper and lower aquifers:

- Groundwater pumping conditions at the facility and surrounding area were reviewed to confirm that the basis for the RTLs remain valid. As discussed in Section 2, groundwater flow patterns remain the same as those evaluated during the 1999 baseline sampling. However, as discussed in the 2005 Site Wide Groundwater Monitoring Report (ARCADIS 2006), changes in on-site pumping was implemented during the 2005 monitoring period. Specifically, GM production wells 31 and 39 are no longer in continuous operation and pumping rates at the Moraine Assembly Plant wells 11B and 12A have changed; therefore, wells 31 and 39 were modeled as being "off" and wells 11B and 12A were modeled to reflect current operating conditions. In addition, as discussed in the 2005 Report, ARCADIS contacted the Ohio Department of Natural Resources (ODNR) regarding the current operations of the nearby well fields. Based on information provided, the pumping rates at the West Carrollton well field were also adjusted to better reflect current operations. Based on the updated information on pumping conditions at and near the Facility, the groundwater model for the scenario used for

the assessment of corrective measures performance (i.e., Scenario 1 – baseline conditions without interim measures pumping) was updated in 2005. No changes in pumping or flow conditions have been noted during the last year. Therefore, the information presented in the 2005 Site Wide Groundwater Monitoring Report was used in this evaluation. The pumping conditions are summarized on Table F-1 in Appendix F. Table F-1 also provides the source reduction factors used to assess potential hypothetical concentrations at receptor wells that are attributable to the land-based units (i.e., North and South Settling Lagoons, and Landfills L1, L2 and L3). The RTLs, updated in 2005, are presented on Table F-4 in Appendix F.

- Minimum, mean and maximum constituent concentrations in each remediation monitoring zone were calculated based on data collected during the 2006 monitoring period. One-half sample quantitation limits were used for non-detect results.

- Minimum, mean and maximum constituent concentrations were compared against the RTLs developed for each remediation monitoring zone.

4.1.3 Results

The results for groundwater quality data collected in 2006 in each remediation monitoring zone wells are discussed in Section 2.2.3. A comparison of the minimum, mean and maximum concentrations for each parameter in each remediation monitoring zone to the RTLs is presented on Table 25. These results and relative change in these results in comparison with the 2005 monitoring period are discussed below and presented on Table 25. For reference, Table 25 also presents a comparison with the results from the 1999 baseline sampling event.

The comparison of the 2006 shallow zone monitoring data with the RTLs indicates the following:

AOI 7, Shallow (wells GM-23, GM-29 and GM-30):

- As compared to 2005, the maximum and average concentrations of cis-1,2-DCE, PCE, and TCE have decreased but remain above the RTLs. The maximum concentrations in GM-23 and GM-29 caused the RTL to be exceeded.

- As compared to 2005, the maximum and average concentrations of vinyl chloride have increased and remain above the RTLs.

Zone S1 (well GM-28):

- Consistent with 2005, all concentrations remain below the RTLs.

Zone S1 to S2 (wells GM-28, ME-6):

- Consistent with 2005, all concentrations remain below RTLs.

Zone S2 (wells ME-6, ME-3, GM-31):

- As compared to 2005, the maximum concentration of TCE remains steady at a concentration above the RTL. The maximum concentration of TCE in GM-31 caused the RTL to be exceeded; this well is screened at the regional clay till which is below the former RZ-2 treatment zone.

Zone S2 to S3 (wells ME-6, ME-3, GM-31, GM-22, GM-19S, EAST, GM-33, GM-35):

- As compared to 2005, the maximum concentrations of PCE, TCE and vinyl chloride have decreased and remain above the RTLs. The average concentrations of PCE, TCE, and vinyl chloride have decreased. The average concentration of PCE is now below the RTL while the average concentration of TCE remains above the RTL.

- As compared to 2005, the maximum concentration of cis-1,2-DCE has increased and now is above the RTL. The average cis-1,2-DCE concentration has also increased, but remains below the RTL. The maximum concentration of cis-1,2-DCE in GM-19S caused the RTL to be exceeded in this monitoring zone; this well serves as the downgradient monitoring well for RZ-4 East. This initial increase in cis-1,2-DCE indicates the beginning stages of the RZ have been developed. Specifically, the increase in the maximum concentration of cis-1,2-DCE in this zone is due to the in-situ treatment in RZ-4 which began in 2006.

Zone S3 (wells GM-32, GM-21):

- As compared to 2005, the maximum concentration of vinyl chloride has decreased but remains above the RTL.

Zone S3 to GM-10 (wells GM-32, GM-21, GM-8, GM-6, W-4-S, 4S, GM-2, GM-16, GM-18, WSU-24, and GM-10):

- As compared to 2005, the maximum concentrations of PCE and vinyl chloride have decreased, but remain above the RTLs.
- As compared to 2005, the maximum concentration of TCE is stable but remains above the RTL. As compared to 2005, the average concentration of TCE has decreased below the RTL.

GM-10:

- As compared to 2005, the detected concentration of TCE has decreased and is now below the RTL.

POC Shallow (well GM-26):

- Consistent with 2005, all concentrations remain below the RTLs.

The comparison of the 2006 deep zone monitoring data with the RTLs indicates the following:

AOI 7, Deep (wells GM-23, GM-29, and GM-30):

- As compared to 2005, the maximum and average concentrations of cis-1,2-DCE, PCE, and TCE have decreased but remain above the RTLs.
- As compared to 2005, the maximum and average concentrations of vinyl chloride have increased and remain above the RTL.

Zone GM-40/41:

- As compared to 2005, the maximum and average concentration of TCE has decreased but remains above the RTL. This exceedance of the RTL is due to the levels of TCE observed in GM-41. TCE was not detected in GM-40 in 2006.

GM-42:

- Consistent with 2005, all concentrations remain below the RTLs.

Zone D1 (well GM-19D):

- As compared to 2005, the detected concentration of vinyl chloride has not changed significantly, and remains above the RTL.

Zone D2 (wells GM-1 and GM-3):

- As compared to 2005, the concentrations of TCE have not changed significantly and remain above the RTL.

POC Deep (wells GM-11, GM-15 and GM-20D):

- As compared to 2005, the concentrations of TCE have not changed significantly and remain above the RTL.

As indicated by the comparison of groundwater monitoring data with the RTLs presented on Table 25, concentrations at the upper aquifer POC well remain below RTLs. In addition, concentrations in the monitoring zone immediately upgradient of the upper aquifer POC have decreased to levels below or equal to the RTLs. However, concentrations in the monitoring zones further upgradient of the upper aquifer POC, as well as concentrations at the lower aquifer POC wells remain above the RTLs. Therefore, active corrective measures are still required to maintain the short-term objective in the upper aquifer, and to achieve the short-term corrective action objective in the lower aquifer.

Concentrations in the AOI 7 area remain above levels necessary to achieve the RTLs at the downgradient upper and lower aquifer POCs. However, concentrations downgradient of RZ-1 remain below the RTLs, thus indicating that RZ-1 has been effective at remediating groundwater impacts from AOI 7 in the upper aquifer.

Continued corrective measures are also required downgradient of RZ-1 (i.e., at RZ-3 and RZ-4) to address residual impacts in the downgradient upper aquifer plume area.

4.2 Monitoring of Land-Based Waste Management Units

4.2.1 Background and Objectives

One additional component of the site-wide groundwater monitoring program is monitoring of other specific units (i.e., the closed lagoons). Although the RFI and

Supplemental RFI determined that the wastes at these units do not contribute constituents to groundwater at levels that would have a significant effect on current and reasonably expected future groundwater uses, the monitoring program includes monitoring wells that are used to confirm these findings. In addition, the Site-Wide Groundwater Monitoring Plan was developed to meet the objectives of Ohio EPA's post-closure monitoring for the closed North and South Settling Lagoons.

4.2.2 Methodology

As indicated above, this site-wide monitoring program was developed to meet the objectives of RCRA corrective action and the post-closure groundwater monitoring requirements for the closed lagoons. The site-wide program monitors potentially significant contributions of hazardous waste constituents to existing groundwater quality from the closed lagoons. To determine if the closed lagoons may be significant contributors of hazardous waste constituents to existing groundwater concentrations, monitoring data collected from the designated post-closure monitoring wells located downgradient of each of the closed lagoons are evaluated for temporal trends. The approach proposed in the Site-Wide Groundwater Monitoring Plan for this assessment includes, as an initial approach, the application of straight line regression to determine if the data suggests a strong positive correlation.

In addition, in accordance with the Site-Wide Groundwater Monitoring Plan, the monitoring wells located immediately downgradient of the in-place waste management units are evaluated to determine whether these units are significantly affecting groundwater quality. Specifically, the potential health significance of constituents detected in monitoring wells immediately downgradient of these units to current and reasonably expected groundwater uses on-site and off-site are evaluated using the groundwater assessment methods developed in the Supplemental RFI Baseline Risk Assessment (ENVIRON 2000b). If this evaluation identifies detected concentrations that indicate one of these units may be having a potentially significant impact on downgradient groundwater quality, then a review of groundwater quality from monitoring wells upgradient and downgradient of the particular unit would be conducted to identify whether the unit is affecting groundwater quality. The monitoring wells identified in the Site-Wide Groundwater Monitoring Plan for monitoring each of the waste management units are:

- Closed North Settling Lagoon: HR-5, W-2-N, W-3-N, and W-4-N.
- Closed South Settling Lagoon: W-2-S, W-3-S, and W-4-S.

- Landfill L1: TW-2, GM-6, and 4S.
- Landfill L2: W-4-N and HR-2.
- Landfill L3: W-4-N, HR-2, and HR-4.

Consistent with the groundwater exposure evaluation conducted for the Supplemental Baseline Risk Assessment, groundwater concentrations reported for each set of downgradient monitoring wells are assumed to represent source concentrations associated with each unit. These source concentrations are combined with source reduction factors developed for the base case exposure scenario (i.e., current groundwater use conditions without corrective measures pumping) to estimate exposure concentrations at the points of groundwater use (e.g., downgradient municipal well fields and on-site industrial wells). For the current evaluation, the maximum concentrations detected during the 2006 sampling events in each set of monitoring wells are used as the source concentration and combined with the updated source reduction factors presented on Table F-1 (as described in Section 4.1.2). The estimated exposure concentrations are then compared with MCLs or risk-based equivalent drinking water levels (EDWLs).

4.2.3 Results

As proposed in the Site-Wide Groundwater Monitoring Plan, post-closure monitoring data collected from those wells assigned to the closed North and South Settling Lagoons were reviewed for temporal trends (see Section 2.2.3.1.2). Data considered in the evaluation included results from the September 2006 monitoring event and data ranging back to the initial post-closure monitoring event conducted in November 2001. Currently, the data set collected since the lagoons were closed includes six data points for any monitoring well/constituent pair; the data plots for key constituents are provided on Figure F-1 for the North Settling Lagoon and Figure F-2 for the South Settling Lagoon. In general, the linear regression analysis for the NSL using the available data indicates either declining concentrations or little significant change over time; any positive slope to the regression lines appears to be a result of analytical variability. Similarly for the SSL, changes in concentrations in the wells immediately downgradient of this unit appear to correspond to changes in concentrations in the upgradient well (HR-17). These concentration trend lines do not indicate that there are any significant increases in groundwater concentrations that would be attributable to the units.

Using the methodology developed in the RFI baseline risk assessment for assessing potential impacts to groundwater receptors from releases at the Moraine facilities, GM determined that the data from the wells downgradient of the closed North and South Settling Lagoons do not indicate that these units are significantly affecting groundwater quality. The potential significance of concentrations detected during the 2006 sampling events in each set of downgradient monitoring wells for the lagoons and landfills were assessed. Based on the maximum concentrations detected during the 2006 sampling events at each of these units, exposure concentrations at water supply wells representing current pumping conditions were estimated. The estimated combined groundwater concentrations at each of the receptor wells are presented on Table 26 in comparison with MCLs or EDWLs. As shown on Table 26, the maximum concentrations detected downgradient of each of the land-based waste disposal units do not contribute significantly to concentrations at these points of potential exposure. Therefore, the data from the wells downgradient of the waste management units indicate that these units are not significantly affecting groundwater quality. Supporting calculations for this assessment are provided in Appendix F.

5. Conclusions and Recommendations

This summary report presents the groundwater monitoring activities completed in 2006 at the GM Moraine Facilities located in Moraine, Ohio. This sampling was conducted to meet the five objectives presented in Section 1.2. Compliance with these objectives is presented for the waste management units, corrective measures, and on-going site-wide groundwater monitoring in the following sections.

5.1 Land-Based Waste Management Units

As proposed in the Site-Wide Groundwater Monitoring Plan (ARCADIS G&M, Inc. 2002), monitoring data collected immediately downgradient of the closed North and South Settling Lagoons, and Landfills L1, L2 and L3 were evaluated to determine if these units may be contributing constituents to groundwater at levels that would have a significant effect on current and reasonably expected future groundwater uses. Using the methodology developed in the RFI baseline risk assessment for assessing potential impacts to groundwater receptors from releases at the Moraine facilities, the potential significance of observed groundwater concentrations downgradient of these units was evaluated.

This evaluation determined that data from the wells downgradient of the in-place waste management units indicate that these units are not significantly affecting groundwater quality. Based on the results from the 2006 monitoring, no changes in the monitoring program for the waste management units are proposed.

5.2 Corrective Measures Performance

GM's approach for achieving its corrective action goals for the Moraine facilities is based on a combination of corrective measures (in-situ treatment and hydraulic control) designed to reduce existing plume concentrations thereby achieving plume reduction and migration control.

5.2.1 In-Situ Treatment

Groundwater quality monitoring at and downgradient of the reductive dechlorination treatment zones indicates that this in-situ treatment program has been effective at reducing VOC concentrations in groundwater. As observed during the 2006 monitoring, the upper aquifer conditions in the areas downgradient of the in-situ reactive zones have been converted to more reducing conditions through the

introduction of a carbon source, as evidenced by the changes in field and bioattenuation indicator parameters. Further, the VOC results indicate that the target compounds (PCE and TCE) have been effectively reduced to daughter products (cis-1,2-DCE and vinyl chloride) and ultimately to ethene and ethane.

Overall, the process of enhanced reductive dechlorination at this site has been successful in achieving a reduction of VOC concentrations. Based on the data collected in 2006, as part of the site-wide groundwater monitoring program and the corrective measures supplemental groundwater investigation with the installation of RZ-4, GM does not believe that additional modifications to the RZs will be necessary at this time; however, in 2007, GM will continue to evaluate if modifications to the RZs (i.e., RZ-2) are needed based on water quality and performance monitoring data.

5.2.2 Hydraulic Control

Groundwater elevation monitoring indicates that the capture zone corrective measures continue to be effective at maintaining hydraulic control in both the upper and lower aquifers at the southern end of the former Delphi Thermal Moraine. Additionally, the observed flow conditions are consistent with the conditions predicted by the capture zone modeling performed in developing the corrective measures pumping plan, which confirms the continued utility of the previously developed groundwater flow model as a predictive tool.

Based on the effective performance of the pumping program during the 2006 monitoring and exceedences of RTLs at the Former Oil House Area and in Zones S2 to S3, S3 to GM-10, Zone GM-40/-41, Zone GM-19D, Zone D2, and POC monitoring points in the deep aquifer (GM-11, GM-15, GM-20D), no changes to the hydraulic control component of the ongoing corrective measures are proposed at this time.

GM's ongoing groundwater monitoring program includes the assessment of changes in site-specific VOCs in both the upper and lower aquifers at locations upgradient of the GM Moraine facilities, as well as on-site and downgradient of the facilities. Data collected from upper and lower aquifer wells located upgradient of the facilities confirms that upgradient sources of VOCs, not related to GM operations, continue to exist in the local area. Notwithstanding these upgradient contributions of VOCs to on-site groundwater, the monitoring data indicate a site-wide decrease in VOC concentrations since the baseline sampling event conducted in 1999. In addition, VOC concentrations at the off-site downgradient upper aquifer well GM-26 remained below MCLs. Concentrations of TCE remained above the MCL in downgradient lower

aquifer wells GM-11, GM-15 and GM-20D, however, groundwater downgradient of these wells is contained by the lower aquifer capture zone well DN-13.

The decreasing concentrations in the wells downgradient of the site, compared to the RFI data, is likely attributable to the combined effects of corrective measures pumping at TW-2 which began in January 1996, pumping at DN-13, and on-going enhanced natural attenuation of the VOCs. However, concentrations in the monitoring zones immediately upgradient of the upper aquifer POC (GM-26), as well as concentrations at the lower aquifer POC wells remain above the RTLs. Therefore, active corrective measures are still required to achieve the corrective action objectives.

Based on the evaluation of the site-wide groundwater quality, both the in-situ treatment and hydraulic control components of the corrective action program will be continued.

5.3 Reassessment of Site-Wide Groundwater Monitoring Program

In accordance with the Site-Wide Groundwater Monitoring Plan (ARCADIS G&M, Inc. 2002), groundwater monitoring was conducted in 2006 to evaluate groundwater quality upgradient and downgradient of the closed lagoons and landfills, performance of the in-situ reactive zones, and performance of the capture zones. Based on the data collected during the 2006 monitoring period, GM believes that the monitoring program has provided sufficient data for a comprehensive evaluation of these corrective action objectives. The site-wide groundwater monitoring program summary for 2007 is presented in Table 27. To reassess the monitoring program in support of the proposed final corrective measures, GM recommends the following:

- In 2006, GM implemented the Corrective Measures Supplemental Groundwater Investigation to collect data that will further refine the available information on groundwater flow and quality within several study areas. As presented below, several wells installed in the GM-16 and GM-41 study areas will be incorporated into the site-wide groundwater monitoring program. This data will be used to further evaluate and refine, if necessary, the current corrective measures strategy. GM will continue to assess the need for additional monitoring wells in the upper and lower aquifers in support of the final corrective measures with the goal of ultimately ending active corrective measures.

- In 2007, GM will review the groundwater flow patterns and groundwater pumping conditions using the previously developed groundwater flow model, to confirm that the basis for the RTLs remain valid.

- In 2007, GM recommends the following additions/deletions to the list of wells in the annual monitoring program to ensure an appropriate list of wells are sampled (Table 27); however, GM still intends to collect water levels from these wells.
    - Upper Aquifer Wells:
        - Additional Wells – GM-47, GM-50, GM-51, GM-52, GM-63, GM-64
        - Deleted Wells – HR-8, HR-3, EAST, 4S
    - Lower Aquifer Wells:
        - Additional Wells – GM-54, GM-58, GM-61
        - Deleted Well – HR-13

5.4 Supplemental Groundwater Investigation Recommendations

The Corrective Measures Supplemental Groundwater Investigation conducted in 2006 has provided additional data to refine the current understanding of groundwater chemistry and flow direction at the site as these relate to the evaluation of the current corrective measures. Using the data obtained from the GM-16 study area, RZ-4 was designed and installed to address VOC concentrations present west of RZ-3 West. In the Former Oil House Area, groundwater data from well GM-46 demonstrated that the VOC concentrations side gradient to RZ-1 are not significant enough to warrant an expansion of RZ-1 to the east. While these data are useful in refining the current understanding of site conditions and the current corrective measures at the site they continue to support the corrective measures approach that is proposed for the site. The refinements are being pursued so that the objective of terminating active corrective measures can be achieved as soon as possible.

GM recommends the following additional data collection in 2007 to supplement the evaluation of current site conditions and to more effectively manage the components of the final corrective measures such that active corrective measures can be terminated as soon as possible.

- DN-13 Area Detailed Water Level Study – a transducer study to further refine the available information on groundwater fluctuations and any potential communication

between the upper and lower aquifers in the area of lower aquifer well DN-13 will be completed.

- GM-41 Study Area – additional characterization of groundwater chemistry and flow direction to the northwest (near GM-59/-60) and northeast of lower aquifer well GM-41 will be conducted.

- Holes Creek Study Area – due to delays with access agreements from the Miami Conservancy District, proposed well G was not installed in 2006. This well will be installed in 2007 and will be located east of the Great Miami River and south of Holes Creek, near the bike path.

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Table 1. Site-Wide Groundwater Monitoring Events in 2006, General Motors Corporation, Moraine, Ohio.

February 2006 Site-Wide Groundwater Elevations

Groundwater elevations were measured on February 27-28, 2006.

June 2006 Site-Wide Groundwater and Surface Water Elevations

Groundwater and surface water elevations were measured on June 21-22, 2006.

September 2006 Site-Wide Annual Groundwater Sampling

Groundwater elevations were measured on September 12-13, 2006. Site-specific list of VOCs(1) and field parameters(2) were analyzed during these sampling events from the following upper aquifer monitoring wells. Biogeochemical parameters(3) were analyzed at wells denoted with an asterisk(*):

W-2-N	HR-11	GM-16	GM-22*	GM-33
W-3-N	HR-17	GM-17	GM-23*	GM-35
W-4-N	W-2-S	GM-18	GM-26	GM-43
HR-1	W-3-S	GM-19S*	GM-27	GM-45
HR-2	W-4-S*	EAST*	GM-28*	
HR-3	GM-2	WSU-24	GM-29*	
HR-4	TW-2*	ME-3*	GM-30*	
HR-5	GM-6*	ME-6*	GM-31*	
HR-8	GM-8*	4S	GM-32*	
HR-9	GM-10	GM-21*		

Site-specific list of VOCs(1) were analyzed during this sampling event from the following list of lower aquifer monitoring wells:

HR-10	GM-19D	GM-11	MT69	GM-42
HR-12	GM-3	GM-20D	GM-39	
HR-13	GM-1	DN-13	GM-40	
HR-15	GM-15	GM-9	GM-41	

1. Site-specific list of VOCs includes: benzene, 1,1-dichloroethane, 1,1-dichloroethene, cis-1,2-dichloroethene, trans-1,2-dichloroethene, ethylbenzene, tetrachloroethene, toluene, 1,1,1-trichloroethane, trichloroethene, vinyl chloride, and xylenes.
2. Field parameters include: pH, specific conductivity, dissolved oxygen, oxidation reduction potential, and temperature.
3. Biogeochemical parameters include: manganese (total and dissolved), iron (total and dissolved), sulfate, sulfide, total organic carbon, chlorides, ethane, ethene, and methane.

Table 1. Site-Wide Groundwater Monitoring Events in 2006, General Motors Corporation, Moraine, Ohio.

RZ Performance Sampling

The following events were performed in 2006:

The following wells were sampled on July 5, 2006 for site-specific list of VOCs[1], TOC, ethane, ethene, methane, and field parameters[2]: GM-8, GM-21, GM-23, GM-28, and GM-32;

The following wells were sample on August 3, 2006 for site-specific list of VOCs[1], biogeochemical parameters[3], and field parameters[2]: RZ-4B, RZ-4O, and W-4-S;

The following wells were sample on September 14, 2006 for site-specific list of VOCs[1], biogeochemical parameters[3], and field parameters[2]: GM-63 and GM-64;

The following wells were sampled on December 1, 2006 for site-specific list of VOCs[1], TOC, ethane, ethene, methane, and field parameters[2]: GM-8, GM-19S, GM-21, GM-29, GM-32, GM-63, GM-64, and W-4-S.

DN-13 Monthly Groundwater Sampling

Appendix IX VOCs and cis-1,2-DCE were analyzed during these sampling events from DN-13.

Air Stripper Tower Influent and Effluent Monthly Groundwater Sampling

Benzene, chloroethane, 1,1-dichloroethane, cis-1,2-dichloroethene, trans-1,2-dichloroethene, ethylbenzene, tetrachloroethene, toluene, 1,1,1-trichloroethane, trichloroethene, vinyl chloride, and xylenes were analyzed during the influent sampling events from the air stripper tower by EPA Method 8260B. The stripping tower effluent sample was analyzed for oil and grease and the following list of VOCs: benzene, chloroethane, 1,1-dichloroethane, cis-1,2-dichloroethene, trans-1,2-dichloroethene, ethylbenzene, tetrachloroethene, toluene, 1,1,1-trichloroethane, trichloroethene, vinyl chloride, and xylenes. The effluent sample was analyzed by EPA Methods 8260B and 624 (drinking water standard).

Parameter	Analytical Method
Site-specific list of VOCs	EPA Method 8260B/EPA Method 624
Manganese, total and dissolved	EPA Method 6010B
Iron, total and dissolved	EPA Method 6010B
Sulfate	SM 375.4
Sulfide	SM 376.1
Total Organic Carbon	SM 415.1
Chlorides	SM 325.2
Ethane, Ethene, Methane	Method AM18G

1. Site-specific list of VOCs includes: benzene, 1,1-dichloroethane, 1,1-dichloroethene, cis-1,2-dichloroethene, trans-1,2-dichloroethene, ethylbenzene, tetrachloroethene, toluene, 1,1,1-trichloroethane, trichloroethene, vinyl chloride, and xylenes.
2. Field parameters include: pH, specific conductivity, dissolved oxygen, oxidation reduction potential, and temperature.
3. Biogeochemical parameters include: manganese (total and dissolved), iron (total and dissolved), sulfate, sulfide, total organic carbon, chlorides, ethane, ethene, and methane.

Table 2. Influent Monitoring of the Air Stripper Tower for 2006, General Motors Corporation, Moraine, Ohio.

Constituent	Units	1/6/06	2/1/06[3]	3/1/06[3]	4/1/06[3]	5/23/06	6/26/06	7/10/06	8/2/06	9/5/06	10/2/06	11/3/06	12/4/06
Oil & Grease[1]	mg/L	<5.0	NS	NS	NS	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
VOCs[2]													
Benzene	ug/L	1.8	NS	NS	NS	1.9	2.1	1.8	1.3	1.1	1.1	0.84J	0.89J
Chloroethane	ug/L	15	NS	NS	NS	9.0	15	10	8.5	9.0	9.3	8.4	6.4
1,1-Dichloroethane	ug/L	11	NS	NS	NS	6.9	6.6	8.4	8.0	7.1	8.3	8.7	11
cis-1,2-Dichloroethene	ug/L	12	NS	NS	NS	15	19	13	13	11	11	14	13
trans-1,2-Dichloroethene	ug/L	0.89J	NS	NS	NS	0.74J	0.83J	0.93J	0.87J	0.72J	0.80J	0.93J	0.86J
Ethylbenzene	ug/L	1.5	NS	NS	NS	0.81J	0.41J	1.2	2.0	1.5	1.4	1.1	1.6
Tetrachloroethene	ug/L	4.1	NS	NS	NS	2.7	2.3	2.7	2.8	2.7	3.6	4.2	5.6
Toluene	ug/L	<1.0	NS	NS	NS	0.28J,B	<1.0	0.33J	0.32J	<1.0	<1.0	<1.0	<1.0
1,1,1-Trichloroethane	ug/L	<1.0	NS	NS	NS	<1.0	<1.0	<1.0	<1.0	<1.0	0.35J	0.63J	0.83J
Trichloroethene	ug/L	9.0	NS	NS	NS	8.6	7.6	8.4	8.9	8.5	11	15	15
Vinyl chloride	ug/L	3.9	NS	NS	NS	2.7	3.7	3.9	3.2	<1.0	2.2	3.0	2.7
Xylenes	ug/L	0.63J	NS	NS	NS	1.4J	0.61J	1.5J	1.9J	0.62J	0.47J	0.45J	1.5J
Total VOCs	ug/L	58.30				46.80	56.30	49.40	47.70	40.90	47.90	54.40	55.30

1 Analytical method for oil & grease is EPA 1664A.
2 Analytical method for VOC analysis is SW-846 Method 8260B.
3 Samples were not collected in February, March, and April as the system was not in operation due to O&M issues.
VOC concentrations in micrograms per liter (ug/L) and Oil & Grease concentrations in milligrams per liter (mg/L) as reported by the laboratory.
-- Not analyzed.
NS Not Sampled
J Estimated result. Result is less than reporting limit.
B Method blank contamination. The associated method blank contains the target analyte at a reportable level.

Table 3. NPDES Permit Effluent Monitoring of the Air Stripper Tower for 2006, General Motors Corporation, Moraine, Ohio.

Constituent	Units	Permit Limit	1/6/06	2/1/06[4]	3/1/06[4]	4/1/06[4]	5/23/06	6/26/06	7/10/06	8/2/06	9/5/06	10/2/06	11/3/06	12/4/06
Oil & Grease[1]	mg/L	10	<5.0	NS	NS	NS	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
pH[2]	S.U.	6.5 - 9.0 S.U.	6.86	NS	NS	NS	7.99	7.86	8.01	6.93	7.60	6.73	7.94	6.98
VOCs[3]														
Benzene	ug/L	10	<1.0	NS	NS	NS	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Chloroethane	ug/L	10	0.38J	NS	NS	NS	0.46J	0.65J	0.51J	0.28J	<1.0	<1.0	0.26J	<1.0
1,1-Dichloroethane	ug/L	10	0.43J	NS	NS	NS	0.50J	0.43J	0.61J	0.42J	0.39J	0.47J	0.42J	0.55J
cis-1,2-Dichloroethene	ug/L	10	0.59J	NS	NS	NS	1.3	1.5	1.2	0.91J	0.65J	0.68J	0.91J	0.80J
trans-1,2-Dichloroethene	ug/L	10	<1.0	NS	NS	NS	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Ethylbenzene	ug/L	10	<1.0	NS	NS	NS	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Tetrachloroethene	ug/L	10	<1.0	NS	NS	NS	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	0.20
Toluene	ug/L	10	<1.0	NS	NS	NS	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1,1-Trichloroethane	ug/L	10	<1.0	NS	NS	NS	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Trichloroethene	ug/L	10	0.31J	NS	NS	NS	0.51J	0.45J	0.54J	0.41J	0.41J	0.54J	0.60J	0.61J
Vinyl Chloride	ug/L	10	<1.0	NS	NS	NS	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Xylenes	ug/L	10	<2.0	NS	NS	NS	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0

mg/L Milligrams per Liter.
S.U. Standard Units.
ug/L Micrograms per Liter.
1 Analytical method for oil & grease is EPA 1664A.
2 Analytical method for pH is EPA 150.1.
3 Analytical method for volatile organic compounds (VOCs) is SW-846 Method 8260B.
4 Samples were not collected in February, March, and April as the system was not in operation due to O&M issues.
VOC concentrations in micrograms per liter (ug/L) and Oil & Grease concentrations in milligrams per liter (mg/L) as reported by the laboratory
NS Not Sampled
J Estimated result. Result is less than reporting limit.

Table 4. DN-13 Monthly Monitoring for 2006, General Motors Corporation, Moraine, Ohio.

Volatile Organic Compound[1]	Units	1/6/06	2/3/06	3/13/06	4/17/06	5/23/06	6/22/06	7/10/06	8/2/06	9/5/06	10/2/06	11/3/06	12/4/06
trans-1,3-Dichloropropene	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,4-Dioxane	ug/L	<200	55J,B	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200
Ethyl methacrylate	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Ethylbenzene	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
2-Hexanone	ug/L	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Iodomethane	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Isobutyl alcohol	ug/L	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
Methacrylonitrile	ug/L	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Methylene chloride	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
4-Methyl-2-pentanone	ug/L	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Methyl methacrylate	ug/L	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Propionitrile	ug/L	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0
Styrene	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1,1,2-Tetrachloroethane	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1,2,2-Tetrachloroethane	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Tetrachloroethene	ug/L	0.37J	0.37J	0.39J	0.42J	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Toluene	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1,1-Trichloroethane	ug/L	0.68J	0.58J	0.62J	0.61J	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1,2-Trichloroethane	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Trichloroethene	ug/L	6.2	5.6	5.9	6.1	6.2	5.8	5.7	6.5	6.2	5.5	5.8	6.0
Trichlorofluoromethane	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2,3-Trichloropropane	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Vinyl acetate	ug/L	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Vinyl chloride	ug/L	2.5	1.8	2.1	1.9	2.3	2.3	2.4	2.8	2.6	1.9	2.2	2.2
Xylenes (total)	ug/L	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Total VOCs	**ug/L**	**17.40**	**15.50**	**16.30**	**15.90**	**16.50**	**16.20**	**15.80**	**17.00**	**16.60**	**14.70**	**15.80**	**16.60**

1 Analytical method for VOC analysis is SW-846 Method 8260B.
All concentrations in micrograms per liter (ug/L) as reported by the laboratory.
< - Value below laboratory reporting limits.
J Estimated result. Result is less than reporting limit.
B Method blank contamination. The associated method blank contains the target analyte at a reportable level.

Table 4. DN-13 Monthly Monitoring for 2006, General Motors Corporation, Moraine, Ohio.

Volatile Organic Compound[1]	Units	1/6/06	2/3/06	3/13/06	4/17/06	5/23/06	6/22/06	7/10/06	8/2/06	9/5/06	10/2/06	11/3/06	12/4/06
Acetone	ug/L	0.80J,B	1.0J,B	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Acetonitrile	ug/L	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20
Acrolein	ug/L	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20
Acrylonitrile	ug/L	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20
Allyl chloride	ug/L	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Benzene	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Bromodichloromethane	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Bromoform	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Bromomethane	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
2-Butanone	ug/L	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Carbon disulfide	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Carbon tetrachloride	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Chlorobenzene	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Chloroethane	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Chloroform	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Chloromethane	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Chloroprene	ug/L	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Dibromochloromethane	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Dibromomethane	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Dichlorodifluoromethane	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-Dibromo-3-chloropropane	ug/L	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
1,2-Dibromoethane (EDB)	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
trans-1,4-Dichloro-2-butene	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1-Dichloroethane	ug/L	2.0	1.8	1.8	1.7	1.7	1.8	1.6	1.8	1.7	1.6	1.7	1.8
1,2-Dichloroethane	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1-Dichloroethene	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
cis-1,2-Dichloroethene	ug/L	6.7	6.3	6.5	6.2	6.3	6.3	6.1	5.9	6.1	5.7	6.1	6.6
trans-1,2-Dichloroethene	ug/L	0.44J	0.39J	0.42J	0.43J	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-Dichloropropane	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
cis-1,3-Dichloropropene	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0

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Table 5. Monitoring Well Construction Details, General Motors Corporation, Moraine, Ohio.

Well ID #	Surface Elevation ft msl	TOC Elevation ft msl	Well Diameter Inches	Screened Interval ft bls	Total Well Depth ft bls	Northing y	Easting x
Upper Aquifer Wells							
W-1-N	737.61	739.02	4	35-70	70	6618	5037
W-2-N	729.68	731.68	4	35-60	60	5264	4744
W-3-N	731.98	733.66	4	32-57	57	5157	5032
W-4-N	729.88	731.63	4	40-65	65	5157	5224
HR-1	730.10	732.71	2	47-57	57	3420	5205
HR-2	732.62	734.75	2	47-57	57	5209	5455
HR-3	734.31	736.75	2	50-60	60	5211	5648
HR-4	740.61	742.60	2	55-65	65	6111	5214
HR-5	730.95	734.27	2	44-54	54	4760	4985
HR-6	730.18	732.66	2	43-53	53	4009	4985
HR-7	731.00	731.73	2	47-57	57	4743	4678
HR-8	740.84	743.42	2	54-64	64	6819	5626
HR-9	741.00	743.51	2	58-68	68	7669	5508
HR-11	740.90	743.33	2	60-70	70	7313	6207
HR-16	724.60	727.01	4	42-62	62	2354	4198
HR-17	725.40	726.43	4	27-47	47	2457	4776
W-1-S	728.23	729.29	4	25-60	60	2777	4958
W-2-S	725.01	726.64	4	30-65	65	1786	4207
W-3-S	NM	729.17	4	36-76	76	1678	4386
W-4-S	726.66	727.92	4	30-70	70	1671	4785
GM-2	NM	735.81	2	45-55	55	1102	5803
4S	NM	731.36	4	30-65	65	1071	5564
GM-6	NM	730.27	2	35-45	45	1042	5306
GM-8	735.17	735.17	2	40-50	50	1283	5285
GM-10	NM	723.90	2	40-50	50	162	5258
GM-16	NM	725.30	2	48-58	58	652	4566
GM-17	NM	723.84	2	40-50	50	672	5174
GM-18	NM	723.80	2	45-55	55	583	4993
GM-19S	NM	730.92	2	47-57	57	1767	5274
EAST	NM	730.98	2	NA	71	2120	5818
WEST	NM	731.08	2	NA	52	2004	5463
WSU-17	NM	726.18	2	NA	66	970	5279
WSU-18	NM	733.52	2	NA	61	1004	5458
WSU-19	NM	726.62	2	NA	62	1182	5212

Table 5. Monitoring Well Construction Details, General Motors Corporation, Moraine, Ohio.

Well ID #	Surface Elevation ft msl	TOC Elevation ft msl	Well Diameter inches	Screened Interval ft bls	Total Well Depth ft bls	Northing y	Easting x
Upper Aquifer Wells							
WSU-22	726.21	726.49	2	NA	52.4	1625	4917
WSU-23	724.65	724.90	2	NA	57.6	1535	4204
WSU-24	725.10	724.82	2	NA	65.7	574	5663
TW-2	NM	733.38	10	35-45	45	1027	5337
GM-21	725.36	725.00	2	45-55	55	1519	6052
GM-22	731.84	731.63	2	44-54	54	2531	6285
GM-23	NM	731.07	2	24-34	34	5393	6018
GM-24	747.61	747.29	2	58-68	68	8122	7812
GM-25	747.05	746.17	2	48-58	58	4930	8170
GM-26	719.84	722.29	2	50-60	60	-988	4961
GM-27	731.03	730.57	2	40-50	50	5393	6029
GM-28	NM	736.46	2	22-32	32	5041	5916
GM-29	731.31	731.37	2	28-38	38	5209	5974
GM-30[(1)]	NM	734.79	2	30-40	40	5559	5970
GM-31[(1)]	732.05	732.13	2	58-68	68	2939	5914
GM-32	732.47	732.08	2	51-61	61	3486	6070
GM-33	730.30	729.77	2	48-58	58	2278	5762
GM-34	731.06	730.56	2	26-36	36	2278	5770
GM-35	731.56	731.27	2	57-67	67	1750	5510
GM-36	731.44	731.11	2	25-35	35	1755	5551
GM-37	730.36	730.05	2	46-56	56	1857	5696
GM-38	730.31	729.88	2	24-34	34	1858	5686
GM-43	NM	729.00	2	40-50	50	3655	5211
GM-44	NM	728.77	2	51-61	61	3137	5217
GM-45	NM	729.75	2	50-60	60	2853	5217
GM-46	728.13	727.79	2	19.8-29.8	29.8	5130	6257
GM-47	727.03	726.75	2	49.4-59.4	59.4	1312	4776
GM-48	728.98	728.67	2	63.2-73.2	73.2	610	4200
GM-49	728.28	727.88	2	66.9-76.9	76.9	-222	4383
GM-50	727.03	726.56	2	29.7-39.7	39.7	1312	4773
GM-51	728.83	728.30	2	34.3-44.3	44.3	614	4198
GM-52	728.16	727.62	2	34-44	44	-226	4383
GM-53	730.53	730.35	2	23-33	33	2999	6824
GM-55	719.90	719.86	2	25-35	35	-646	5202

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Table 5. Monitoring Well Construction Details, General Motors Corporation, Moraine, Ohio.

Well ID #	Surface Elevation ft msl	TOC Elevation ft msl	Well Diameter inches	Screened Interval ft bls	Total Well Depth ft bls	Northing y	Easting x
Upper Aquifer Wells							
GM-56	719.75	719.52	2	75-85	85	-646	5209
GM-57	719.41	721.74	2	25-35	35	-993	4966
GM-59	732.46	732.25	2	25-35	35	4501	6323
GM-60	732.46	732.24	2	42-52	52	4501	6324
GM-62	722.17	722.11	2	50-60	60	-189	5443
GM-63	726.21	725.79	2	30-40	40	1625	4919
GM-64	726.38	725.95	2	50-60	60	1625	4914
ME-2[1]	732.38	732.08	2	27-37	37	2945	5973
ME-3[1]	732.23	731.73	2	29-39	39	2897	5938
ME-4[1]	732.05	732.24	2	26-36	36	2925	5914
ME-6[1]	733.09	732.68	2	29-39	39	3325	5927

Table 5. Monitoring Well Construction Details, General Motors Corporation, Moraine, Ohio.

Well ID #	Surface Elevation ft msl	TOC Elevation ft msl	Well Diameter inches	Screened Interval ft bls	Total Well Depth ft bls	Northing y	Easting x
Lower Aquifer Wells							
GM-1	NM	735.74	2	90-100	100	1087	5803
GM-3	NM	730.44	2	90-100	100	1023	5309
GM-4	NM	731.46	2	140-150	150	1010	5322
GM-5	NM	731.29	2	90-100	100	1037	5512
GM-7R	NM	735.61	2	80-90	91	1247	5295
GM-9	NM	724.07	2	90-100	100	146	5247
GM-11	NM	723.71	2	90-100	100	679	5164
GM-13	NM	723.82	2	90-100	100	566	4990
GM-14	NM	723.50	2	140-150	150	611	5030
GM-15	NM	725.23	2	90-100	100	664	4581
GM-19D	NM	730.73	4	145-150	150	1775	5298
GM-20D	NM	727.26	4	87-92	92	619	5699
GM-39	731.15	730.95	2	106-116	116	5396	6006
GM-40	727.28	727.04	2	140-150	150	3089	4984
GM-41	731.22	733.65	2	104-114	114	3430	6684
GM-42	729.48	729.16	2	140-150	150	2338	5651
GM-54	730.51	730.29	2	70-80	80	2995	6818
GM-58	735.59	735.46	2	72-82	82	3451	7183
GM-61	732.48	732.23	2	70-80	80	4501	6318
HR-10	740.90	742.81	4	115-125	125	7686	5492
HR-12	741.00	742.64	4	120-130	130	7333	6194
HR-13	733.20	735.03	4	75-85	85	5221	5665
HR-14	729.90	731.63	4	78-88	88	5178	5209
HR-15	732.10	733.74	4	88-98	98	5161	5020
M73C	NM	716.55	NA	NA	NA	180	4539
MT69	719.84	722.71	8	NA	158	-988	5020
MT576M	750.00	751.46	5	NA	114	4804	9620
MT596M*	759.18	757.73	5	NA	89	6438	10644
DN-13	NM	NM	20	110-170	170	NM	NM

TOC - Top of Casing.
ft bls - Feet Below Land Surface.
ft msl - Feet Above Mean Sea Level.
NA - Not Available.
NM - Not Measured.
(1) - Depth of screened interval and total well depth have been modified from the well log due to site construction.
* Measuring point is top of cement housing.

Table 6. Water-Level Measurements Collected During February 2006, General Motors Corporation, Moraine, Ohio.

Well	Measuring Point Elevation	Depth-to-Water (feet)	Water-Level Elevation
Upper Aquifer Wells			
W-1-N	739.02	30.81	708.21
W-2-N	731.68	24.07	707.61
W-3-N	733.66	26.15	707.51
W-4-N	731.63	24.06	707.57
HR-1	732.71	26.61	706.10
HR-2	734.75	27.19	707.56
HR-3	736.75	29.21	707.54
HR-4	742.60	34.52	708.08
HR-5	734.27	27.13	707.14
HR-6	732.66	26.20	706.46
HR-7	731.73	24.55	707.18
HR-8	743.42	35.05	708.37
HR-9	743.51	34.71	708.80
HR-11	743.33	34.49	708.84
HR-16	727.01	21.42	705.59
HR-17	726.43	20.61	705.82
W-1-S	729.29	23.33	705.96
W-2-S	726.64	21.65	704.99
W-3-S	730.95	24.15	706.80
W-4-S	727.92	22.61	705.31
GM-2	735.81	30.70	705.11
4S	731.36	26.45	704.91
GM-6	730.27	25.51	704.76
GM-8	735.17	30.35	704.82
GM-10	723.90	19.50	704.40
GM-16	725.30	20.78	704.52
GM-17	723.84	19.25	704.59
GM-18	723.80	19.30	704.50
GM-19S	730.92	25.43	705.49
EAST	730.98	25.20	705.78
WEST	731.08	25.40	705.68
WSU-17	726.18	21.35	704.83
WSU-18	733.52	28.60	704.92
WSU-19	726.62	21.85	704.77
WSU-22	726.49	21.45	705.04
WSU-23	724.90	20.15	704.75
WSU-24	724.82	19.97	704.85
TW-2	733.38	27.42	705.96
GM-21	725.00	19.62	705.38
GM-22	731.63	25.65	705.98
GM-23	731.07	23.36	707.71
GM-24	747.29	37.92	709.37
GM-25	746.17	38.55	707.62

Table 6. Water-Level Measurements Collected During February 2006, General Motors Corporation, Moraine, Ohio.

Well	Measuring Point Elevation	Depth-to-Water (feet)	Water-Level Elevation
GM-26	722.29	18.55	703.74
GM-27	730.57	22.78	707.79
GM-28	736.46	29.08	707.38
GM-29	731.37	23.85	707.52
GM-30	734.79	27.11	707.68
GM-31	732.13	26.02	706.11
GM-32	732.08	26.51	705.57
GM-33	729.77	23.91	705.86
GM-34	730.56	24.71	705.85
GM-35	731.27	25.95	705.32
GM-36	731.11	25.66	705.45
GM-37	730.05	24.33	705.72
GM-38	729.88	24.46	705.42
GM-43	729.00	NM	NA
GM-44	728.77	22.74	706.03
GM-45	729.75	23.11	706.64
GM-46	727.79	20.27	707.52
GM-47	726.75	21.95	704.80
GM-48	728.67	24.39	704.28
GM-49	727.88	24.10	703.78
ME-2	732.08	25.89	706.19
ME-3	731.73	25.61	706.12
ME-4	732.24	26.23	706.01
ME-6	732.68	26.59	706.09
Lower Aquifer Wells			
GM-1	735.74	30.72	705.02
GM-3	730.44	25.75	704.69
GM-4	731.46	26.77	704.69
GM-5	731.29	26.49	704.80
GM-7R	735.61	30.48	705.13
GM-9	724.07	19.78	704.29
GM-11	723.71	19.26	704.45
GM-13	723.82	19.64	704.18
GM-14	723.50	19.38	704.12
GM-15	725.23	21.17	704.06
GM-19D	730.73	25.13	705.60
GM-20D	727.26	22.12	705.14
GM-39	730.95	23.20	707.75
GM-40	727.04	21.33	705.71
GM-41	733.65	27.20	706.45
GM-42	729.16	23.69	705.47
HR-10	742.81	34.02	708.79
HR-12	742.64	33.81	708.83
HR-13	735.03	27.44	707.59

Table 6. Water-Level Measurements Collected During February 2006, General Motors Corporation, Moraine, Ohio.

Well	Measuring Point Elevation	Depth-to-Water (feet)	Water-Level Elevation
HR-14	731.63	24.13	707.50
HR-15	733.74	26.37	707.37
M73C	716.55	12.53	704.02
MT69	722.71	19.10	703.61
MT576M	751.46	42.82	708.64
MT596M*	757.73	48.27	709.46
Production and Fire Wells			
11B	NS	ON	NA
12A	742.35	ON	NA
31	734.05	26.53	707.52
34	733.46	26.68	706.78
39	732.07	NM	NA
A	739.00	NM	NA
FW-1A	739.89	32.11	707.78
FW-2	737.48	30.82	706.66
FW-3	739.26	32.94	706.32
FW-4	731.62	26.22	705.40
Stream Gauge			
SG1	747.64	39.80	707.84

Measuring point is to top of the PVC Casing.
Water-level elevations are reported in feet above mean sea level (msl).
Depth-to-water elevations were measured on February 27-28, 2006 using an electronic water level indicator.
Depth-to-water measurements are reported in feet below the measuring point.
NS - Not Surveyed.
NM - Not measured.
*Measuring point is top of cement housing.
SG1 - Measuring point on the Main Street Bridge over the Great Miami River.

Table 7. Water-Level Measurements Collected During June 2006, General Motors Corporation, Moraine, Ohio.

Well	Measuring Point Elevation	Depth-to-Water (feet)	Water-Level Elevation
Upper Aquifer Wells			
W-1-N	739.02	29.92	709.10
W-2-N	731.68	22.93	708.75
W-3-N	733.66	25.02	708.64
W-4-N	731.63	22.93	708.70
HR-1	732.71	25.19	707.52
HR-2	734.75	26.12	708.63
HR-3	736.75	28.11	708.64
HR-4	742.60	33.53	709.07
HR-5	734.27	25.91	708.36
HR-6	732.66	24.80	707.86
HR-7	731.73	23.31	708.42
HR-8	743.42	34.12	709.30
HR-9	743.51	33.89	709.62
HR-11	743.33	33.66	709.67
HR-16	727.01	19.91	707.10
HR-17	726.43	19.13	707.30
W-1-S	729.29	21.91	707.38
W-2-S	726.64	20.15	706.49
W-3-S	729.17	22.61	706.56
W-4-S	727.92	21.12	706.80
GM-2	735.81	29.00	706.81
4S	731.36	24.80	706.56
GM-6	730.27	23.89	706.38
GM-8	735.17	28.75	706.42
GM-10	723.90	18.00	705.90
GM-16	725.30	19.30	706.00
GM-17	723.84	17.70	706.14
GM-18	723.80	17.76	706.04
GM-19S	730.92	23.92	707.00
EAST	730.98	23.66	707.32
WEST	731.08	23.87	707.21
WSU-17	726.18	19.92	706.26
WSU-18	733.52	27.14	706.38
WSU-19	726.62	20.37	706.25
WSU-22	726.49	19.93	706.56
WSU-23	724.90	18.64	706.26
WSU-24	724.82	18.45	706.37
TW-2	733.38	26.94	706.44
GM-21	725.00	18.08	706.92
GM-22	731.63	24.08	707.55
GM-23	731.07	22.31	708.76
GM-24	747.29	37.08	710.21
GM-25	746.17	37.30	708.87

Table 7. Water-Level Measurements Collected During June 2006, General Motors Corporation, Moraine, Ohio.

Well	Measuring Point Elevation	Depth-to-Water (feet)	Water-Level Elevation
GM-26	722.29	16.99	705.30
GM-27	730.57	25.74	704.83
GM-28	736.46	27.83	708.63
GM-29	731.37	23.46	707.91
GM-30	734.79	25.75	709.04
GM-31	732.13	24.64	707.49
GM-32	732.08	25.30	706.78
GM-33	729.77	22.41	707.36
GM-34	730.56	23.20	707.36
GM-35	731.27	24.40	706.87
GM-36	731.11	24.12	706.99
GM-37	730.05	22.94	707.11
GM-38	729.88	22.80	707.08
GM-43	729.00	21.24	707.76
GM-44	728.77	21.32	707.45
GM-45	729.75	21.67	708.08
GM-46	727.79	19.03	708.76
GM-47	726.75	20.45	706.30
GM-48	728.67	22.89	705.78
GM-49	727.88	22.66	705.22
GM-50	726.56	20.32	706.24
GM-51	728.30	22.70	705.60
GM-52	727.62	22.40	705.22
ME-2	732.08	24.47	707.61
ME-3	731.73	24.25	707.48
ME-4	732.24	24.81	707.43
ME-6	732.68	25.27	707.41
Lower Aquifer Wells			
GM-1	735.74	29.19	706.55
GM-3	730.44	24.23	706.21
GM-4	731.46	25.26	706.20
GM-5	731.29	24.97	706.32
GM-7R	735.61	28.99	706.62
GM-9	724.07	18.25	705.82
GM-11	723.71	17.81	705.90
GM-13	723.82	18.18	705.64
GM-14	723.50	17.90	705.60
GM-15	725.23	19.79	705.44
GM-19D	730.73	23.72	707.01
GM-20D	727.26	20.61	706.65
GM-39	730.95	22.31	708.64
GM-40	727.04	20.01	707.03
GM-41	733.65	25.97	707.68
GM-42	729.16	22.32	706.84

Table 7. Water-Level Measurements Collected During June 2006, General Motors Corporation, Moraine, Ohio.

Well	Measuring Point Elevation	Depth-to-Water (feet)	Water-Level Elevation
HR-10	742.81	33.20	709.61
HR-12	742.64	32.98	709.66
HR-13	735.03	26.42	708.61
HR-14	731.63	23.11	708.52
HR-15	733.74	25.94	707.80
M73C	716.55	11.09	705.46
MT69	722.71	17.58	705.13
MT576M	751.46	41.85	709.61
MT596M*	757.73	47.13	710.60
Production and Fire Wells			
11B	NS	NM	On
12A	742.35	NM	On
31	734.05	25.54	708.51
39	732.07	NM	Off
A	739.00	NM	NM
FW-1A	739.89	31.24	708.65
FW-2	737.48	30.39	707.09
FW-3	739.26	31.33	707.93
FW-4	731.62	24.69	706.93
Stream Gauge			
SG1	747.64	39.55	708.09
SG2	709.95	1.99	707.96
SG3	718.45	6.8	711.65
SG4	714.78	5.88	708.90
SG5	711.10	1.91	709.19
SG6	723.21	15.4	707.81
SG7	731.55	15.22	716.33

Measuring point is to top of the PVC Casing.
Water-level elevations are reported in feet above mean sea level (msl).
Depth-to-water elevations were measured on June 21-22, 2006 using an electronic water level indicator.
Depth-to-water measurements are reported in feet below the measuring point.
NS - Not Surveyed.
NM - Not measured.
*Measuring point is top of cement housing.
NA - Not applicable.

Table 8. Water-Level Measurements Collected During September 2006, General Motors Corporation, Moraine, Ohio.

Well	Measuring Point Elevation	Depth-to-Water (feet)	Water-Level Elevation
Upper Aquifer Wells			
W-1-N	739.02	30.87	708.15
W-2-N	731.68	23.98	707.70
W-3-N	733.66	26.04	707.62
W-4-N	731.63	23.97	707.66
HR-1	732.71	26.17	706.54
HR-2	734.75	27.01	707.74
HR-3	736.75	29.02	707.73
HR-4	742.60	34.50	708.10
HR-5	734.27	26.97	707.30
HR-6	732.66	25.90	706.76
HR-7	731.73	24.22	707.51
HR-8	743.42	35.10	708.32
HR-9	743.51	34.82	708.69
HR-11	743.33	34.75	708.58
HR-16	727.01	20.68	706.33
HR-17	726.43	19.90	706.53
W-1-S	729.29	22.75	706.54
W-2-S	726.64	20.88	705.76
W-3-S	729.17	23.37	705.80
W-4-S	727.92	21.88	706.04
GM-2	735.81	30.18	705.63
4S	731.36	26.04	705.32
GM-6	730.27	25.21	705.06
GM-8	735.17	29.91	705.26
GM-10	723.90	19.00	704.90
GM-16	725.30	20.25	705.05
GM-17	723.84	18.75	705.09
GM-18	723.80	18.77	705.03
GM-19S	730.92	24.88	706.04
EAST	730.98	24.73	706.25
WEST	731.08	24.95	706.13
WSU-17	726.18	21.00	705.18
WSU-18	733.52	28.26	705.26
WSU-19	726.62	21.15	705.47
WSU-22	726.49	NM	NA
WSU-23	724.90	19.48	705.42
WSU-24	724.82	19.48	705.34
TW-2	733.38	34.04	699.34
GM-21	725.00	19.32	705.68
GM-22	731.63	25.05	706.58
GM-23	731.07	23.51	707.56
GM-24	747.29	38.11	709.18
GM-25	746.17	38.40	707.77

Table 8. Water-Level Measurements Collected During September 2006, General Motors Corporation, Moraine, Ohio.

Well	Measuring Point Elevation	Depth-to-Water (feet)	Water-Level Elevation
GM-26	722.29	18.02	704.27
GM-27	730.57	22.81	707.76
GM-28	736.46	28.83	707.63
GM-29	731.37	24.35	707.02
GM-30	734.79	27.11	707.68
GM-31	732.13	25.59	706.54
GM-32	732.08	26.05	706.03
GM-33	729.77	23.45	706.32
GM-34	730.56	24.26	706.30
GM-35	731.27	25.54	705.73
GM-36	731.11	25.31	705.80
GM-37	730.05	23.92	706.13
GM-38	729.88	24.03	705.85
GM-43	729.00	NM	NA
GM-44	728.77	22.22	706.55
GM-45	729.75	22.55	707.20
GM-46	727.79	18.12	709.67
GM-47	726.75	21.41	705.34
GM-48	728.67	23.58	705.09
GM-49	727.88	23.60	704.28
GM-50	726.56	21.30	705.26
GM-51	728.30	23.76	704.54
GM-52	727.62	23.33	704.29
GM-53	730.35	24.71	705.64
GM-55	719.86	15.45	704.41
GM-56	719.52	15.16	704.36
GM-57	721.74	18.55	703.19
GM-59	732.25	25.03	707.22
GM-60	732.24	25.01	707.23
GM-62	722.11	17.34	704.77
GM-63	725.79	20.18	705.61
GM-64	725.95	20.34	705.61
ME-2	732.08	25.44	706.64
ME-3	731.73	25.21	706.52
ME-4	732.24	25.78	706.46
ME-6	732.68	26.23	706.45
Lower Aquifer Wells			
GM-1	735.74	30.32	705.42
GM-3	730.44	25.46	704.98
GM-4	731.46	26.46	705.00
GM-5	731.29	26.11	705.18
GM-7R	735.61	30.20	705.41
GM-9	724.07	19.25	704.82
GM-11	723.71	18.77	704.94

Table 8. Water-Level Measurements Collected During September 2006, General Motors Corporation, Moraine, Ohio.

Well	Measuring Point Elevation	Depth-to-Water (feet)	Water-Level Elevation
GM-13	723.82	19.09	704.73
GM-14	723.50	18.84	704.66
GM-15	725.23	20.70	704.53
GM-19D	730.73	24.64	706.09
GM-20D	727.26	21.60	705.66
GM-39	730.95	23.33	707.62
GM-40	727.04	28.90	698.14
GM-41	733.65	26.82	706.83
GM-42	729.16	23.22	705.94
GM-54	730.29	23.48	706.81
GM-58	735.46	28.55	706.91
GM-61	732.23	25.23	707.00
HR-10	742.81	34.11	708.70
HR-12	742.64	34.08	708.56
HR-13	735.03	27.32	707.71
HR-14	731.63	24.05	707.58
HR-15	733.74	26.25	707.49
M73C	716.55	11.97	704.58
MT69	722.71	17.95	704.76
MT576M	751.46	42.71	708.75
MT596M*	757.73	47.90	709.83
Production and Fire Wells			
11B	NS	OFF	NA
12A	742.35	ON	NA
31	734.05	26.70	707.35
34	733.46	26.45	707.01
39	732.07	NM	NA
A	739.00	NM	NA
FW-1A	739.89	32.19	707.70
FW-2	737.48	30.73	706.75
FW-3	739.26	32.12	707.14
FW-4	731.62	25.57	706.05
Stream Gauge			
SG1	747.64	39.31	708.33
SG2	709.95	1.55	708.40
SG3	718.45	7.00	711.45
SG4	714.78	6.10	708.68
SG5	711.10	3.00	708.10
SG6	723.21	14.90	708.31
SG7	731.55	14.50	717.05

Table 8. Water-Level Measurements Collected During September 2006, General Motors Corporation, Moraine, Ohio.

Well	Measuring Point Elevation	Depth-to-Water (feet)	Water-Level Elevation

Measuring point is to top of the PVC Casing.
Water-level elevations are reported in feet above mean sea level (msl).
Depth-to-water elevations were measured on September 12-13, 2006 using an electronic water level indicator.
Depth-to-water measurements are reported in feet below the measuring point.
NS - Not Surveyed.
NM - Not measured.
*Measuring point is top of cement housing.
NA - Not applicable.

Table 9. Summary of Precipitation Measurements Recorded by the National Weather Service, During 2006 - Dayton, Ohio.

Date	Actual Precipitation	Average Precipitation	Departure from Average
January	2.97	6.62[1]	3.65 below average
February	1.66	2.29[1]	0.63 above average
March	3.70	3.29	0.41 above average
April	4.42	4.03[1]	0.39 above average
May	3.67	4.17[1]	0.50 below average
June	3.64	4.21[1]	0.57 below average
July	5.32	3.75	1.57 above average
August	3.44	3.49	0.05 below average
September	5.09	2.65	2.44 above average
October	4.60	2.72	1.88 above average
November	3.17	3.30	0.13 below average
December	3.66	3.08	0.58 above average
2006 Total	**45.34**	**43.60**	**1.74 above average**

[1] value taken from 2005 due to missing data from 2006.
All precipitation measurements are reported in inches.
Information obtained from the NOAA Website (www.erh.noaa.gov on 01/26/07)

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Table 10. Vertical Gradients For Shallow/Deep Well Pairs During 2006, General Motors Corporation, Moraine, Ohio.

Upper/Lower Wells	Vertical Gradients February 27-28, 2006		Vertical Gradients June 21-22, 2006		Vertical Gradients In September 12-13, 2006	
	Direction	Gradient (ft/ft)	Direction	Gradient (ft/ft)	Direction	Gradient (ft/ft)
Upgradient						
HR-9/HR-10	D	-0.00017	D	-0.00018	U	0.00018
HR-11/HR-12	D	-0.00017	D	-0.00017	D	-0.00033
On-Site						
W-3-N/HR-15	D	-0.0029	D	-0.017	D	-0.0027
W-4-N/HR-14	D	-0.0023	D	-0.0059	D	-0.0026
HR-3/HR-13	U	0.0020	D	-0.0012	D	-0.00080
GM-8/GM-7R	U	0.0077	U	0.0050	U	0.0037
GM-16/GM-15	D	-0.011	D	-0.013	D	-0.012
GM-2/GM-1	D	-0.0020	D	-0.0058	D	-0.0047
GM-18/GM-13	D	-0.0071	D	-0.0089	D	-0.0067
GM-17/GM-11	D	-0.0028	D	-0.0048	D	-0.0030
GM-6/GM-3	D	-0.0013	D	-0.0031	D	-0.0015
4S/GM-5	D	-0.0023	D	-0.0051	D	-0.0030
Former Oil House Area						
GM-23/GM-27	U	0.005	D	-0.26*	U	0.013
GM-23/GM-39	U	0.00049	D	-0.0015	U	0.00073
Downgradient						
GM-10/GM-9	D	-0.0022	D	-0.0016	D	-0.0016
GM-26/MT-69	D	-0.0013	D	-0.0017	U	0.0050

D - Downward gradient (-).
U - Upward gradient (+).
*Outlier data, not included in discussion of the vertical data range.

Table 11. Summary of Groundwater Analytical Results from Reactive Zone 1 Wells, General Motors Corporation, Moraine, Ohio.

RZ-1		Sidegradient Well GM-29															
Constituents	**Units**	**9/1/99**	**2/22/00**	**5/26/00**	**9/21/00**	**3/20/01**	**6/26/01**	**11/13/01**	**12/12/01**	**6/13/02**	**9/25/02**	**5/22/03**	**9/24/03**	**9/15/04**	**10/17/05**	**9/28/06**	**12/1/06**
Volatile Organic Compounds																	
1,1,1-Trichloroethane	ug/L	37.8	36.0	32.5	24.5	27.0	23.8J	<50	19J	17	16J	< 50	18J	21 J	19 J	17 J	17 J
1,1-Dichloroethane	ug/L	4.3	4.1	6.3	16.6	10.8	6.3J	<50	<50	<50	<40	< 50	<33	< 50 U	18 J	15 J	15 J
1,1-Dichloroethene	ug/L	1.3	1.1	1.6	3.1	3.5	3.0J	<50	<50	<50	<40	< 50	<33	< 50 U	< 50 U	< 33 U	< 40 U
Benzene	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0UJ	<50	<50	<50	<40	< 50	<33	< 50 U	< 50 U	< 33 U	< 40 U
cis-1,2-Dichloroethene	ug/L	320	223	1,190J	2,871	2,170	2050J	1,800	1,800	1600	1300	950	1200	1200	1600	1300	1300
Ethylbenzene	ug/L	<1.0	1.4	<1.0	<1.0	<1.0	<1.0UJ	21J	<50	<50	<40	< 50	<33	< 50 U	< 50 U	< 33 U	< 40 U
Tetrachloroethene	ug/L	<20	38.7	24.6	20.0	24.4	24.8J	17J	22J	22	18J	47J	18J	20 J	15 J	15 J	7.8 J
Toluene	ug/L	<1.0	<1.0	<1.0	2.2	<1.0	<1.0UJ	<50	<50	<50	<40	< 50	<33	< 50 U	< 50 U	< 33 U	< 40 U
trans-1,2-Dichloroethene	ug/L	11.1	9.1	8.9	14.4	20.4	25.6J	26	24J	21	21	< 25	20	21 J	27 J	20 J	16 J
Trichloroethene	ug/L	878	758	649J	289	354	437J	270	320	380	310	280	390	440	390	310	220
Vinyl chloride	ug/L	3.8	1.0	1.7	788	362	276J	230	280	140	140	99	150	230	490	210	150
Xylenes	ug/L	<1.0	6.0	<1.0	<1.0	<1.0	<1.0UJ	52	<50	<50	<40	< 50	<33	< 50 U	< 100 U	< 67 U	< 80 U
Total VOCs	**ug/L**	**1,256.3**	**1,078.4**	**1,914.6**	**4,028.8**	**2,972.1**	**2,846.5**	**2,416**	**2,465**	**2,180**	**1,805**	**1,376**	**1,796**	**1,932**	**2,559**	**1,887**	**1,725.8**

ug/L - Micrograms per liter.
J - Value is estimated.
UJ - Constituent not detected above laboratory reporting limit. Reporting limit estimated.
< - Constituent not detected above laboratory reporting limit shown.
U - Constituent not detected.
Samples collected in September and October 1999 represent baseline conditions.
Carbon source introductions began in December 1999.

Table 11. Summary of Groundwater Analytical Results from Reactive Zone 1 Wells, General Motors Corporation, Moraine, Ohio.

RZ-1		Upgradient Well GM-23														
Constituents	**Units**	**9/2/99**	**2/21/00**	**5/31/00**	**9/20/00**	**3/20/01**	**6/26/01**	**11/12/01**	**12/12/01**	**6/13/02**	**9/26/02**	**5/22/03**	**9/23/03**	**9/14/04**	**10/17/05**	**9/28/06**
Volatile Organic Compounds																
1,1,1-Trichloroethane	ug/L	7.2	< 50	< 20	2.0	3.1	1.5	< 420	< 500	< 330	< 400	< 620 U	< 500 U	< 500 U	< 560 U	< 330 U
1,1-Dichloroethane	ug/L	32.5	< 50	12.8 J	16.3	17.9	3.7	< 420	< 500	< 330	< 400	< 620 U	< 500 U	< 500 U	< 560 U	< 330 U
1,1-Dichloroethene	ug/L	17.2	<50	6.6 J	5.1	15.9	16.3	< 420	< 500	< 330	< 400	< 620 U	< 500 U	< 500 U	< 560 U	< 330 U
Benzene	ug/L	1.9	< 50	< 20	< 1.0	1.4	< 1.0	< 420	< 500	< 330	< 400	< 620 U	< 500 U	< 500 U	< 560 U	< 330 U
cis-1,2-Dichloroethene	ug/L	7530	10400 D	4080 J	5620	9640	11000	8400	7200	9900	7700	6800	5800	4600	19000	11000
Ethylbenzene	ug/L	< 1.0	<50	< 20	< 1.0	<1.0	< 1.0	< 420	< 500	< 330	< 400	< 620 U	< 500 U	< 500 U	< 560 U	< 330 U
Tetrachloroethene	ug/L	6250	7280 J	6200 J	3470	2910	8600	15000	14000	8400	10000	12000	12000	6700	2300	370
Toluene	ug/L	<1.0	< 50	< 20	< 1.0	< 1.0	2.3	< 420	< 500	< 330	< 400	< 620 U	< 500 U	< 500 U	< 560 U	< 330 U
trans-1,2-Dichloroethene	ug/L	54.5	118 J	39.8 J	33.2	85.5	60.8	<210	< 250	<170	< 200	< 310 U	< 250 U	< 250 U	< 560 U	270 J
Trichloroethene	ug/L	1460	1350 D	1480 J	609	745	1780J	2200	2100	1900	1700	1500	1600	1100	490 J	95 J
Vinyl chloride	ug/L	2500	2420 J	140 J	801	765	68	1200	< 500	810	540	1700	690	870	2800	4100
Xylenes	ug/L	< 1.0	< 50	< 20	< 1.0	< 1.0	1.4	< 420	< 500	< 330	< 400	< 620 U	< 500 U	< 500 U	< 1100 U	< 670 U
Total VOCs	**ug/L**	**17,853.3**	**21,568**	**11,959.2**	**10,556.6**	**14,183.8**	**21,533.8**	**26,800**	**23,300**	**21,010**	**19,940**	**22,000**	**20,090**	**13,270**	**24,590**	**15,835**

ug/L - Micrograms per liter.
J - Value is estimated.
UJ - Constituent not detected above laboratory reporting limit. Reporting limit estimated.
< - Constituent not detected above laboratory reporting limit shown.
U - Constituent not detected.
Samples collected in September and October 1999 represent baseline conditions.
Carbon source introductions began in December 1999.

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Table 11. Summary of Groundwater Analytical Results from Reactive Zone 1 Wells, General Motors Corporation, Moraine, Ohio.

RZ-1		Downgradient Well GM-28															
Constituents	**Units**	**9/1/99**	**2/23/00**	**5/26/00**	**9/21/00**	**3/20/01**	**6/26/01**	**11/15/01**	**12/12/01**	**7/21/02**	**9/24/02**	**5/23/03**	**10/1/03**	**4/30/04**	**9/15/04**	**10/18/05**	**9/27/06**
Volatile Organic Compounds																	
1,1,1-Trichloroethane	ug/L	17.7	23.2	18.1	5.0	<1.0	<1.0	<10	<5.0UJ	<4.0	<1	< 1	<1.0	< 1	< 1 U	< 1.0 U	< 1 U
1,1-Dichloroethane	ug/L	3.3	4.2	11.8	9.9	<1.0	<1.0	<10	<5.0UJ	<4.0	2.7	4.2	3.3	3.5	3.3	4.0	4.2
1,1-Dichloroethene	ug/L	<1.0	<1.0	3.8	<1.0	<1.0	<1.0	<10	<5.0UJ	<4.0	<1	< 1	<1.0	< 1	< 1 U	< 1.0 U	< 1 U
Benzene	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<5.0UJ	<4.0	<1	< 1	<1.0	< 1	< 1 U	< 1.0 U	< 1 U
cis-1,2-Dichloroethene	ug/L	175	503	2,700	37.0	7.7	352	<5.0	2.2UJ	<2.0	1.1	0.66	0.58	0.45 J	0.41 J	0.32 J	0.26 J
Ethylbenzene	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<5.0UJ	<4.0	<1	< 1	0.28J	< 1	< 1 U	< 1.0 U	< 1 U
Tetrachloroethene	ug/L	316	88.4	30.2	2.3	2.8	<1.0	<10	<5.0UJ	<4.0	<1	0.95J	<1.0	< 1	0.88 J	< 1.0 U	< 1 U
Toluene	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10	< 1.8UJ	<4.0	<1.3	1	1.0	< 1	< 1 U	< 1.0 U	< 1 U
trans-1,2-Dichloroethene	ug/L	9.2	9.7	36.5	22.3	17.6	<1.0	11	11J	8.6	11	9.2	4.0	2.2	1.2	0.63 J	0.66 J
Trichloroethene	ug/L	768	833	14.8	1.6	1.8	<1.0	<10	<5.0UJ	<4.0	0.86J	3.1	1.6	1.6	1.4	0.66 J	0.43 J
Vinyl chloride	ug/L	3.2	<1.0	1.9	12.4	2.6	<1.0	<10	<5.0UJ	<4.0	<1	< 1	0.53J	< 1	0.44 J	1.1	0.42 J
Xylenes	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<5.0UJ	<4.0	<1.2	0.87J	1.6	< 1	< 1 U	< 2.0 U	< 2 U
Total VOCs	**ug/L**	**1,292.4**	**1,461.5**	**2,817.1**	**90.5**	**32.5**	**352**	**11**	**11**	**8.6**	**15.66**	**19.98**	**12.89**	**7.75**	**7.63**	**6.71**	**5.97**

ug/L - Micrograms per liter.
J - Value is estimated.
UJ - Constituent not detected above laboratory reporting limit. Reporting limit estimated.
< - Constituent not detected above laboratory reporting limit shown.
U - Constituent not detected.
Samples collected in September and October 1999 represent baseline conditions.
Carbon source introductions began in December 1999.

Table 12. Summary of Groundwater Analytical Results from Reactive Zone 2 Wells, General Motors Corporation, Moraine, Ohio.

RZ-2		Introduction Well ME-6													
Constituents	**Units**	**8/31/99**	**2/22/00**	**5/25/00**	**9/21/00**	**3/20/01**	**6/26/01**	**11/15/01**	**12/12/01**	**9/25/02**	**5/22/03**	**10/1/03**	**9/15/04**	**10/18/05**	**9/27/06**
Volatile Organic Compounds															
1,1,1-Trichloroethane	ug/L	2.9	<10	<5.0	<1.0	1.3	1.2	2.2	2.9J	<10	0.83J	13	4.1	2.2	1.4
1,1-Dichloroethane	ug/L	<1.0	<10	1.4J	<1.0	1.6	1.8	2.7	4.8	<10	1.7	7.2	6.3	7.0	6.3
1,1-Dichloroethene	ug/L	<1.0	<10	<5.0	<1.0	<1.0	<1.0	<2.0	<3.3	<10	< 1	<2.0	0.26 J	< 1.0 U	< 1.4 U
Benzene	ug/L	<1.0	<10	<5.0	<1.0	<1.0	<1.0	<2.0	<3.3	<10	< 1	0.46J	< 1 U	< 1.0 U	< 1.4 U
cis-1,2-Dichloroethene	ug/L	255	541	712	98.8	171	67.0	65	86	5.2	3.3	20	14	13	27
Ethylbenzene	ug/L	<1.0	<10	<5.0	<1.0	<1.0	<1.0	<2.0	<3.3	<10	< 1	0.54J	< 1 U	< 1.0 U	< 1.4 U
Tetrachloroethene	ug/L	213	18.3	16.2	6.7	34.0	<1.0	8.2	6.1	<10	< 1	12	5.3	9.8	13
Toluene	ug/L	<1.0	<10	<5.0	1.9	<1.0	2.1	0.42J	1.5J	6.6J	1.8	3.4	< 1 U	< 1.0 U	< 1.4 U
trans-1,2-Dichloroethene	ug/L	<1.0	<10	6.1	2.5	4.3	1.8	1.8	2.0	<5	< 0.5	<1.0	0.56	0.93 J	1.3 J
Trichloroethene	ug/L	474	39.0	28.0	19.0	66.0	4.8	23	19	<10	0.69J	31	9.2	25	32
Vinyl chloride	ug/L	<1.0	<10	10.8	6.1	27.7	13.3	13	22	<10	1.8	2.9	2.4	5.6	11
Xylenes	ug/L	<1.0	<10	<5.0	<1.0	<1.0	2.9	<2.0	<3.3	<10	0.93J	3.2	< 1 U	< 2.0 U	< 2.9 U
Total VOCs	**ug/L**	**944.9**	**598.3**	**774.5**	**135**	**305.9**	**94.9**	**116.32**	**144.3**	**11.8**	**11.05**	**93.7**	**42.12**	**63.53**	**92**

ug/L - Micrograms per liter.
J - Value is estimated.
UJ - Constituent not detected above laboratory reporting limit. Reporting limit estimated.
< - Constituent not detected above laboratory reporting limit shown.
U - Constituent not detected.
Samples collected in September and October 1999 represent baseline conditions.
Carbon source introductions began in December 1999.

Table 12. Summary of Groundwater Analytical Results from Reactive Zone 2 Wells, General Motors Corporation, Moraine, Ohio.

RZ-2		Introduction Well ME-3												
Constituents	**Units**	**8/31/99**	**2/22/00**	**5/25/00**	**9/21/00**	**11/15/01**	**12/12/01**	**7/21/02**	**9/24/02**	**5/21/03**	**10/1/03**	**9/15/04**	**10/18/05**	**9/27/06**
Volatile Organic Compounds														
1,1,1-Trichloroethane	ug/L	42.5	16.0	4.8	6.4	1.6	1.9	<40	<2.5	< 1	0.31J	0.53 J	1.6	1.1
1,1-Dichloroethane	ug/L	6.1	12.4	4.7	3.4	5.9	5.6	<40	<2.5	19	24	18	15	8.5
1,1-Dichloroethene	ug/L	<1.0	<10	<1.0	<1.0	<1.0	<1.0	<40	<2.5	< 1	<1.0	< 1 U	< 1.0 U	< 1 U
Benzene	ug/L	<1.0	<10	<1.0	<1.0	<1.0	<1.0	<40	<2.5	< 1	0.60J	< 1 U	< 1.0 U	< 1 U
cis-1,2-Dichloroethene	ug/L	5.7	105	100	2.9	16	22	<20	<1.2	1.3	0.96	2.2	1.1	3.5
Ethylbenzene	ug/L	<1.0	<10	<1.0	<1.0	<1.0	<1.0	<40	<2.5	< 1	0.52J	< 1 U	< 1.0 U	< 1 U
Tetrachloroethene	ug/L	57.9	<10	<1.0	<1.0	1.3	3.4	<40	<2.5	< 1	<1.0	0.21 J	< 1.0 U	1.9
Toluene	ug/L	<1.0	<10	<1.0	1.4	0.34J	0.19J	<40	<2.5	< 1	2.8	< 1 U	< 1.0 U	< 1 U
trans-1,2-Dichloroethene	ug/L	<1.0	<10	7.5	2.9	2.7	2.8	<20	<1.2	< 0.5	<0.50	< 0.5 U	< 1.0 U	0.34 J
Trichloroethene	ug/L	47.5	<10	4.3	<1.0	3.8	9.7	<40	<2.5	1.2	1.5	1.5	1.9	2.4
Vinyl chloride	ug/L	<1.0	<10	54.7	2.1	7.3	11	<40	<2.5	0.36J	<1.0	1.1	1.6	2.2
Xylenes	ug/L	<1.0	<10	<1.0	<1.0	<1.0	<1.0	<40	<2.5	< 1	2.8	< 1 U	< 2.0 U	< 2 U
Total VOCs	**ug/L**	**159.7**	**133.4**	**176**	**19.1**	**38.94**	**56.59**	**0**	**0**	**21.86**	**33.49**	**23.54**	**21.2**	**19.94**

ug/L - Micrograms per liter.
J - Value is estimated.
UJ - Constituent not detected above laboratory reporting limit. Reporting limit estimated.
< - Constituent not detected above laboratory reporting limit shown.
U - Constituent not detected.
Samples collected in September and October 1999 represent baseline conditions.
Carbon source introductions began in December 1999.

Table 12. Summary of Groundwater Analytical Results from Reactive Zone 2 Wells, General Motors Corporation, Moraine, Ohio.

RZ-2		Below Introduction Zone									
						GM-31					
Constituents	Units	9/1/99	2/23/00	5/31/00	9/21/00	11/15/01	9/24/02	10/1/03	9/15/04	10/18/05	9/27/06
Volatile Organic Compounds											
1,1,1-Trichloroethane	ug/L	<1.0	<1.0	<1.0	<1.0	<4.0	<6	<5.0	1.4 J	3.4	2.3 J
1,1-Dichloroethane	ug/L	1.3	1.4	1.8	1.1	3.1J	5.9J	6.0	4 J	6.2	5.1
1,1-Dichloroethene	ug/L	<1.0	<1.0	<1.0	<1.0	<4.0	<6	<5.0	< 5 U	0.42 J	< 4 U
Benzene	ug/L	<1.0	<1.0	<1.0	<1.0	<4.0	<6	<5.0	< 5 U	< 2.0 U	< 4 U
cis-1,2-Dichloroethene	ug/L	7.80	27.8	48.1	40.2	120	200	170	120	120	110
Ethylbenzene	ug/L	<1.0	<1.0	<1.0	<1.0	<4.0	<6	<5.0	< 5 U	< 2.0 U	< 4 U
Tetrachloroethene	ug/L	1.3	<1.0	<1.0	<1.0	<4.0	<6	<5.0	2.5 J	< 2.0 U	< 4 U
Toluene	ug/L	<1.0	<1.0	1.5	<1.0	<4.0	<6	1.3J	< 5 U	< 2.0 U	< 4 U
trans-1,2-Dichloroethene	ug/L	<1.0	<1.0	<1.0	<1.0	1.8J	3.5	3.5	2.7	3.7	2.9 J
Trichloroethene	ug/L	27.2	13.6	8.4	8.5	11	10	28	29	67	65
Vinyl chloride	ug/L	<1.0	<1.0	<1.0	<1.0	7.4	19	10	2.4 J	3.1	1.2 J
Xylenes	ug/L	<1.0	1.1	1.6	<1.0	<4.0	<6	<5.0	< 5 U	< 4.0 U	< 8 U
Total VOCs	**ug/L**	**37.6**	**43.9**	**61.4**	**49.8**	**143.3**	**238.4**	**218.8**	**162**	**203.82**	**186.5**

ug/L - Micrograms per liter.
J - Value is estimated.
UJ - Constituent not detected above laboratory reporting limit. Reporting limit estimated.
< - Constituent not detected above laboratory reporting limit shown.
U - Constituent not detected.
Samples collected in September and October 1999 represent baseline conditions.
Carbon source introductions began in December 1999.

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Table 13. Summary of Groundwater Analytical Results from Reactive Zone 3 West Wells, General Motors Corporation, Moraine, Ohio.

RZ-3 West		Upgradient Well EAST														
Constituents	**Units**	**9/21/99**	**2/23/00**	**5/25/00**	**9/22/00**	**3/19/01**	**6/25/01**	**11/12/01**	**12/11/01**	**6/12/02**	**9/23/02**	**5/21/03**	**9/25/03**	**9/13/04**	**10/18/05**	**9/21/06**
Volatile Organic Compounds																
1,1,1-Trichloroethane	ug/L	21.0	20.6	20.5	22.2	19.3	16.7	13	12	14	10	6.2	7.1	5.7	5.9	10
1,1-Dichloroethane	ug/L	5.4	7.3	7.7	7.7	5.9	5.5	6.2	5.3	6.0	3.9	1.9	2.3	0.72 J	3.0	3.2
1,1-Dichloroethene	ug/L	<1.0	<1.0	1.02J	1.2	1.2	<1.0	0.90J	<3.3	1.3	0.73J	< 1.4	<2.0	0.34 J	< 1.0 U	0.59 J
Benzene	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<3.3	<3.3	<2.5	<2	< 1.4	<2.0	< 1 U	< 1.0 U	< 1.4 U
cis-1,2-Dichloroethene	ug/L	9.1	24.0	32.0	77.3	117	80.1	51	51	33	8.8	4.5	4.3	1.6	3.1	4.1
Ethylbenzene	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<3.3	<3.3	<2.5	<2	< 1.4	<2.0	< 1	< 1.0 U	< 1.4 U
Tetrachloroethene	ug/L	61.0	77.1	54.6	55.8	49.9	59.3	56	49	37	49	42	47	40	47	41
Toluene	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<3.3	<3.3	<2.5	<2	< 1.4	<2.0	< 1 U	< 1.0 U	< 1.4 U
trans-1,2-Dichloroethene	ug/L	<1.0	2.0	1.5	1.8	5.8	3.3	2.7	2.4	1.3	<1	< 0.72	<1.0	< 0.5 U	< 1.0 U	< 1.4 U
Trichloroethene	ug/L	56.1	90.1	81.3	97.2	105	117	92	94	75	46	29	35	23	23	29
Vinyl chloride	ug/L	<1.0	5.3	1.2	3.0	4.8	<1.0	1.5J	0.66J	0.48	<2	< 1.4	<2.0	< 1 U	1.2	< 1.4 U
Xylenes	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<3.3	<3.3	<2.5	<2	< 1.4	<2.0	< 1 U	< 2.0 U	< 2.9 U
Total VOCs	**ug/L**	**152.6**	**226.4**	**199.82**	**266.2**	**308.9**	**281.9**	**223.3**	**214.36**	**168.08**	**118.43**	**83.6**	**95.7**	**71.36**	**83.2**	**87.89**

ug/L - Micrograms per liter.
J - Value is estimated.
UJ - Constituent not detected above laboratory reporting limit. Reporting limit estimated.
< - Constituent not detected above laboratory reporting limit shown.
U - Constituent not detected.
Samples collected in September and October 1999 represent baseline conditions.
Carbon source introductions began in December 1999.

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Table 13. Summary of Groundwater Analytical Results from Reactive Zone 3 West Wells, General Motors Corporation, Moraine, Ohio.

RZ-3 West		Downgradient Well GM-32															
Constituents	**Units**	**9/22/99**	**2/28/00**	**5/30/00**	**9/25/00**	**3/19/01**	**6/25/01**	**11/12/01**	**12/11/01**	**6/12/02**	**9/20/02**	**5/23/03**	**10/1/03**	**9/14/04**	**10/19/05**	**9/19/06**	**12/1/06**
Volatile Organic Compounds																	
1,1,1-Trichloroethane	ug/L	<1.0	<10	<100	<1.0	<50	9.2	<5.0	<100	<20	<10	< 1 U	<2.0	< 10 U	< 10 U	< 10 U	< 3.3 U
1,1-Dichloroethane	ug/L	3.3	101	46.0J	35.9	<50	3.1	6.2	<100	12	9.7J	5.5	5.5	3 J	4.9 J	3.7 J	4.2
1,1-Dichloroethene	ug/L	<1.0	<10	<100	<1.0	<50	<1.0	<5.0	<100	<20	<10	< 1 U	<2.0	< 10 U	< 10 U	< 10 U	< 3.3 U
Benzene	ug/L	<1.0	<10	<100	<1.0	<50	<1.0	4.3J	<100	4.0	<10	1.6	1.5J	< 10 U	< 10 U	< 10 U	1.4 J
cis-1,2-Dichloroethene	ug/L	2.6	<10	<100	<1.0	<50	32.0	<2.5	<50	<10	<5	0.66	<1.0	< 5 U	< 10 U	< 10 U	< 3.3 U
Ethylbenzene	ug/L	<1.0	<10	<100	<1.0	<50	<1.0	0.79J	<100	<20	<10	0.65J	0.73J	< 10 U	< 10 U	< 10 U	< 3.3 U
Tetrachloroethene	ug/L	1.2	<10	<100	<1.0	<50	37.6	<5.0	<100	<20	<10	< 1 U	<2.0	< 10 U	< 10 U	< 10 U	< 3.3 U
Toluene	ug/L	1.0	20.6	<100	10.4	<50	<1.0	12	<100	4.9	<10	2.2	2.3	< 10 U	< 10 U	< 10 U	0.74 J
trans-1,2-Dichloroethene	ug/L	4.2	111	41.0J	20.3	<50	2.5	2.9	<50	3.0	<5	1.6	1.0	< 5 U	< 10 U	< 10 U	0.91 J
Trichloroethene	ug/L	3.2	<10	<100	<1.0	<50	107	<5.0	<100	<20	<10	< 1 U	<2.0	< 10 U	< 10 U	< 10 U	< 3.3 U
Vinyl chloride	ug/L	3.0	<10	<100	<1.0	<50	<1.0	1.1J	<100	3.0	<10	< 1 U	<2.0	< 10 U	< 10 U	< 10 U	< 3.3 U
Xylenes	ug/L	<1.0	<10	<100	<1.0	<50	<1.0	3.0J	<100	<20	<10	2.1	3.6	< 10 U	< 20 U	< 20 U	< 6.7 U
Total VOCs	**ug/L**	**18.5**	**232.6**	**87**	**66.6**	**0**	**191.4**	**30.29**	**0**	**26.9**	**9.7**	**14.31**	**14.63**	**3**	**4.9**	**3.7**	**7.25**

ug/L - Micrograms per liter.
J - Value is estimated.
UJ - Constituent not detected above laboratory reporting limit. Reporting limit estimated.
< - Constituent not detected above laboratory reporting limit shown.
U - Constituent not detected.
Samples collected in September and October 1999 represent baseline conditions.
Carbon source introductions began in December 1999.

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Table 13. Summary of Groundwater Analytical Results from Reactive Zone 3 West Wells, General Motors Corporation, Moraine, Ohio.

RZ-3 West		Downgradient Well GM-8										Downgradient Well GM-6								
Constituents	**Units**	**3/6/98**	**9/20/99**	**9/26/00**	**11/9/01**	**9/20/02**	**10/1/03**	**9/14/04**	**10/19/05**	**9/19/06**	**12/1/06**	**3/6/98**	**9/20/99**	**9/26/00**	**11/9/01**	**9/20/02**	**10/2/03**	**9/14/04**	**10/19/05**	**9/19/06**
Volatile Organic Compounds																				
1,1,1-Trichloroethane	ug/L	6.7	1.9	<1.0	0.40J	<2.0	<2.0	< 1 U	< 1.0 U	< 5 U	< 2 U	36.2	24.6	12.1	3.9	1.4J	0.19J	< 1 U	< 1.0 U	< 1 U
1,1-Dichloroethane	ug/L	49.3	30.2	36.5	40	63	48	15	16	18	21	35.3	33.2	13.0	14	60	20	18	21	16
1,1-Dichloroethene	ug/L	1.0	<1.0	<1.0	< 1.0	<2.0	<2.0	< 1 U	< 1.0 U	< 5 U	< 2 U	<1.0	1.2	<1.0	< 2.0	<2.0	<1.0	< 1 U	< 1.0 U	< 1 U
Benzene	ug/L	2.3	3.4	1.1	0.78J	5.5	5.4	4.2	3.5	2.1 J	2.4	<1.0	<1.0	<1.0	< 2.0	2.2	1.0	1.7	0.49 J	< 1 U
cis-1,2-Dichloroethene	ug/L	56.1	26.2	1.5	2.0	5.5	<1.0	< 0.5	0.24 J	2.1 J	1.3 J	82.4	52.9	41.0	8.2	43	13	10	20	18
Ethylbenzene	ug/L	28.9	20.7	12.5	0.40J	7.5	11	19	29	< 5 U	< 2 U	<1.0	<10.0	<1.0	< 2.0	<2.0	0.22J	< 1 U	< 1.0 U	< 1 U
Tetrachloroethene	ug/L	20.0	14.8	<1.0	< 1.0	<2.0	<2.0	< 1 U	< 1.0 U	< 5 U	< 2 U	94.0	81.4	51.5	14	14	11	2.6	0.34 J	< 1 U
Toluene	ug/L	<1.0	<1.0	<1.0	< 1.0	1.8J	1.2J	< 1 U	0.39 J	< 5 U	< 2 U	<1.0	<1.0	<1.0	< 2.0	<2.0	0.83J	< 1 U	< 1.0 U	< 1 U
trans-1,2-Dichloroethene	ug/L	10.1	12.0	5.4	3.6	9	4.4	1.1	0.99 J	1 J	1 J	2.4	2.0	2.2	1.8	8.6	2.5	1.9	2.1	1.6
Trichloroethene	ug/L	95.2	30.4	6.6	4.4	<2.0	<2.0	< 1 U	< 1.0 U	< 5 U	< 2 U	119	78.2	56.6	48	33	23	5.7	1.4	0.35 J
Vinyl chloride	ug/L	10.1	8.4	2.4	1.9	5.8	<2.0	0.48 J	0.73 J	3.2 J	2.3	2.3	1.6	3.7	1.9J	12	3.3	3	11	7.3
Xylenes	ug/L	10.3	2.3	1.9	0.39J	1.5J	2.0	1.1	< 2.0 U	< 10 U	< 4 U	<1.0	<10	<1.0	< 2.0	< 2.0	1.0	< 1 U	< 2.0 U	< 2 U
Total VOCs	**ug/L**	**290**	**150.3**	**67.9**	**53.87**	**99.6**	**72**	**40.88**	**50.85**	**26.4**	**28**	**371.6**	**275.1**	**180.1**	**91.8**	**174.2**	**76.04**	**42.9**	**56.33**	**43.25**

ug/L - Micrograms per liter.
J - Value is estimated.
UJ - Constituent not detected above laboratory reporting limit. Reporting limit estimated.
< - Constituent not detected above laboratory reporting limit shown.
U - Constituent not detected.
Samples collected in September and October 1999 represent baseline conditions.
Carbon source introductions began in December 1999.

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Table 14. Summary of Groundwater Analytical Results from Reactive Zone 3 East Wells, General Motors Corporation, Moraine, Ohio.

RZ-3 East		Upgradient Well GM-22														
Constituents	**Units**	**9/1/99**	**2/23/00**	**5/25/00**	**9/21/00**	**3/20/01**	**6/26/01**	**11/13/01**	**12/12/01**	**6/13/02**	**9/25/02**	**5/22/03**	**9/24/03**	**9/14/04**	**10/17/05**	**9/20/06**
Volatile Organic Compounds																
1,1,1-Trichloroethane	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	4.4	0.63J	0.47	0.93J	0.61J	1.2	1.7	0.96 J	0.47 J
1,1-Dichloroethane	ug/L	<1.0	2.2	2.8	2.4	3.8	4.7	6.8	6.6	4.1	<2	1.2	1.0	2.1	1.0	1.1
1,1-Dichloroethene	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	0.58J	0.32J	<1.0	<2	< 1	<1.0	< 1 U	< 1.0 U	< 1 U
Benzene	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2	< 1	<1.0	< 1 U	< 1.0 U	< 1 U
cis-1,2-Dichloroethene	ug/L	<1.0	3.1	4.0	1.9	3.5	5.1	8.5	7.8	3.6	<1	0.46J	0.45J	0.9	0.36 J	0.28 J
Ethylbenzene	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2	< 1	<1.0	< 1 U	< 1.0 U	< 1 U
Tetrachloroethene	ug/L	3.6	2.8	3.0	1.6	2.2	3.2	4.9	2.9	1.9	2.3	2.5	2.9	2.9	3.6	3.2
Toluene	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	1.1	<1.0	0.32J	<1.0	<2	0.49J	<1.0	< 1 U	< 1.0 U	< 1 U
trans-1,2-Dichloroethene	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	0.17J	<0.50	<0.50	<1	< 0.5	<0.50	< 0.5 U	< 1.0 U	< 1 U
Trichloroethene	ug/L	4.0	2.5	3.6	<1.0	1.6	2.8	7.5	2.3	2.1	7.6	6	7.6	10	4.7	3
Vinyl chloride	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	0.60J	0.85J	0.38	<2	< 1	<1.0	< 1 U	< 1.0 U	< 1 U
Xylenes	ug/L	<1.0	1.2	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2	< 1	<1.0	< 1 U	< 2.0 U	< 2 U
Total VOCs	**ug/L**	**7.6**	**11.8**	**13.4**	**5.9**	**11.1**	**16.9**	**33.45**	**21.72**	**12.55**	**10.83**	**11.26**	**13.15**	**17.6**	**10.62**	**8.05**

ug/L - Micrograms per liter.
J - Value is estimated.
UJ - Constituent not detected above laboratory reporting limit. Reporting limit estimated.
< - Constituent not detected above laboratory reporting limit shown.
U - Constituent not detected.
Samples collected in September and October 1999 represent baseline conditions.
Carbon source introductions began in December 1999.

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Table 14. Summary of Groundwater Analytical Results from Reactive Zone 3 East Wells, General Motors Corporation, Moraine, Ohio.

RZ-3 East		Downgradient Well GM-21															
Constituents	**Units**	**9/22/99**	**2/23/00**	**5/26/00**	**9/22/00**	**3/19/01**	**6/25/01**	**11/13/01**	**12/11/01**	**6/12/02**	**9/25/02**	**5/22/03**	**9/24/03**	**9/14/04**	**10/17/05**	**9/20/06**	**12/1/06**
Volatile Organic Compounds																	
1,1,1-Trichloroethane	ug/L	53.1	15.4	27.9	15.7	7.0	7.7	6.9	1.2	23	31	18	31	26	4.3	12	4.7
1,1-Dichloroethane	ug/L	9.0	5.8	6.8	5.6	5.1	4.1	3.8J	0.71J	5.4	5J	4.1J	6.9J	4.2 J	3.4	8.6	6.4
1,1-Dichloroethene	ug/L	3.9	1.6	2.4	1.6	1.2	<1.0	<5.0	<1.0	3.6	2.6J	< 6.7	2.0J	3.1 J	< 1.0 U	0.19 J	0.2 J
Benzene	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<6.0	<6.7	< 6.7	<8.0	< 9.1 U	< 1.0 U	< 1 U	< 1 U
cis-1,2-Dichloroethene	ug/L	66.4	35.9	47.8	38.7	39.5	37.8	39	6.5	48	43	130	100	56	20	14	8.2
Ethylbenzene	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<6.0	<6.7	< 6.7	<8.0	< 9.1 U	< 1.0 U	< 1 U	< 1 U
Tetrachloroethene	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<6.0	<6.7	< 6.7	<8.0	< 9.1 U	< 1.0 U	< 1 U	< 1 U
Toluene	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<6.0	<6.7	< 6.7	<8.0	< 9.1 U	< 1.0 U	< 1 U	< 1 U
trans-1,2-Dichloroethene	ug/L	7.8	9.3	7.4	12.9	16.4	15.7	15	2.8	8.3	5.1	2.2J	2.9J	7.9	22	4.3	4.8
Trichloroethene	ug/L	28.7	283	311	189	169	158	160	28	210	230	79	200	180	1.8	5.9	0.8 J
Vinyl chloride	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<6.0	<6.7	< 6.7	<8.0	< 9.1 U	13	9.3	4.7
Xylenes	ug/L	<1.0	2.3	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<6.0	<6.7	< 6.7	<8.0	< 9.1 U	< 2.0 U	< 2 U	< 2 U
Total VOCs	**ug/L**	**168.9**	**353.3**	**403.3**	**263.5**	**238.2**	**223.3**	**224.7**	**39.21**	**298.3**	**316.7**	**233.3**	**342.8**	**277.2**	**64.5**	**54.29**	**29.8**

ug/L - Micrograms per liter.
J - Value is estimated.
UJ - Constituent not detected above laboratory reporting limit. Reporting limit estimated.
< - Constituent not detected above laboratory reporting limit shown.
U - Constituent not detected.
Samples collected in September and October 1999 represent baseline conditions.
Carbon source introductions began in December 1999.

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Table 15. Summary of Groundwater Analytical Results from Reactive Zone 4 West Wells, General Motors Corporation, Moraine, Ohio.

RZ-4 West		Sidegradient Well W-4-S									Downgradient Well GM-63		Downgradient Well GM-64	
Constituents	**Units**	**9/23/99**	**9/28/00**	**11/08/01**	**9/18/02**	**9/26/03**	**9/17/04**	**10/19/05**	**9/19/06**	**12/1/06**	**9/14/06**	**12/1/06**	**9/14/06**	**12/1/06**
Volatile Organic Compounds														
1,1,1-Trichloroethane	ug/L	3.3	3.0	2.9	2.3	2	2.3	2.4	1.7	1.7	2.3 J	2.3 J	1.8 J	2.1 J
1,1-Dichloroethane	ug/L	1.2	1.0	1.1	0.87J	0.92 J	1.2	1.4	1.3	1.2	1.9 J	1.9 J	1.8 J	2.1 J
1,1-Dichloroethene	ug/L	<1.0	<1.0	< 1.0	< 1.0	< 1 U	< 1 U	< 1.0 U	< 1 U	< 1 U	< 5 U	< 4 U	< 2.5 U	< 2.5 U
Benzene	ug/L	<1.0	<1.0	< 1.0	< 1.0	< 1 U	< 1 U	< 1.0 U	< 1 U	< 1 U	< 5 U	< 4 U	< 2.5 U	< 2.5 U
cis-1,2-Dichloroethene	ug/L	4.4	4.0	3.3	3.6	3.6	4.4	4.3	4.3	4.3	5.6	8.8	16	42
Ethylbenzene	ug/L	<1.0	<1.0	< 1.0	< 1.0	< 1 U	< 1 U	< 1.0 U	< 1 U	< 1 U	< 5 U	< 4 U	< 2.5 U	< 2.5 U
Tetrachloroethene	ug/L	30.5J	15.4	13	17	24	18	20	18	18	160	140	77	85
Toluene	ug/L	<1.0	<1.0	< 1.0	< 1.0	0.25 J	< 1 U	< 1.0 U	< 1 U	< 1 U	< 5 U	< 4 U	< 2.5 U	< 2.5 U
trans-1,2-Dichloroethene	ug/L	<1.0	<1.0	0.43J	0.60	0.78	0.97	1.1	1	0.97 J	1.4 J	1.3 J	1.6 J	2 J
Trichloroethene	ug/L	14.7J	11.3	8.9B	9.8	13	13	13	12	11	120	100	34	35
Vinyl chloride	ug/L	<1.0	<1.0	<1.0	<1.0	< 1 U	< 1 U	< 1.0 U	< 1 U	< 1 U	< 5 U	< 4 U	< 2.5 U	< 2.5 U
Xylenes	ug/L	<1.0	<1.0	<1.0	<1.0	< 1 U	< 1 U	< 2.0 U	< 2 U	< 2 U	< 10 U	< 8 U	< 5 U	< 5 U
Total VOCs	**ug/L**	**54.1**	**34.7**	**29.63**	**34.17**	**44.55**	**39.87**	**42.2**	**38.3**	**37.17**	**291.2**	**254.3**	**132.2**	**168.2**

ug/L - Micrograms per liter.
J - Value is estimated.
UJ - Constituent not detected above laboratory reporting limit. Reporting limit estimated.
< - Constituent not detected above laboratory reporting limit shown.
U - Constituent not detected.
Carbon source introductions began in August 2006.

Table 16. Summary of Groundwater Analytical Results from Reactive Zone 4 East Wells, General Motors Corporation, Moraine, Ohio.

RZ-4 East		Upgradient Well WEST			Downgradient Well GM-19S													
Constituents	**Units**	**9/21/99**	**2/23/00**	**5/25/00**	**9/20/99**	**5/24/00**	**9/22/00**	**3/19/01**	**6/25/01**	**11/12/01**	**6/12/02**	**9/26/02**	**5/21/03**	**9/25/03**	**9/13/04**	**10/18/05**	**9/21/06**	**12/1/06**
Volatile Organic Compounds																		
1,1,1-Trichloroethane	ug/L	24.8	25.1	27.4	16.0	17.9	14.5	11.9	9.6	7.6	7.2	6.3	12	13	14	13	9.7 J	9.1 J
1,1-Dichloroethane	ug/L	25.6	24.5	32.5	7.7	7.0	4.4	4.1	2.9	2.9J	3.7	6.3	8.4	8.3	8.1	9.0	7 J	8.2 J
1,1-Dichloroethene	ug/L	<1.0	<1.0	<1.0	1.0	1.1	<1.0	<1.0	<1.0	<3.3	0.98	<4	< 4	1.6J	1.9 J	1.2 J	< 22 U	< 18 U
Benzene	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<3.3	0.62	<4	< 4	<5.0	< 4 U	< 1.7 U	< 22 U	< 18 U
cis-1,2-Dichloroethene	ug/L	125	34.5	29.0	34.6	42.9	37.6	38.2	31.5	26	28	39	81	89	61	29	660	560
Ethylbenzene	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<3.3	<3.3	<4	< 4	<5.0	< 4 U	< 1.7 U	< 22 U	< 18 U
Tetrachloroethene	ug/L	41.3	53.9	37.7	46.0	57.1	68.0	67.6	71.7	64	60	52	62	62	71	95	9.1 J	27
Toluene	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<3.3	<3.3	<4	< 4	<5.0	< 4 U	< 1.7 U	< 22 U	< 18 U
trans-1,2-Dichloroethene	ug/L	<1.0	1.7	1.3	2.3	2.7	2.6	3.0	2.4	2.0	2.3	2.7	2.5	2.9	2.4	1.0 J	10 J	9 J
Trichloroethene	ug/L	37.3	108	103.0	71.1	104	104	107	121	97	110	110	120	140	120	140	11 J	20
Vinyl chloride	ug/L	<1.0	<1.0	<1.0	<1.0	1.4	<1.0	<1.0	<1.0	<3.3	0.70	5.2	< 4	<5.0	< 4 U	1.8	< 22 U	< 18 U
Xylenes	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<3.3	<3.3	<4	< 4	<5.0	< 4 U	< 3.3 U	< 44 U	< 36 U
Total VOCs	**ug/L**	**254**	**247.7**	**230.9**	**178.7**	**234.1**	**231.1**	**231.8**	**239.1**	**199.5**	**213.5**	**221.5**	**285.9**	**316.8**	**278.4**	**290**	**706.8**	**633.3**

ug/L - Micrograms per liter.
J - Value is estimated.
JJ - Constituent not detected above laboratory reporting limit. Reporting limit estimated.
< - Constituent not detected above laboratory reporting limit shown.
U - Constituent not detected.
Samples collected in September and October 1999 represent baseline conditions.
Carbon source introductions began in August 2006.

Table 17. Bioattenuation Parameter Results for Groundwater Samples Collected in Reactive Zone 1, General Motors Corporation, Moraine, Ohio.

RZ-1		Sidegradient Well GM-29															
Constituents	**Units**	**9/1/99**	**2/22/00**	**5/26/00**	**9/21/00**	**3/20/01**	**6/26/01**	**11/13/01**	**12/12/01**	**6/13/02**	**9/25/02**	**5/22/03**	**9/24/03**	**9/15/04**	**10/17/05**	**9/28/06**	**12/1/06**
Inorganics & TOC																	
Nitrate	mg/l	0	0	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrite	mg/l	0	0	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrogen, Ammonia	mg/l	<0.30	<0.30	<0.30	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Manganese (Total)	mg/l	0.552	0.136	0.35	0.248	0.203	0.136	0.17B	0.17	1.5B	0.18B	0.67J	0.20J	0.17	0.18	1.3	NA
Manganese (Dissolved)	mg/l	0.13	0.101	0.177	0.125	0.116	0.128	0.17B	0.15	0.13B	0.16B	0.15J	0.21J	0.15	0.14	0.12	NA
Iron (Total)	mg/l	18	1.43	10.1	8.48	5.84	2.52	3.4	3.8	47.8B	3.8	28.6	4.9	3.2	4.6	< 0.1 U	NA
Iron (Dissolved)	mg/l	0.24	0.13	2.78	3.09	<0.10	2.03	3.3	2.9	2.2B	2.8	2.4	3.6	2.7	3.7	2.9	NA
Iron (Ferrous)	mg/l	0.02	0	2.2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Sulfate	mg/l	90	126	31	29	31	37	65	48	63	76	91J	52	14 J	51	70	NA
Sulfide	mg/l	<4	<1	<1	<1	<1.0	<1	1.3	<1.0	<1.0	<1.0	0.54B	1.6	< 1 U	< 1.0 U	< 1 U	NA
Total Organic Carbon	mg/l	18	11	22	<1	7.57	7.3	10	10	8	8	7	9	9	11	13	12
Chloride	mg/l	254	426	508	373	337	262	600B	460	490	490	490	560J	540	370	380	NA
Permanent Gases																	
Carbon Dioxide	mg/l	46.52	49.87	44.05	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Oxygen	mg/l	1.02	0.66	1.41	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrogen	mg/l	20.29	18.7	15.61	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methane	mg/l	0.01152	0.007699	0.00017	1.62	1.30	1.5	0.610	1.2	0.56	1.1	0.6	1.5	3.8	13	10	15
Carbon Monoxide	mg/l	<0.40	<0.40	<0.40	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Light Hydrocarbon Scan																	
Ethane	ng/l	5641	1861	751	639	460	17000	20000	28000	14000	16000	7400	9900	13000	170000	350000	380000
Ethene	ng/l	9769	1275	12098	441796	160000	130000	230000	180000	48000	140000	150000	200000	1700000	1600000 J	750000	760000
Field Parameters																	
pH	S.U.	6.99	7.02	6.86	7.24	7.31	7.20	7.47	7.57	7.14	7.22	6.32	6.88	6.85	6.80	6.94	6.92
Specific Conductivity	umhos/cm	1502	3044	2388	1942	1733	1291	2703	2860	1977	2354	2303	2278	2580	2200	2170	2860
Dissolved Oxygen	mg/l	0.35	0.51	0.45	3.44	8.20	0.40	0.22	0.01	3.57	1.40	1.38	0.13	0.04	0	0.29	4.68
Redox Potential	mV	-526.6	19.6	-105.4	-35.0	-158.2	-166.4	-129.7	-168	-122.9	-91.3	-157.8	-118.6	-134	-153	-168	-111
Temperature	°C	17.8	16.9	17.97	17.64	20.04	20.47	16.42	17.13	19.33	17.63	18.23	16.81	16.4	16.8	16.69	13.3

mg/l - milligrams per liter.
S.U. - Standard Units.
mV - Millivolts.
°C - Degrees Celsius.
J - Value is estimated.
B - Blank contamination.
NA - Not Analyzed.
umhos/cm - Micromohs/centimeter.
ng/l - nanograms per liter.
Samples collected in September 1999 represent baseline conditions.
Carbon source introductions began in December 1999.

Table 17. Bioattenuation Parameter Results for Groundwater Samples Collected in Reactive Zone 1, General Motors Corporation, Moraine, Ohio.

RZ-1		Upgradient Well GM-23										
Constituents	**Units**	**9/2/99**	**2/21/00**	**5/31/00**	**3/20/01**	**6/13/02**	**9/26/02**	**5/22/03**	**9/23/03**	**9/14/04**	**10/17/05**	**9/28/06**
Inorganics & TOC												
Nitrate	mg/l	0.08	0	0	NA	NA	NA	NA	NA	NA	NA	NA
Nitrite	mg/l	3.83	0	0	NA	NA	NA	NA	NA	NA	NA	NA
Nitrogen, Ammonia	mg/l	<0.30	0.94	2.84	NA	NA	NA	NA	NA	NA	NA	NA
Manganese (Total)	mg/l	4.71	0.887	0.121	0.469	1.5 J	1.0 J	1.5 J	1.6 J	1.3 J	0.79	1.5
Manganese (Dissolved)	mg/l	0.346	0.841	0.101	0.311	1.3 J	0.68 J	1.5 J	1.7 J	1.2 J	0.81	1.5
Iron (Total)	mg/l	13.6	0.53	0.18	0.48	0.16 J	0.63	0.50	0.14	0.11	30.7	13.6
Iron (Dissolved)	mg/l	<0.10	<0.10	<0.10	< 1.0	<0.10	<0.10	<0.10	<0.10	<0.10	34.2	13.2
Iron (Ferrous)	mg/l	4	0	0	NA	NA	NA	NA	NA	NA	NA	NA
Sulfate	mg/l	72	650	8040	1440	920	810	310 J	650	430 J	120	850
Sulfide	mg/l	<4	<1	<1	< 1.0	<1.0	<1.0	<1 U	0.67 B	<1.0	<1.0	< 1 U
Total Organic Carbon	mg/l	19	25	19	10.8	15 J	15	15	13	10 J	360	11
Chloride	mg/l	118	143	85	232	180	190	220	140 J	220	260	220
Permanent Gases												
Carbon Dioxide	mg/l	88.47	264.8	323.79	NA	NA	NA	NA	NA	NA	NA	NA
Oxygen	mg/l	0.96	1.56	17.78	NA	NA	NA	NA	NA	NA	NA	NA
Nitrogen	mg/l	20.22	13.75	3.13	NA	NA	NA	NA	NA	NA	NA	NA
Methane	mg/l	0.1248	0.72	0.02083	0.780	1.6	2.1	2.7	1.8	1.5	1.3	0.91
Carbon Monoxide	mg/l	<0.40	<0.40	<0.40	NA	NA	NA	NA	NA	NA	NA	NA
Light Hydrocarbon Scan												
Ethane	ng/l	6,878	14644	1037	11000	25000	32000	44000	23000	17000	16000	12000
Ethene	ng/l	580916	439458	569	260000	230000	230000	1200000	270000	260000	500000	900000
Field Parameters												
pH	S.U.	6.80	6.62	6.31	6.64	6.81	6.76	5.59	6.73	7.04	5.66	6.69
Specific Conductivity	umhos/cm	1160	2856	6720	3448	2290	2390	1683	2258	2130	2570	2740
Dissolved Oxygen	mg/l	0.65	0.78	10.48	8.38	4.23	0.42	1.76	0.85	0	0	0.4
Redox Potential	mV	122.2	158.7	194.2	160.4	346.5	215.6	247.9	198.8	57	-108	-108
Temperature	°C	17.89	17.6	26.45	19.08	16.40	19.06	17.91	17.38	16.30	16.5	16.78

mg/l - milligrams per liter.
S.U. - Standard Units.
mV - Millivolts.
°C - Degrees Celsius.
J - Value is estimated.
B - Blank contamination.
NA - Not Analyzed.
umhos/cm - Micromohs/centimeter.
ng/l - nanograms per liter.
Samples collected in September 1999 represent baseline conditions.
Carbon source introductions began in December 1999.

Table 17. Bioattenuation Parameter Results for Groundwater Samples Collected in Reactive Zone 1, General Motors Corporation, Moraine, Ohio.

RZ-1		Downgradient Well GM-28															
Constituents	**Units**	**9/1/99**	**2/23/00**	**5/26/00**	**9/21/00**	**3/20/01**	**6/26/01**	**11/15/01**	**12/12/01**	**7/21/02**	**9/24/02**	**5/23/03**	**10/1/03**	**4/30/04**	**9/15/04**	**10/18/05**	**9/27/06**
Inorganics & TOC																	
Nitrate	mg/l	0.08	0	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrite	mg/l	0.06	0	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrogen, Ammonia	mg/l	<0.30	<0.30	0.68	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Manganese (Total)	mg/l	3.2	1.15	6.26	4.1	0.594	2.24	0.58	0.47	1.1	0.48B	0.69J	0.42J	0.34	0.37	0.45	0.46
Manganese (Dissolved)	mg/l	0.068	0.449	6.71	3.94	0.477	1.76	0.61	0.49	1.1	0.41B	0.29J	0.40J	0.32	0.36	0.45	0.43
Iron (Total)	mg/l	106	25.3	22.7	58.9	29.6	59	23.6	23.5	36.2	28.7	47.9	23.4J	17.6	15.7	16.1	14.5
Iron (Dissolved)	mg/l	<0.10	0.59	23.3	48.3	2.65	49.8	23.3	23.7	34.7	23.4	16.7	22.4J	16.4	15.1	15.2	13.1
Iron (Ferrous)	mg/l	0	0.03	2.6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Sulfate	mg/l	89	43	<5	<5	9	106	<5	<5	<5	18	65J	31J	89	93 J	91	75
Sulfide	mg/l	<4	<1	<1	<1	<1	<1	1.5	<1.0	2.0	4.3	2.5	<1.0	< 1 U	< 1 U	< 1.0 U	< 1 U
Total Organic Carbon	mg/l	15	24	742	571	90.0	360	74	68B	140	23	15	17	15 J	8	10	7
Chloride	mg/l	208	664	805	782	1030	508	730B	560	370	450	350	270J	320	340	320	320
Permanent Gases																	
Carbon Dioxide	mg/l	41.52	63.57	16.51	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Oxygen	mg/l	2.32	0.59	0.64	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrogen	mg/l	19.42	16.39	19.82	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methane	mg/l	0.002487	0.001832	0.21	1.70	13.0	13.0	13	20	19	14	8.9	11	7.9	6.6	2.8	2.5
Carbon Monoxide	mg/l	<0.40	<0.40	<0.40	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Light Hydrocarbon Scan																	
Ethane	ng/l	750	493	865	1198	42000	39000	91000	98000	420000	300000	310000	230000	160000	150000	81000	73000
Ethene	ng/l	48	98	646	1794606	57000	5000	1100	1400	8800	12000	74000	430	160	54	< 210 U	< 25 U
Field Parameters																	
pH	S.U.	7.02	6.92	7.01	7.18	7.10	6.64	6.50	7.45	6.84	7.24	6.86	6.80	NA	6.85	5.47	7.08
Specific Conductivity	umhos/cm	1359	3124	4402	4538	3724	3216	3136	3700	2187	2195	2132	1501	NA	2030	2230	1880
Dissolved Oxygen	mg/l	0.95	1.45	2.52	6.78	4.36	0.41	0.83	0.20	0.68	0.35	1.41	0.34	NA	0	0	0.29
Redox Potential	mV	90.5	56.0	-93.7	-200.1	-70.6	-177.8	-148.2	-203	-153.3	-135.3	-93.1	-146.9	NA	-165	-166	-183
Temperature	°C	16.4	18.48	19.24	20.21	18.93	19.04	19.24	18.92	20.44	18.68	16.88	17.97	NA	16.2	15.9	16.33

mg/l - milligrams per liter.
S.U. - Standard Units.
mV - Millivolts.
°C - Degrees Celsius.
J - Value is estimated.
B - Blank contamination.
NA - Not Analyzed.
umhos/cm - Micromohs/centimeter.
ng/l - nanograms per liter.
Samples collected in September 1999 represent baseline conditions.
Carbon source introductions began in December 1999.

Table 18. Bioattenuation Parameter Results for Groundwater Samples Collected in Reactive Zone 2, General Motors Corporation, Moraine, Ohio.

RZ-2		Introduction Well ME-6													
Constituents	**Units**	**8/31/99**	**2/22/00**	**5/25/00**	**9/21/00**	**3/20/01**	**6/26/01**	**11/15/01**	**12/12/01**	**9/25/02**	**5/22/03**	**10/1/03**	**9/15/04**	**10/18/05**	**9/27/06**
Inorganics & TOC															
Nitrate	mg/l	0.08	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrite	mg/l	0.06	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrogen, Ammonia	mg/l	<0.30	10.9	23.4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Manganese (Total)	mg/l	0.502	4.19	1.44	0.46	0.276	0.245	0.33	0.34	1.9B	0.77J	0.42J	0.28	0.26	0.21
Manganese (Dissolved)	mg/l	<0.010	3.60	1.34	0.456	0.277	0.222	0.30	0.32	1.6B	0.63J	0.40J	0.33	0.25	0.2
Iron (Total)	mg/l	8.17	67.1	46.3	6.4	1.25	3.52	5.5	4.6	37.2	30.3	6.7J	9.6	26.2	5.6
Iron (Dissolved)	mg/l	<0.10	46.5	42.8	6.66	0.63	1.74	3.9	2.8	7.3	6.5	6.1J	2.9	2.8	1.4
Iron (Ferrous)	mg/l	0.02	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Sulfate	mg/l	139	111	34	91	128	165	400	220	<5	<5	91J	64 J	78	100
Sulfide	mg/l	<2	2.00	1.11	1.58	<1.0	<1	<1.0	<1.0	1.7	0.86B	6.7	3.7 U	7.0	2.7
Total Organic Carbon	mg/l	9	1,560	374	35	21.5	38	41	34	1500	250	56	11	14	7
Chloride	mg/l	182	350	302	196	261	289	390B	320	430	370	220J	290	230	200
Permanent Gases															
Carbon Dioxide	mg/l	51.08	173.39	156.4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Oxygen	mg/l	0.84	0.45	0.52	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrogen	mg/l	18.57	12.44	9.03	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methane	mg/l	0.002063	0.56	12.2	0.33	8.30	0.25	0.160	0.65	1.6	12	5.1	2.9	1.5	0.7
Carbon Monoxide	mg/l	<0.40	<0.40	<0.40	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Light Hydrocarbon Scan															
Ethane	ng/l	134	97	<5	134	4900	3600	4600	16000	26	2600	2000	4300	< 1100 U	390
Ethene	ng/l	134	164	3508	3316	7600	1900	4000	20000	340	810	1400	1700	< 1300 U	710
Field Parameters															
pH	S.U.	7.02	6.64	6.58	7.00	7.06	6.82	6.92	7.50	6.78	6.73	6.90	6.49	5.85	6.98
Specific Conductivity	umhos/cm	1424	4645	3118	1864	1922	2630	3004	3000	6309	3428	1735	1710	1730	1370
Dissolved Oxygen	mg/l	0.66	7.12	0.84	1.19	4.83	0.33	0.67	0.48	0.59	2.49	0.35	2.51	NA	NA
Redox Potential	mV	109.1	-85.8	-133.8	-200.6	-294.0	43.5	-80.4	-129	-107.2	-101.4	-133.4	-4	NA	-134.0
Temperature	°C	27.51	18.59	22.60	18.98	21.68	19.42	20.01	19.74	22.17	19.1	17.58	17.4	15.3	16.75

mg/l - milligrams per liter.
S.U. - Standard Units.
mV - Millivolts.
°C - Degrees Celsius.
J - Value is estimated.
B - Blank contamination.
NA - Not Analyzed.
umhos/cm - Micromohs/centimeter.
ng/l - nanograms per liter.
Samples collected in September 1999 represent baseline conditions.
Carbon source introductions began in December 1999.

Table 18. Bioattenuation Parameter Results for Groundwater Samples Collected in Reactive Zone 2, General Motors Corporation, Moraine, Ohio.

RZ-2		Introduction Well ME-3												
Constituents	**Units**	**8/31/99**	**2/22/00**	**5/25/00**	**9/21/00**	**11/15/01**	**12/12/01**	**7/21/02**	**9/24/02**	**5/21/03**	**10/1/03**	**9/15/04**	**10/18/05**	**9/27/06**
Inorganics & TOC														
Nitrate	mg/l	22	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrite	mg/l	0.1665	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrogen, Ammonia	mg/l	<0.30	3.10	12.6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Manganese (Total)	mg/l	0.016	0.870	1.16	0.556	0.580	0.60	3.0	0.67B	0.21J	0.28J	0.47	0.42	0.42
Manganese (Dissolved)	mg/l	<0.010	0.702	0.436	0.543	0.620	0.610	3.4	0.69B	0.23J	0.28J	0.47	0.41	0.46
Iron (Total)	mg/l	<0.10	20.5	38.2	4.9	3.9	3.6	162	41.1	5.9	1.9J	3.2	11.2	4.4
Iron (Dissolved)	mg/l	<0.10	15.3	10.3	4.45	4.10	3.40	133	36.2	4.7	1.7J	2.8	3.8	2.2
Iron (Ferrous)	mg/l	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Sulfate	mg/l	152	60	34	87	160	150	71B	<5	45J	79J	71 J	68	89
Sulfide	mg/l	<1	1.39	1.32	<1	<1	<1.0	0.32J	<1.0	1.70	0.98B	3.4 U	< 1.0 U	< 1 U
Total Organic Carbon	mg/l	1	162	69	4	<1	6	1100	340	15	9	4	8	4
Chloride	mg/l	336	208	235	184	260B	330	370	380	290	340J	440	480	500
Permanent Gases														
Carbon Dioxide	mg/l	57.26	183.76	85.52	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Oxygen	mg/l	1.72	0.47	0.78	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrogen	mg/l	16.44	13.39	13.0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methane	mg/l	0.000129	0.01088	9.68	0.001226	0.0430	0.0160	1.6	7	1.8	1.2	0.81	0.25	0.11
Carbon Monoxide	mg/l	<0.40	<0.40	<0.40	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Light Hydrocarbon Scan														
Ethane	ng/l	10	73	138	47	520	470	370	210	830	540	170	< 140 U	160
Ethene	ng/l	<5	109	96276	218	23000	38000	1500	200	120	73	270	< 350 U	260
Field Parameters														
pH	S.U.	6.96	6.75	6.89	7.15	6.52	7.40	5.77	6.96	6.70	6.97	6.88	6.39	7.05
Specific Conductivity	umhos/cm	1889	2305	1752	1509	1477	2280	4081	3454	1662	1413	2130	2340	2180
Dissolved Oxygen	mg/l	2.01	4.06	0.59	1.11	1.70	0.19	1.60	2.41	2.92	2.93	3.12	NA	NA
Redox Potential	mV	80.9	-96.8	-136.7	-193.2	-36.1	-127.0	-103.4	-59.7	-30.6	-89.7	-6.2	NA	-101
Temperature	°C	22.86	19.28	20.00	21.09	18.63	20.05	20.82	21.65	17.18	17.74	17.4	16.0	17.08

mg/l - milligrams per liter.
S.U. - Standard Units.
mV - Millivolts.
°C - Degrees Celsius.
J - Value is estimated.
B - Blank contamination.
NA - Not Analyzed.
umhos/cm - Micromohs/centimeter.
ng/l - nanograms per liter.
Samples collected in September 1999 represent baseline conditions.
Carbon source introductions began in December 1999.

Table 18. Bioattenuation Parameter Results for Groundwater Samples Collected in Reactive Zone 2, General Motors Corporation, Moraine, Ohio.

RZ-2		Below Introduction Zone GM-31									
Constituents	**Units**	**9/1/99**	**2/23/00**	**5/31/00**	**9/21/00**	**11/15/01**	**9/24/02**	**10/1/03**	**9/15/04**	**10/18/05**	**9/27/06**
Inorganics & TOC											
Nitrate	mg/l	0	0	0	NA	NA	NA	NA	NA	NA	NA
Nitrite	mg/l	0	0	0	NA	NA	NA	NA	NA	NA	NA
Nitrogen, Ammonia	mg/l	0.41	<0.3	<0.30	NA	NA	NA	NA	NA	NA	NA
Manganese (Total)	mg/l	7.45	0.53	0.899	0.605	0.470	0.97B	1.6J	0.38	0.43	0.54
Manganese (Dissolved)	mg/l	0.293	0.208	0.189	0.163	0.19	0.27B	0.24J	0.29	0.32	0.27
Iron (Total)	mg/l	288	17.4	34.9	18.7	16.3	33.4	35.9J	4.6 J	6.2	11.1
Iron (Dissolved)	mg/l	0.27	1.87	2.37	2.51	3.2	2.8	0.79J	1.4	1.0	0.44
Iron (Ferrous)	mg/l	0	1.6	1.6	NA	NA	NA	NA	NA	NA	NA
Sulfate	mg/l	118	105	131	105	120	130	140J	98 J	88	91
Sulfide	mg/l	<4	<1	1.06	<1	<1	<1.0	7.5	< 1 U	< 1.0 U	< 1 U
Total Organic Carbon	mg/l	176	4	12	<1	3B	3	2	< 1 U	3	2
Chloride	mg/l	240	249	259	221	190B	240	290J	300	380	350
Permanent Gases											
Carbon Dioxide	mg/l	32.12	49.58	38.89	NA	NA	NA	NA	NA	NA	NA
Oxygen	mg/l	0.60	0.61	0.66	NA	NA	NA	NA	NA	NA	NA
Nitrogen	mg/l	16.05	19.79	23.03	NA	NA	NA	NA	NA	NA	NA
Methane	mg/l	0.0124	0.03339	0.08616	0.04758	0.034	0.11	0.075	0.059	<0.017 U	0.0098
Carbon Monoxide	mg/l	<0.40	<0.40	<0.40	NA	NA	NA	NA	NA	NA	NA
Light Hydrocarbon Scan											
Ethane	ng/l	2472	4550	9895	2507	1900	1300	740	430	< 300 U	240
Ethene	ng/l	2295	1283	2439	413	500	2000	260	190	< 260 U	30
Field Parameters											
pH	S.U.	7.25	7.19	7.03	7.30	6.70	6.80	6.99	7.04	6.47	7.09
Specific Conductivity	umhos/cm	1514	1786	1538	1580	1275	1635	1321	1790	2200	1870
Dissolved Oxygen	mg/l	1.61	0.39	0.81	1.71	ME	0.31	0.25	0.41	0	0.46
Redox Potential	mV	-328.2	-61.9	-73.7	-188.5	-82.1	-66.2	-69.7	-86	-65	-58
Temperature	°C	28.93	20.75	21.91	21.11	19.45	20.87	18.74	18.3	17.6	17.94

mg/l - milligrams per liter.
S.U. - Standard Units.
mV - Millivolts.
°C - Degrees Celsius.
J - Value is estimated.
B - Blank contamination.
NA - Not Analyzed.
umhos/cm - Micromohs/centimeter.
ng/l - nanograms per liter.
Samples collected in September 1999 represent baseline conditions.
Carbon source introductions began in December 1999.

Table 19. Bioattenuation Parameter Results for Groundwater Samples Collected in Reactive Zone 3 West, General Motors Corporation, Moraine, Ohio.

RZ-3 West		Upgradient Well EAST													
Constituents	**Units**	**9/21/99**	**2/23/00**	**5/25/00**	**9/22/00**	**3/19/01**	**11/12/01**	**12/11/01**	**6/12/02**	**9/23/02**	**5/21/03**	**9/25/03**	**9/13/04**	**10/18/05**	**9/21/06**
Inorganics & TOC															
Nitrate	mg/l	0	0	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrite	mg/l	0	0	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrogen, Ammonia	mg/l	<0.30	<0.30	<0.30	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Manganese (Total)	mg/l	0.627	0.474	0.361	0.227	0.182	0.20B	0.21B	0.56B	0.28B	0.12J	0.23J	0.19	1.4	0.92
Manganese (Dissolved)	mg/l	0.098	0.157	0.116	0.136	0.129	0.18B	0.17B	0.20B	0.16B	0.041J	0.096	0.047	0.10	0.12
Iron (Total)	mg/l	4.82	5.55	5.3	2.26	1.17	0.21	0.29	7.9	0.89	0.16	0.64	0.4	5.1	14
Iron (Dissolved)	mg/l	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<1.0	<0.10	< 0.1 U	< 0.10 U	< 0.1 U
Iron (Ferrous)	mg/l	0	0	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Sulfate	mg/l	75	130	117	96	101	130	120	170	95	63J	110	54 J	130	71
Sulfide	mg/l	<1	<1	<1	<1	<1.0	1.2	1.6	<1.0	<1.0	<1	2.1	< 1 U	< 1.0 U	< 1 U
Total Organic Carbon	mg/l	3	10	4	<1	<1.0	3B	2	4	2	<1	1	0.5 B	4	2
Chloride	mg/l	283	254	194	196	198	190B	180	270	310	250	310J	290	370	430
Permanent Gases															
Carbon Dioxide	mg/l	34.69	58.08	52.02	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Oxygen	mg/l	1.88	0.97	1.26	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrogen	mg/l	17.88	17.50	19.1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methane	mg/l	0.000571	0.003269	0.01158	1.08	1.100	0.310	0.15	0.0042	0.0027	0.00055	0.0013	0.0012	< 0.0058 U	0.0018
Carbon Monoxide	mg/l	<0.40	<0.40	<0.40	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Light Hydrocarbon Scan															
Ethane	ng/l	32	39	118	126	2600	2000	1800	440	50	13	14	20	< 76 U	28
Ethene	ng/l	18	107	57	73	190	150	56	170	37	34	21	20	< 210 U	43
Field Parameters															
pH	S.U.	6.99	7.04	7.00	7.11	7.34	7.15	7.32	7.02	7.18	6.69	6.94	7.18	6.17	6.88
Specific Conductivity	umhos/cm	1777	1955	1503	1133	1189	1363	1480	1439	1467	1506	1548	1700	2190	2120
Dissolved Oxygen	mg/l	0.30	0.37	2.76	1.68	1.00	1.73	0.05	1.05	1.82	1.79	1.04	0.94	0	0.52
Redox Potential	mV	14.9	122.9	144.5	143.7	468.4	177.1	86	306.5	215.6	201	147.6	195	189	104
Temperature	°C	21.21	19.38	19.32	20.30	19.60	18.68	18.69	19.61	19.62	19.45	18.47	17.4	17.5	18.03

mg/l - milligrams per liter.
S.U. - Standard Units.
mV - Millivolts.
°C - Degrees Celsius.
J - Value is estimated.
B - Blank contamination.
NA - Not Analyzed.
umhos/cm - Micromohs/centimeter.
ng/l - nanograms per liter.
Samples collected in September 1999 represent baseline conditions.
Carbon source introductions began in December 1999.

Table 19. Bioattenuation Parameter Results for Groundwater Samples Collected in Reactive Zone 3 West, General Motors Corporation, Moraine, Ohio.

RZ-3 West		Downgradient Well GM-32														
Constituents	Units	9/22/99	2/28/00	5/30/00	9/25/00	3/19/01	11/12/01	12/11/01	6/12/02	9/20/02	5/23/03	10/1/03	9/14/04	10/19/05	9/19/06	12/1/06
Inorganics & TOC																
Nitrate	mg/l	0	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrite	mg/l	0	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrogen, Ammonia	mg/l	2.29	2.00	19.3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Manganese (Total)	mg/l	0.147	0.516	0.051	0.30	0.17	0.16B	0.087B	0.043B	0.053B	0.1J	0.13J	0.13 J	0.076	0.088	NA
Manganese (Dissolved)	mg/l	0.052	0.061	0.048	0.31	<0.050	0.020B	0.024B	0.042B	0.028B	0.077J	0.11J	0.13 J	0.067	0.078	NA
Iron (Total)	mg/l	8.14	42.4	18.4	81.0	13.0	16.5	10.5	7.5	8.4B	21.3	31.4J	33.9	22.0	24.7	NA
Iron (Dissolved)	mg/l	3.53	0.59	17.1	81.6	3.17	5.2	6.5	8.1	6.8B	18.7	30.5J	34.5	19.8	24.5	NA
Iron (Ferrous)	mg/l	1.8	2.2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Sulfate	mg/l	30	<5	<10	<10	<20	5	4J	1J	<5	<5	<5	< 5 U	< 5 U	< 5 U	NA
Sulfide	mg/l	<1	<10	<1	<1	1.60	<1	<1.0	0.50J	1.3	0.86B	7.3	16	4.1	1	NA
Total Organic Carbon	mg/l	68	1200	2020	2720	1120	320B	250	240	160	150	170	240 J	300	260	28
Chloride	mg/l	317	638	740	740	798	700B	630	470	510	390	510J	530	550	560	NA
Permanent Gases																
Carbon Dioxide	mg/l	39.79	8.94	24.32	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Oxygen	mg/l	1.67	0.85	<0.15	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrogen	mg/l	14.93	15.23	2.40	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methane	mg/l	2.73	7.06	14.91	16.84	29	29	38	24	32	24	19	25	30 J	26	26
Carbon Monoxide	mg/l	<0.40	<0.40	<0.40	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Light Hydrocarbon Scan																
Ethane	ng/l	1649	9965	1029	189	7900	42000	72000	84000	94000	74000	46000	57000	85000 J	76000	92000
Ethene	ng/l	86509	163855	472312	510593	150000	130000	90000	93000	49000	9900	3400	2000	1900 J	2400	2900
Field Parameters																
pH	S.U.	7.54	8.59	7.64	7.73	8.36	8.42	8.13	8.55	8.13	6.41	6.81	6.86	6.3	6.84	7.26
Specific Conductivity	umhos/cm	2750	9030	9195	9225	7483	6874	6200	5432	4289	3908	3192	4210	4810	4510	6510
Dissolved Oxygen	mg/l	0.09	0.23	10.82	2.55	0.36	0.07	0.03	1.14	0.22	1.93	0.31	0	0	0.21	0.1
Redox Potential	mV	-226.4	-279.1	-213.6	-353.8	-152.5	-222.8	-279	-220.5	-227.1	-204.6	-154.4	-160	-191	-193	-182
Temperature	°C	19.27	19.72	23.48	19.27	19.30	18.84	18.62	20.83	19.81	19.31	18.47	17.2	17.0	17.7	16.3

mg/l - milligrams per liter.
S.U. - Standard Units.
mV - Millivolts.
°C - Degrees Celsius.
J - Value is estimated.
B - Blank contamination.
NA - Not Analyzed.
umhos/cm - Micromohs/centimeter.
ng/l - nanograms per liter.
Samples collected in September 1999 represent baseline conditions.
Carbon source introductions began in December 1999.

Table 19. Bioattenuation Parameter Results for Groundwater Samples Collected in Reactive Zone 3 West, General Motors Corporation, Moraine, Ohio.

RZ-3 West		Downgradient Well GM-8								Downgradient Well GM-6						
Constituents	Units	3/6/98	9/20/99	9/20/02	12/9/03	9/14/04	10/19/05	9/19/06	12/1/06	3/6/98	9/20/99	9/20/02	12/9/03	9/14/04	10/19/05	9/19/06
Inorganics & TOC																
Nitrate	mg/l	<4.4	0	NA	NA	NA	NA	NA	NA	<4.4	0	NA	NA	NA	NA	NA
Nitrite	mg/l	<0.033	0	NA	NA	NA	NA	NA	NA	<0.033	0	NA	NA	NA	NA	NA
Nitrogen, Ammonia	mg/l	1.69	1.95	NA	NA	NA	NA	NA	NA	<0.300	<0.30	NA	NA	NA	NA	NA
Manganese (Total)	mg/l	0.204	0.125	0.085B	0.21	0.13	0.17	0.16	NA	1.07	1.11	0.27B	0.57	0.43	0.50	0.54
Manganese (Dissolved)	mg/l	0.229	0.125	0.084B	0.21	0.14	0.15	0.15	NA	1	0.958	0.24B	0.53	0.47	0.49	0.54
Iron (Total)	mg/l	1.01	0.27	0.55B	1.9	1.8	3.2	3.4	NA	1.32	0.27	0.40B	5.7	3.2	5.4	5.7
Iron (Dissolved)	mg/l	1.22	0.26	0.52B	1.9	1.8	2.8	3.1	NA	<0.1	<0.10	0.30B	1.9	3.1	4.8	5.6
Iron (Ferrous)	mg/l	<0.2	0	NA	NA	NA	NA	NA	NA	<0.2	NA	NA	NA	NA	NA	NA
Sulfate	mg/l	59	54	59	<5	13 J	27	24	NA	93	83	43	27	26 J	52	55
Sulfide	mg/l	<1	<1	<1.0	<1.0	2	< 1.0 U	1.8	NA	<1	<1	<1.0	<1.0	3.4	< 1.0 U	< 1 U
Total Organic Carbon	mg/l	7	8	16	20	19 J	19	16	18	3	4	17	12	16 J	6	7
Chloride	mg/l	248	216	180	180J	190	260	320	NA	227	247	170	190J	230	290	340
Permanent Gases																
Carbon Dioxide	mg/l	15.8	9.91	NA	NA	NA	NA	NA	NA	47.4	48.44	NA	NA	NA	NA	NA
Oxygen	mg/l	1.1	0.92	NA	NA	NA	NA	NA	NA	1.57	2.23	NA	NA	NA	NA	NA
Nitrogen	mg/l	19.7	25.42	NA	NA	NA	NA	NA	NA	20.5	21.77	NA	NA	NA	NA	NA
Methane	mg/l	1.48	2.47	8.5	14	9	8.1 J	7.2	8.7	0.008337	0.006916	7.8	7.8	7.2	4.4 J	3.5
Carbon Monoxide	mg/l	<0.4	<0.40	NA	NA	NA	NA	NA	NA	<0.4	<0.40	NA	NA	NA	NA	NA
Light Hydrocarbon Scan																
Ethane	ng/l	370	1134	13000	12000	18000	17000 J	7200	4800	47	67	10000	2400	5000	870 J	520
Ethene	ng/l	12233	39617	3700	440	56	< 76 U J	1200	1200	91	97	4900	750	2000	3600 J	1700
Field Parameters																
pH	S.U.	7.7	7.98	8.18	7.2	7.76	6.45	7.31	7.46	7	7.05	7.46	7.76	7.16	6.06	6.8
Specific Conductivity	umhos/cm	1539	1584	1734	1870	1900	2080	2120	2600	1422	1493	1658	2080	1830	1880	1920
Dissolved Oxygen	mg/l	0.16	0.28	0.37	0.04	0	0	0.53	0.08	0.88	0.48	0.34	0.03	0	0	0.24
Redox Potential	mV	-145	-49.8	-150.6	-137	-186	-162	-160	-156	57.6	26.5	-27.7	-223	-111	-107	-111
Temperature	°C	17.53	19.09	19.20	18.17	16.6	16.3	18.1	16.3	18.49	21.07	19.07	17.71	16.8	16.8	17.3

mg/l - milligrams per liter.
S.U. - Standard Units.
mV - Millivolts.
°C - Degrees Celsius.
J - Value is estimated.
B - Blank contamination.
NA - Not Analyzed.
umhos/cm - Micromohs/centimeter.
ng/l - nanograms per liter.
Samples collected in September 1999 represent baseline conditions.
Carbon source introductions began in December 1999.

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Table 20. Bioattenuation Parameter Results for Groundwater Samples Collected in Reactive Zone 3 East, General Motors Corporation, Moraine, Ohio.

RZ-3 East		Upgradient Well GM-22													
Constituents	**Units**	**9/1/99**	**2/23/00**	**5/25/00**	**9/21/00**	**3/20/01**	**11/13/01**	**12/12/01**	**6/13/02**	**9/25/02**	**5/22/03**	**9/24/03**	**9/14/04**	**10/17/05**	**9/20/06**
Inorganics & TOC															
Nitrate	mg/l	0	0	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrite	mg/l	0	0	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrogen, Ammonia	mg/l	<0.30	<0.30	<0.30	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Manganese (Total)	mg/l	0.089	0.273	0.355	0.422	0.458	0.74B	0.63	0.38B	0.029B	0.031J	0.027J	0.1 J	0.040	0.26
Manganese (Dissolved)	mg/l	0.096	0.263	0.328	0.403	0.413	0.73B	0.62	0.40B	0.093B	0.023J	0.020J	0.035 J	0.026	0.18
Iron (Total)	mg/l	<0.10	0.16	0.96	0.94	0.28	<0.10	<0.10	0.11B	0.18	0.22	0.23	1.6	0.19	2.1
Iron (Dissolved)	mg/l	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.1	<0.10	< 0.1 U	< 0.10 U	< 0.1 U
Iron (Ferrous)	mg/l	0.6	0	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Sulfate	mg/l	49	125	120	117	99	300	150	120	70	72J	77	49 J	52	48
Sulfide	mg/l	<1	<1	<1	<1	<1.0	<1	<1.0	<1.0	0.40J	0.54B	1.6	< 1 U	< 1.0 U	< 1 U
Total Organic Carbon	mg/l	6	4	4	<1	<1.0	16B	6B	3	2	<1	1	1 J	2	2
Chloride	mg/l	246	270	279	248	326	220B	280	290	370	350	350J	370	330	420
Permanent Gases															
Carbon Dioxide	mg/l	40.15	43.99	40.20	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Oxygen	mg/l	1.05	0.86	1.28	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrogen	mg/l	23.38	19.43	21.3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methane	mg/l	0.05818	0.23	0.18	0.000967	0.280	0.067	0.16	0.039	0.014	0.00039	1.2	0.02	< 0.012 U	< 0.0047 U
Carbon Monoxide	mg/l	<0.40	<0.40	<0.40	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Light Hydrocarbon Scan															
Ethane	ng/l	42	91	69	29	83	130	120	140	270	13	8.4	340	< 810 U	< 83 U
Ethene	ng/l	67	32	64	111	39	210	12	54	62	27	11	12	< 810 U	< 59 U
Field Parameters															
pH	S.U.	7.12	7.15	7.08	7.17	7.00	7.33	7.39	7.21	7.02	6.89	7.04	7.10	6.88	6.97
Specific Conductivity	umhos/cm	1373	1975	1671	1684	1610	1753	2020	1415	1720	1730	1597	1760	1930	2080
Dissolved Oxygen	mg/l	0.32	0.46	0.49	1.73	0.82	0.01	0.15	0.94	2.14	1.04	1.2	0	0	0.27
Redox Potential	mV	62.2	70.2	26.1	-80.8	175.1	54.8	-110	105.2	181.2	116.6	74.6	62	68	51
Temperature	°C	19.41	18.87	20.87	22.28	20.79	19.45	18.99	20.29	19.49	18.62	18.45	17.2	16.9	17.46

mg/l - milligrams per liter.
S.U. - Standard Units.
mV - Millivolts.
°C - Degrees Celsius.
J - Value is estimated.
B - Blank contamination.
NA - Not Analyzed.
umhos/cm - Micromohs/centimeter.

ng/l - nanograms per liter.
Samples collected in September 1999 represent baseline conditions.
Carbon source introductions began in December 1999.

Table 20. Bioattenuation Parameter Results for Groundwater Samples Collected in Reactive Zone 3 East, General Motors Corporation, Moraine, Ohio.

RZ-3 East		Downgradient Well GM-21														
Constituents	**Units**	**9/22/99**	**2/23/00**	**5/26/00**	**9/22/00**	**3/19/01**	**11/13/01**	**12/11/01**	**6/12/02**	**9/25/02**	**5/22/03**	**9/24/03**	**9/14/04**	**10/17/05**	**9/20/06**	**12/1/06**
Inorganics & TOC																
Nitrate	mg/l	0	0	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrite	mg/l	0	0	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrogen, Ammonia	mg/l	<0.30	<0.3	<0.30	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Manganese (Total)	mg/l	0.321	0.233	0.215	0.336	0.298	0.30B	0.30B	0.31B	0.29B	0.32J	0.37J	0.35 J	0.17	0.19	NA
Manganese (Dissolved)	mg/l	0.273	0.225	0.212	0.312	0.291	0.32B	0.29B	0.29B	0.25B	0.26J	0.38J	0.33 J	0.16	0.19	NA
Iron (Total)	mg/l	2.58	0.30	0.83	0.63	0.11	<0.10	0.16	0.65	0.56	12.6	0.27	2.3	26.9	10.7	NA
Iron (Dissolved)	mg/l	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.11	<0.10	<0.10	1.4	0.47	< 0.1 U	25.5	10.7	NA
Iron (Ferrous)	mg/l	0.4	0	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Sulfate	mg/l	103	102	80	102	118	120	100	76	76	55J	82	79 J	< 5 U	35	NA
Sulfide	mg/l	<1	<1	<1	<1	<1	<1	1.9	0.50J	0.40J	0.54B	1.5	2.9	< 1.0 U	< 1 U	NA
Total Organic Carbon	mg/l	1	3	2	<1	<1	2B	1	0.9J	2	2	2	2 J	92	7	21
Chloride	mg/l	136	145	126	129	165	140	150	170	180	160	190J	190	190	240	NA
Permanent Gases																
Carbon Dioxide	mg/l	37.04	37.40	18.70	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Oxygen	mg/l	1.41	0.99	1.89	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrogen	mg/l	23.40	21.67	23.64	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methane	mg/l	0.03744	0.01769	0.01370	0.04218	0.048	0.049	0.035	0.022	0.03	0.031	1.5	0.077	17	4.9	17
Carbon Monoxide	mg/l	<0.40	<0.40	<0.40	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Light Hydrocarbon Scan																
Ethane	ng/l	72	67	84	72	82	76	120	150	120	130	30	140	9800	27000	72000
Ethene	ng/l	169	38	70	69	46	46	100	120	64	570	520	250	330000	63000	31000
Field Parameters																
pH	S.U.	6.99	7.22	7.06	7.21	7.85	7.50	7.45	7.22	7.09	6.76	7.05	7.19	6.73	6.9	6.76
Specific Conductivity	umhos/cm	1188	1299	1048	1096	1067	1190	1360	1045	1245	968	1181	1180	1640	1580	1970
Dissolved Oxygen	mg/l	0.66	0.60	0.40	0.99	0.57	0.04	0.04	0.63	0.41	0.83	0.75	0	0	0.25	0.08
Redox Potential	mV	-26.9	113.3	167.1	153.9	218.5	168.8	-25	373.8	238.1	77.1	-26.7	-7	-140	-137	-103
Temperature	°C	20.43	18.43	17.92	19.03	17.59	16.73	15.82	18.67	18.67	17.54	18.39	17.1	16.4	16.94	15.8

mg/l - milligrams per liter.
S.U. - Standard Units.
mV - Millivolts.
°C - Degrees Celsius.
J - Value is estimated.
B - Blank contamination.
NA - Not Analyzed.
umhos/cm - Micromohs/centimeter.

ng/l - nanograms per liter.
Samples collected in September 1999 represent baseline conditions.
Carbon source introductions began in December 1999.

Table 21. Bioattenuation Parameter Results for Groundwater Samples Collected in Reactive Zone 4 West, General Motors Corporation, Moraine, Ohio.

RZ-4 West		Sidegradient Well W-4-S		Downgradient Well GM-63		Downgradient Well GM-64	
Constituents	Units	9/19/06	12/1/06	9/14/06	12/1/06	9/14/06	12/1/06
Inorganics & TOC							
Nitrate	mg/l	NA	NA	NA	NA	NA	NA
Nitrite	mg/l	NA	NA	NA	NA	NA	NA
Nitrogen, Ammonia	mg/l	NA	NA	NA	NA	NA	NA
Manganese (Total)	mg/l	1.2	NA	0.0441	NA	0.667	NA
Manganese (Dissolved)	mg/l	0.17	NA	0.0203	NA	0.484	NA
Iron (Total)	mg/l	0.39	NA	1.03 J	NA	1.73 J	NA
Iron (Dissolved)	mg/l	< 0.1 U	NA	< 0.1 U	NA	< 0.167 U	NA
Iron (Ferrous)	mg/l	NA	NA	NA	NA	NA	NA
Sulfate	mg/l	74	NA	140	NA	120	NA
Sulfide	mg/l	< 1 U	NA	< 1 U	NA	< 1 U	NA
Total Organic Carbon	mg/l	2	2	3	2	3	5
Chloride	mg/l	140	NA	180	NA	170	NA
Permanent Gases							
Carbon Dioxide	mg/l	NA	NA	NA	NA	NA	NA
Oxygen	mg/l	NA	NA	NA	NA	NA	NA
Nitrogen	mg/l	NA	NA	NA	NA	NA	NA
Methane	mg/l	0.00071	0.031	0.019 J	0.012	0.018	0.01
Carbon Monoxide	mg/l	NA	NA	NA	NA	NA	NA
Light Hydrocarbon Scan							
Ethane	ng/l	43	270	36	110 J	3500	1000
Ethene	ng/l	21 J	180	290 J	130 J	1800	730
Field Parameters							
pH	S.U.	6.99	7.13	6.99	7.08	7.13	7.09
Specific Conductivity	umhos/cm	1280	1530	1640	1580	1480	1820
Dissolved Oxygen	mg/l	0.31	0.43	0.37	0.38	0.2	0
Redox Potential	mV	79	69	77	99	-62	-17
Temperature	°C	17.7	15	17.4	16.9	17.8	16.9

mg/l - milligrams per liter.
S.U. - Standard Units.
mV - Millivolts.
°C - Degrees Celsius.
J - Value is estimated.
B - Blank contamination.
NA - Not Analyzed.
umhos/cm - Micromohs/centimeter.
ng/l - nanograms per liter.
Carbon source introductions began in August 2006.

Table 22. Bioattenuation Parameter Results for Groundwater Samples Collected in Reactive Zone 4 East, General Motors Corporation, Moraine, Ohio.

RZ-4 East		Upgradient Well WEST			Upgradient Well GM-19S														
Constituents	Units	9/21/99	2/23/00	5/25/00	9/20/99	2/23/00	5/24/00	9/22/00	3/19/01	11/20/01	12/11/01	6/12/02	9/26/02	5/21/03	9/25/03	9/13/04	10/18/05	9/21/06	12/1/06
Inorganics & TOC																			
Nitrate	mg/l	0	0	0	11	0	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrite	mg/l	17.6	0	0	0	0	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrogen, Ammonia	mg/l	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Manganese (Total)	mg/l	0.391	0.038	0.029	0.726	1.09	0.247	0.238	0.191	0.20	0.21B	0.25B	0.39B	0.3J	0.23J	0.25	0.24	0.99	NA
Manganese (Dissolved)	mg/l	0.383	<0.010	<0.010	0.185	0.205	0.200	0.187	0.155	0.19	0.18B	0.18B	0.19B	0.2J	0.21J	0.16	0.20	0.94	NA
Iron (Total)	mg/l	0.27	0.40	0.37	16.9	39.4	1.19	0.40	0.90	0.091	0.18	0.26	0.44	0.17	0.96	3	0.38	1.6	NA
Iron (Dissolved)	mg/l	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.1	<0.10	< 0.1 U	< 0.10 U	1.4	NA
Iron (Ferrous)	mg/l	0	0	0	0	0	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Sulfate	mg/l	73	129	155	127	131	131	118	113	100	90	110	110	150J	150	110 J	83	95	NA
Sulfide	mg/l	<1	<1	<1	<1	<1	<1	<1	<1	<1	0.96J	<1.0	<1.0	<1	1.3	1.6	< 1.0 U	< 1 U	NA
Total Organic Carbon	mg/l	2	7	3	2	7	5	<1	<1	2B	1	1	3	2	2	1	3	22	7
Chloride	mg/l	260	166	164	247	197	168	165	158	130B	150	140	210	270	300J	310	320	350	NA
Permanent Gases																			
Carbon Dioxide	mg/l	50.41	67.57	61.09	41.85	57.12	50.12	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Oxygen	mg/l	1.30	1.50	2.20	4.43	1.01	1.24	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrogen	mg/l	13.24	13.74	17.1	20.87	17.07	17.13	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methane	mg/l	0.001409	0.000217	0.002179	0.009863	0.002712	0.003325	0.003706	0.039	0.005	0.0088	0.002	0.46	0.0021	0.0022	0.0014	< 0.0065 U	0.025	0.011
Carbon Monoxide	mg/l	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Light Hydrocarbon Scan																			
Ethane	ng/l	37	33	57	71	104	139	184	210	300	350	410	730	170	80	48	< 250 U	730	300
Ethene	ng/l	100	17	47	55	45	43	36	61	34	27	130	770	78	45	51	< 220 U	550	530
Field Parameters																			
pH	S.U.	6.89	6.97	6.97	7.05	7.05	7.00	7.19	7.14	7.28	7.31	7.09	7.02	6.71	6.93	7.13	5.97	6.84	6.99
Specific Conductivity	umhos/cm	1759	1640	1547	1500	1784	1548	1235	1097	1190	1350	1052	1474	1706	1726	1970	1940	2150	2680
Dissolved Oxygen	mg/l	0.41	1.73	1.50	0.92	0.30	1.94	1.36	0.96	1.75	0.06	0.90	0.47	2.01	1.87	0	0	0.3	0.16
Redox Potential	mV	106.2	139.1	198.3	31.3	149.6	200.1	187.7	320.8	195.6	13	446.3	259.6	178.3	135	160	122	-82	-30
Temperature	°C	21.44	19.90	19.75	20.85	18.69	20.80	20.09	20.14	19.24	19.10	20.39	20.36	20.22	19.57	18.6	17.6	17.9	16

mg/l - milligrams per liter.
S.U. - Standard Units.
mV - Millivolts.
°C - Degrees Celsius.
J - Value is estimated.
B - Blank contamination.
NA - Not Analyzed.
umhos/cm - Micromohs/centimeter.
ng/l - nanograms per liter.
Samples collected in September 1999 represent baseline conditions.
Carbon source introductions began in August 2006.

Table 23. Summary of Groundwater VOC Analytical Results from Upper/Lower Aquifer Monitoring Wells in September 2006, General Motors Corporation, Moraine, Ohio.

		Upgradient of the Site		On-Site			
	Units	HR-9 9/21/2006 Upper Aquifer	HR-11 9/25/2006 Upper Aquifer	HR-8 9/21/2006 Upper Aquifer	HR-4 9/25/2006 Upper Aquifer	W-2-N 9/22/2006 Upper Aquifer	W-3-N 9/25/2006 Upper Aquifer
Volatile Organic Compounds							
1,1,1-Trichloroethane	ug/l	16	< 1 U	4.2	< 1 U	0.25 J	< 5 U
1,1-Dichloroethane	ug/l	36	6.7	6.1	1.6	0.29 J	< 5 U
1,1-Dichloroethene	ug/l	0.65 J	< 1 U	< 1 U	< 1 U	< 1 UJ	< 5 U
Benzene	ug/l	< 1.4 U	< 1 U	< 1 U	< 1 U	< 1 UJ	< 5 U
cis-1,2-Dichloroethene	ug/l	15	0.31 J	0.92 J	0.26 J	1.4 J	140
Ethylbenzene	ug/l	< 1.4 U	< 1 U	< 1 U	< 1 U	< 1 UJ	< 5 U
Tetrachloroethene	ug/l	< 1.4 U	< 1 U	< 1 U	0.41 J	< 1 UJ	< 5 U
Toluene	ug/l	< 1.4 U	< 1 U	< 1 U	< 1 U	< 1 UJ	< 5 U
trans-1,2-Dichloroethene	ug/l	2.5	< 1 U	0.3 J	< 1 U	0.18 J	1.9 J
Trichloroethene	ug/l	13	< 1 U	0.55 J	0.34 J	1 J	< 5 U
Vinyl chloride	ug/l	< 1.4 U	< 1 U	< 1 U	< 1 U	< 1 UJ	9.6
Xylene (total)	ug/l	< 2.9 U	< 2 U	< 2 U	< 2 U	< 2 UJ	< 10 U
Total VOCs	**ug/l**	**83.15**	**7.01**	**12.07**	**2.61**	**3.12**	**151.5**

ug/l - Micrograms per liter.
All QA/QC results for 2006 data are shown in Appendix C.
< - Constituent not detected above laboratory reporting limit shown.
J - Value is estimated.
U - Constituent not detected above laboratory reporting limit shown.

Table 23. Summary of Groundwater VOC Analytical Results from Upper/Lower Aquifer Monitoring Wells in September 2006, General Motors Corporation, Moraine, Ohio.

	Units	On-Site					
		W-4-N 9/25/2006 Upper Aquifer	HR-2 9/25/2006 Upper Aquifer	HR-5 9/22/2006 Upper Aquifer	HR-3 9/25/2006 Upper Aquifer	HR-1 9/25/2006 Upper Aquifer	GM-30 9/20/2006 Upper Aquifer
Volatile Organic Compounds							
1,1,1-Trichloroethane	ug/l	< 1 U	< 1 U	< 1 UJ	< 1 U	0.57 J	< 33 U
1,1-Dichloroethane	ug/l	1.3	5.2	0.41 J	10	1.7	25 J
1,1-Dichloroethene	ug/l	< 1 U	< 1 U	< 1 UJ	< 1 U	< 1.7 U	< 33 U
Benzene	ug/l	< 1 U	< 1 U	< 1 UJ	< 1 U	< 1.7 U	< 33 U
cis-1,2-Dichloroethene	ug/l	2.4	5.6	5.2 J	8.2	14	< 33 U
Ethylbenzene	ug/l	< 1 U	< 1 U	< 1 UJ	< 1 U	< 1.7 U	570
Tetrachloroethene	ug/l	0.96 J	< 1 U	0.27 J	< 1 U	< 1.7 U	< 33 U
Toluene	ug/l	< 1 U	< 1 U	< 1 UJ	< 1 U	< 1.7 U	5.8 J
trans-1,2-Dichloroethene	ug/l	0.19 J	0.79 J	0.46 J	0.99 J	1.4 J	< 33 U
Trichloroethene	ug/l	7.6	0.48 J	13 J	7.2	50	< 33 U
Vinyl chloride	ug/l	0.56 J	< 1 U	0.22 J	< 1 U	< 1.7 U	< 33 U
Xylene (total)	ug/l	< 2 U	< 2 U	< 2 UJ	< 2 U	< 3.3 U	2500
Total VOCs	**ug/l**	**13.01**	**12.07**	**19.56**	**26.39**	**67.67**	**3,100.8**

ug/l - Micrograms per liter.
All QA/QC results for 2006 data are shown in Appendix C.
< - Constituent not detected above laboratory reporting limit shown.
J - Value is estimated.
U - Constituent not detected above laboratory reporting limit shown.

Table 23. Summary of Groundwater VOC Analytical Results from Upper/Lower Aquifer Monitoring Wells in September 2006, General Motors Corporation, Moraine, Ohio.

		On-Site					
	Units	GM-23 9/28/2006 Upper Aquifer	GM-27 9/28/2006 Upper Aquifer	GM-29 9/28/2006 Upper Aquifer	GM-28 9/27/2006 Upper Aquifer	ME-6 9/27/2006 Upper Aquifer	GM-31 9/27/2006 Upper Aquifer
Volatile Organic Compounds							
1,1,1-Trichloroethane	ug/l	< 330 U	< 2.5 U	17 J	< 1 U	1.4	2.3 J
1,1-Dichloroethane	ug/l	< 330 U	2.6	15 J	4.2	6.3	5.1
1,1-Dichloroethene	ug/l	< 330 U	< 2.5 U	< 33 U	< 1 U	< 1.4 U	< 4 U
Benzene	ug/l	< 330 U	< 2.5 U	< 33 U	< 1 U	< 1.4 U	< 4 U
cis-1,2-Dichloroethene	ug/l	11000	14	1300	0.26 J	27	110
Ethylbenzene	ug/l	< 330 U	< 2.5 U	< 33 U	< 1 U	< 1.4 U	< 4 U
Tetrachloroethene	ug/l	370	1 J	15 J	< 1 U	13	< 4 U
Toluene	ug/l	< 330 U	< 2.5 U	< 33 U	< 1 U	< 1.4 U	< 4 U
trans-1,2-Dichloroethene	ug/l	270 J	1 J	20 J	0.66 J	1.3 J	2.9 J
Trichloroethene	ug/l	95 J	80	310	0.43 J	32	65
Vinyl chloride	ug/l	4100	< 2.5 U	210	0.42 J	11	1.2 J
Xylene (total)	ug/l	< 670 U	< 5 U	< 67 U	< 2 U	< 2.9 U	< 8 U
Total VOCs	**ug/l**	**15,835**	**98.6**	**1,887**	**5.97**	**92**	**186.5**

ug/l - Micrograms per liter.
All QA/QC results for 2006 data are shown in Appendix C.
< - Constituent not detected above laboratory reporting limit shown.
J - Value is estimated.
U - Constituent not detected above laboratory reporting limit shown.

Table 23. Summary of Groundwater VOC Analytical Results from Upper/Lower Aquifer Monitoring Wells in September 2006, General Motors Corporation, Moraine, Ohio.

	Units	On-Site ME-3 9/27/2006 Upper Aquifer	GM-43 9/22/2006 Upper Aquifer	GM-45 9/22/2006 Upper Aquifer	GM-22 9/20/2006 Upper Aquifer	GM-19S 9/21/2006 Upper Aquifer	EAST 9/21/2006 Upper Aquifer
Volatile Organic Compounds							
1,1,1-Trichloroethane	ug/l	1.1	< 5 UJ	3.5 J	0.47 J	9.7 J	10
1,1-Dichloroethane	ug/l	8.5	3.7 J	3.1 J	1.1	7 J	3.2
1,1-Dichloroethene	ug/l	< 1 U	< 5 UJ	< 8 UJ	< 1 U	< 22 U	0.59 J
Benzene	ug/l	< 1 U	< 5 UJ	< 8 UJ	< 1 U	< 22 U	< 1.4 U
cis-1,2-Dichloroethene	ug/l	3.5	120 J	54 J	0.28 J	660	4.1
Ethylbenzene	ug/l	< 1 U	< 5 UJ	< 8 UJ	< 1 U	< 22 U	< 1.4 U
Tetrachloroethene	ug/l	1.9	21 J	230 J	3.2	9.1 J	41
Toluene	ug/l	< 1 U	< 5 UJ	< 8 UJ	< 1 U	< 22 U	< 1.4 U
trans-1,2-Dichloroethene	ug/l	0.34 J	5.7 J	2.7 J	< 1 U	10 J	< 1.4 U
Trichloroethene	ug/l	2.4	98 J	230 J	3	11 J	29
Vinyl chloride	ug/l	2.2	< 5 UJ	< 8 UJ	< 1 U	< 22 U	< 1.4 U
Xylene (total)	ug/l	< 2 U	< 10 UJ	< 16 UJ	< 2 U	< 44 U	< 2.9 U
Total VOCs	**ug/l**	**19.94**	**248.4**	**523.3**	**8.05**	**706.8**	**87.89**

ug/l - Micrograms per liter.
All QA/QC results for 2006 data are shown in Appendix C.
< - Constituent not detected above laboratory reporting limit shown.
J - Value is estimated.
U - Constituent not detected above laboratory reporting limit shown.

Table 23. Summary of Groundwater VOC Analytical Results from Upper/Lower Aquifer Monitoring Wells in September 2006, General Motors Corporation, Moraine, Ohio.

		On-Site					
	Units	GM-33 9/21/2006 Upper Aquifer	GM-35 9/22/2006 Upper Aquifer	GM-32 9/19/2006 Upper Aquifer	GM-21 9/20/2006 Upper Aquifer	HR-17 9/18/2006 Upper Aquifer	W-2-S 9/18/2006 Upper Aquifer
Volatile Organic Compounds							
1,1,1-Trichloroethane	ug/l	18	5.5 J	< 10 U	12	< 1 U	1.8
1,1-Dichloroethane	ug/l	4.5	26 J	3.7 J	8.6	0.6 J	1.2
1,1-Dichloroethene	ug/l	1.1 J	< 5 UJ	< 10 U	0.19 J	< 1 U	< 1 U
Benzene	ug/l	< 1.7 U	< 5 UJ	< 10 U	< 1 U	< 1 U	< 1 U
cis-1,2-Dichloroethene	ug/l	6.9	160 J	< 10 U	14	4.6	1.2
Ethylbenzene	ug/l	< 1.7 U	< 5 UJ	< 10 U	< 1 U	< 1 U	< 1 U
Tetrachloroethene	ug/l	37	14 J	< 10 U	< 1 U	34	< 1 U
Toluene	ug/l	< 1.7 U	< 5 UJ	< 10 U	< 1 U	< 1 U	< 1 U
trans-1,2-Dichloroethene	ug/l	0.44 J	11 J	< 10 U	4.3	0.46 J	< 1 U
Trichloroethene	ug/l	64	130 J	< 10 U	5.9	5.6	5.1
Vinyl chloride	ug/l	< 1.7 U	13 J	< 10 U	9.3	< 1 U	< 1 U
Xylene (total)	ug/l	< 3.3 U	< 10 UJ	< 20 U	< 2 U	< 2 U	< 2 U
Total VOCs	**ug/l**	**131.94**	**359.5**	**3.7**	**54.29**	**45.26**	**9.3**

ug/l - Micrograms per liter.
All QA/QC results for 2006 data are shown in Appendix C.
< - Constituent not detected above laboratory reporting limit shown.
J - Value is estimated.
U - Constituent not detected above laboratory reporting limit shown.

Table 23. Summary of Groundwater VOC Analytical Results from Upper/Lower Aquifer Monitoring Wells in September 2006, General Motors Corporation, Moraine, Ohio.

		On-Site		Downgradient of the Site			
	Units	W-3-S 9/18/2006 Upper Aquifer	W-4-S 9/19/2006 Upper Aquifer	GM-8 9/19/2006 Upper Aquifer	GM-6 9/19/2006 Upper Aquifer	TW-2 9/19/2006 Upper Aquifer	4S 9/20/2006 Upper Aquifer
Volatile Organic Compounds							
1,1,1-Trichloroethane	ug/l	2.5	1.7	< 5 U	< 1 U	0.55 J	< 1 U
1,1-Dichloroethane	ug/l	< 1 U	1.3	18	16	3.4	5.6
1,1-Dichloroethene	ug/l	< 1 U	< 1 U	< 5 U	< 1 U	< 1 U	< 1 U
Benzene	ug/l	< 1 U	< 1 U	2.1 J	< 1 U	< 1 U	0.7 J
cis-1,2-Dichloroethene	ug/l	< 1 U	4.3	2.1 J	18	11	0.25 J
Ethylbenzene	ug/l	< 1 U	< 1 U	< 5 U	< 1 U	< 1 U	0.52 J
Tetrachloroethene	ug/l	0.6 J	18	< 5 U	< 1 U	7	< 1 U
Toluene	ug/l	< 1 U	< 1 U	< 5 U	< 1 U	< 1 U	< 1 U
trans-1,2-Dichloroethene	ug/l	< 1 U	1	1 J	1.6	0.38 J	0.75 J
Trichloroethene	ug/l	3.4	12	< 5 U	0.35 J	32	< 1 U
Vinyl chloride	ug/l	< 1 U	< 1 U	3.2 J	7.3	0.27 J	< 1 U
Xylene (total)	ug/l	< 2 U	< 2 U	< 10 U	< 2 U	< 2 U	< 2 U
Total VOCs	**ug/l**	**6.5**	**38.3**	**26.4**	**43.25**	**54.6**	**7.82**

ug/l - Micrograms per liter.
All QA/QC results for 2006 data are shown in Appendix C.
< - Constituent not detected above laboratory reporting limit shown.
J - Value is estimated.
U - Constituent not detected above laboratory reporting limit shown.

Table 23. Summary of Groundwater VOC Analytical Results from Upper/Lower Aquifer Monitoring Wells in September 2006, General Motors Corporation, Moraine, Ohio.

				Downgradient of the Site			
	Units	GM-2 9/20/2006 Upper Aquifer	GM-16 9/18/2006 Upper Aquifer	GM-17 9/27/2006 Upper Aquifer	GM-18 9/27/2006 Upper Aquifer	WSU-24 9/26/2006 Upper Aquifer	GM-10 9/27/2006 Upper Aquifer
Volatile Organic Compounds							
1,1,1-Trichloroethane	ug/l	< 1 U	2.1	0.46 J	6.2	0.65 J	0.9 J
1,1-Dichloroethane	ug/l	2.1	1.1 J	3.2	17	< 1 U	0.29 J
1,1-Dichloroethene	ug/l	< 1 U	< 1.4 U	< 1 U	< 2.9 U	< 1 U	< 1 U
Benzene	ug/l	< 1 U	< 1.4 U	< 1 U	< 2.9 U	< 1 U	< 1 U
cis-1,2-Dichloroethene	ug/l	7.7	3.8	9.5	21	< 1 U	0.77 J
Ethylbenzene	ug/l	< 1 U	< 1.4 U	< 1 U	< 2.9 U	< 1 U	< 1 U
Tetrachloroethene	ug/l	2.6	98	11	15	0.81 J	0.98 J
Toluene	ug/l	< 1 U	< 1.4 U	< 1 U	< 2.9 U	< 1 U	< 1 U
trans-1,2-Dichloroethene	ug/l	0.34 J	1 J	0.49 J	2 J	< 1 U	< 1 U
Trichloroethene	ug/l	5.1	51	24	72	10	11
Vinyl chloride	ug/l	0.61 J	< 1.4 U	0.54 J	2.5 J	< 1 U	< 1 U
Xylene (total)	ug/l	< 2 U	< 2.9 U	< 2 U	< 5.7 U	< 2 U	< 2 U
Total VOCs	**ug/l**	**18.45**	**157**	**49.19**	**135.7**	**11.46**	**13.94**

ug/l - Micrograms per liter.
All QA/QC results for 2006 data are shown in Appendix C.
< - Constituent not detected above laboratory reporting limit shown.
J - Value is estimated.
U - Constituent not detected above laboratory reporting limit shown.

Table 23. Summary of Groundwater VOC Analytical Results from Upper/Lower Aquifer Monitoring Wells in September 2006, General Motors Corporation, Moraine, Ohio.

	Units	Downgradient GM-26 9/21/2006 Upper Aquifer	Upgradient of the Site HR-10 9/26/2006 Lower Aquifer	Upgradient of the Site HR-12 9/26/2006 Lower Aquifer	On-Site HR-15 9/25/2006 Lower Aquifer	On-Site HR-13 9/25/2006 Lower Aquifer	On-Site GM-39 9/27/2006 Lower Aquifer
Volatile Organic Compounds							
1,1,1-Trichloroethane	ug/l	< 1 U	< 1 U	< 1 U	< 1 U	2	< 1 U
1,1-Dichloroethane	ug/l	< 1 U	< 1 U	2.1	< 1 U	22	< 1 U
1,1-Dichloroethene	ug/l	< 1 U	< 1 U	< 1 U	< 1 U	0.18 J	< 1 U
Benzene	ug/l	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
cis-1,2-Dichloroethene	ug/l	< 1 U	< 1 U	1.3	2.2	9	< 1 U
Ethylbenzene	ug/l	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Tetrachloroethene	ug/l	0.91 J	< 1 U	< 1 U	< 1 U	0.2 J	< 1 U
Toluene	ug/l	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
trans-1,2-Dichloroethene	ug/l	< 1 U	< 1 U	< 1 U	< 1 U	1.4	< 1 U
Trichloroethene	ug/l	< 1 U	< 1 U	< 1 U	0.5 J	15	< 1 U
Vinyl chloride	ug/l	< 1 U	< 1 U	< 1 U	13	< 1 U	1.7
Xylene (total)	ug/l	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U
Total VOCs	**ug/l**	**0.91**	**0**	**3.4**	**15.7**	**49.78**	**1.7**

ug/l - Micrograms per liter.
All QA/QC results for 2006 data are shown in Appendix C.
< - Constituent not detected above laboratory reporting limit shown.
J - Value is estimated.
U - Constituent not detected above laboratory reporting limit shown.

Table 23. Summary of Groundwater VOC Analytical Results from Upper/Lower Aquifer Monitoring Wells in September 2006, General Motors Corporation, Moraine, Ohio.

		On-Site				Downgradient of the Site	
	Units	GM-40 9/26/2006 Lower Aquifer	GM-41 9/18/2006 Lower Aquifer	GM-42 9/26/2006 Lower Aquifer	GM-19D 9/26/2006 Lower Aquifer	GM-3 9/22/2006 Lower Aquifer	GM-1 9/20/2006 Lower Aquifer
Volatile Organic Compounds							
1,1,1-Trichloroethane	ug/l	< 1 U	< 4 U	< 1 U	< 1 U	0.59 J	0.76 J
1,1-Dichloroethane	ug/l	< 1 U	< 4 U	0.5 J	< 1 U	2 J	< 1 U
1,1-Dichloroethene	ug/l	< 1 U	< 4 U	< 1 U	< 1 U	< 1 UJ	< 1 U
Benzene	ug/l	< 1 U	< 4 U	< 1 U	< 1 U	< 1 UJ	< 1 U
cis-1,2-Dichloroethene	ug/l	< 1 U	11	14	2	6.1 J	< 1 U
Ethylbenzene	ug/l	< 1 U	< 4 U	< 1 U	< 1 U	< 1 UJ	< 1 U
Tetrachloroethene	ug/l	< 1 U	< 4 U	< 1 U	< 1 U	2.1 J	2.1
Toluene	ug/l	< 1 U	< 4 U	< 1 U	< 1 U	< 1 UJ	< 1 U
trans-1,2-Dichloroethene	ug/l	< 1 U	< 4 U	0.44 J	< 1 U	1 J	< 1 U
Trichloroethene	ug/l	< 1 U	210	0.64 J	1.4	13 J	34
Vinyl chloride	ug/l	3.9	< 4 U	0.45 J	18	0.27 J	< 1 U
Xylene (total)	ug/l	< 2 U	< 8 U	< 2 U	< 2 U	< 2 UJ	< 2 U
Total VOCs	**ug/l**	**3.9**	**221**	**16.03**	**21.4**	**25.06**	**36.86**

ug/l - Micrograms per liter.
All QA/QC results for 2006 data are shown in Appendix C.
< - Constituent not detected above laboratory reporting limit shown.
J - Value is estimated.
U - Constituent not detected above laboratory reporting limit shown.

Table 23. Summary of Groundwater VOC Analytical Results from Upper/Lower Aquifer Monitoring Wells in September 2006, General Motors Corporation, Moraine, Ohio.

	Units	Downgradient of the Site					
		GM-15 9/18/2006 Lower Aquifer	GM-11 9/25/2006 Lower Aquifer	GM-20D 9/26/2006 Lower Aquifer	DN-13 9/27/2006 Lower Aquifer	GM-9 9/25/2006 Lower Aquifer	MT-69 9/26/2006 Lower Aquifer
Volatile Organic Compounds							
1,1,1-Trichloroethane	ug/l	< 1 U	0.75 J	0.51 J	0.51 J	0.44 J	< 1 U
1,1-Dichloroethane	ug/l	1.6	< 1 U	< 1 U	1.5	0.48 J	< 1 U
1,1-Dichloroethene	ug/l	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Benzene	ug/l	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
cis-1,2-Dichloroethene	ug/l	1.2	< 1 U	< 1 U	6.1	0.85 J	< 1 U
Ethylbenzene	ug/l	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Tetrachloroethene	ug/l	< 1 U	2	2.1	0.33 J	< 1 U	< 1 U
Toluene	ug/l	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
trans-1,2-Dichloroethene	ug/l	< 1 U	< 1 U	< 1 U	0.41 J	< 1 U	< 1 U
Trichloroethene	ug/l	6.3	34	11	5.7	6.6	< 1 U
Vinyl chloride	ug/l	< 1 U	< 1 U	< 1 U	2.3	< 1 U	< 1 U
Xylene (total)	ug/l	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U
Total VOCs	**ug/l**	**9.1**	**36.75**	**13.61**	**16.85**	**8.37**	**0**

ug/l - Micrograms per liter.
All QA/QC results for 2006 data are shown in Appendix C.
< - Constituent not detected above laboratory reporting limit shown.
J - Value is estimated.
U - Constituent not detected above laboratory reporting limit shown.

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Table 24. Carbon Source Solution Introduction Volumes for 2006, General Motors Corporation, Moraine, Ohio.

Location	Injection Well	January		February		March		April	
		Injection Event #69[1]		Injection Event #70[2]		Injection Event #71[3]		Injection Event #72[4]	
		Volume (gal.)	Flow Rate (gpm)	Volume (gal.)	Flow Rate (gpm)	Volume (gal.)	Flow Rate (gpm)	Volume (gal.)	Flow Rate (gpm)
Reactive Zone 1									
	RZ-1A	--	NA	450	22.50	1000	26.32	--	NA
	RZ-1B	--	NA	450	18.75	1000	24.41	--	NA
	RZ-1C	--	NA	900	21.42	900	22.50	--	NA
	RZ-1D	--	NA	900	30.00	900	23.08	--	NA
	RZ-1E	--	NA	900	18.00	900	25.00	--	NA
	RZ-1F	--	NA	900	18.36	900	26.47	--	NA
	RZ-1G	--	NA	900	22.50	900	39.13	--	NA
	RZ-1H	--	NA	900	21.42	900	34.62	--	NA
	RZ-1I	--	NA	900	25.71	900	24.62	--	NA
	RZ-1J	--	NA	900	30.00	900	20.00	--	NA
	RZ-1K	--	NA	900	36.00	900	21.95	--	NA
	RZ-1L	--	NA	900	34.61	900	36.00	--	NA
	RZ-1M	--	NA	900	27.27	900	32.14	--	NA
	RZ-1N	--	NA	900	21.42	900	34.62	--	NA
	RZ-1O	--	NA	900	34.61	900	39.13	--	NA
	RZ-1P	--	NA	900	20.93	900	36.00	--	NA
	RZ-1Q	--	NA	900	36.00	900	34.62	--	NA
	RZ-1R	--	NA	900	40.91	900	34.62	--	NA
	RZ-1S	--	NA	900	36.00	900	23.68	--	NA
	RZ-1T	--	NA	900	40.90	900	36.00	--	NA
	RZ-1U	--	NA	900	37.50	900	27.27	--	NA
	OW-1	--	NA	--	NA	--	NA	--	NA
	OW-2	--	NA	--	NA	--	NA	--	NA
	OW-3	500[15]	20.00	--	NA	--	NA	--	NA
Reactive Zone 2									
	ME-2	--	NA	--	NA	--	NA	--	NA
	ME-4	--	NA	--	NA	--	NA	--	NA

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Table 24. Carbon Source Solution Introduction Volumes for 2006, General Motors Corporation, Moraine, Ohio.

Location	Injection Well	January		February		March		April	
		Injection Event #69[1]		Injection Event #70[2]		Injection Event #71[3]		Injection Event #72[4]	
		Volume (gal.)	Flow Rate (gpm)	Volume (gal.)	Flow Rate (gpm)	Volume (gal.)	Flow Rate (gpm)	Volume (gal.)	Flow Rate (gpm)
Reactive Zone 3									
	RZ-3A	1800	35.45	1800	35.31	1800	35.97	1800	32.82
	RZ-3B	1800	36.06	1800	33.00	1800	35.08	1800	36.06
	RZ-3C	1800	32.31	1800	33.38	1800	30.59	1800	35.97
	RZ-3D	1800	33.00	1800	33.27	1800	30.54	1800	29.52
	RZ-3E	1800	35.42	1800	30.30	1800	29.90	1800	34.67
	RZ-3F	1800	33.00	1800	32.81	1800	27.90	1800	32.31
	RZ-3G	1800	73.50	1800	31.76	1800	21.19	1800	33.75
	RZ-3H	1800	30.54	1800	36.43	1800	33.33	1800	28.57
	RZ-3I	1800	32.06	1800	37.50	1800	26.65	900[14]	29.03
	RZ-3J	1800	36.00	1800	33.75	0[14]	0[14]	900[14]	40.91
	RZ-3K	1800	38.53	1800	31.07	1800	33.38	1800	35.42
	RZ-3L	1800	28.64	1800	35.31	1800	28.98	1800	22.29
	RZ-3M	900[14]	32.14	1800	35.31	1800	29.25	1800	36.00
	RZ-3N	1800	37.76	0[14]	NA	1800	35.97	1800	29.07
	RZ-3O	1800	36.00	1800	32.31	1800	33.20	1800	35.50
	RZ-3P	1800	41.69	1800	33.00	1800	19.67	1800	33.38
	RZ-3Q	1800	36.75	1800	30.13	1800	31.24	1800	40.98
	RZ-3R	1800	34.57	1800	32.18	1800	32.82	1800	24.52
	RZ-3S	1800	29.52	1800	34.82	1800	30.52	1800	23.93
	RZ-3T	1800	25.52	1800	31.81	1800	32.39	0[14]	NA
	RZ-3U	1800	22.13	1800	30.00	1800	31.73	1800	28.75
	RZ-3V	1800	30.16	1800	31.61	1800	29.81	1800	28.13
	RZ-3W	1800	36.23	1800	38.45	1800	36.06	1800	28.93
	RZ-3X	1800	31.59	1800	35.31	1800	46.92	1800	22.51
	RZ-3Y	1800	36.06	900[14]	37.50	1800	22.90	1800	37.77
	RZ-3Z	1800	34.97	1800	34.61	1800	31.64	1800	33.00
	RZ-3AA	1800	29.06	1100	22.57	1800	36.23	1800	35.31
	RZ-3BB	1800	37.57	1600	25.00	1800	36.06	1800	39.13

Table 24. Carbon Source Solution Introduction Volumes for 2006, General Motors Corporation, Moraine, Ohio.

Location	Injection Well	January		February		March		April	
		Injection Event #69[1]		Injection Event #70[2]		Injection Event #71[3]		Injection Event #72[4]	
		Volume (gal.)	Flow Rate (gpm)	Volume (gal.)	Flow Rate (gpm)	Volume (gal.)	Flow Rate (gpm)	Volume (gal.)	Flow Rate (gpm)
Reactive Zone 3									
	RZ-3CC	1800	39.20	900[14]	33.33	1800	32.31	0[13]	NA
	RZ-3DD	1810	31.98	1800	36.06	900[14]	36.00	1800	25.72
	RZ-3FF	0[13]	NA	900[13]	30.00	900[13]	37.50	0[13]	NA
	RZ-3GG	1800	37.57	1525	30.50	1800	31.41	1800	27.06
	RZ-3HH	1800	37.12	1800	31.73	1800	33.33	1800	36.75
	RZ-3II	1800	32.14	1800	30.16	1350	30.00	1800	39.21
	RZ-3JJ	900[13]	34.61	1800	28.23	1350	19.66	900[14]	37.50
	RZ-3KK	900[13]	34.61	1800	28.57	1800	19.28	900[14]	36.00
	RZ-3MM	--	NA	--	NA	--	NA	--	NA
	RZ-3NN	--	NA	--	NA	--	NA	--	NA
	RZ-3OO	--	NA	--	NA	--	NA	--	NA
	RZ-3PP	--	NA	--	NA	--	NA	--	NA
	RZ-3QQ	--	NA	--	NA	--	NA	--	NA
	RZ-3RR	1800	18.57	900[13]	20.00	1800	13.57	900[14]	16.67
	RZ-3SS	1800	21.18	900[13]	10.71	1800	14.18	0[14]	NA
	RZ-3TT	900[14]	13.23	0[13]	NA	1800	17.18	900[14]	13.85
	RZ-3UU	1800	19.38	0[13]	NA	1800	17.50	0[14]	NA
	RZ-3VV	1800	17	0[13]	NA	1800	12.92	900[14]	20.00
Reactive Zone 4 (Note-installed 7/6/2006)									
	RZ-4A	NA	NA	NA	NA	NA	NA	NA	NA
	RZ-4B	NA	NA	NA	NA	NA	NA	NA	NA
	RZ-4C	NA	NA	NA	NA	NA	NA	NA	NA
	RZ-4D	NA	NA	NA	NA	NA	NA	NA	NA
	RZ-4E	NA	NA	NA	NA	NA	NA	NA	NA
	RZ-4F	NA	NA	NA	NA	NA	NA	NA	NA
	RZ-4G	NA	NA	NA	NA	NA	NA	NA	NA
	RZ-4H	NA	NA	NA	NA	NA	NA	NA	NA
	RZ-4I	NA	NA	NA	NA	NA	NA	NA	NA
	RZ-4J	NA	NA	NA	NA	NA	NA	NA	NA
	RZ-4K	NA	NA	NA	NA	NA	NA	NA	NA

Table 24. Carbon Source Solution Introduction Volumes for 2006, General Motors Corporation, Moraine, Ohio.

Location	Injection Well	January		February		March		April	
		Injection Event #69[1]		Injection Event #70[2]		Injection Event #71[3]		Injection Event #72[4]	
		Volume (gal.)	Flow Rate (gpm)	Volume (gal.)	Flow Rate (gpm)	Volume (gal.)	Flow Rate (gpm)	Volume (gal.)	Flow Rate (gpm)
	RZ-4L	NA	NA	NA	NA	NA	NA	NA	NA
	RZ-4M	NA	NA	NA	NA	NA	NA	NA	NA
	RZ-4N	NA	NA	NA	NA	NA	NA	NA	NA
	RZ-4O	NA	NA	NA	NA	NA	NA	NA	NA
Site-Wide Total		68,900		78,925		88,400		58,500	

Table 24. Carbon Source Solution Introduction Volumes for 2006, General Motors Corporation, Moraine, Ohio.

Location	Injection Well	May		June		July		August	
		Injection Event #73[5]		Injection Event #74[6]		Injection Event #75[7]		Injection Event #76[8]	
		Volume (gal.)	Flow Rate (gpm)	Volume (gal.)	Flow Rate (gpm)	Volume (gal.)	Flow Rate (gpm)	Volume (gal.)	Flow Rate (gpm)
Reactive Zone 1									
	RZ-1A	400	16.67	400	21.05	--	NA	400	16.00
	RZ-1B	400	17.39	400	13.79	--	NA	400	14.28
	RZ-1C	800	25.00	800	33.33	--	NA	800	32.00
	RZ-1D	800	27.58	800	36.36	--	NA	800	29.62
	RZ-1E	800	18.18	800	33.33	--	NA	800	33.33
	RZ-1F	800	27.59	800	22.22	--	NA	800	30.76
	RZ-1G	800	33.33	800	27.59	--	NA	800	32.00
	RZ-1H	800	32.00	800	24.24	--	NA	800	32.00
	RZ-1I	800	27.59	800	21.62	--	NA	800	29.62
	RZ-1J	800	36.36	800	14.55	--	NA	800	32.00
	RZ-1K	800	26.67	800	32.00	--	NA	800	28.57
	RZ-1L	800	28.57	800	27.59	--	NA	800	30.76
	RZ-1M	800	32.00	800	30.77	--	NA	800	16.00
	RZ-1N	800	27.59	800	33.33	--	NA	800	30.76
	RZ-1O	800	33.33	800	29.63	--	NA	800	30.76
	RZ-1P	800	30.77	800	32.00	--	NA	800	34.78
	RZ-1Q	800	32.00	800	19.51	--	NA	800	25.00
	RZ-1R	800	33.33	800	30.77	--	NA	800	30.76
	RZ-1S	800	17.39	800	28.57	--	NA	200[14]	6.66
	RZ-1T	800	30.77	800	22.86	--	NA	800	30.76
	RZ-1U	800	23.53	800	32.00	--	NA	800	25.00
	OW-1	--	NA	375	7.5	--	NA	400[14]	20.00
	OW-2	--	NA	50[14]	5.00	--	NA	400[14]	12.12
	OW-3	--	NA	250	6.25	--	NA	600[14]	13.33
Reactive Zone 2									
	ME-2	--	NA	--	NA	--	NA	--	NA
	ME-4	--	NA	--	NA	--	NA	--	NA

Table 24. Carbon Source Solution Introduction Volumes for 2006, General Motors Corporation, Moraine, Ohio.

Location	Injection Well	May		June		July		August	
		Injection Event #73[5]		Injection Event #74[6]		Injection Event #75[7]		Injection Event #76[8]	
		Volume (gal.)	Flow Rate (gpm)	Volume (gal.)	Flow Rate (gpm)	Volume (gal.)	Flow Rate (gpm)	Volume (gal.)	Flow Rate (gpm)
Reactive Zone 3									
	RZ-3A	1600	24.29	1600	32.00	1600	27.11	1600	25.85
	RZ-3B	1600	26.81	1600	34.78	1600	25.00	1600	24.56
	RZ-3C	1600	34.44	1600	31.39	1600	29.18	1600	22.50
	RZ-3D	1600	35.72	1600	28.12	1600	20.12	1600	19.37
	RZ-3E	1600	27.73	1600	25.10	1600	23.19	1600	15.97
	RZ-3F	1600	31.52	1600	28.43	1600	31.48	1600	24.48
	RZ-3G	1600	29.67	1600	32.05	1600	37.39	1600	23.30
	RZ-3H	1600	27.13	1600	32.05	1600	27.13	1600	19.43
	RZ-3I	1600	31.48	1600	25.18	1600	26.81	1600	21.43
	RZ-3J	800[14]	32.00	1600	29.10	1600	31.48	1600	18.70
	RZ-3K	800[14]	29.63	1600	30.46	1600	32.78	1600	18.89
	RZ-3L	1600	25.91	1600	37.61	1600	30.82	1600	21.43
	RZ-3M	1600	31.07	1600	24.53	20[14]	2.85	1600	26.67
	RZ-3N	800[14]	20.00	1600	31.39	1600	25.10	1600	26.67
	RZ-3O	1600	26.00	1600	28.12	1600	27.32	1600	23.34
	RZ-3P	1600	15.97	1600	26.41	1600	32.05	1600	22.85
	RZ-3Q	800[14]	25.00	1600	32.05	1600	34.18	1600	29.33
	RZ-3R	1600	30.82	1600	28.57	1600	29.34	1600	27.43
	RZ-3S	1600	30.20	1600	30.20	1600	19.49	1600	26.00
	RZ-3T	1600	28.57	1600	28.08	1600	24.15	1600	27.43
	RZ-3U	1600	32.67	1600	30.82	1600	28.50	1600	21.43
	RZ-3V	1600	29.18	1600	35.07	1600	22.50	1600	28.72
	RZ-3W	1600	19.69	1600	33.00	1600	20.91	1600	30.29
	RZ-3X	1600	25.10	1600	25.22	1600	25.80	1600	34.18
	RZ-3Y	1600	25.10	1600	29.18	1600	29.34	800[14]	30.76
	RZ-3Z	0[14]	NA	100[13]	5.26	0[14]	NA	1600	33.33
	RZ-3AA	1600	26.81	200[13]	9.52	1600	30.20	1600	24.00
	RZ-3BB	1600	34.78	1600	27.32	1600	32.91	1600	24.27

Table 24. Carbon Source Solution Introduction Volumes for 2006, General Motors Corporation, Moraine, Ohio.

Location	Injection Well	May		June		July		August	
		Injection Event #73[5]		Injection Event #74[6]		Injection Event #75[7]		Injection Event #76[8]	
		Volume (gal.)	Flow Rate (gpm)	Volume (gal.)	Flow Rate (gpm)	Volume (gal.)	Flow Rate (gpm)	Volume (gal.)	Flow Rate (gpm)
Reactive Zone 3									
	RZ-3CC	1600	29.61	1600	25.00	1475	27.16	1600	29.33
	RZ-3DD	1600	29.57	1600	23.59	1600	32.00	1600	27.43
	RZ-3FF	800[14]	34.78	800[13]	30.76	800[13]	29.62	800[14]	28.57
	RZ-3GG	1600	27.13	0[13]	NA	1600	25.43	1600	28.14
	RZ-3HH	1600	30.00	0[13]	NA	1600	19.04	1600	29.67
	RZ-3II	1600	26.00	0[13]	NA	1600	28.15	1600	32.47
	RZ-3JJ	800[13]	26.67	1600	24.81	1600	30.26	1600	29.79
	RZ-3KK	800[13]	29.63	1600	20.53	1600	24.45	1600	25.91
	RZ-3MM	--	NA	--	NA	--	NA	--	NA
	RZ-3NN	--	NA	--	NA	--	NA	--	NA
	RZ-3OO	--	NA	--	NA	--	NA	--	NA
	RZ-3PP	--	NA	--	NA	--	NA	--	NA
	RZ-3QQ	--	NA	--	NA	--	NA	--	NA
	RZ-3RR	1600	25.83	1600	11.11	1600	22.22	1600	31.17
	RZ-3SS	1600	17.41	1600	12.84	1600	16.00	1600	17.52
	RZ-3TT	1600	8.49	1600	16.24	800[14]	22.22	1600	26.41
	RZ-3UU	1600	15.41	1600	22.66	1600	31.19	1600	24.14
	RZ-3VV	800[14]	21.62	800[14]	21.64	1600	23.80	1600	39.77
Reactive Zone 4 (Note-installed 7/6/2006)	RZ-4A	NA	NA	NA	NA	NA	NA	3000	19.12
	RZ-4B	NA	NA	NA	NA	NA	NA	3000	26.56
	RZ-4C	NA	NA	NA	NA	NA	NA	3000	27.03
	RZ-4D	NA	NA	NA	NA	NA	NA	3000	32.50
	RZ-4E	NA	NA	NA	NA	NA	NA	3000	30.36
	RZ-4F	NA	NA	NA	NA	NA	NA	3000	18.78
	RZ-4G	NA	NA	NA	NA	NA	NA	3000	28.34
	RZ-4H	NA	NA	NA	NA	NA	NA	3000	28.48
	RZ-4I	NA	NA	NA	NA	NA	NA	3000	18.78
	RZ-4J	NA	NA	NA	NA	NA	NA	3000	32.05
	RZ-4K	NA	NA	NA	NA	NA	NA	3000	15.52

Table 24. Carbon Source Solution Introduction Volumes for 2006, General Motors Corporation, Moraine, Ohio.

Location	Injection Well	May		June		July		August	
		Injection Event #73[5]		Injection Event #74[6]		Injection Event #75[7]		Injection Event #76[8]	
		Volume (gal.)	Flow Rate (gpm)	Volume (gal.)	Flow Rate (gpm)	Volume (gal.)	Flow Rate (gpm)	Volume (gal.)	Flow Rate (gpm)
	RZ-4L	NA	NA	NA	NA	NA	NA	3000	22.17
	RZ-4M	NA	NA	NA	NA	NA	NA	2600	15.97
	RZ-4N	NA	NA	NA	NA	NA	NA	3000	30.24
	RZ-4O	NA	NA	NA	NA	NA	NA	3000	21.22
Site-Wide Total		73,600		72,663		59,220		125,800	

Table 24. Carbon Source Solution Introduction Volumes for 2006, General Motors Corporation, Moraine, Ohio.

Location	Injection Well	September		October		November		December	
		Injection Event #77[9]		Injection Event #78[10]		Injection Event #79[11]		Injection Event #80[12]	
		Volume (gal.)	Flow Rate (gpm)	Volume (gal.)	Flow Rate (gpm)	Volume (gal.)	Flow Rate (gpm)	Volume (gal.)	Flow Rate (gpm)
Reactive Zone 1									
	RZ-1A	0[13]	NA	--	NA	--	NA	400	20.00
	RZ-1B	0[13]	NA	--	NA	--	NA	400	22.22
	RZ-1C	800	32.00	--	NA	--	NA	800	29.62
	RZ-1D	800	32.00	--	NA	--	NA	800	24.24
	RZ-1E	800	27.58	--	NA	--	NA	800	29.62
	RZ-1F	800	27.58	--	NA	--	NA	800	28.57
	RZ-1G	800	29.62	--	NA	--	NA	800	33.33
	RZ-1H	800	32.00	--	NA	--	NA	800	25.00
	RZ-1I	800	36.36	--	NA	--	NA	800	40.00
	RZ-1J	800	30.76	--	NA	--	NA	800	22.85
	RZ-1K	800	34.78	--	NA	--	NA	800	16.32
	RZ-1L	800	29.62	--	NA	--	NA	800	32.00
	RZ-1M	800	34.78	--	NA	--	NA	600	25.00
	RZ-1N	800	16.32	--	NA	--	NA	800	16.00
	RZ-1O	800	27.58	--	NA	--	NA	800	33.33
	RZ-1P	800	27.58	--	NA	--	NA	200[14]	13.33
	RZ-1Q	800	66.66	--	NA	--	NA	800	30.76
	RZ-1R	800	29.62	--	NA	--	NA	800	36.36
	RZ-1S	800	29.62	--	NA	--	NA	800	26.66
	RZ-1T	800	33.33	--	NA	--	NA	800	33.33
	RZ-1U	800	29.62	--	NA	--	NA	800	40.00
	OW-1	600[14]	21.42	--	NA	--	NA	--	NA
	OW-2	10[14]	2.00	--	NA	--	NA	--	NA
	OW-3	200[14]	12.50	--	NA	--	NA	--	NA
Reactive Zone 2									
	ME-2	--	NA	--	NA	--	NA	--	NA
	ME-4	--	NA	--	NA	--	NA	--	NA

Table 24. Carbon Source Solution Introduction Volumes for 2006, General Motors Corporation, Moraine, Ohio.

Location	Injection Well	September		October		November		December	
		Injection Event #77[9]		Injection Event #78[10]		Injection Event #79[11]		Injection Event #80[12]	
		Volume (gal.)	Flow Rate (gpm)	Volume (gal.)	Flow Rate (gpm)	Volume (gal.)	Flow Rate (gpm)	Volume (gal.)	Flow Rate (gpm)
Reactive Zone 3									
	RZ-3A	1600	25.36	1600	19.20	1600	21.05	1800	29.50
	RZ-3B	1600	22.51	1600	20.80	1600	21.91	1000	40.00
	RZ-3C	1600	26.57	1600	21.60	1600	21.62	1800	26.47
	RZ-3D	1600	21.00	1600	19.50	1600	34.78	1800	28.57
	RZ-3E	1600	17.95	1600	17.60	600	17.14	1800	26.08
	RZ-3F	1600	19.61	1600	18.60	600	21.42	1800	33.96
	RZ-3G	1600	26.57	1600	19.00	600	22.22	1800	34.61
	RZ-3H	1600	22.83	1600	18.00	600	21.40	1800	32.72
	RZ-3I	1600	20.00	1600	18.60	600	25.00	1800	26.86
	RZ-3J	1600	22.54	1600	16.60	600	26.08	1000[15]	23.80
	RZ-3K	1600	18.55	1600	15.70	1600	16.32	1800	28.12
	RZ-3L	1600	26.94	1600	18.00	1600	24.24	1800	32.14
	RZ-3M	1600	29.67	1600	18.80	1400	23.72	1400	29.78
	RZ-3N	1600	28.50	1600	19.50	1400	30.43	1600	34.04
	RZ-3O	1600	28.12	1600	17.60	1400	31.11	1600	28.56
	RZ-3P	1600	29.17	1600	18.00	1400	28.00	1600	31.37
	RZ-3Q	1600	28.50	1600	17.80	1400	22.50	1600	32.64
	RZ-3R	1600	25.41	1600	16.20	1400	25.45	1600	34.78
	RZ-3S	1600	23.03	1600	19.00	1400	22.58	1600	30.18
	RZ-3T	1600	22.58	1600	19.30	1400	27.45	1600	29.62
	RZ-3U	1600	24.15	1600	20.00	2000	27.39	2200	33.33
	RZ-3V	1600	25.81	1600	19.80	2000	31.25	2200	29.72
	RZ-3W	1600	28.08	1600	23.50	2000	25.31	1200	32.00
	RZ-3X	1600	26.70	1600	19.00	800	28.57	600[15]	33.33
	RZ-3Y	1600	27.77	1600	17.80	600	NA	600[15]	26.08
	RZ-3Z	1600	28.50	1600	18.20	600	26.08	600[15]	26.08
	RZ-3AA	1600	27.32	1600	18.60	600	25.00	800[15]	32.00
	RZ-3BB	1600	24.62	1600	22.90	600	21.44	600[15]	28.57

Table 24. Carbon Source Solution Introduction Volumes for 2006, General Motors Corporation, Moraine, Ohio.

Location	Injection Well	September		October		November		December	
		Injection Event #77[9]		Injection Event #78[10]		Injection Event #79[11]		Injection Event #80[12]	
		Volume (gal.)	Flow Rate (gpm)	Volume (gal.)	Flow Rate (gpm)	Volume (gal.)	Flow Rate (gpm)	Volume (gal.)	Flow Rate (gpm)
Reactive Zone 3									
	RZ-3CC	1600	29.91	1600	24.20	600	20.00	600[15]	25.00
	RZ-3DD	1600	23.72	1600	25.80	600	25.00	600[15]	25.00
	RZ-3FF	0[13]	NA	NA [13]	NA	NA (3)	NA	0[15]	NA
	RZ-3GG	1600	36.00	1600	29.70	1600	21.33	0[15]	NA
	RZ-3HH	1600	28.29	1600	24.20	1600	22.93	0[15]	NA
	RZ-3II	0[13]	NA	1600	25.80	1600	22.85	0[15]	NA
	RZ-3JJ	0[13]	NA	1600	34.80	1600	20.45	0[15]	NA
	RZ-3KK	0[13]	NA	NA [13]	NA	1600	17.40	800[15]	22.22
	RZ-3MM	--	NA	--	NA	--	NA	--	NA
	RZ-3NN	--	NA	--	NA	--	NA	--	NA
	RZ-3OO	--	NA	--	NA	--	NA	--	NA
	RZ-3PP	--	NA	--	NA	--	NA	--	NA
	RZ-3QQ	--	NA	--	NA	--	NA	--	NA
	RZ-3RR	800	17.77	1600	24.20	1600	8.90	1600	20.50
	RZ-3SS	800	33.33	1600	23.50	1600	12.21	800[15]	26.66
	RZ-3TT	800	20.51	1600	14.90	1600	10.80	0[15]	NA
	RZ-3UU	800	27.89	1600	25.80	1600	21.91	1600	13.19
	RZ-3VV	800	38.10	1600	18.60	1600	16.67	1400	26.41
Reactive Zone 4									
(Note-installed	RZ-4A	3000	24.52	3000	23.40	2400	19.67	3000	23.43
7/6/2006)	RZ-4B	3000	23.68	3000	22.40	2400	21.05	3000	26.54
	RZ-4C	3000	20.34	3000	25.20	2400	16.10	3000	22.38
	RZ-4D	3000	20.57	3000	20.80	2400	24.48	3000	29.41
	RZ-4E	3000	25.53	3000	22.10	2400	19.67	3000	22.72
	RZ-4F	3000	24.83	3000	20.00	2400	21.81	3000	17.85
	RZ-4G	3000	22.46	3000	20.80	2400	24.48	3000	28.03
	RZ-4H	3000	18.03	3000	29.40	2400	22.53	1600	33.33
	RZ-4I	3000	19.90	3000	25.40	3000	21.89	0[13]	NA
	RZ-4J	3000	25.74	3000	22.50	3000	21.12	0[13]	NA
	RZ-4K	3000	24.90	3000	19.00	3000	23.07	0[13]	NA

Table 24. Carbon Source Solution Introduction Volumes for 2006, General Motors Corporation, Moraine, Ohio.

Location	Injection Well	September		October		November		December	
		Injection Event #77[9]		Injection Event #78[10]		Injection Event #79[11]		Injection Event #80[12]	
		Volume (gal.)	Flow Rate (gpm)	Volume (gal.)	Flow Rate (gpm)	Volume (gal.)	Flow Rate (gpm)	Volume (gal.)	Flow Rate (gpm)
	RZ-4L	3000	17.93	3000	19.40	NA (3)	NA	0[13]	NA
	RZ-4M	3000	23.00	3000	16.80	NA (3)	NA	1000[13]	29
	RZ-4N	3000	24.35	3000	19.70	NA (3)	NA	2000[13]	30
	RZ-4O	3000	24.46	3000	27.00	NA (3)	NA	3000[13]	30
Site-Wide Total		116,210		107,400		79,000		92,600	

Table 24. Carbon Source Solution Introduction Volumes for 2006, General Motors Corporation, Moraine, Ohio.

Notes:
Carbon source introduced into each well is a 20:1 solution (potable water to molasses) for RZ-1A through RZ-3KK, 33:1 for RZ-3RR through RZ-3VV and OW-1 through OW-3, and 50:1 solution for RZ-4.
NA Not Applicable
-- Introduction well was not selected for introduction during this event.
(1) Injection Event #69 was completed January 9 through 13, and January 16 through 18, 2006.
(2) Injection Event #70 was completed February 6 through 10, and February 13 through 16, 2006.
(3) Injection Event #71 was completed February 28 through March 3, March 6 through 10, March 13 through 16, and March 20, 2006.
(4) Injection Event #72 was completed April 10 through 13 and April 17 through 20, 2006.
(5) Injection Event #73 was completed May 18 through 12 ans May 15 through 19, 2006.
(6) Injection Event #74 was completed June 1 and 2, June 5 through 9, and June 12 through 15, 2006.
(7) Injection Event #75 was completed July 5 and 6, 10 through 14, and 17 through 19, 2006.
(8) Injection Event #76 was completed July 31 through August 4 and August 9 through 18, 2006.
(9) Injection Event #77 was completed September 7 through 24 and October 2, 2006.
(10) Injection Event #78 was completed October 2 through 17, 2006.
(11) Injection Event #79 was completed November 1 - 9, 2006, November 14-16, 2006, and November 28-30, 2006.
(12) Injection Event #80 was completed December 1, 2006 through December 22, 2006.
(13) Introduction not completed or introduction volume reduced due to accessibility.
(14) Introduction not completed or introduction volume reduced because well would not accept solution.
(15) Well flushed with potable water. No carbon solution introduced.
(16) Introduction not completed or introduction volume reduced due to equipment malfunction and time constraints.

Table 25: Corrective Action Monitoring Results for Comparison to Remediation Target Levels (RTLs)
General Motors Corporation - Moraine, Ohio

			2006					2005			1999										
Aquifer	Remediation Zone	Chemical	Num of Analyses	Num of Detects	Min of 2006 Value (mg/l)	Mean 2006 Value (mg/L)	Max of 2006 Value (mg/l)	Min of 2005 Value (mg/l)	Mean 2005 Value (mg/L)	Max of 2005 Value (mg/l)	Min of 1999 Value (mg/l)	Mean 1999 Value (mg/l)	Max of 1999 Value (mg/l)	RTL[1] (mg/L)	Ratio: Min 2006 Value to RTL	Ratio: Mean 2006 Value to RTL	Ratio: Max 2006 Value to RTL	Ratio: Min 2005 Value to RTL	Ratio: Mean 2005 Value to RTL	Ratio: Max 2005 Value to RTL	Ratio: Min 1999 Value to RTL	Ratio: Mean 1999 Value to RTL	Ratio: Max 1999 Value to RTL
SHALLOW	AOI 7 SHALLOW	1,1-Dichloroethene	4	0	3.0E-03	2.0E-02	4.5E-02	4.5E-03	2.0E-02	5.0E-02	1.3E-03	2.4E-02	5.0E-02	1.4E-01	2.2E-02	1.5E-01	3.3E-01	3.3E-02	1.4E-01	3.6E-01	9.5E-03	1.7E-01	3.6E-01
SHALLOW	AOI 7 SHALLOW	cis-1,2-Dichloroethene	4	3	3.5E-03	6.1E+00	1.2E+01	5.0E-03	6.9E+00	1.9E+01	7.5E-03	6.0E+00	9.7E+00	1.4E+00	2.5E-03	4.4E+00	8.7E+00	3.6E-03	5.0E+00	1.4E+01	5.5E-03	4.4E+00	7.1E+00
SHALLOW	AOI 7 SHALLOW	Tetrachloroethene	4	3	3.2E-03	1.8E-01	3.7E-01	4.8E-03	7.7E-01	2.3E+00	9.5E-03	4.5E+00	7.1E+00	9.8E-02	3.2E-02	1.8E+00	3.8E+00	4.8E-02	7.9E+00	2.3E+01	9.7E-02	4.6E+01	7.3E+01
SHALLOW	AOI 7 SHALLOW	Trichloroethene	4	3	4.7E-03	1.5E-01	3.1E-01	7.0E-03	3.0E-01	4.9E-01	5.0E-03	1.0E+00	1.5E+00	9.8E-02	4.7E-02	1.5E+00	3.2E+00	7.1E-02	3.0E+00	5.0E+00	5.1E-02	1.0E+01	1.5E+01
SHALLOW	AOI 7 SHALLOW	Vinyl Chloride	4	3	3.5E-03	2.8E+00	7.0E+00	5.0E-03	1.1E+00	2.8E+00	3.8E-03	1.6E+00	2.6E+00	3.9E-02	9.0E-02	7.3E+01	1.8E+02	1.3E-01	2.8E+01	7.2E+01	9.7E-02	4.2E+01	6.7E+01
SHALLOW	ZONE S1	1,1-Dichloroethene	2	0	9.0E-05	9.0E-05	9.0E-05	9.0E-05	9.0E-05	9.0E-05	5.0E-04	5.0E-04	5.0E-04	1.2E-01	7.3E-04	7.3E-04	7.3E-04	7.3E-04	7.3E-04	7.3E-04	4.0E-03	4.0E-03	4.0E-03
SHALLOW	ZONE S1	cis-1,2-Dichloroethene	2	2	2.6E-04	3.4E-04	4.2E-04	3.2E-04	3.2E-04	3.2E-04	1.8E-01	1.8E-01	1.8E-01	1.2E+00	2.1E-04	2.8E-04	3.4E-04	2.6E-04	2.6E-04	2.6E-04	1.4E-01	1.4E-01	1.4E-01
SHALLOW	ZONE S1	Tetrachloroethene	2	0	9.5E-05	9.5E-05	9.5E-05	9.5E-05	9.5E-05	9.5E-05	3.2E-01	3.2E-01	3.2E-01	8.8E-02	1.1E-03	1.1E-03	1.1E-03	1.1E-03	1.1E-03	1.1E-03	3.6E+00	3.6E+00	3.6E+00
SHALLOW	ZONE S1	Trichloroethene	2	2	4.3E-04	5.8E-04	7.3E-04	6.6E-04	6.6E-04	6.6E-04	7.7E-01	7.7E-01	7.7E-01	8.8E-02	4.9E-03	6.6E-03	8.3E-03	7.5E-03	7.5E-03	7.5E-03	8.7E+00	8.7E+00	8.7E+00
SHALLOW	ZONE S1	Vinyl Chloride	2	2	4.2E-04	5.5E-04	6.8E-04	1.1E-03	1.1E-03	1.1E-03	3.2E-03	3.2E-03	3.2E-03	3.5E-02	1.2E-02	1.6E-02	1.9E-02	3.1E-02	3.1E-02	3.1E-02	9.1E-02	9.1E-02	9.1E-02
SHALLOW	ZONE S1 TO ZONE S2	1,1-Dichloroethene	3	0	9.0E-05	1.0E-04	1.3E-04	9.0E-05	9.0E-05	9.0E-05	5.0E-04	5.0E-04	5.0E-04	6.5E-02	1.4E-03	1.6E-03	2.0E-03	1.4E-03	1.4E-03	1.4E-03	7.7E-03	7.7E-03	7.7E-03
SHALLOW	ZONE S1 TO ZONE S2	cis-1,2-Dichloroethene	3	3	2.6E-04	9.2E-03	2.7E-02	3.2E-04	6.7E-03	1.3E-02	1.8E-01	2.2E-01	2.6E-01	6.5E-01	4.0E-04	1.4E-02	4.2E-02	5.0E-04	1.0E-02	2.0E-02	2.7E-01	3.3E-01	4.0E-01
SHALLOW	ZONE S1 TO ZONE S2	Tetrachloroethene	3	1	9.5E-05	4.4E-03	1.3E-02	9.5E-05	4.9E-03	9.8E-03	2.1E-01	2.6E-01	3.2E-01	4.6E-02	2.1E-03	9.6E-02	2.8E-01	2.1E-03	1.1E-01	2.1E-01	4.6E+00	5.8E+00	6.9E+00
SHALLOW	ZONE S1 TO ZONE S2	Trichloroethene	3	3	4.3E-04	1.1E-02	3.2E-02	6.6E-04	1.3E-02	2.5E-02	4.7E-01	6.2E-01	7.7E-01	4.6E-02	9.3E-03	2.4E-01	7.0E-01	1.4E-02	2.8E-01	5.4E-01	1.0E+01	1.4E+01	1.7E+01
SHALLOW	ZONE S1 TO ZONE S2	Vinyl Chloride	3	3	4.2E-04	4.0E-03	1.1E-02	1.1E-03	3.4E-03	5.6E-03	5.0E-04	1.9E-03	3.2E-03	1.8E-02	2.3E-02	2.2E-01	6.1E-01	6.1E-02	1.9E-01	3.1E-01	2.8E-02	1.0E-01	1.8E-01
SHALLOW	ZONE S2	1,1-Dichloroethene	3	0	9.0E-05	1.9E-04	3.6E-04	9.0E-05	2.0E-04	4.2E-04	5.0E-04	5.0E-04	5.0E-04	5.5E-02	1.6E-03	3.5E-03	6.5E-03	1.6E-03	3.6E-03	7.6E-03	9.1E-03	9.1E-03	9.1E-03
SHALLOW	ZONE S2	cis-1,2-Dichloroethene	3	3	3.5E-03	4.7E-02	1.1E-01	1.1E-03	4.5E-02	1.2E-01	5.7E-03	8.9E-02	2.6E-01	5.5E-01	6.4E-03	8.5E-02	2.0E-01	2.0E-03	8.1E-02	2.2E-01	1.0E-02	1.6E-01	4.6E-01
SHALLOW	ZONE S2	Tetrachloroethene	3	2	3.8E-04	5.1E-03	1.3E-02	9.5E-05	3.4E-03	9.8E-03	1.3E-03	9.1E-02	2.1E-01	3.9E-02	9.7E-03	1.3E-01	3.3E-01	2.4E-03	8.6E-02	2.5E-01	3.3E-02	2.3E+00	5.5E+00
SHALLOW	ZONE S2	Trichloroethene	3	3	2.4E-03	3.3E-02	6.5E-02	1.9E-03	3.1E-02	6.7E-02	2.7E-02	1.8E-01	4.7E-01	3.9E-02	6.2E-02	8.5E-01	1.7E+00	4.9E-02	8.0E-01	1.7E+00	7.0E-01	4.7E+00	1.2E+01
SHALLOW	ZONE S2	Vinyl Chloride	3	3	1.2E-03	4.8E-03	1.1E-02	1.6E-03	3.4E-03	5.6E-03	5.0E-04	5.0E-04	5.0E-04	1.6E-02	7.5E-02	3.0E-01	6.9E-01	1.0E-01	2.1E-01	3.5E-01	3.1E-02	3.1E-02	3.1E-02
SHALLOW	ZONE S2 TO ZONE S3	1,1-Dichloroethene	8	2	9.0E-05	6.0E-04	2.0E-03	9.0E-05	5.6E-04	1.8E-03	5.0E-04	5.8E-04	1.0E-03	3.7E-02	2.4E-03	1.6E-02	5.4E-02	2.4E-03	1.5E-02	4.9E-02	1.4E-02	1.6E-02	2.7E-02
SHALLOW	ZONE S2 TO ZONE S3	cis-1,2-Dichloroethene	8	8	2.8E-04	1.2E-01	6.6E-01	3.6E-04	4.5E-02	1.9E-01	5.0E-04	5.2E-02	2.6E-01	3.7E-01	7.5E-04	3.3E-01	1.8E+00	9.7E-04	1.2E-01	5.1E-01	1.3E-03	1.4E-01	6.9E-01
SHALLOW	ZONE S2 TO ZONE S3	Tetrachloroethene	8	7	3.8E-04	1.5E-02	4.1E-02	9.5E-05	2.9E-02	9.5E-02	1.3E-03	6.4E-02	2.1E-01	2.6E-02	1.5E-02	5.7E-01	1.6E+00	3.7E-03	1.1E+00	3.7E+00	5.0E-02	2.5E+00	8.2E+00
SHALLOW	ZONE S2 TO ZONE S3	Trichloroethene	8	8	2.4E-03	4.2E-02	1.3E-01	1.9E-03	7.2E-02	2.4E-01	4.0E-03	1.1E-01	4.7E-01	2.6E-02	9.2E-02	1.6E+00	5.0E+00	7.3E-02	2.8E+00	9.2E+00	1.5E-01	4.4E+00	1.8E+01
SHALLOW	ZONE S2 TO ZONE S3	Vinyl Chloride	8	4	1.1E-04	3.8E-03	1.3E-02	1.1E-04	4.7E-03	2.3E-02	5.0E-04	5.0E-04	5.0E-04	1.1E-02	9.5E-03	3.4E-01	1.2E+00	9.5E-03	4.3E-01	2.1E+00	4.5E-02	4.5E-02	4.5E-02
SHALLOW	ZONE S3	1,1-Dichloroethene	4	2	1.9E-04	7.9E-04	1.8E-03	9.0E-05	5.0E-04	9.0E-04	5.0E-04	2.2E-03	3.9E-03	2.6E-02	7.3E-03	3.0E-02	6.9E-02	3.5E-03	1.9E-02	3.5E-02	1.9E-02	8.5E-02	1.5E-01
SHALLOW	ZONE S3	cis-1,2-Dichloroethene	4	2	1.1E-03	7.3E-03	1.4E-02	1.1E-03	1.1E-02	2.0E-02	2.6E-03	3.5E-02	6.6E-02	2.6E-01	4.0E-03	2.8E-02	5.4E-02	4.0E-03	4.0E-02	7.7E-02	1.0E-02	1.3E-01	2.5E-01
SHALLOW	ZONE S3	Tetrachloroethene	4	0	9.5E-05	7.6E-04	1.9E-03	9.5E-05	5.2E-04	9.5E-04	5.0E-04	8.5E-04	1.2E-03	1.9E-02	5.0E-03	4.0E-02	1.0E-01	5.0E-03	2.8E-02	5.0E-02	2.6E-02	4.5E-02	6.3E-02
SHALLOW	ZONE S3	Trichloroethene	4	2	1.4E-03	3.2E-03	5.9E-03	1.4E-03	1.6E-03	1.8E-03	3.2E-03	1.6E-02	2.9E-02	1.9E-02	7.4E-02	1.7E-01	3.1E-01	7.4E-02	8.4E-02	9.5E-02	1.7E-01	8.4E-01	1.5E+00
SHALLOW	ZONE S3	Vinyl Chloride	4	2	1.1E-03	4.8E-03	9.3E-03	1.1E-03	7.0E-03	1.3E-02	5.0E-04	1.8E-03	3.0E-03	7.0E-03	1.5E-01	6.8E-01	1.3E+00	1.5E-01	1.0E+00	1.9E+00	7.1E-02	2.5E-01	4.3E-01
SHALLOW	ZONE S3 TO GM-10	1,1-Dichloroethene	15	2	9.0E-05	3.1E-04	1.8E-03	9.0E-05	2.0E-04	9.0E-04	5.0E-04	9.9E-04	3.9E-03	2.1E-02	4.3E-03	1.5E-02	8.6E-02	4.3E-03	9.6E-03	4.3E-02	2.4E-02	4.7E-02	1.9E-01
SHALLOW	ZONE S3 TO GM-10	cis-1,2-Dichloroethene	15	12	1.1E-04	6.9E-03	2.1E-02	1.1E-04	7.1E-03	2.0E-02	5.0E-04	2.2E-02	6.6E-02	2.1E-01	5.1E-04	3.3E-02	1.0E-01	5.1E-04	3.5E-02	9.7E-02	2.4E-03	1.1E-01	3.2E-01
SHALLOW	ZONE S3 TO GM-10	Tetrachloroethene	15	8	9.5E-05	1.2E-02	9.8E-02	9.5E-05	1.4E-02	1.0E-01	5.0E-04	1.8E-02	8.1E-02	1.5E-02	6.3E-03	7.8E-01	6.5E+00	6.3E-03	9.5E-01	6.7E+00	3.3E-02	1.2E+00	5.4E+00
SHALLOW	ZONE S3 TO GM-10	Trichloroethene	15	11	1.4E-04	1.4E-02	7.2E-02	1.4E-04	1.8E-02	7.0E-02	3.2E-03	3.5E-02	1.3E-01	1.5E-02	9.3E-03	9.5E-01	4.8E+00	9.3E-03	1.2E+00	4.7E+00	2.1E-01	2.4E+00	8.7E+00
SHALLOW	ZONE S3 TO GM-10	Vinyl Chloride	15	8	1.1E-04	2.6E-03	9.3E-03	1.1E-04	2.9E-03	1.3E-02	5.0E-04	1.7E-03	8.4E-03	6.0E-03	1.8E-02	4.3E-01	1.6E+00	1.8E-02	4.8E-01	2.2E+00	8.3E-02	2.9E-01	1.4E+00
SHALLOW	GM-10	1,1-Dichloroethene	1	0	9.0E-05	9.0E-05	9.0E-05	9.0E-05	9.0E-05	9.0E-05	5.0E-04	5.0E-04	5.0E-04	1.5E-02	6.0E-03	6.0E-03	6.0E-03	6.0E-03	6.0E-03	6.0E-03	3.3E-02	3.3E-02	3.3E-02
SHALLOW	GM-10	cis-1,2-Dichloroethene	1	1	7.7E-04	7.7E-04	7.7E-04	3.1E-04	3.1E-04	3.1E-04	5.0E-04	5.0E-04	5.0E-04	1.5E-01	5.1E-03	5.1E-03	5.1E-03	2.1E-03	2.1E-03	2.1E-03	3.3E-03	3.3E-03	3.3E-03
SHALLOW	GM-10	Tetrachloroethene	1	1	9.8E-04	9.8E-04	9.8E-04	1.2E-03	1.2E-03	1.2E-03	5.0E-04	5.0E-04	5.0E-04	1.1E-02	8.9E-02	8.9E-02	8.9E-02	1.1E-01	1.1E-01	1.1E-01	4.5E-02	4.5E-02	4.5E-02
SHALLOW	GM-10	Trichloroethene	1	1	1.1E-02	1.1E-02	1.1E-02	1.2E-02	1.2E-02	1.2E-02	1.4E-02	1.4E-02	1.4E-02	1.1E-02	1.0E+00	1.0E+00	1.0E+00	1.1E+00	1.1E+00	1.1E+00	1.3E+00	1.3E+00	1.3E+00
SHALLOW	GM-10	Vinyl Chloride	1	0	1.1E-04	1.1E-04	1.1E-04	1.1E-04	1.1E-04	1.1E-04	5.0E-04	5.0E-04	5.0E-04	4.0E-03	2.6E-02	2.6E-02	2.6E-02	2.6E-02	2.6E-02	2.6E-02	1.3E-01	1.3E-01	1.3E-01
SHALLOW	POC SHALLOW	1,1-Dichloroethene	1	0	9.0E-05	9.0E-05	9.0E-05	9.0E-05	9.0E-05	9.0E-05	5.0E-04	5.0E-04	5.0E-04	7.0E-03	1.3E-02	1.3E-02	1.3E-02	1.3E-02	1.3E-02	1.3E-02	7.1E-02	7.1E-02	7.1E-02
SHALLOW	POC SHALLOW	cis-1,2-Dichloroethene	1	0	1.1E-04	1.1E-04	1.1E-04	1.1E-04	1.1E-04	1.1E-04	5.0E-04	5.0E-04	5.0E-04	7.0E-02	1.5E-03	1.5E-03	1.5E-03	1.5E-03	1.5E-03	1.5E-03	7.1E-03	7.1E-03	7.1E-03
SHALLOW	POC SHALLOW	Tetrachloroethene	1	1	9.1E-04	9.1E-04	9.1E-04	1.0E-03	1.0E-03	1.0E-03	5.0E-04	5.0E-04	5.0E-04	5.0E-03	1.8E-01	1.8E-01	1.8E-01	2.0E-01	2.0E-01	2.0E-01	1.0E-01	1.0E-01	1.0E-01
SHALLOW	POC SHALLOW	Trichloroethene	1	0	1.4E-04	1.4E-04	1.4E-04	1.4E-04	1.4E-04	1.4E-04	5.0E-04	5.0E-04	5.0E-04	5.0E-03	2.8E-02	2.8E-02	2.8E-02	2.8E-02	2.8E-02	2.8E-02	1.0E-01	1.0E-01	1.0E-01
SHALLOW	POC SHALLOW	Vinyl Chloride	1	0	1.1E-04	1.1E-04	1.1E-04	1.1E-04	1.1E-04	1.1E-04	5.0E-04	5.0E-04	5.0E-04	2.0E-03	5.3E-02	5.3E-02	5.3E-02	5.3E-02	5.3E-02	5.3E-02	2.5E-01	2.5E-01	2.5E-01

Table 25: Corrective Action Monitoring Results for Comparison to Remediation Target Levels (RTLs)
General Motors Corporation - Moraine, Ohio

			2006					2005			1999											
Aquifer	Remediation Zone	Chemical	Num of Analyses	Num of Detects	Min of 2006 Value (mg/l)	Mean 2006 Value (mg/L)	Max of 2006 Value (mg/l)	Min of 2005 Value (mg/l)	Mean 2005 Value (mg/L)	Max of 2005 Value (mg/l)	Min of 1999 Value (mg/l)	Mean 1999 Value (mg/l)	Max of 1999 Value (mg/l)	RTL[1] (mg/L)	Ratio: Min 2006 Value to RTL	Ratio: Mean 2006 Value to RTL	Ratio: Max 2006 Value to RTL	Ratio: Min 2005 Value to RTL	Ratio: Mean 2005 Value to RTL	Ratio: Max 2005 Value to RTL	Ratio: Min 1999 Value to RTL	Ratio: Mean 1999 Value to RTL	Ratio: Max 1999 Value to RTL
DEEP	AOI 7 DEEP	1,1-Dichloroethene	4	0	3.0E-03	2.0E-02	4.5E-02	4.5E-03	2.0E-02	5.0E-02	1.3E-03	2.4E-02	5.0E-02	1.8E-01	1.7E-02	1.1E-01	2.5E-01	2.5E-02	1.1E-01	2.8E-01	7.3E-03	1.3E-01	2.8E-01
DEEP	AOI 7 DEEP	cis-1,2-Dichloroethene	4	3	3.5E-03	6.1E+00	1.2E+01	5.0E-03	6.9E+00	1.9E+01	7.5E-03	6.0E+00	9.7E+00	1.8E+00	1.9E-03	**3.4E+00**	**6.7E+00**	2.8E-03	**3.8E+00**	**1.1E+01**	4.2E-03	**3.4E+00**	**5.4E+00**
DEEP	AOI 7 DEEP	Tetrachloroethene	4	3	3.2E-03	1.8E-01	3.7E-01	4.8E-03	7.7E-01	2.3E+00	9.5E-03	4.5E+00	7.1E+00	1.3E-01	2.5E-02	**1.4E+00**	**2.9E+00**	3.7E-02	**6.0E+00**	**1.8E+01**	7.4E-02	**3.5E+01**	**5.6E+01**
DEEP	AOI 7 DEEP	Trichloroethene	4	3	4.7E-03	1.5E-01	3.1E-01	7.0E-03	3.0E-01	4.9E-01	5.0E-03	1.0E+00	1.5E+00	1.3E-01	3.6E-02	**1.2E+00**	**2.4E+00**	5.5E-02	**2.3E+00**	**3.8E+00**	3.9E-02	**8.0E+00**	**1.1E+01**
DEEP	AOI 7 DEEP	Vinyl Chloride	4	3	3.5E-03	2.8E+00	7.0E+00	5.0E-03	1.1E+00	2.8E+00	3.8E-03	1.6E+00	2.6E+00	5.1E-02	6.9E-02	**5.5E+01**	**1.4E+02**	9.8E-02	**2.2E+01**	**5.5E+01**	7.5E-02	**3.2E+01**	**5.1E+01**
DEEP	GM-40/41	1,1-Dichloroethene	2	0	9.0E-05	2.3E-04	3.6E-04	9.0E-05	5.0E-04	9.0E-04				3.2E-02	2.8E-03	7.0E-03	1.1E-02	2.8E-03	1.5E-02	2.8E-02			
DEEP	GM-40/41	cis-1,2-Dichloroethene	2	1	1.1E-04	5.6E-03	1.1E-02	1.1E-04	8.1E-03	1.6E-02				3.2E-01	3.3E-04	1.7E-02	3.4E-02	3.3E-04	2.5E-02	5.0E-02			
DEEP	GM-40/41	Tetrachloroethene	2	0	9.5E-05	2.4E-04	3.8E-04	9.5E-05	5.2E-04	9.5E-04				2.3E-02	4.1E-03	1.0E-02	1.7E-02	4.1E-03	2.3E-02	4.1E-02			
DEEP	GM-40/41	Trichloroethene	2	1	1.4E-04	1.1E-01	2.1E-01	1.4E-04	1.3E-01	2.5E-01				2.3E-02	6.1E-03	**4.6E+00**	**9.1E+00**	6.1E-03	**5.4E+00**	**1.1E+01**			
DEEP	GM-40/41	Vinyl Chloride	2	1	4.2E-04	2.2E-03	3.9E-03	1.1E-03	2.0E-03	2.9E-03				9.0E-03	4.7E-02	2.4E-01	4.3E-01	1.2E-01	2.2E-01	3.2E-01			
DEEP	GM-42	1,1-Dichloroethene	1	0	9.0E-05	9.0E-05	9.0E-05	2.1E-04	2.1E-04	2.1E-04				1.1E-02	8.2E-03	8.2E-03	8.2E-03	1.9E-02	1.9E-02	1.9E-02			
DEEP	GM-42	cis-1,2-Dichloroethene	1	1	1.4E-02	1.4E-02	1.4E-02	1.7E-02	1.7E-02	1.7E-02				1.1E-01	1.3E-01	1.3E-01	1.3E-01	1.6E-01	1.6E-01	1.6E-01			
DEEP	GM-42	Tetrachloroethene	1	0	9.5E-05	9.5E-05	9.5E-05	1.9E-04	1.9E-04	1.9E-04				8.0E-03	1.2E-02	1.2E-02	1.2E-02	2.4E-02	2.4E-02	2.4E-02			
DEEP	GM-42	Trichloroethene	1	1	6.4E-04	6.4E-04	6.4E-04	8.5E-04	8.5E-04	8.5E-04				8.0E-03	8.0E-02	8.0E-02	8.0E-02	1.1E-01	1.1E-01	1.1E-01			
DEEP	GM-42	Vinyl Chloride	1	1	4.5E-04	4.5E-04	4.5E-04	5.6E-04	5.6E-04	5.6E-04				3.0E-03	1.5E-01	1.5E-01	1.5E-01	1.9E-01	1.9E-01	1.9E-01			
DEEP	GM-19D	1,1-Dichloroethene	1	0	9.0E-05	9.0E-05	9.0E-05	9.0E-05	9.0E-05	9.0E-05	5.0E-04	5.0E-04	5.0E-04	8.0E-03	1.1E-02	1.1E-02	1.1E-02	1.1E-02	1.1E-02	1.1E-02	6.3E-02	6.3E-02	6.3E-02
DEEP	GM-19D	cis-1,2-Dichloroethene	1	1	2.0E-03	2.0E-03	2.0E-03	2.7E-03	2.7E-03	2.7E-03	1.2E-03	1.2E-03	1.2E-03	8.3E-02	2.4E-02	2.4E-02	2.4E-02	3.3E-02	3.3E-02	3.3E-02	1.4E-02	1.4E-02	1.4E-02
DEEP	GM-19D	Tetrachloroethene	1	0	9.5E-05	9.5E-05	9.5E-05	9.5E-05	9.5E-05	9.5E-05	5.0E-04	5.0E-04	5.0E-04	6.0E-03	1.6E-02	1.6E-02	1.6E-02	1.6E-02	1.6E-02	1.6E-02	8.3E-02	8.3E-02	8.3E-02
DEEP	GM-19D	Trichloroethene	1	1	1.4E-03	1.4E-03	1.4E-03	1.2E-03	1.2E-03	1.2E-03	1.4E-02	1.4E-02	1.4E-02	6.0E-03	2.3E-01	2.3E-01	2.3E-01	2.0E-01	2.0E-01	2.0E-01	**2.3E+00**	**2.3E+00**	**2.3E+00**
DEEP	GM-19D	Vinyl Chloride	1	1	1.8E-02	1.8E-02	1.8E-02	1.5E-02	1.5E-02	1.5E-02	1.5E-03	1.5E-03	1.5E-03	2.0E-03	**9.0E+00**	**9.0E+00**	**9.0E+00**	**7.5E+00**	**7.5E+00**	**7.5E+00**	7.5E-01	7.5E-01	7.5E-01
DEEP	ZONE D2	1,1-Dichloroethene	2	0	9.0E-05	9.0E-05	9.0E-05	9.0E-05	9.0E-05	9.0E-05	5.0E-04	5.0E-04	5.0E-04	8.0E-03	1.1E-02	1.1E-02	1.1E-02	1.1E-02	1.1E-02	1.1E-02	6.3E-02	6.3E-02	6.3E-02
DEEP	ZONE D2	cis-1,2-Dichloroethene	2	1	1.1E-04	3.1E-03	6.1E-03	1.1E-04	2.4E-03	4.7E-03	5.0E-04	8.0E-04	1.1E-03	7.5E-02	1.4E-03	4.1E-02	8.1E-02	1.4E-03	3.2E-02	6.3E-02	6.7E-03	1.1E-02	1.5E-02
DEEP	ZONE D2	Tetrachloroethene	2	2	2.1E-03	2.1E-03	2.1E-03	2.0E-03	2.1E-03	2.1E-03	1.2E-03	1.6E-03	2.0E-03	5.0E-03	4.2E-01	4.2E-01	4.2E-01	4.0E-01	4.1E-01	4.2E-01	2.4E-01	3.2E-01	4.0E-01
DEEP	ZONE D2	Trichloroethene	2	2	1.3E-02	2.4E-02	3.4E-02	1.4E-02	2.4E-02	3.4E-02	7.5E-03	1.9E-02	3.1E-02	5.0E-03	**2.6E+00**	**4.7E+00**	**6.8E+00**	**2.8E+00**	**4.8E+00**	**6.8E+00**	**1.5E+00**	**3.8E+00**	**6.1E+00**
DEEP	ZONE D2	Vinyl Chloride	2	1	1.1E-04	1.9E-04	2.7E-04	1.1E-04	1.1E-04	1.1E-04	5.0E-04	5.0E-04	5.0E-04	2.0E-03	5.3E-02	9.4E-02	1.4E-01	5.3E-02	5.3E-02	5.3E-02	2.5E-01	2.5E-01	2.5E-01
DEEP	POC DEEP	1,1-Dichloroethene	3	0	9.0E-05	9.0E-05	9.0E-05	9.0E-05	9.0E-05	9.0E-05	5.0E-04	5.0E-04	5.0E-04	7.0E-03	1.3E-02	1.3E-02	1.3E-02	1.3E-02	1.3E-02	1.3E-02	7.1E-02	7.1E-02	7.1E-02
DEEP	POC DEEP	cis-1,2-Dichloroethene	3	1	1.1E-04	4.7E-04	1.2E-03	1.1E-04	6.4E-04	1.7E-03	5.0E-04	1.8E-03	4.3E-03	7.0E-02	1.5E-03	6.7E-03	1.7E-02	1.5E-03	9.1E-03	2.4E-02	7.1E-03	2.5E-02	6.1E-02
DEEP	POC DEEP	Tetrachloroethene	3	2	9.5E-05	1.4E-03	2.1E-03	9.5E-05	1.5E-03	2.7E-03	5.0E-04	8.3E-04	1.5E-03	5.0E-03	1.9E-02	2.8E-01	4.2E-01	1.9E-02	3.0E-01	5.4E-01	1.0E-01	1.7E-01	3.0E-01
DEEP	POC DEEP	Trichloroethene	3	3	6.3E-03	1.7E-02	3.4E-02	5.9E-03	1.6E-02	3.2E-02	5.0E-04	6.4E-03	1.5E-02	5.0E-03	**1.3E+00**	**3.4E+00**	**6.8E+00**	**1.2E+00**	**3.3E+00**	**6.4E+00**	1.0E-01	**1.3E+00**	**2.9E+00**
DEEP	POC DEEP	Vinyl Chloride	3	0	1.1E-04	1.1E-04	1.1E-04	1.1E-04	1.1E-04	1.1E-04	5.0E-04	5.0E-04	5.0E-04	2.0E-03	5.3E-02	5.3E-02	5.3E-02	5.3E-02	5.3E-02	5.3E-02	2.5E-01	2.5E-01	2.5E-01

NOTES

1. RTL reflects updated groundwater modeling conducted to reflect current pumping conditions (see Appendix F, Table F-4)

Table 26: In-Place Waste Management Unit Assessment
Summary of Downgradient Ground Water Concentrations (mg/L) for Current Ground Water Use[1]
Delphi Thermal, Moraine Engine and Moraine Assembly Plants - GMC, Moraine, Ohio

TCL/TAL Group	Constituent	CASRN	Moraine Assembly	Moraine Engine	West Carrollton	Criteria	Flag
VOC	1,1,1-Trichloroethane	71-55-6	0.	0.	0.	0.2	
VOC	1,1-Dichloroethane	75-34-3	0.0001	0.	0.	3.65	
VOC	1,1-Dichloroethene	75-35-4	0.	0.	0.	0.007	
VOC	1,2-Dichloroethene (total)	540-59-0	0.	0.	0.	0.07	
VOC	2-Butanone	78-93-3	0.	0.	0.	21.9	
VOC	Acetone	67-64-1	0.	0.	0.	3.65	
VOC	Benzene	71-43-2	0.	0.	0.	0.005	
VOC	Carbon Disulfide	75-15-0	0.	0.	0.	3.65	
VOC	Chlorobenzene	108-90-7	0.	0.	0.	0.1	
VOC	Chloroethane	75-00-3	0.	0.	0.	0.01	
VOC	Chloroform	67-66-3	0.	0.	0.	0.1	
VOC	cis-1,2-Dichloroethene	156-59-2	0.0001	0.	0.	0.07	
VOC	Ethyl Benzene	100-41-4	0.	0.	0.	0.7	
VOC	Styrene	100-42-5	0.	0.	0.	0.1	
VOC	Tetrachloroethene	127-18-4	0.	0.	0.0001	0.005	
VOC	Toluene	108-88-3	0.	0.	0.	1.	
VOC	trans-1,2-Dichloroethene	156-60-5	0.	0.	0.	0.1	
VOC	Trichloroethene	79-01-6	0.0001	0.	0.0001	0.005	
VOC	Trichlorofluoromethane	75-69-4	0.	0.	0.	10.95	
VOC	Vinyl Chloride	75-01-4	0.	0.	0.	0.002	
VOC	Xylenes (total)	1330-20-7	0.	0.	0.	10.	
SVOC	1,2-Dichlorobenzene	95-50-1	0.	0.	0.	0.6	
SVOC	2-Methylnaphthalene	91-57-6	0.	0.	0.	0.73	
SVOC	Benzo(a)anthracene	56-55-3	0.	0.	0.	0.01	
SVOC	Benzo(a)pyrene	50-32-8	0.	0.	0.	0.0002	
SVOC	Benzo(b)fluoranthene	205-99-2	0.	0.	0.	0.01	
SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	0.	0.	0.	0.006	
SVOC	Butylbenzylphthalate	85-68-7	0.	0.	0.	7.3	
SVOC	Chrysene	218-01-9	0.	0.	0.	0.0117	
SVOC	Di-n-butylphthalate	84-74-2	0.	0.	0.	3.65	
SVOC	Fluoranthene	206-44-0	0.	0.	0.	1.46	
SVOC	Fluorene	86-73-7	0.	0.	0.	1.46	
SVOC	Naphthalene	91-20-3	0.	0.	0.	0.73	
SVOC	Phenanthrene	85-01-8	0.	0.	0.	1.095	
SVOC	Pyrene	129-00-0	0.	0.	0.	1.095	
P/PCB	Aroclor-1242	53469-21-9	0.	0.	0.	0.0005	
P/PCB	Aroclor-1254	11097-69-1	0.	0.	0.	0.0005	
P/PCB	Aroclor-1260	11096-82-5	0.	0.	0.	0.0005	
INORG	Antimony	7440-36-0	0.	0.	0.	0.006	
INORG	Arsenic	7440-38-2	0.	0.	0.	0.05	
INORG	Barium	7440-39-3	0.	0.	0.0003	2.	
INORG	Beryllium	7440-41-7	0.	0.	0.	0.004	
INORG	Cadmium	7440-43-9	0.	0.	0.	0.005	
INORG	Chromium (total)	7440-47-3	0.	0.	0.	0.1	
INORG	Cobalt	7440-48-4	0.	0.	0.	2.19	
INORG	Copper	7440-50-8	0.	0.	0.	1.3	
INORG	Cyanide (total)	57-12-5	0.	0.	0.	0.2	
INORG	Lead	7439-92-1	0.	0.	0.	0.015	
INORG	Manganese	7439-96-5	0.	0.	0.0009	5.11	
INORG	Mercury	7439-97-6	0.	0.	0.	0.002	
INORG	Nickel	7440-02-0	0.	0.	0.	0.1	
INORG	Selenium	7782-49-2	0.	0.	0.	0.05	
INORG	Silver	7440-22-4	0.	0.	0.	0.1825	
INORG	Thallium	7440-28-0	0.	0.	0.	0.002	
INORG	Vanadium	7440-62-2	0.	0.	0.	0.2555	
INORG	Zinc	7440-66-6	0.	0.	0.	10.95	

Note:

1 Supplemental Baseline Risk Assessment (ENVIRON 2001b). Groundwater Exposure Scenario 1 - Baseline wells (West Carrollton municipal well field and Moraine Assembly industrial wells (11A, 12A)).

Table 27. Summary of Site-Wide Groundwater Monitoring Plan for 2007, General Motors Corporation, Moraine, Ohio.

Monitoring Wells	Reason for Monitoring	Monitoring Frequency	Parameter List
Upper Aquifer Wells			
HR-9	Monitoring groundwater quality upgradient of the site.	Annual	VOCs[1]
HR-11	Monitoring groundwater quality upgradient of the site.	Annual	VOCs[1]
HR-4	Monitoring of groundwater quality upgradient of the closed North Settling Lagoon and downgradient of Landfill L3.	Annual	VOCs[1]
W-2-N	Monitoring of groundwater quality downgradient of the closed North Settling Lagoon.	Annual	VOCs[1]
W-3-N	Monitoring of groundwater quality downgradient of the closed North Settling Lagoon.	Annual	VOCs[1]
W-4-N	Monitoring of groundwater quality downgradient of the closed North Settling Lagoon and Landfills L2 and L3.	Annual	VOCs[1]
HR-2	Monitoring groundwater quality downgradient of Landfills L2 and L3.	Annual	VOCs[1]
HR-5	Monitoring of groundwater quality downgradient of the North Settling Lagoon.	Annual	VOCs[1]
HR-1	Monitoring groundwater quality in the central portion of the site.	Annual	VOCs[1]
GM-30	Monitoring effectiveness of corrective measures at AOI 7.	Annual	VOCs[1] Biogeochemical[2]
GM-23	Monitoring effectiveness of corrective measures at RZ-1.	Annual	VOCs[1] Biogeochemical[2]

Table 27. Summary of Site-Wide Groundwater Monitoring Plan for 2007, General Motors Corporation, Moraine, Ohio.

Monitoring Wells	Reason for Monitoring	Monitoring Frequency	Parameter List
Upper Aquifer Wells			
GM-27	Monitoring effectiveness of corrective measures at RZ-1 in lower portion of the upper aquifer.	Annual	VOCs[1]
GM-29	Monitoring effectiveness of corrective measures sidegradient to RZ-1.	Annual	VOCs[1] Biogeochemical[2]
GM-28	Monitoring effectiveness of corrective measures downgradient of RZ-1.	Annual	VOCs[1] Biogeochemical[2]
ME-6	Monitoring effectiveness of corrective measures at the upgradient boundary of RZ-2.	Annual	VOCs[1] Biogeochemical[2]
GM-31	Monitoring effectiveness of corrective measures beneath the introduction zone within RZ-2.	Annual	VOCs[1] Biogeochemical[2]
ME-3	Monitoring effectiveness of corrective measures at the downgradient boundary of RZ-2.	Annual	VOCs[1] Biogeochemical[2]
GM-22	Monitoring effectiveness of corrective measures upgradient of RZ-3 East.	Annual	VOCs[1] Biogeochemical[2]
GM-19S	Monitoring effectiveness of corrective measures downgradient of RZ-4 East and groundwater quality upgradient of Landfill L1.	Annual	VOCs[1] Biogeochemical[2]

Table 27. **Summary of Site-Wide Groundwater Monitoring Plan for 2007, General Motors Corporation, Moraine, Ohio.**

Monitoring Wells	Reason for Monitoring	Monitoring Frequency	Parameter List
Upper Aquifer Wells			
GM-33	Monitoring effectiveness of corrective measures upgradient of RZ-3 West and groundwater quality upgradient of Landfill L1.	Annual	VOCs[1]
GM-35	Monitoring effectiveness of corrective measures upgradient of RZ-3 West and groundwater quality upgradient of Landfill L1.	Annual	VOCs[1]
GM-32	Monitoring effectiveness of corrective measures downgradient of RZ-3 West and groundwater quality upgradient of Landfill L1.	Annual	VOCs[1] Biogeochemical[2]
GM-21	Monitoring effectiveness of corrective measures downgradient of RZ-3 West.	Annual	VOCs[1] Biogeochemical[2]
HR-17	Monitoring of groundwater quality upgradient of the closed South Settling Lagoon.	Annual	VOCs[1]
W-2-S	Monitoring of groundwater quality downgradient of the closed South Settling Lagoon.	Annual	VOCs[1]
W-3-S	Monitoring of groundwater quality downgradient of the closed South Settling Lagoon.	Annual	VOCs[1]
W-4-S	Monitoring of groundwater quality downgradient of the closed South Settling Lagoon and sidegradient to RZ-4 West.	Annual	VOCs[1] Biogeochemical[2]
GM-8	Monitoring groundwater quality downgradient of RZ-3 West and within Landfill L1.	Annual	VOCs[1] Biogeochemical[2]
GM-6	Monitoring groundwater quality downgradient of RZ-3 West and within Landfill L1.	Annual	VOCs[1] Biogeochemical[2]
GM-47/GM-50	Monitoring effectiveness of corrective measures downgradient of RZ-4 West.	Annual	VOCs[1] Biogeochemical[2]
GM-51	Monitoring effectiveness of corrective measures downgradient of the site.	Annual	VOCs[1]

Table 27. Summary of Site-Wide Groundwater Monitoring Plan for 2007, General Motors Corporation, Moraine, Ohio.

Monitoring Wells	Reason for Monitoring	Monitoring Frequency	Parameter List
Upper Aquifer Wells			
GM-52	Monitoring effectiveness of corrective measures downgradient of the site.	Annual	VOCs[1]
GM-63/GM-64	Monitoring effectiveness of corrective measures downgradient of RZ-4 West.	Annual	VOCs[1] Biogeochemical[2]
TW-2	Monitoring groundwater quality downgradient of the site and Landfill L1.	Annual	VOCs[1]
GM-2	Monitoring groundwater quality downgradient of the site.	Annual	VOCs[1]
GM-16	Monitoring groundwater quality downgradient of the site.	Annual	VOCs[1]
GM-17	Monitoring groundwater quality downgradient of the site.	Annual	VOCs[1]
GM-18	Monitoring groundwater quality downgradient of the site.	Annual	VOCs[1]
WSU-24	Monitoring groundwater quality downgradient of the site.	Annual	VOCs[1]
GM-10	Monitoring groundwater quality downgradient of the site.	Annual	VOCs[1]
GM-26	Monitoring groundwater quality downgradient of the site. Point of compliance well.	Annual	VOCs[1]
Lower Aquifer Wells			
HR-10	Monitoring groundwater quality upgradient of the site.	Annual	VOCs[1]
HR-12	Monitoring groundwater quality upgradient of the site.	Annual	VOCs[1]
HR-15	Monitoring groundwater quality in the central portion of the site.	Annual	VOCs[1]

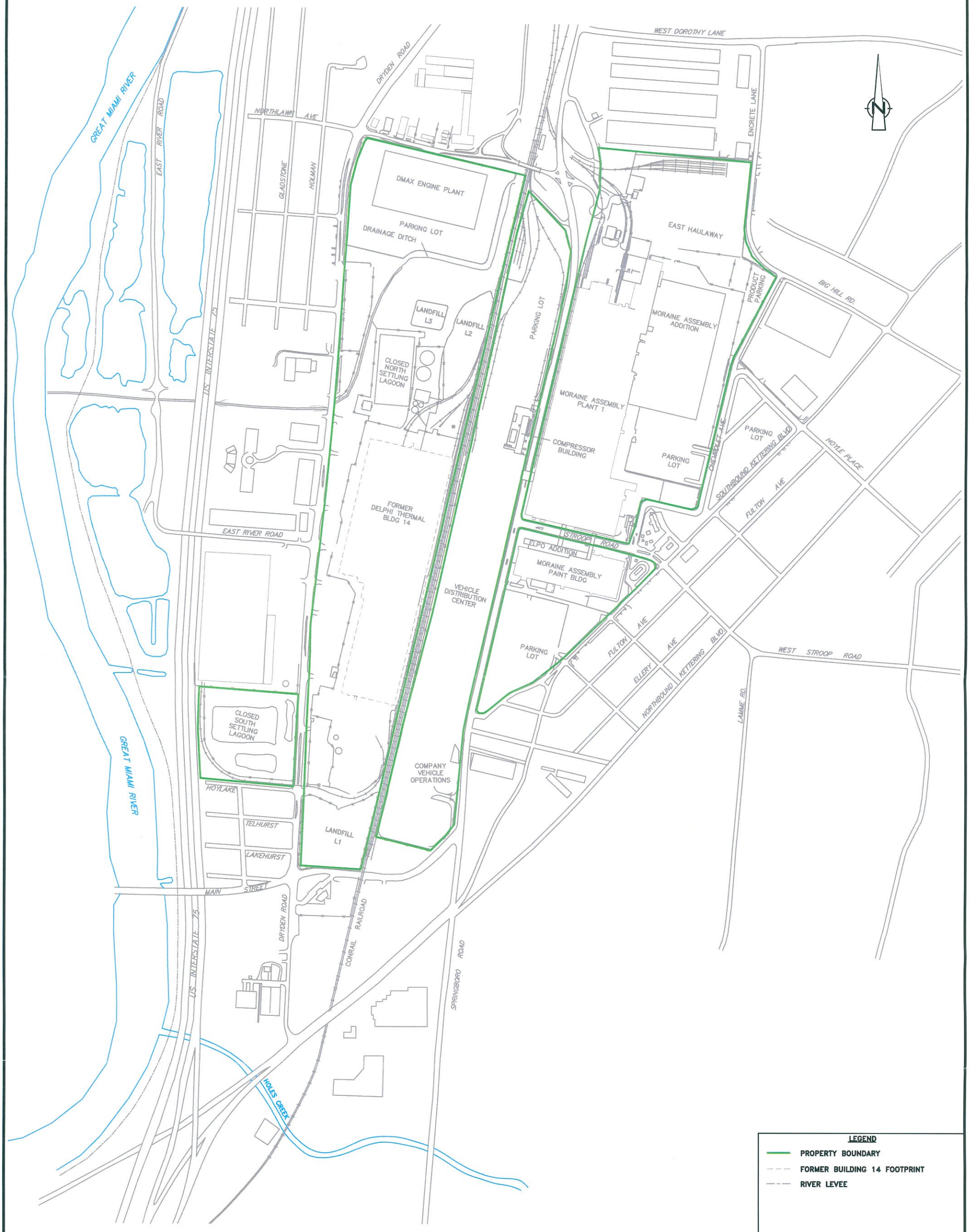
Table 27. Summary of Site-Wide Groundwater Monitoring Plan for 2007, General Motors Corporation, Moraine, Ohio.

Monitoring Wells	Reason for Monitoring	Monitoring Frequency	Parameter List
Lower Aquifer Wells			
GM-39	Monitoring groundwater quality in the central portion of the site.	Annual	VOCs(1)
GM-40	Monitoring groundwater quality in the central portion of the site.	Annual	VOCs(1)
GM-41	Monitoring groundwater quality in the central portion of the site.	Annual	VOCs(1)
GM-42	Monitoring groundwater quality in the central portion of the site.	Annual	VOCs(1)
GM-54	Monitoring groundwater quality in the central portion of the site.	Annual	VOCs(1)
GM-58	Monitoring groundwater quality in the central portion of the site.	Annual	VOCs(1)
GM-61	Monitoring groundwater quality in the central portion of the site.	Annual	VOCs(1)
GM-19D	Monitoring groundwater quality downgradient of the site.	Annual	VOCs(1)
GM-3	Monitoring groundwater quality downgradient of the site.	Annual	VOCs(1)
GM-1	Monitoring groundwater quality downgradient of the site.	Annual	VOCs(1)
GM-15	Monitoring groundwater quality downgradient of the site. Point of compliance well.	Annual	VOCs(1)
GM-11	Monitoring groundwater quality downgradient of the site. Point of compliance well.	Annual	VOCs(1)
GM-20D	Monitoring groundwater quality downgradient of the site. Point of compliance well.	Annual	VOCs(1)
DN-13	Monitoring groundwater quality downgradient of the site.	Annual	VOCs(1)
GM-9	Monitoring groundwater quality downgradient of the site.	Annual	VOCs(1)
MT-69	Monitoring groundwater quality downgradient of the site.	Annual	VOCs(1)

VOCs - Volatile organic compounds.

(1) The parameters for the remaining annual sampling events will include the site-specific list of VOCs: benzene, 1,1,-dichloroethane, 1,1-dichloroethene, cis-1,2-dichloroethene, trans-1,2-dichloroethene, ethylbenzene, tetrachloroethene, toluene, 1,1,1-trichloroethane, trichloroethene, vinyl chloride, and xylenes.

(2) The biogeochemical list includes the field and laboratory parameters presented on Table 1.



LEGEND

- PROPERTY BOUNDARY
- FORMER BUILDING 14 FOOTPRINT
- RIVER LEVEE

ARCADIS
284 Cramer Creek Court
Dublin, OH 43017
Tel: 614/764-2310 Fax: 614/764-1270

SITE LAYOUT
GENERAL MOTORS CORPORATION
MORAINE, OHIO

DATE	PROJECT MANAGER	DRAWING NAME
12/26/2006	N. GILLOTTI	\C\ANN06\ANN06-03
DRAWN	LEAD DESIGN PROF.	CHECKED
R. SMITH	J. REID	T. FORTNER
PROJECT NUMBER		DRAWING NUMBER
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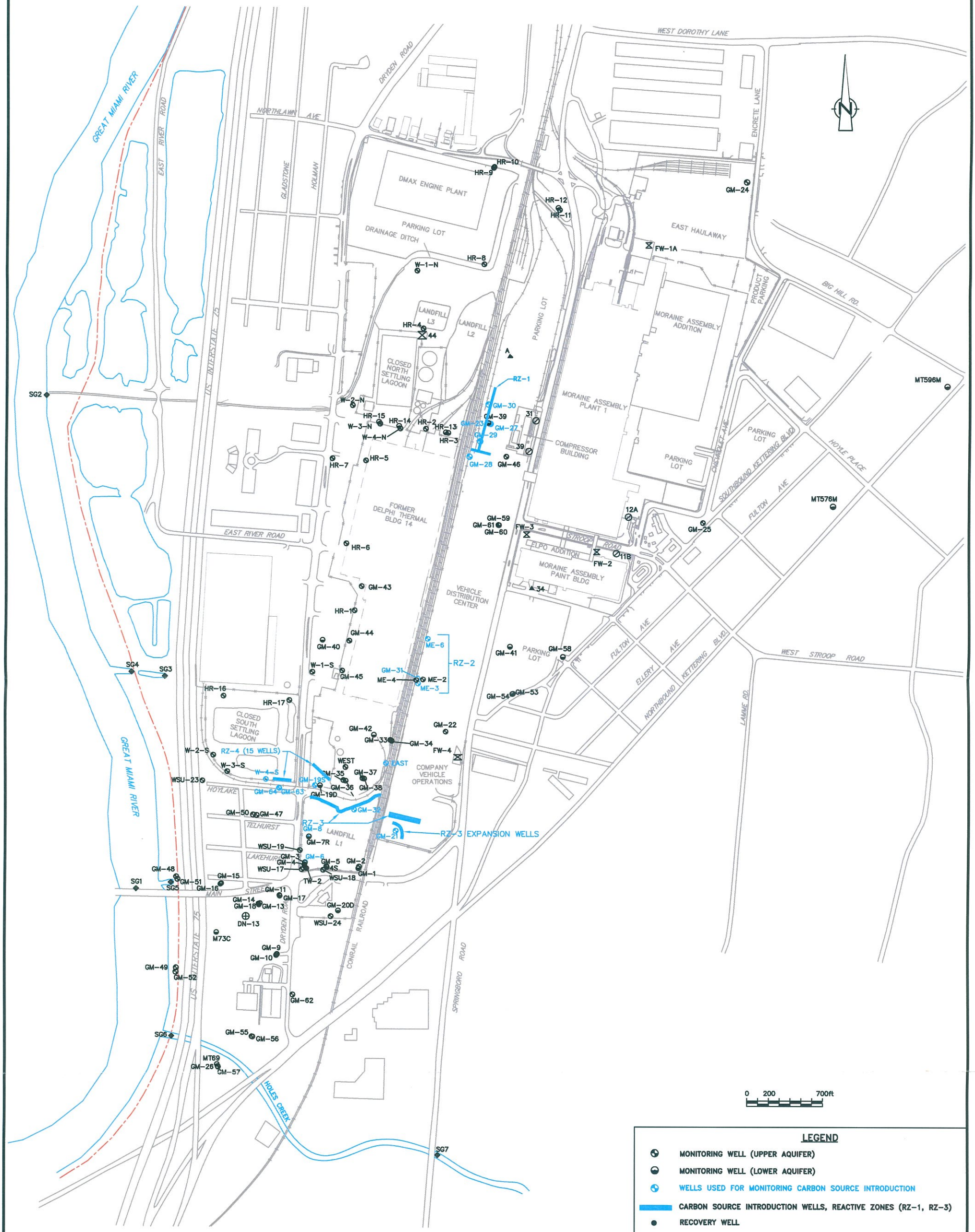

LEGEND

- MONITORING WELL (UPPER AQUIFER)
- MONITORING WELL (LOWER AQUIFER)
- WELLS USED FOR MONITORING CARBON SOURCE INTRODUCTION
- CARBON SOURCE INTRODUCTION WELLS, REACTIVE ZONES (RZ-1, RZ-3)
- RECOVERY WELL
- PUMP TO WASTE WELL
- FIRE WELLS
- INACTIVE PRODUCTION WELLS
- STREAM GAUGE
- FORMER BUILDING 14 FOOTPRINT

ARCADIS
284 Cramer Creek Court
Dublin, OH 43017
Tel: 614/764-2310 Fax: 614/764-1270

SITE-WIDE CORRECTIVE MEASURES
GENERAL MOTORS CORPORATION
MORAINE, OHIO

DATE	PROJECT MANAGER	DRAWING NAME
2/19/2007	N. GILLOTTI	CRA\ANN06\ANN06-04
DRAWN	LEAD DESIGN PROF.	CHECKED
R. SMITH	J. REID	N. GILLOTTI
PROJECT NUMBER		FIGURE NUMBER
0H000294.0009.003		2

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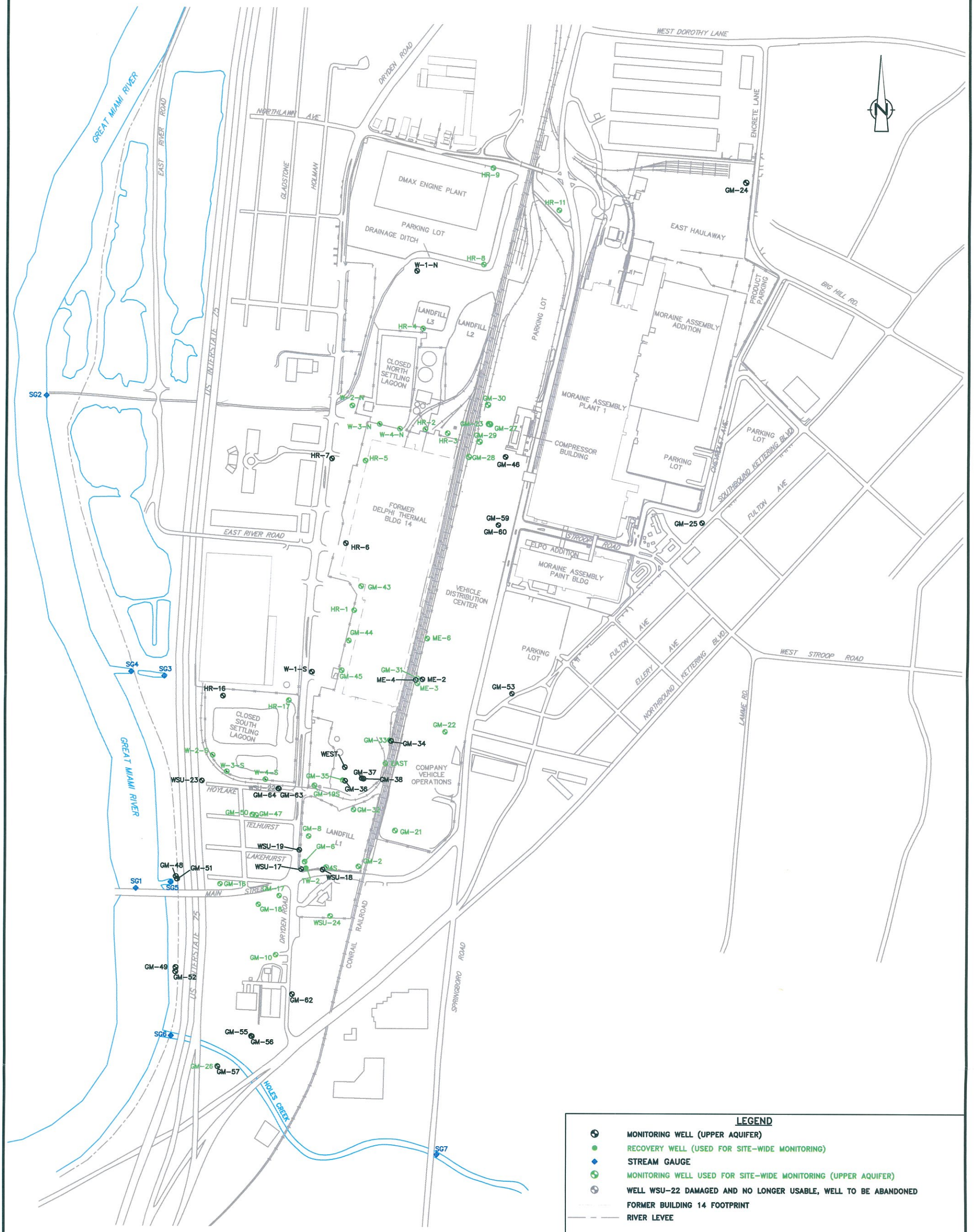


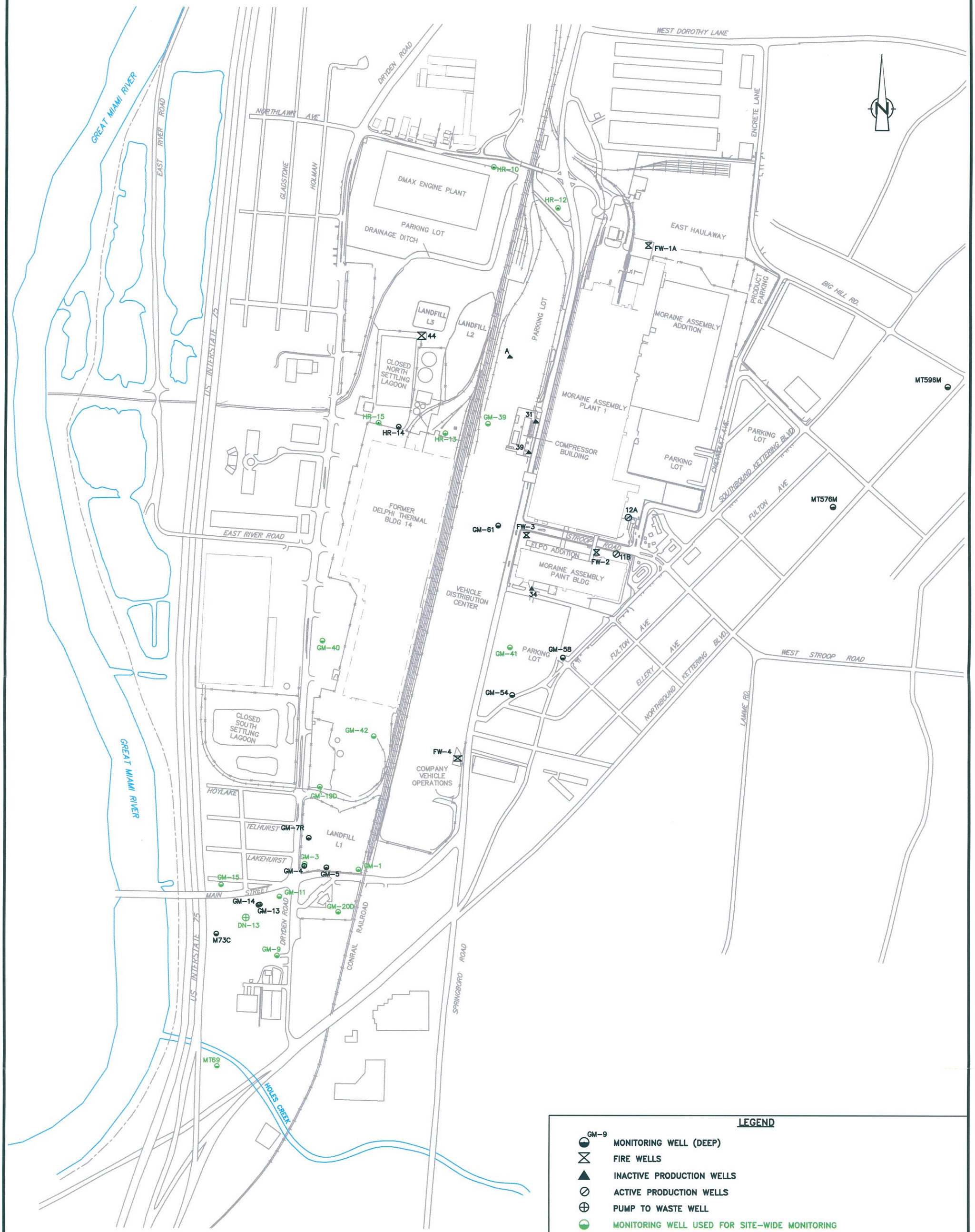
LEGEND

- MONITORING WELL (UPPER AQUIFER)
- RECOVERY WELL (USED FOR SITE-WIDE MONITORING)
- STREAM GAUGE
- MONITORING WELL USED FOR SITE-WIDE MONITORING (UPPER AQUIFER)
- WELL WSU-22 DAMAGED AND NO LONGER USABLE, WELL TO BE ABANDONED
- FORMER BUILDING 14 FOOTPRINT
- RIVER LEVEE

ARCADIS
284 Cramer Creek Court
Dublin, OH 43017
Tel: 614/764-2310 Fax: 614/764-1270

UPPER AQUIFER MONITORING WELLS FOR SITE-WIDE GROUNDWATER MONITORING GENERAL MOTORS CORPORATION MORAINE, OHIO

DATE	PROJECT MANAGER	DRAWING NAME
12/26/2006	N. GILLOTTI	\06\ANN06\ANN06-05
DRAWN	LEAD DESIGN PROF.	CHECKED
R. SMITH	J. REID	N. GILLOTTI
PROJECT NUMBER		DRAWING NUMBER
0H000294.0009.003		3



LEGEND

- GM-9 — MONITORING WELL (DEEP)
- FIRE WELLS
- INACTIVE PRODUCTION WELLS
- ACTIVE PRODUCTION WELLS
- PUMP TO WASTE WELL
- MONITORING WELL USED FOR SITE-WIDE MONITORING
- FORMER BUILDING 14 FOOTPRINT
- RIVER LEVEE

NOTE: M73C IS A PIEZOMETER.

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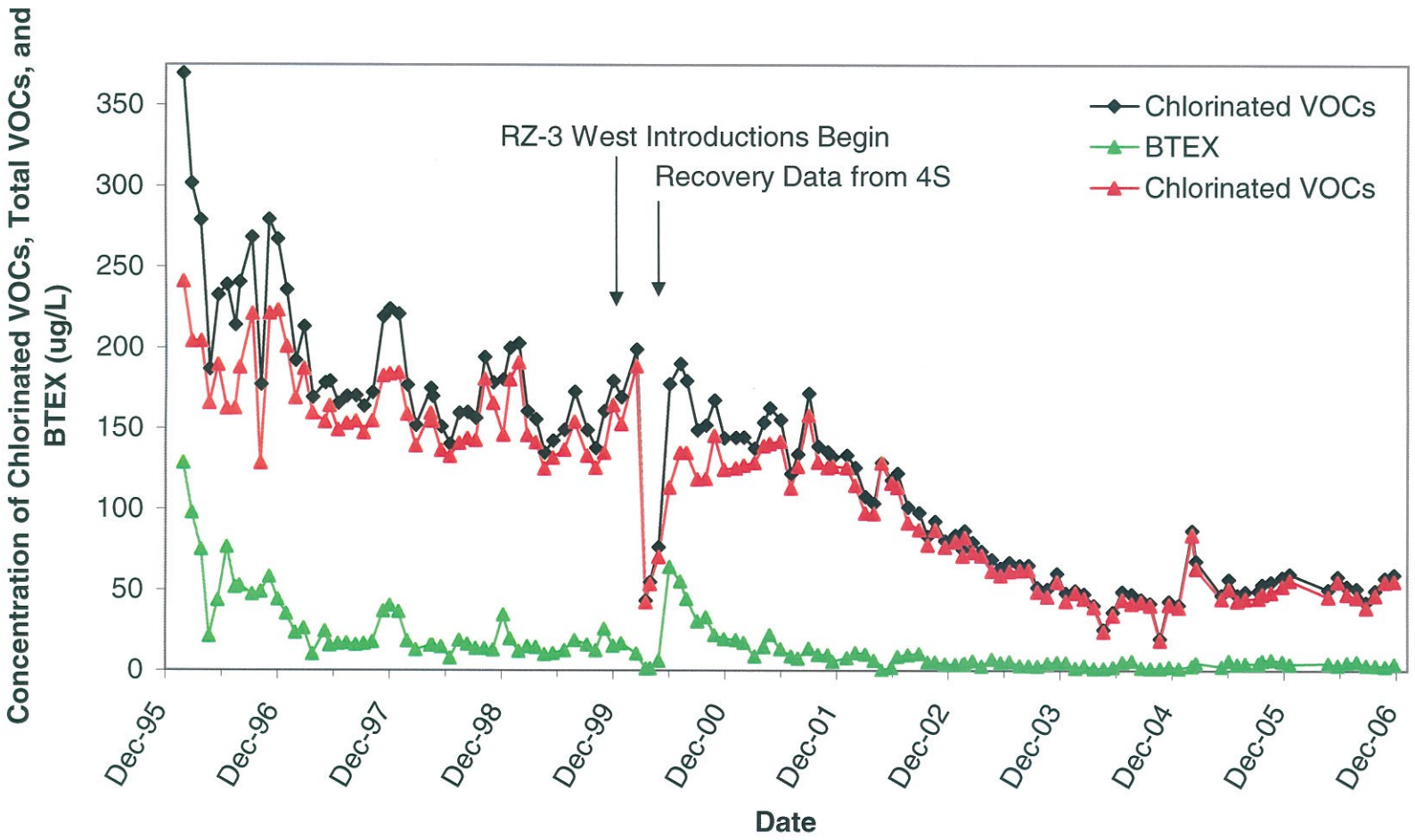
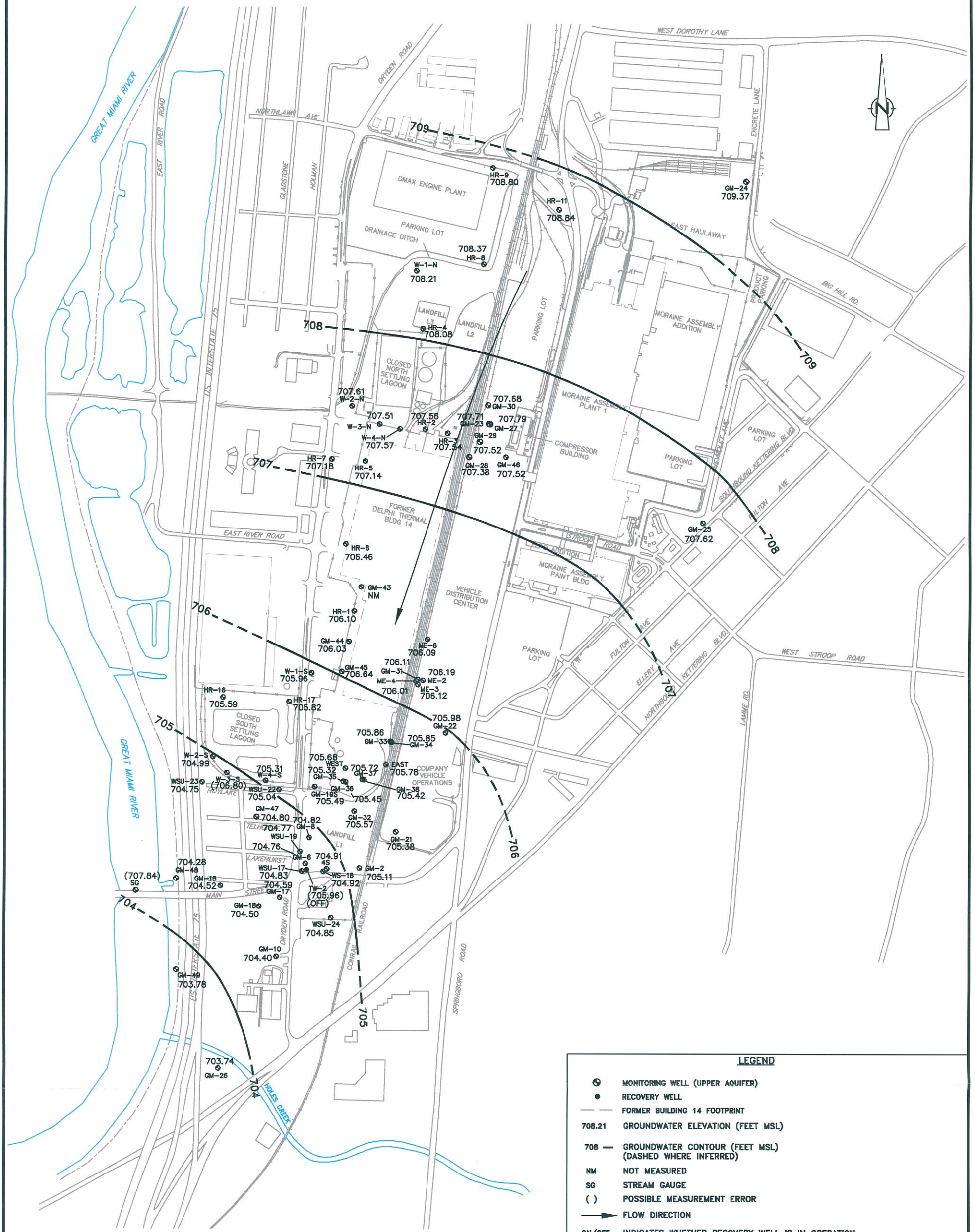
LOWER AQUIFER MONITORING WELLS FOR SITE-WIDE GROUNDWATER MONITORING GENERAL MOTORS CORPORATION MORAINE, OHIO

DATE 12/26/2006	PROJECT MANAGER N. GILLOTTI	DRAWING NAME \06\ANN06\ANN06-06
DRAWN R. SMITH	LEAD DESIGN PROF. J. REID	CHECKED T. FORTNER
PROJECT NUMBER 0H000294.0009.003		DRAWING NUMBER 4

Figure 5. Influent VOCs Since System Start-Up, Groundwater Recovery & Treatment System, General Motors Corporation, Moraine, Ohio





LEGEND

- MONITORING WELL (UPPER AQUIFER)
- RECOVERY WELL
- FORMER BUILDING 14 FOOTPRINT
- 708.21 GROUNDWATER ELEVATION (FEET MSL)
- 708 — GROUNDWATER CONTOUR (FEET MSL) (DASHED WHERE INFERRED)
- NM NOT MEASURED
- SG STREAM GAUGE
- ( ) POSSIBLE MEASUREMENT ERROR
- FLOW DIRECTION
- ON/OFF INDICATES WHETHER RECOVERY WELL IS IN OPERATION

CONTOUR INTERVAL = 1 FOOT

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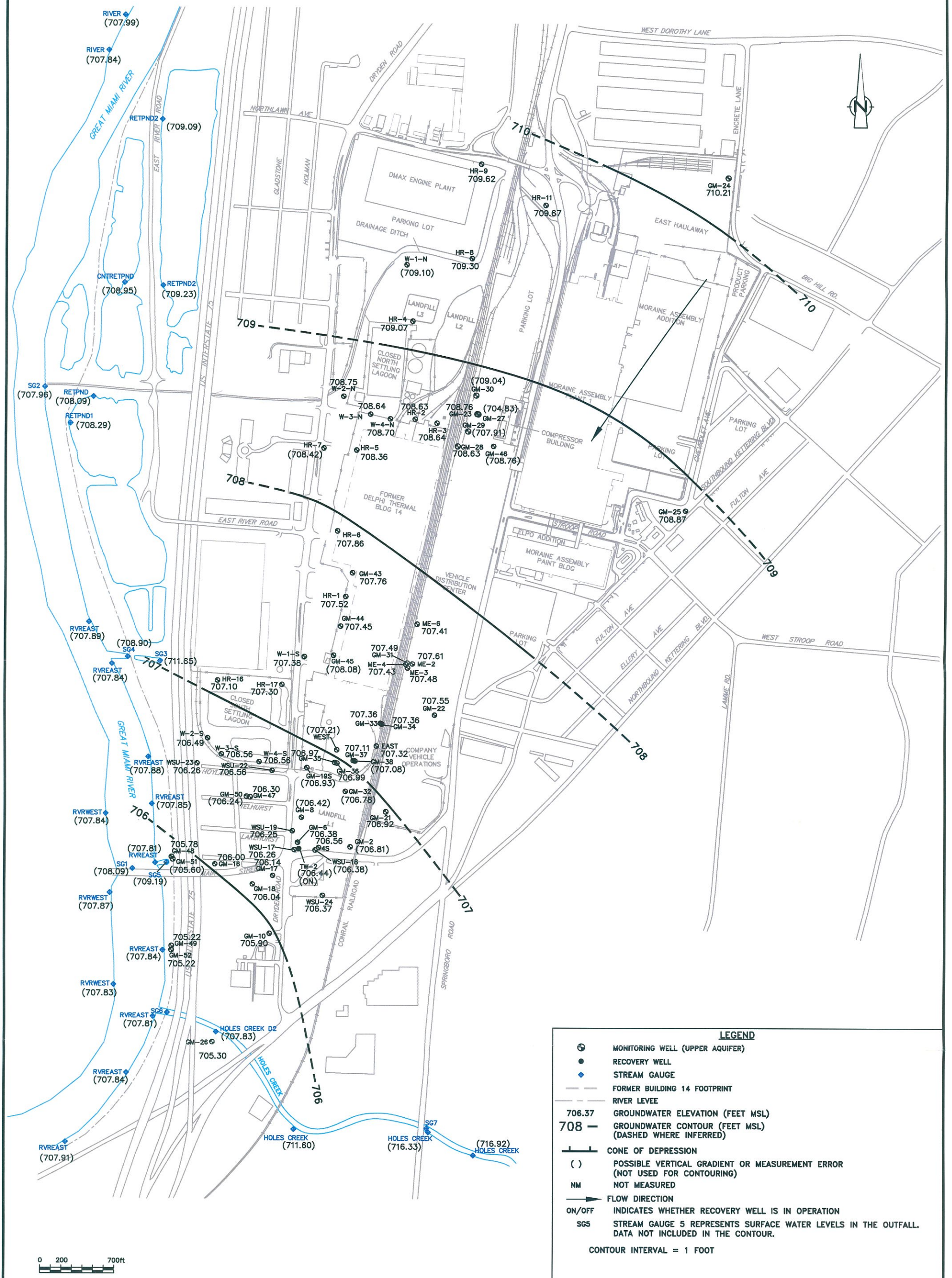
POTENTIOMETRIC SURFACE (UPPER AQUIFER) ON FEBRUARY 27-28, 2006 GENERAL MOTORS CORPORATION MORAINE, OHIO

DATE 1/23/2007	PROJECT MANAGER N. GILLOTTI	DRAWING NAME CRA\06\ANN06-10
DRAWN R. SMITH	LEAD DESIGN PROF. J. REID	CHECKED N. GILLOTTI
PROJECT NUMBER 0H000294.0009.003		DRAWING NUMBER 6



LEGEND

- MONITORING WELL (UPPER AQUIFER)
- RECOVERY WELL
- STREAM GAUGE
- FORMER BUILDING 14 FOOTPRINT
- RIVER LEVEE
- 706.37 — GROUNDWATER ELEVATION (FEET MSL)
- 708 — GROUNDWATER CONTOUR (FEET MSL) (DASHED WHERE INFERRED)
- CONE OF DEPRESSION
- ( ) — POSSIBLE VERTICAL GRADIENT OR MEASUREMENT ERROR (NOT USED FOR CONTOURING)
- NM — NOT MEASURED
- FLOW DIRECTION
- ON/OFF — INDICATES WHETHER RECOVERY WELL IS IN OPERATION
- SG5 — STREAM GAUGE 5 REPRESENTS SURFACE WATER LEVELS IN THE OUTFALL. DATA NOT INCLUDED IN THE CONTOUR.

CONTOUR INTERVAL = 1 FOOT

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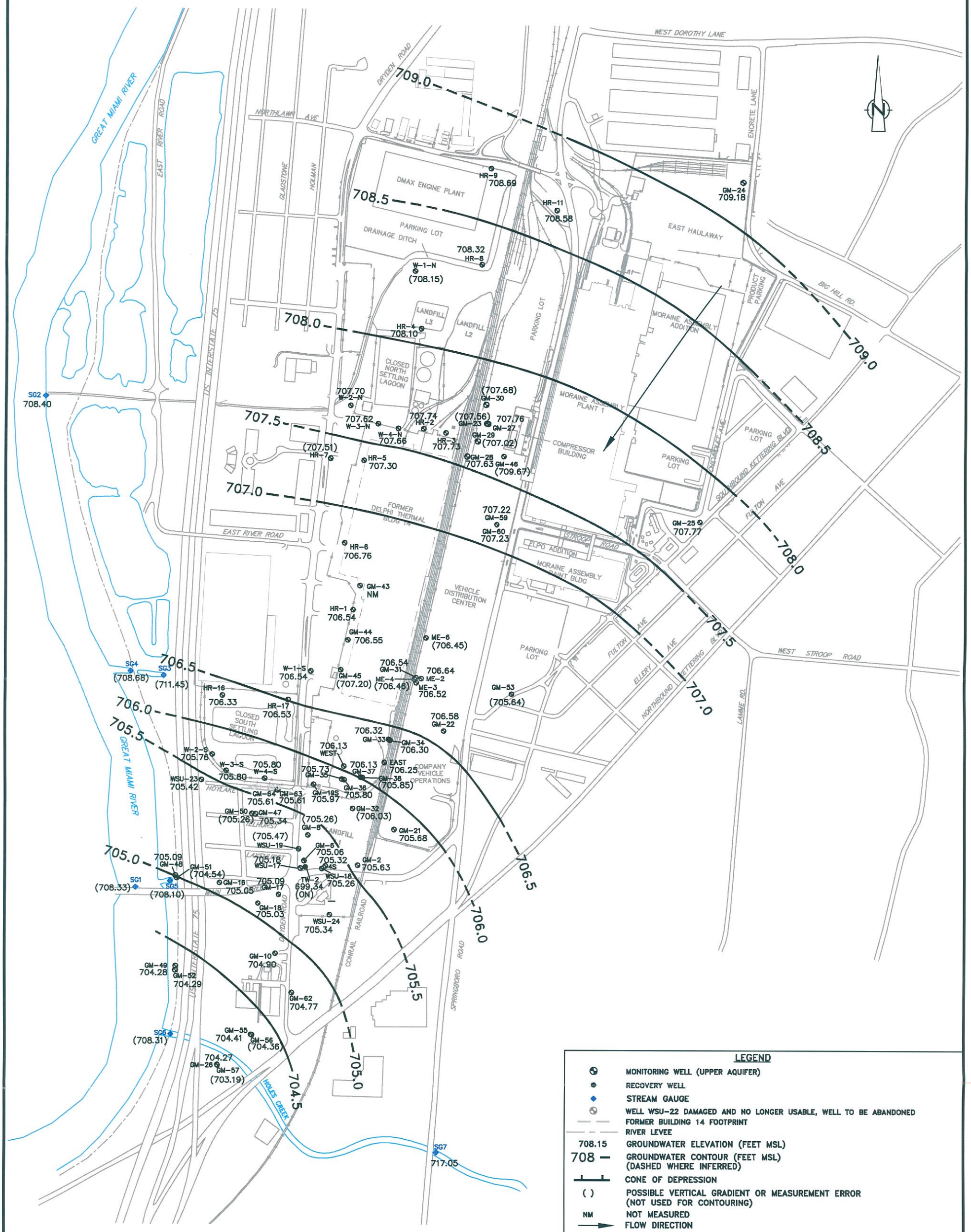
POTENTIOMETRIC SURFACE (UPPER AQUIFER) ON JUNE 21-22, 2006 GENERAL MOTORS CORPORATION MORAINE, OHIO

DATE	PROJECT MANAGER	DRAWING NAME
1/23/2007	N. GILLOTTI	CRA\06\ANN06-10
DRAWN	LEAD DESIGN PROF.	CHECKED
R. SMITH	J. REID	N. GILLOTTI
PROJECT NUMBER		DRAWING NUMBER
OH000294.0009.003		7



LEGEND

- MONITORING WELL (UPPER AQUIFER)
- RECOVERY WELL
- STREAM GAUGE
- WELL WSU-22 DAMAGED AND NO LONGER USABLE, WELL TO BE ABANDONED
- FORMER BUILDING 14 FOOTPRINT
- RIVER LEVEE
- 708.15 — GROUNDWATER ELEVATION (FEET MSL)
- 708 — GROUNDWATER CONTOUR (FEET MSL) (DASHED WHERE INFERRED)
- CONE OF DEPRESSION
- ( ) — POSSIBLE VERTICAL GRADIENT OR MEASUREMENT ERROR (NOT USED FOR CONTOURING)
- NM — NOT MEASURED
- FLOW DIRECTION
- ON/OFF — INDICATES WHETHER RECOVERY WELL IS IN OPERATION
- SG5 — STREAM GAUGE 5 REPRESENTS SURFACE WATER LEVELS IN THE OUTFALL. DATA NOT INCLUDED IN THE CONTOUR.

CONTOUR INTERVAL = 0.5 FOOT

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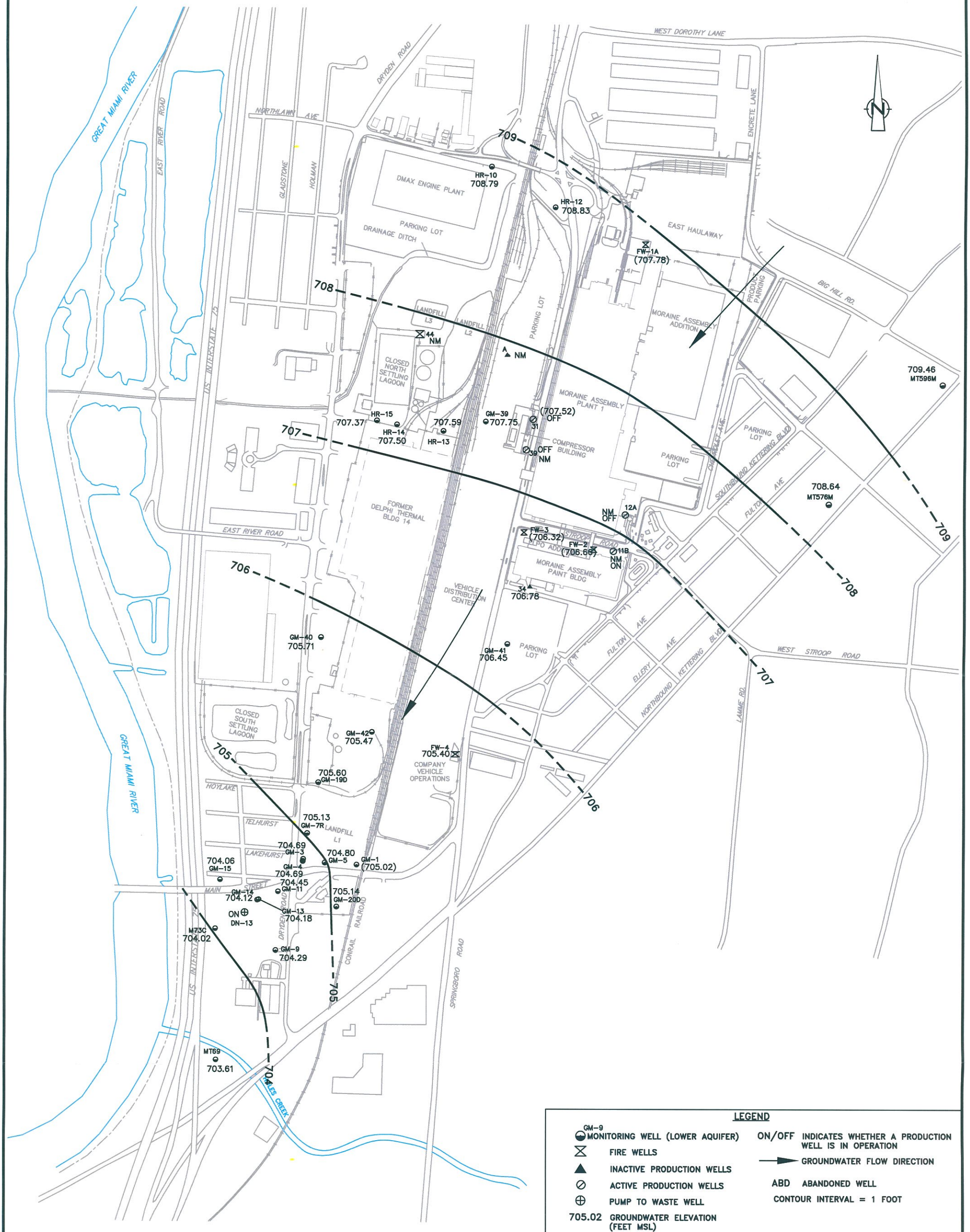
POTENTIOMETRIC SURFACE (UPPER AQUIFER) ON SEPTEMBER 12-13, 2006 GENERAL MOTORS CORPORATION MORAINE, OHIO

DATE 1/23/2007	PROJECT MANAGER N. GILLOTTI	DRAWING NAME CRA\06\ANN06-10
DRAWN R. SMITH	LEAD DESIGN PROF. J. REID	CHECKED N. GILLOTTI
PROJECT NUMBER 0H000294.0009.003		DRAWING NUMBER 8



LEGEND

GM-9 ◒	MONITORING WELL (LOWER AQUIFER)
⧖	FIRE WELLS
▲	INACTIVE PRODUCTION WELLS
⊘	ACTIVE PRODUCTION WELLS
⊕	PUMP TO WASTE WELL
705.02	GROUNDWATER ELEVATION (FEET MSL)
NM	NOT MEASURED
709 —	GROUNDWATER CONTOUR (FEET MSL) (DASHED WHERE INFERRED)
( )	POSSIBLE MEASUREMENT ERROR
ON/OFF	INDICATES WHETHER A PRODUCTION WELL IS IN OPERATION
→	GROUNDWATER FLOW DIRECTION
ABD	ABANDONED WELL
	CONTOUR INTERVAL = 1 FOOT

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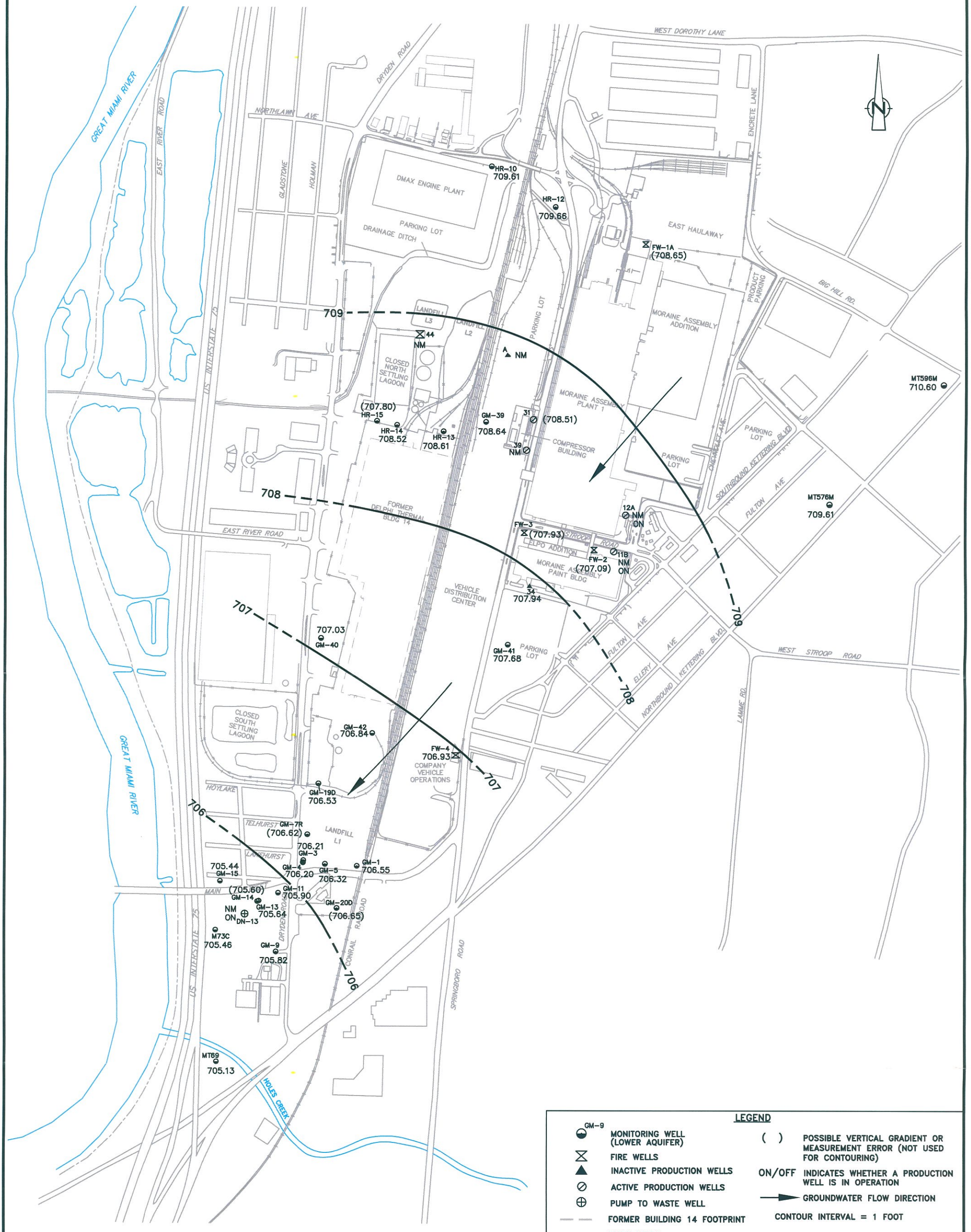
POTENTIOMETRIC SURFACE (LOWER AQUIFER) ON FEBRUARY 27-28, 2006 GENERAL MOTORS CORPORATION MORAINE, OHIO

DATE 1/23/2006	PROJECT MANAGER N. GILLOTTI		DRAWING NAME CRA\06\ANN06-11
DRAWN R. SMITH	LEAD DESIGN PROF. J. REID		CHECKED N. GILLOTTI
PROJECT NUMBER OH000294.0009.003			DRAWING NUMBER 9



LEGEND

- GM-9 — MONITORING WELL (LOWER AQUIFER)
- FIRE WELLS
- INACTIVE PRODUCTION WELLS
- ACTIVE PRODUCTION WELLS
- PUMP TO WASTE WELL
- FORMER BUILDING 14 FOOTPRINT
- RIVER LEVEE
- 706.93 — GROUNDWATER ELEVATION (FEET MSL)
- NM — NOT MEASURED
- 708 — GROUNDWATER CONTOUR (FEET MSL) (DASHED WHERE INFERRED)
- ( ) — POSSIBLE VERTICAL GRADIENT OR MEASUREMENT ERROR (NOT USED FOR CONTOURING)
- ON/OFF — INDICATES WHETHER A PRODUCTION WELL IS IN OPERATION
- GROUNDWATER FLOW DIRECTION
- CONTOUR INTERVAL = 1 FOOT

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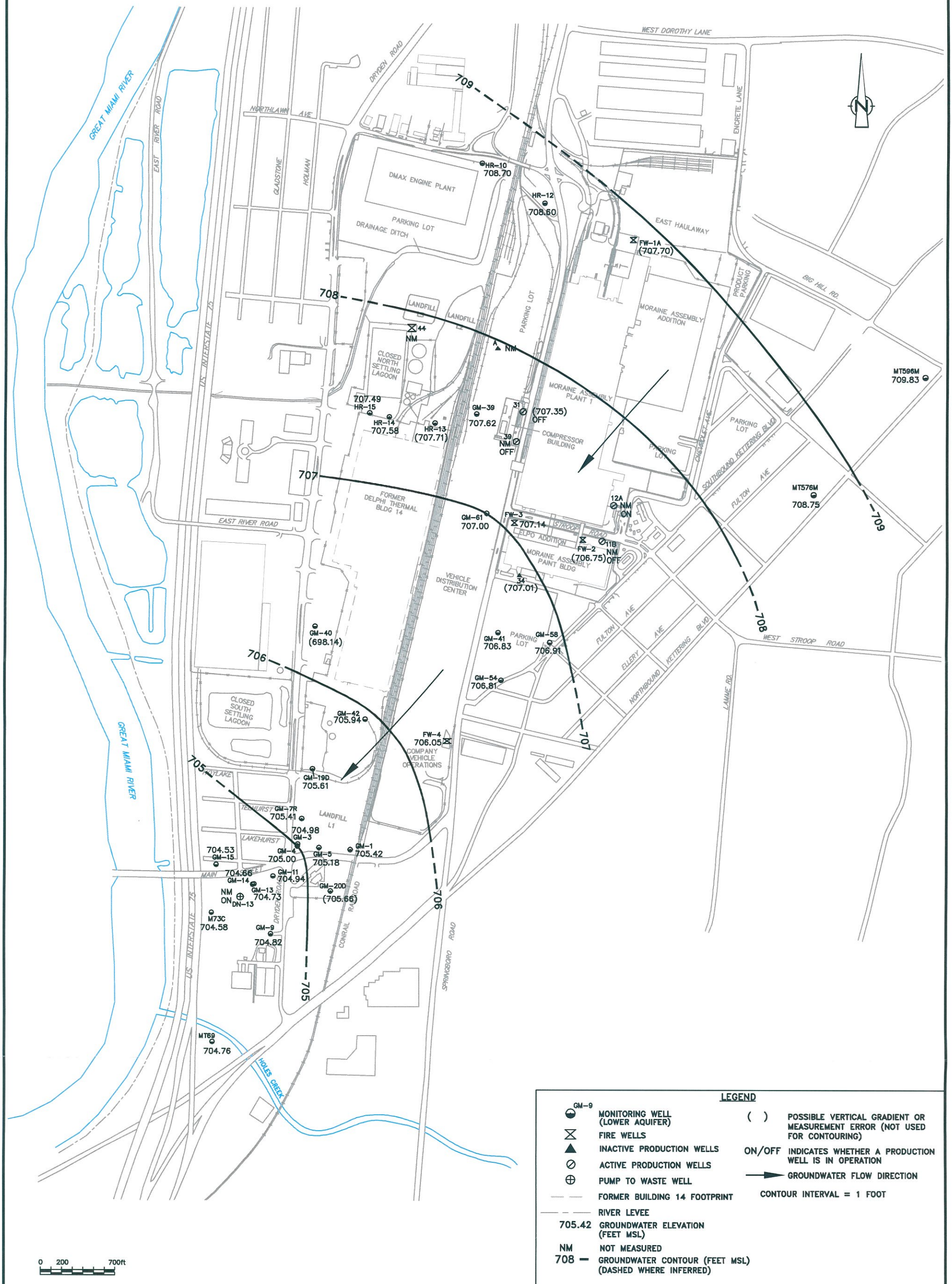
POTENTIOMETRIC SURFACE (LOWER AQUIFER) ON JUNE 21-22, 2006 GENERAL MOTORS CORPORATION MORAINE, OHIO

DATE 1/23/2006	PROJECT MANAGER N. GILLOTTI	DRAWING NAME CRA\06\ANN06-11
DRAWN R. SMITH	LEAD DESIGN PROF. J. REID	CHECKED N. GILLOTTI
PROJECT NUMBER 0H000294.0009.003		DRAWING NUMBER 10



LEGEND

- GM-9 — MONITORING WELL (LOWER AQUIFER)
- FIRE WELLS
- INACTIVE PRODUCTION WELLS
- ACTIVE PRODUCTION WELLS
- PUMP TO WASTE WELL
- FORMER BUILDING 14 FOOTPRINT
- RIVER LEVEE
- 705.42 — GROUNDWATER ELEVATION (FEET MSL)
- NM — NOT MEASURED
- 708 — GROUNDWATER CONTOUR (FEET MSL) (DASHED WHERE INFERRED)
- ( ) — POSSIBLE VERTICAL GRADIENT OR MEASUREMENT ERROR (NOT USED FOR CONTOURING)
- ON/OFF — INDICATES WHETHER A PRODUCTION WELL IS IN OPERATION
- GROUNDWATER FLOW DIRECTION
- CONTOUR INTERVAL = 1 FOOT

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POTENTIOMETRIC SURFACE (LOWER AQUIFER) ON SEPTEMBER 12-13, 2006 GENERAL MOTORS CORPORATION MORAINE, OHIO

DATE	PROJECT MANAGER	DRAWING NAME
1/23/2006	N. GILLOTTI	CRA\06\ANN06-11
DRAWN	LEAD DESIGN PROF.	CHECKED
R. SMITH	J. REID	N. GILLOTTI
PROJECT NUMBER		DRAWING NUMBER
OH000294.0009.003		11

HR-4	9/14/1999	9/20/2000	11/6/2001	9/27/2002	9/18/2003	9/16/2004	10/20/2005	9/25/2006
	UG/L	UG/L	UG/L	UG/L	ug/l	ug/l	ug/L	ug/L
1,1,1-Trichloroethane	ND (1.0) U	ND (1.00) U	0.17 J	ND (1) U	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U
1,1-Dichloroethane	ND (1.0) U	ND (1.00) U	ND (1) U	ND (1) U	ND (1) U	0.77 J	1.5	1.6
1,1-Dichloroethene	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1) U	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U
Benzene	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1) U	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U
cis-1,2-Dichloroethene	ND (1.0) U	ND (1.00) U	0.28 J	ND (0.5) U	ND (0.5) U	ND (0.5) U	ND (1.0) U	0.26 J
Ethylbenzene	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1) U	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U
Tetrachloroethene	1.2	ND (1.00) U	0.88 J	0.59 J	0.55 J	1.3	0.39 J	0.41 J
Toluene	ND (1.0) U	ND (1.00) U	ND (1.0) U	0.95 U	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U
trans-1,2-Dichloroethene	ND (1.0) U	ND (1.00) U	ND (0.50) U	ND (0.5) U	ND (0.5) U	ND (0.5) U	ND (1.0) U	ND (1.0) U
Trichloroethene	1.4	ND (1.00) U	1.0	0.71 J	0.71 J	0.5 J	0.32 J	0.34 J
Vinyl chloride	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1) U	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U
Xylene (total)	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1) U	ND (1) U	ND (1) U	ND (2.0) U	ND (2.0) U

HR-3	9/16/1999	9/19/2000	11/7/2001	9/24/2002	9/16/2003	9/16/2004	10/20/2005	9/25/2006
	UG/L	UG/L	UG/L	UG/L	ug/l	ug/l	ug/L	ug/L
1,1,1-Trichloroethane	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1) U	ND (1) U	0.27 J	0.34 J	ND (1.0) U
1,1-Dichloroethane	6.2	5.1	6.9	15	13	23	18	10
1,1-Dichloroethene	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1) U	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U
Benzene	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1) U	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U
cis-1,2-Dichloroethene	6.1	4.6	5.1	9.9	9.9	18	11	8.2
Ethylbenzene	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1) U	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U
Tetrachloroethene	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1) U	ND (1) U	0.32 J	ND (1.0) U	ND (1.0) U
Toluene	ND (1.0) U	ND (1.00) U	ND (1.0) U	0.53 U	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U
trans-1,2-Dichloroethene	ND (1.0) U	ND (1.00) U	0.60 J	1	1.1	1.8	1.5	0.99 J
Trichloroethene	ND (1.0) U	ND (1.00) U	0.66 J	1.4	1.6	8.1	10	7.2
Vinyl chloride	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1) U	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U
Xylene (total)	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1) U	ND (1) U	ND (2.0) U	ND (2.0) U	ND (2.0) U

HR-2	9/16/1999	9/19/2000	11/7/2001	9/24/2002	9/16/2003	9/16/2004	10/20/2005	9/25/2006
	UG/L	UG/L	UG/L	UG/L	ug/l	ug/l	ug/L	ug/L
1,1,1-Trichloroethane	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1) U	ND (1) U	ND (1) U	ND (1.0) U/ND (1.0) U	ND (1.0) U
1,1-Dichloroethane	3.9	4.6	4.2	4.9	4.5	5.6	4.4	5.2
1,1-Dichloroethene	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1) U	ND (1) U	ND (1) U	ND (1.0) U/ND (1.0) U	ND (1.0) U
Benzene	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1) U	ND (1) U	ND (1) U	ND (1.0) U/ND (1.0) U	ND (1.0) U
cis-1,2-Dichloroethene	0.6	8.3	8.8	7.2	7.8	5.0/5.1	5.6	5.6
Ethylbenzene	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1) U	ND (1) U	ND (1) U	ND (1.0) U/ND (1.0) U	ND (1.0) U
Tetrachloroethene	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1) U	ND (1) U	0.37 J	ND (1.0) U/ND (1.0) U	ND (1.0) U
Toluene	ND (1.0) U	ND (1.00) U	ND (1.0) U	0.47 U	ND (1) U	ND (1) U	ND (1.0) U/ND (1.0) U	ND (1.0) U
trans-1,2-Dichloroethene	1.5	1.1	1.1	1.2	0.96	1.1	0.78 J/0.80 J	0.78 J
Trichloroethene	ND (1.0) U	ND (1.00) U	0.56 J	0.46 J	0.4 J	0.53 J	0.35 J/0.40 J	0.48 J
Vinyl chloride	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1) U	ND (1) U	0.23 J	0.29 J/0.25 J	ND (1.0) U
Xylene (total)	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1) U	ND (1) U	ND (1) U	ND (2.0) U/ND (2.0) U	ND (2.0) U

W-4-N	9/17/1999	9/19/2000	11/7/2001	9/24/2002	9/17/2003	9/16/2004	10/20/2005	9/25/2006
	UG/L	UG/L	UG/L	UG/L	ug/l	ug/l	ug/L	ug/L
1,1,1-Trichloroethane	ND (1.0) U	ND (1.00) U	0.33 J	0.44 J	0.26 J	0.4 J	ND (1.0) U	ND (1.0) U
1,1-Dichloroethane	1.3	ND (1.00) U	0.89 J	1.7	0.94 J	1.7	1.2	1.3
1,1-Dichloroethene	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1) U	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U
Benzene	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1) U	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U
cis-1,2-Dichloroethene	2.2	2.0	1.6	5.2	1.7	5.8	2.0	2.4
Ethylbenzene	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1) U	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U
Tetrachloroethene	2.1	ND (1.00) U	0.92 J	0.94 J	1.1	1.7	1.0	0.96 J
Toluene	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1) U	0.81 U	ND (1) U	ND (1.0) U	ND (1.0) U
trans-1,2-Dichloroethene	ND (1.0) U	ND (1.00) U	ND (0.50) U	0.33 J	ND (0.5) U	0.38 J	ND (1.0) U	0.19 J
Trichloroethene	9.8	7.3	7.1	8.5	8.1	12	7.2	7.6
Vinyl chloride	ND (1.0) U	ND (1.00) U	ND (1.0) U	0.77 J	0.48 J	0.49 J	0.54 J	0.56 J
Xylene (total)	ND (1.0) U	ND (1.00) U	ND (1.0) U	0.71 U	ND (1) U	ND (1) U	ND (2.0) U	ND (2.0) U

W-3-N	9/17/1999	9/19/2000	11/7/2001	9/23/2002	9/17/2003	9/16/2004	10/20/2005	9/25/2006
	UG/L	UG/L	UG/L	UG/L	ug/l	ug/l	ug/L	ug/L
1,1,1-Trichloroethane	ND (1.0) U	ND (1.00) U	ND (5.6) U	ND (6.7) U	ND (4) U	ND (4) U	ND (4.0) U	ND (5.0) U
1,1-Dichloroethane	ND (1.0) U	ND (1.00) U	ND (5.6) U	ND (6.7) U	ND (4) U	ND (4) U	ND (4.0) U	ND (5.0) U
1,1-Dichloroethene	ND (1.0) U	ND (1.00) U	ND (5.6) U	ND (6.7) U	ND (4) U	ND (4) U	ND (4.0) U	ND (5.0) U
Benzene	ND (1.0) U	ND (1.00) U	ND (5.6) U	ND (6.7) U	ND (4) U	ND (4) U	ND (4.0) U	ND (5.0) U
cis-1,2-Dichloroethene	291	282	160	150	100	120	84	140
Ethylbenzene	ND (1.0) U	ND (1.00) U	ND (5.6) U	ND (6.7) U	ND (4) U	ND (4) U	ND (4.0) U	ND (5.0) U
Tetrachloroethene	2.5	ND (1.00) U	9.0	ND (6.7) U	5.1	0.94 J	1.4 J	ND (5.0) U
Toluene	ND (1.0) U	ND (1.00) U	ND (5.6) U	ND (6.7) U	ND (4) U	ND (4) U	ND (4.0) U	ND (5.0) U
trans-1,2-Dichloroethene	2.6	3.9	2.2 J	ND (3.3) U	1.6 J	1.6 J	1.0 J	1.9 J
Trichloroethene	ND (1.0) U	ND (1.00) U	2.1 J	ND (6.7) U	1.7 J	ND (4) U	ND (4.0) U	ND (5.0) U
Vinyl chloride	12.8	24.0	7.6	6.5 J	6.6	6.1	8.0	9.6
Xylene (total)	ND (1.0) U	ND (1.00) U	ND (5.6) U	ND (6.7) U	ND (4) U	ND (4) U	ND (8.0) U	ND (10) U

W-2-N	9/14/1999	9/19/2000	11/6/2001	9/19/2002	9/18/2003	9/16/2004	10/20/2005	9/22/2006
	UG/L	UG/L	UG/L	UG/L	ug/l	ug/l	ug/L	ug/L
1,1,1-Trichloroethane	ND (1.0) U	ND (1.00) U	0.48 J	ND (1.0) U	ND (1) U	0.3 J	ND (1.0) U	0.25 J/0.25 J
1,1-Dichloroethane	ND (1.0) U	ND (1.00) U	0.33 J	0.31 J	ND (1) U	0.36 J	0.28 J	0.26 J/0.29 J
1,1-Dichloroethene	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1.0) U	ND (1) U	ND (1) U	ND (1.0) U	UJ/ND (1.0) UJ
Benzene	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1.0) U	ND (1) U	ND (1) U	ND (1.0) U	UJ/ND (1.0) UJ
cis-1,2-Dichloroethene	1.6	1.2	1.1	1.6	1.3	1.8	1.3	1.4 J/1.4 J
Ethylbenzene	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1.0) U	ND (1) U	ND (1) U	ND (1.0) U	UJ/ND (1.0) UJ
Tetrachloroethene	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1.0) U	ND (1) U	0.31 J	ND (1.0) U	ND (1.0) UJ
Toluene	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1.0) U	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) UJ
trans-1,2-Dichloroethene	ND (1.0) U	ND (1.00) U	ND (0.50) U	ND (0.50) U	ND (0.5) U	ND (0.5) U	ND (1.0) U	ND (1.0) UJ
Trichloroethene	3.9/4.0	3.2	2.8	3.2	2.3/2.4	2.3	1.4 J	1.4 J
Trichloroethene	53.5/56.0	56.4	86 B	33	30/31	43	50	50
Vinyl chloride	ND (1.0) U	ND (1.00) U	ND (5.3) U	ND (2) U	0.55 J/0.61 J	1.1	ND (1.7) U	ND (1.7) U
Xylene (total)	ND (1.0) U	ND (1.00) U	ND (5.3) U	ND (2) U	ND (1) U	ND (2.0) U	ND (3.3) U	ND (3.3) U

HR-16	9/23/1999	9/18/2002
	UG/L	UG/L
1,1,1-Trichloroethane	ND (1.0) U	ND (1.0) U
1,1-Dichloroethane	ND (1.0) U	ND (1.0) U
1,1-Dichloroethene	ND (1.0) U	ND (1.0) U
Benzene	ND (1.0) U	ND (1.0) U
cis-1,2-Dichloroethene	5.8/6.1	8.5
Ethylbenzene	ND (1.0) U	ND (1.0) U
Tetrachloroethene	40.5/44.3	32.6
Toluene	ND (1.0) U	ND (1.0) U
trans-1,2-Dichloroethene	3.9/4.0	3.2
Trichloroethene	53.5/56.0	56.4
Vinyl chloride	ND (1.0) U	ND (1.0) U
Xylene (total)	ND (1.0) U	ND (1.0) U

W-1-S	9/22/1999	9/19/2002
	UG/L	UG/L
1,1,1-Trichloroethane	ND (1.0) U	ND (2.0) U
1,1-Dichloroethane	ND (1.0) U	0.97 J/1.0 J
1,1-Dichloroethene	ND (1.0) U	ND (2.0) U
Benzene	ND (1.0) U	ND (2.0) U
cis-1,2-Dichloroethene	7.8/8.0	6.0/6.1
Ethylbenzene	ND (1.0) U	ND (2.0) U
Tetrachloroethene	28.4/30.9	61/62
Toluene	ND (1.0) U	ND (2.0) U
trans-1,2-Dichloroethene	1.1	1.3
Trichloroethene	11.6	16
Vinyl chloride	ND (1.0) U	ND (2.0) U
Xylene (total)	ND (1.0) U	ND (2.0) U

HR-5	9/16/1999	9/19/2000	11/7/2001	9/23/2002	9/18/2003	9/13/2004	10/18/2005	9/22/2006
	UG/L	UG/L	UG/L	UG/L	ug/l	ug/l	ug/L	ug/L
1,1,1-Trichloroethane	ND (1.0) U	ND (1.00) U	0.17 J/ND (1.0) U	ND (1) U	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) UJ
1,1-Dichloroethane	ND (1.0) U	ND (1.00) U	0.51 J/0.55 J	0.55 J	0.42 J	0.43 J	0.54 J	0.41 J
1,1-Dichloroethene	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1) U	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) UJ
Benzene	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1) U	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) UJ
cis-1,2-Dichloroethene	10.5	5.6	7.7/7.8	7.5	5	4.8	4.6	5.2 J
Ethylbenzene	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1) U	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) UJ
Tetrachloroethene	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1) U	ND (1) U	ND (1) U	ND (1.0) U	0.27 J
Toluene	ND (1.0) U	3.0	ND (1.0) U	ND (1) U	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) UJ
trans-1,2-Dichloroethene	1.1	ND (1.00) U	0.67/0.74	0.58	0.46 J	0.44 J	0.52 J	0.46 J
Trichloroethene	12.0	8.1	11	13	11	13	13	13 J
Vinyl chloride	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1) U	ND (1) U	1.1	1.1	0.22 J
Xylene (total)	ND (1.0) U	2.0	ND (1.0) U	ND (1) U	ND (1) U	ND (2.0) U	ND (2.0) U	ND (2.0) UJ

HR-6	9/16/1999	9/23/2002
	UG/L	UG/L
1,1,1-Trichloroethane	ND (1.0) U	ND (1) U
1,1-Dichloroethane	ND (1.0) U	ND (1) U
1,1-Dichloroethene	ND (1.0) U	ND (1) U
Benzene	ND (1.0) U	ND (1) U
cis-1,2-Dichloroethene	ND (1.0) U	ND (0.5) U
Ethylbenzene	ND (1.0) U	ND (1) U
Tetrachloroethene	ND (1.0) U	ND (1) U
Toluene	ND (1.0) U	ND (1) U
trans-1,2-Dichloroethene	ND (1.0) U	ND (0.5) U
Trichloroethene	2.0	1.5
Vinyl chloride	ND (1.0) U	ND (1) U
Xylene (total)	ND (1.0) U	ND (1) U

HR-7	9/17/1999	9/19/2002
	UG/L	UG/L
1,1,1-Trichloroethane	ND (1.0) U	ND (1.0) U
1,1-Dichloroethane	ND (1.0) U	ND (1.0) U
1,1-Dichloroethene	ND (1.0) U	ND (1.0) U
Benzene	ND (1.0) U	ND (1.0) U
cis-1,2-Dichloroethene	ND (1.0) U	0.65
Ethylbenzene	ND (1.0) U	ND (1.0) U
Tetrachloroethene	ND (1.0) U	ND (1.0) U
Toluene	ND (1.0) U	ND (1.0) U
trans-1,2-Dichloroethene	ND (1.0) U	ND (0.50) U
Trichloroethene	9.8	9.4
Vinyl chloride	ND (1.0) U	ND (1.0) U
Xylene (total)	ND (1.0) U	ND (1.0) U

GM-43	8/19/2004	9/22/2006
	UG/L	UG/L
1,1,1-Trichloroethane	ND (9.1) U	ND (5.0) UJ
1,1-Dichloroethane	6.9 J/6.4 J	3.7 J
1,1-Dichloroethene	ND (9.1) U	ND (5.0) UJ
Benzene	ND (9.1) U	ND (5.0) UJ
cis-1,2-Dichloroethene	210/210	120 J
Ethylbenzene	ND (9.1) U	ND (5.0) UJ
Tetrachloroethene	16/17	21 J
Toluene	ND (9.1) U	ND (5.0) UJ
trans-1,2-Dichloroethene	8.7/8.7	5.7 J
Trichloroethene	100/100	98 J
Vinyl chloride	2.8 J/ND (9.1) U	ND (5.0) UJ
Xylene (total)	ND (9.1) U	ND (10) UJ

HR-1	9/16/1999	9/25/2000	11/8/2001	9/23/2002	9/18/2003	9/13/2004	10/18/2005	9/25/2006
	UG/L	UG/L	UG/L	UG/L	ug/l	ug/l	ug/L	ug/L
1,1,1-Trichloroethane	1.5/1.6	1.3	2.2 J	ND (2) U	1 J	0.56 J/0.56 J	1.2	0.57 J
1,1-Dichloroethane	2.4/2.5	2.4	2.8 J	2.6	2.5/2.5	2.7	2.1	1.7
1,1-Dichloroethene	ND (1.0) U	ND (1.00) U	ND (3.3) U	ND (2) U	ND (2) U	ND (1) U/ND (1.0) U	ND (1.0) U	ND (1.7) U
Benzene	ND (1.0) U	ND (1.00) U	ND (3.3) U	ND (2) U	ND (2) U	ND (1) U/ND (1) U	ND (1.0) U	ND (1.7) U
cis-1,2-Dichloroethene	8.5	8.5	9.8	4.5	2.3	24/24	19	14
Ethylbenzene	ND (1.0) U	ND (1.00) U	ND (3.3) U	ND (2) U	ND (2) U	ND (1) U/ND (1.0) U	ND (1.0) U	ND (1.7) U
Tetrachloroethene	40.5/44.3	32.6	36	33	27	23/24	28	ND (1.7) U
Toluene	2.5	ND (1.00) U	9.0	ND (2) U	ND (2) U	ND (1) U/ND (1.0) U	ND (1.0) U	ND (1.7) U
trans-1,2-Dichloroethene	3.9/4.0	3.2	2.8	3.2	2.3/2.4	2.3	1.4 J	1.4 J
Trichloroethene	53.5/56.0	56.4	86 B	33	30/31	43	50	50
Vinyl chloride	ND (1.0) U	ND (1.00) U	ND (3.3) U	ND (2) U	0.55 J/0.61 J	1.1	ND (1.7) U	ND (1.7) U
Xylene (total)	ND (1.0) U	ND (1.00) U	ND (3.3) U	ND (2) U	ND (1) U	ND (2.0) U	ND (3.3) U	ND (3.3) U

HR-18	9/22/1999	9/27/2000	11/8/2001	9/19/2002	9/22/2003	9/15/2004	10/20/2005	9/27/2006
	UG/L	UG/L	UG/L	UG/L	ug/l	ug/l	ug/L	ug/L
1,1,1-Trichloroethane	42.6	31.8	23	18	10	5.2	7.0/7.6	6.2
1,1-Dichloroethane	22.6	10.4	3.3	6.0	3.7	2.2	15/15	17
1,1-Dichloroethene	1.3	ND (1.00) U	1.3 J	ND (3.3) U	ND (2) U	0.46 J	0.30 J/0.32 J	ND (2.9) U
Benzene	ND (1.0) U	ND (1.00) U	ND (3.3) U	ND (3.3) U	ND (2) U	ND (2) U	ND (1.0) U/ND (1.0) U	ND (2.9) U
cis-1,2-Dichloroethene	35.3	23.9	14	15	8.8	5.9	14/14	21
Ethylbenzene	ND (1.0) U	ND (1.00) U	ND (3.3) U	ND (3.3) U	ND (2) U	ND (2) U	ND (1.0) U/ND (1.0) U	ND (2.9) U
Tetrachloroethene	4.9	7.8	12	28	24	20	21/21	15
Toluene	ND (1.0) U	ND (1.00) U	ND (3.3) U	ND (3.3) U	ND (2) U	ND (2) U	ND (1.0) U/ND (1.0) U	ND (2.9) U
trans-1,2-Dichloroethene	2.2	1.8	1.6 J	1.6 J	ND (1) U	ND (1) U	1.2/1.2	2.0 J
Trichloroethene	135	115	93	98	77	53	70J/73	72
Vinyl chloride	ND (1.0) U	ND (1.00) U	ND (3.3) U	ND (3.3) U	0.75 J	ND (2) U	3.0/3.0	2.5 J
Xylene (total)	ND (1.0) U	ND (1.00) U	ND (3.3) U	ND (3.3) U	ND (2) U	ND (2) U	ND (2.0) U/ND (2.0) U	ND (5.7) U

GM-17	9/21/1999	9/27/2000	11/8/2001	9/19/2002	9/24/2003	9/15/2004	10/20/2005	9/27/2006
	UG/L	UG/L	UG/L	UG/L	ug/l	ug/l	ug/L	ug/L
1,1,1-Trichloroethane	6.4	6.7	6.8	2.3	1.3	1.1	1.4	0.46 J
1,1-Dichloroethane	26.4	23.9	7.3	6.0	1.2	4	5.5	3.2
1,1-Dichloroethene	ND (1.0) U	ND (1.00) U	ND (3.3) U	ND (1.2) U	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U
Benzene	ND (1.0) U	ND (1.00) U	ND (3.3) U	ND (1.2) U	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U
cis-1,2-Dichloroethene	30.0	41.6	16	13	2.9	11	9.0	9.5
Ethylbenzene	ND (1.0) U	ND (1.00) U	ND (3.3) U	ND (1.2) U	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U
Tetrachloroethene	ND (1.0) U	24.6	48	22	12	3.6	8.1	11
Toluene	ND (1.0) U	ND (1.00) U	ND (3.3) U	ND (1.2) U	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U
trans-1,2-Dichloroethene	2.6	2.5	1.8	0.67	ND (0.5) U	0.64	0.57 J	0.49 J
Trichloroethene	28.7	48.4	79	39	24	22	29	24
Vinyl chloride	1.4	ND (1.00) U	ND (3.3) U	0.79 J	ND (1) U	0.49 J	2.0	0.54 J
Xylene (total)	ND (1.0) U	ND (1.00) U	ND (3.3) U	ND (1.2) U	ND (1) U	ND (1) U	ND (2.0) U	ND (2.0) U

GM-16	9/21/1999	9/26/2000	11/8/2001	9/24/2002	9/22/2003	9/16/2004	10/19/2005	9/18/2006
	UG/L	UG/L	UG/L	UG/L	ug/l	ug/l	ug/L	ug/L
1,1,1-Trichloroethane	2.2	2.5	2.2	1.4 J	1.9 J	3.1 J	1.7 J	2.1
1,1-Dichloroethane	ND (1.0) U	ND (1.00) U	0.31 J	4.1	2.8 J	4.3 J	1.1 J	1.1 J
1,1-Dichloroethene	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (2) U	ND (4) U	ND (3.3) U	ND (3.3) U	0.52 J
Benzene	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (2) U	ND (4) U	ND (3.3) U	ND (3.3) U	ND (1.4) U
cis-1,2-Dichloroethene	1.7	ND (1.00) U	0.39 J	6.2	5.8	7.4	2.8 J	3.8
Ethylbenzene	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (2) U	ND (4) U	ND (3.3) U	ND (3.3) U	ND (1.4) U
Tetrachloroethene	44.1	16.2	17	63	110	130	100	98
Toluene	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (2) U	ND (4) U	ND (3.3) U	ND (3.3) U	ND (1.4) U
trans-1,2-Dichloroethene	ND (1.0) U	ND (1.00) U	ND (0.50) U	1.6	1.1 J	1 J	0.90 J	1.0 J
Trichloroethene	8.5	3.5	3.6	28	57	90	55	51
Vinyl chloride	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (2) U	ND (4) U	ND (3.3) U	ND (3.3) U	ND (1.4) U
Xylene (total)	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (2) U	ND (4) U	ND (3.3) U	ND (6.7) U	ND (2.9) U

GM-45	8/19/2004	9/22/2006
	UG/L	UG/L
1,1,1-Trichloroethane	5.8 J	3.5 J
1,1-Dichloroethane	8.5 J	3.1 J
1,1-Dichloroethene	ND (9.1) U	ND (8.0) UJ
Benzene	ND (9.1) U	ND (8.0) UJ
cis-1,2-Dichloroethene	79	54 J
Ethylbenzene	ND (9.1) U	ND (8.0) UJ
Tetrachloroethene	220	230 J
Toluene	ND (9.1) U	ND (8.0) UJ
trans-1,2-Dichloroethene	3.5 J	2.7 J
Trichloroethene	220	230 J
Vinyl chloride	ND (9.1) U	ND (8.0) UJ
Xylene (total)	ND (9.1) U	ND (16) UJ

W-2-S	9/23/1999	9/27/2000	11/8/2001	9/18/2002	9/26/2003	9/17/2004	10/19/2005	9/18/2006
	UG/L	UG/L	UG/L	UG/L	ug/l	ug/l	ug/L	ug/L
1,1,1-Trichloroethane	1.9	1.6/1.7	1.7	1.5	1.4	1.5	1.6	1.8
1,1-Dichloroethane	ND (1.0) U	ND (1.00) U	0.58 J	0.98 J	0.99 J	1.3	1.2	1.2
1,1-Dichloroethene	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1.0) U	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U
Benzene	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1.0) U	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U
cis-1,2-Dichloroethene	ND (1.0) U	ND (1.00) U	0.49 J	0.90	0.74	1.1	0.78 J	1.2
Ethylbenzene	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1.0) U	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U
Tetrachloroethene	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1.0) U	ND (1) U	0.55 J	0.36 J	ND (1.0) U
Toluene	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1.0) U	0.25 J	ND (1) U	ND (1.0) U	ND (1.0) U
trans-1,2-Dichloroethene	ND (1.0) U	ND (1.00) U	ND (0.50) U	ND (0.50) U	ND (0.5) U	ND (0.5) U	ND (1.0) U	ND (1.0) U
Trichloroethene	6.1	5.0	5.2 B	4.9	5.5	6	5.4	5.1
Vinyl chloride	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1.0) U	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U
Xylene (total)	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1.0) U	ND (1) U	ND (1) U	ND (2.0) U	ND (2.0) U

W-3-S	9/23/1999	9/28/2000	11/8/2001	9/18/2002	9/26/2003	9/17/2004	10/19/2005	9/18/2006
	UG/L	UG/L	UG/L	UG/L	ug/l	ug/l	ug/L	ug/L
1,1,1-Trichloroethane	3.9	2.8	1.6	2.1	1.8	2.4	2.5	2.5
1,1-Dichloroethane	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1.0) U	ND (1) U	0.21 J	ND (1.0) U	ND (1.0) U
1,1-Dichloroethene	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1.0) U	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U
Benzene	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1.0) U	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U
cis-1,2-Dichloroethene	ND (1.0) U	ND (1.00) U	ND (0.50) U	ND (0.50) U	0.34 J	ND (0.5) U	ND (1.0) U	ND (1.0) U
Ethylbenzene	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1.0) U	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U
Tetrachloroethene	1.1	ND (1.00) U	0.44 J	0.61 J	0.81 J	1.2	1.0	0.80 J
Toluene	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1.0) U	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U
trans-1,2-Dichloroethene	ND (1.0) U	ND (1.00) U	ND (0.50) U	ND (0.50) U	ND (0.5) U	ND (0.5) U	ND (1.0) U	ND (1.0) U
Trichloroethene	2.6	2.5	1.5 B	2.4	2	2.9	2.9	3.4
Vinyl chloride	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1.0) U	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U
Xylene (total)	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1.0) U	ND (1) U	ND (1) U	ND (2.0) U	ND (2.0) U

| W-4-S | 9/23/1999 | 9/28/2000 | 11/8/2001 | 9/18/2002 | 9/26/2003 | 9/17/2004 | 10/19/2005 | 9/19/2006 |
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HR–10	9/15/1999 UG/L	9/29/2000 UG/L	11/14/2001 UG/L	9/27/2002 UG/L	9/17/2003 ug/l	9/20/2004 ug/l	10/24/2005 ug/L	9/26/2006 ug/L
1,1,1–Trichloroethane	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1) U	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U
1,1–Dichloroethane	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1) U	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U
1,1–Dichloroethene	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1) U	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U
Benzene	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1) U	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U
cis–1,2–Dichloroethene	ND (1.0) U	ND (1.00) U	ND (0.50) U	ND (0.5) U	ND (0.5) U	ND (0.5) U	ND (1.0) U	ND (1.0) U
Ethylbenzene	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1) U	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U
Tetrachloroethene	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1) U	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U
Toluene	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1) U	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U
trans–1,2–Dichloroethene	ND (1.0) U	ND (1.00) U	ND (0.50) U	ND (0.5) U	ND (0.5) U	ND (0.5) U	ND (1.0) U	ND (1.0) U
Trichloroethene	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1) U	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U
Vinyl chloride	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1) U	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U
Xylene (total)	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1) U	ND (1) U	ND (1) U	ND (2.0) U	ND (2.0) U

HR–12	9/14/1999 UG/L	9/28/2000 UG/L	11/14/2001 UG/L	9/26/2002 UG/L	9/18/2003 ug/l	9/21/2004 ug/l	10/24/2005 ug/L	9/26/2006 ug/L
1,1,1–Trichloroethane	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1) U	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U
1,1–Dichloroethane	2.7	2.0/2.2	3.6	2.4/2.5	1.7	1.8	2.1	2.1
1,1–Dichloroethene	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1) U	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U
Benzene	1.2	ND (1.00) U	ND (1.0) U	ND (1) U	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U
cis–1,2–Dichloroethene	1.8	1.8/2.0	2.7	2.1/2.2	1.4	1.2	1.5	1.3
Ethylbenzene	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1) U	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U
Tetrachloroethene	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1) U	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U
Toluene	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1) U	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U
trans–1,2–Dichloroethene	ND (1.0) U	ND (1.00) U	0.23 J	ND (0.5) U	ND (0.5) U	ND (0.5) U	ND (1.0) U	ND (1.0) U
Trichloroethene	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1) U	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U
Vinyl chloride	1.7	2.5/2.6	3.8	1.7/1.8	1.6	1.1	0.36 J	ND (1.0) U
Xylene (total)	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1) U	ND (1) U	ND (1) U	ND (2.0) U	ND (2.0) U

HR–15	9/15/1999 UG/L	9/29/2000 UG/L	11/14/2001 UG/L	9/30/2002 UG/L	9/17/2003 ug/l	9/21/2004 ug/l	10/25/2005 ug/L	9/25/2006 ug/L
1,1,1–Trichloroethane	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1) U	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U/ND (1.0) U
1,1–Dichloroethane	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1) U/ND (1) UJ	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U/ND (1.0) U
1,1–Dichloroethene	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1) U	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U/ND (1.0) U
Benzene	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1) U	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U/ND (1.0) U
cis–1,2–Dichloroethene	2.5	2.8	0.86	0.98/1	2.2	2.5	2.2	2.1/2.2
Ethylbenzene	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1) U	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U/ND (1.0) U
Tetrachloroethene	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1) U	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U/ND (1.0) U
Toluene	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1) U	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U/ND (1.0) U
trans–1,2–Dichloroethene	ND (1.0) U	ND (1.00) U	ND (0.50) U	ND (0.5) U	ND (0.5) U	ND (0.5) U	ND (1.0) U	ND (1.0) U/ND (1.0) U
Trichloroethene	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1) U	0.29 J	0.38 J	0.40 J	0.51 J/0.50 J
Vinyl chloride	11.0	11.2	ND (1.0) U	0.38 J/ND (1) U	14	19	14	13/13
Xylene (total)	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1) U	ND (1) U	ND (1) U	ND (2.0) U	ND (2.0) U/ND (2.0) U

GM–39	12/10/2003 ug/l	9/20/2004 ug/l	10/24/2005 ug/L	9/27/2006 ug/L
1,1,1–Trichloroethane	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U
1,1–Dichloroethane	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U
1,1–Dichloroethene	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U
Benzene	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U
cis–1,2–Dichloroethene	ND (0.5) U	ND (0.5) U	ND (1.0) U	ND (1.0) U
Ethylbenzene	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U
Tetrachloroethene	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U
Toluene	0.18 J	ND (1) U	ND (1.0) U	ND (1.0) U
trans–1,2–Dichloroethene	ND (0.5) U	ND (0.5) U	ND (1.0) U	ND (1.0) U
Trichloroethene	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U
Vinyl chloride	1.3	1.8	0.77 J	1.7
Xylene (total)	ND (1) U	ND (1) U	ND (2.0) U	ND (2.0) U

HR–13	9/15/1999 UG/L	9/29/2000 UG/L	11/14/2001 UG/L	9/30/2002 UG/L	9/16/2003 ug/l	9/21/2004 ug/l	10/25/2005 ug/L	9/25/2006 ug/L
1,1,1–Trichloroethane	1.6/1.6	1.7	0.74 J	1.4	2.2	2.6	2.3	2.0
1,1–Dichloroethane	41.4/42.8	39.5	15	25	33	30	25	22
1,1–Dichloroethene	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1) U	ND (1) U	0.27 J	0.25 J	0.18 J
Benzene	ND (1.0) U	ND (1.00) U	0.18 J	ND (1) U	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U
cis–1,2–Dichloroethene	20.8/21.2	14.1	6.5	11	12	12	11	9.0
Ethylbenzene	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1) U	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U
Tetrachloroethene	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1) U	ND (1) U	ND (1) U	0.20 J	0.20 J
Toluene	ND (1.0) U	ND (1.00) U	ND (1.0) U	0.4 U	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U
trans–1,2–Dichloroethene	3.1/3.3	2.5	0.65	1.4	1.8	1.5	1.5	1.4
Trichloroethene	3.3/3.4	2.0	1.2	3.6	5.7	21	20	15
Vinyl chloride	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1) U	ND (1) U	0.43 J	ND (1.0) U	ND (1.0) U
Xylene (total)	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1) U	ND (1) U	ND (1) U	ND (2.0) U	ND (2.0) U

HR–14	9/15/1999 ug/l	9/30/2002 ug/l
1,1,1–Trichloroethane	ND (1) U	ND (1) U
1,1–Dichloroethane	ND (1) U	ND (1) U
1,1–Dichloroethene	ND (1) U	ND (1) U
Benzene	ND (1) U	ND (1) U
cis–1,2–Dichloroethene	7.9	3.6
Ethylbenzene	ND (1) U	ND (1) U
Tetrachloroethene	ND (1) U	ND (1) U
Toluene	ND (1) U	0.57 U
trans–1,2–Dichloroethene	ND (1) U	ND (0.5) U
Trichloroethene	3.4	1.2
Vinyl chloride	11.5	ND (1) U
Xylene (total)	ND (1) U	ND (1) U

31	9/29/2000 UG/L	11/15/2001 UG/L
1,1,1–Trichloroethane	ND (1.00) U	ND (1) U
1,1–Dichloroethane	7.4	3.1
1,1–Dichloroethene	ND (1.00) U	ND (1) U
Benzene	ND (1.00) U	ND (1) U
cis–1,2–Dichloroethene	8.4	2.4
Ethylbenzene	ND (1.00) U	ND (1) U
Tetrachloroethene	ND (1.00) U	ND (1) U
Toluene	ND (1.00) U	ND (1) U
trans–1,2–Dichloroethene	ND (1.00) U	ND (0.5) U
Trichloroethene	12.9	5.1
Vinyl chloride	4.4	2.5
Xylene (total)	ND (1.00) U	ND (1) U

39	9/27/2002 UG/L	9/24/2003 ug/l
1,1,1–Trichloroethane	ND (1.0) U	ND (1) U
1,1–Dichloroethane	1.6	0.58 J
1,1–Dichloroethene	ND (1.0) U	ND (1) U
Benzene	ND (1.0) U	ND (1) U
cis–1,2–Dichloroethene	1.3	0.71
Ethylbenzene	ND (1.0) U	ND (1) U
Tetrachloroethene	ND (1.0) U	ND (1) U
Toluene	ND (1.0) U	ND (1) U
trans–1,2–Dichloroethene	ND (0.5) U	ND (0.5) U
Trichloroethene	3.8	0.89 J
Vinyl chloride	0.51 J	ND (1) U
Xylene (total)	ND (1.0) U	ND (1) U

GM–42	12/9/2003 ug/l	9/20/2004 ug/l	10/25/2005 ug/L	9/26/2006 ug/L
1,1,1–Trichloroethane	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U
1,1–Dichloroethane	0.46 J	0.7 J	0.64 J	0.50 J
1,1–Dichloroethene	ND (1) U	0.25 J	0.21 J	ND (1.0) U
Benzene	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U
cis–1,2–Dichloroethene	11	16	17	14
Ethylbenzene	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U
Tetrachloroethene	0.27 J	ND (1) U	0.19 J	ND (1.0) U
Toluene	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U
trans–1,2–Dichloroethene	0.34 J	0.44 J	0.59 J	0.44 J
Trichloroethene	0.37 J	0.43 J	0.85 J	0.64 J
Vinyl chloride	1	0.92 J	0.56 J	0.45 J
Xylene (total)	ND (1) U	ND (1) U	ND (2.0) U	ND (2.0) U

GM–41	12/10/2003 ug/l	9/21/2004 ug/l	10/24/2005 ug/L	9/18/2006 ug/L
1,1,1–Trichloroethane	ND (11) U	ND (6.2) U	ND (10) U/ND (10) U	ND (4.0) U
1,1–Dichloroethane	ND (11) U	ND (6.2) U	ND (10) U/ND (10) U	ND (4.0) U
1,1–Dichloroethene	ND (11) U	ND (6.2) U	ND (10) U/ND (10) U	ND (4.0) U
Benzene	ND (11) U	ND (6.2) U	ND (10) U/ND (10) U	ND (4.0) U
cis–1,2–Dichloroethene	10	24	16/17	11
Ethylbenzene	ND (11) U	ND (6.2) U	ND (10) U/ND (10) U	ND (4.0) U
Tetrachloroethene	ND (11) U	ND (6.2) U	ND (10) U/ND (10) U	ND (4.0) U
Toluene	ND (11) U	ND (6.2) U	ND (10) U/ND (10) U	ND (4.0) U
trans–1,2–Dichloroethene	ND (5.6) U	ND (3.1) U	ND (10) U/ND (10) U	ND (4.0) U
Trichloroethene	320	180	250/290	210
Vinyl chloride	ND (11) U	ND (6.2) U	ND (10) U/ND (10) U	ND (4.0) U
Xylene (total)	ND (11) U	ND (6.2) U	ND (20) U/ND (20) U	ND (8.0) U

GM–40	12/10/2003 ug/l	9/20/2004 ug/l	10/25/2005 ug/L	9/26/2006 ug/L
1,1,1–Trichloroethane	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U
1,1–Dichloroethane	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U
1,1–Dichloroethene	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U
Benzene	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U
cis–1,2–Dichloroethene	ND (0.5) U	ND (0.5) U	ND (1.0) U	ND (1.0) U
Ethylbenzene	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U
Tetrachloroethene	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U
Toluene	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U
trans–1,2–Dichloroethene	ND (0.5) U	ND (0.5) U	ND (1.0) U	ND (1.0) U
Trichloroethene	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U
Vinyl chloride	3.1	3.2	2.9	3.9
Xylene (total)	ND (1) U	ND (1) U	ND (2.0) U	ND (2.0) U

GM–19D	9/28/1999 UG/L	10/2/2000 UG/L	11/14/2001 UG/L	9/26/2002 UG/L	9/25/2003 ug/l	9/20/2004 ug/l	10/25/2005 ug/L	9/26/2006 ug/L
1,1,1–Trichloroethane	ND (1.0) U	ND (1.00) U	0.18 J	ND (1) U	ND (1) U	0.31 J	ND (1.0) U	ND (1.0) U
1,1–Dichloroethane	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1) U	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U
1,1–Dichloroethene	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1) U	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U
Benzene	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1) U	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U
cis–1,2–Dichloroethene	1.2	3.5	0.92	0.81	1.8	2	2.7	2.0
Ethylbenzene	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1) U	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U
Tetrachloroethene	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1) U	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U
Toluene	ND (1.0) U	ND (1.00) U	0.38 J	ND (1) U	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U
trans–1,2–Dichloroethene	ND (1.0) U	ND (1.00) U	ND (0.50) U	ND (0.5) U	ND (0.5) U	ND (0.5) U	ND (1.0) U	ND (1.0) U
Trichloroethene	13.5	2.9	3.7	3.1	0.24 J	3.5	1.2	1.4
Vinyl chloride	1.5	15.7	13	0.36 J	17	18	15	18
Xylene (total)	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1) U	ND (1) U	ND (1) U	ND (2.0) U	ND (2.0) U

GM–7R	9/28/1999 UG/L
1,1,1–Trichloroethane	4.2/4.8
1,1–Dichloroethane	1.1/ND (1.0) U
1,1–Dichloroethene	ND (1.0) U
Benzene	ND (1.0) U
cis–1,2–Dichloroethene	2.1/2.3
Ethylbenzene	ND (1.0) U
Tetrachloroethene	ND (1.0) U
Toluene	ND (1.0) U
trans–1,2–Dichloroethene	ND (1.0) U
Trichloroethene	76.1/76.8
Vinyl chloride	ND (1.0) U
Xylene (total)	ND (1.0) U

GM–5	9/28/1999 UG/L
1,1,1–Trichloroethane	ND (1.0) U
1,1–Dichloroethane	ND (1.0) U
1,1–Dichloroethene	ND (1.0) U
Benzene	ND (1.0) U
cis–1,2–Dichloroethene	ND (1.0) U
Ethylbenzene	ND (1.0) U
Tetrachloroethene	ND (1.0) U
Toluene	3.9
trans–1,2–Dichloroethene	ND (1.0) U
Trichloroethene	1.3
Vinyl chloride	ND (1.0) U
Xylene (total)	ND (1.0) U

GM–15	9/24/1999 UG/L	10/2/2000 UG/L	11/14/2001 UG/L	9/27/2002 UG/L	9/22/2003 ug/l	9/20/2004 ug/l	10/26/2005 ug/L	9/18/2006 ug/L
1,1,1–Trichloroethane	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1) U	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U
1,1–Dichloroethane	2.4	2.2/2.3	1.4	1.6	1.7	1.8	1.7	1.6
1,1–Dichloroethene	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1) U	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U
Benzene	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1) U	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U
cis–1,2–Dichloroethene	4.3	2.6/3.8	1.2	1.8	1.6	1.4	1.7	1.2
Ethylbenzene	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1) U	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U
Tetrachloroethene	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1) U	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U
Toluene	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1) U	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U
trans–1,2–Dichloroethene	ND (1.0) U	ND (1.00) U	ND (0.50) U	ND (0.5) U	ND (0.5) U	ND (0.5) U	ND (1.0) U	ND (1.0) U
Trichloroethene	4.1	4.5/4.7	4.9	4.7	5.9	5.8	5.9	6.3
Vinyl chloride	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1) U	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U
Xylene (total)	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1) U	ND (1) U	ND (1) U	ND (2.0) U	ND (2.0) U

GM–1	9/28/1999 UG/L	10/2/2000 UG/L	11/14/2001 UG/L	10/1/2002 UG/L	10/2/2003 ug/l	9/21/2004 ug/l	10/25/2005 ug/L	9/20/2006 ug/L
1,1,1–Trichloroethane	1.1	2.2	0.80 J	1.3 J	1.2	1.2	0.95 J/1.0	0.76 J
1,1–Dichloroethane	ND (1.0) U	ND (1.00) U	0.29 J	0.48 J	ND (1) U	ND (1) U	ND (1.0) U/ND (1.0) U	ND (1.0) U
1,1–Dichloroethene	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1.4) U	ND (1) U	ND (1) U	ND (1.0) U/ND (1.0) U	ND (1.0) U
Benzene	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1.4) U	ND (1) U	ND (1) U	ND (1.0) U/ND (1.0) U	ND (1.0) U
cis–1,2–Dichloroethene	ND (1.0) U	ND (1.00) U	ND (0.50) U	0.95	ND (0.5) U	ND (0.5) U	ND (1.0) U/ND (1.0) U	ND (1.0) U
Ethylbenzene	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1.4) U	ND (1) U	ND (1) U	ND (1.0) U/ND (1.0) U	ND (1.0) U
Tetrachloroethene	2.0	2.8	1.3	2.3	2	2.1	2.1/2.0	2.1
Toluene	5.2	ND (1.00) U	ND (1.0) U	ND (1.4) U	ND (1) U	ND (1) U	ND (1.0) U/ND (1.0) U	ND (1.0) U
trans–1,2–Dichloroethene	ND (1.0) U	ND (1.00) U	ND (0.50) U	ND (0.72) U	ND (0.5) U	ND (0.5) U	ND (1.0) U/ND (1.0) U	ND (1.0) U
Trichloroethene	30.6	37.2	19	39.0	34	35	34/34	34
Vinyl chloride	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1.4) U	ND (1) U	ND (1) U	ND (1.0) U/ND (1.0) U	ND (1.0) U
Xylene (total)	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1.4) U	ND (1) U	ND (1) U	ND (2.0) U/ND (2.0) U	ND (2.0) U

GM–14	9/24/1999 UG/L
1,1,1–Trichloroethane	ND (1.0) U
1,1–Dichloroethane	ND (1.0) U
1,1–Dichloroethene	ND (1.0) U
Benzene	ND (1.0) U
cis–1,2–Dichloroethene	ND (1.0) U
Ethylbenzene	ND (1.0) U
Tetrachloroethene	ND (1.0) U
Toluene	ND (1.0) U
trans–1,2–Dichloroethene	ND (1.0) U
Trichloroethene	ND (1.0) U
Vinyl chloride	ND (1.0) U
Xylene (total)	ND (1.0) U

GM–3	9/28/1999 UG/L	10/2/2000 UG/L	11/14/2001 UG/L	10/1/2002 UG/L	10/2/2003 ug/l	9/21/2004 ug/l	10/25/2005 ug/L	9/22/2006 ug/L
1,1,1–Trichloroethane	1.7	1.0	0.16 J	0.74 J	0.96 J	1	0.83 J	0.59 J
1,1–Dichloroethane	ND (1.0) U	2.1	0.95 J	1.8	1.6	1.8	1.6	2.0 J
1,1–Dichloroethene	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1.0) U	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) UJ
Benzene	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1.0) U	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) UJ
cis–1,2–Dichloroethene	1.1	8.3	2.6	8.9	5.5	4.9	4.7	6.1 J
Ethylbenzene	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1.0) U	0.26 J	ND (1) U	ND (1.0) U	ND (1.0) UJ
Tetrachloroethene	1.2	1.5	0.48 J	1.4	1.7	2	2.0	2.1 J
Toluene	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1.0) U	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) UJ
trans–1,2–Dichloroethene	ND (1.0) U	1.1	0.25 J	1.2	0.77	0.75	0.66 J	1.0 J
Trichloroethene	7.5	9.4	2.9	9.5	12	13	14	13 J
Vinyl chloride	ND (1.0) U	ND (1.00) U	ND (1.0) U	0.63 J	ND (1) U	ND (1) U	ND (1.0) U	0.27 J
Xylene (total)	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1.0) U	ND (1) U	ND (1) U	ND (2.0) U	ND (2.0) UJ

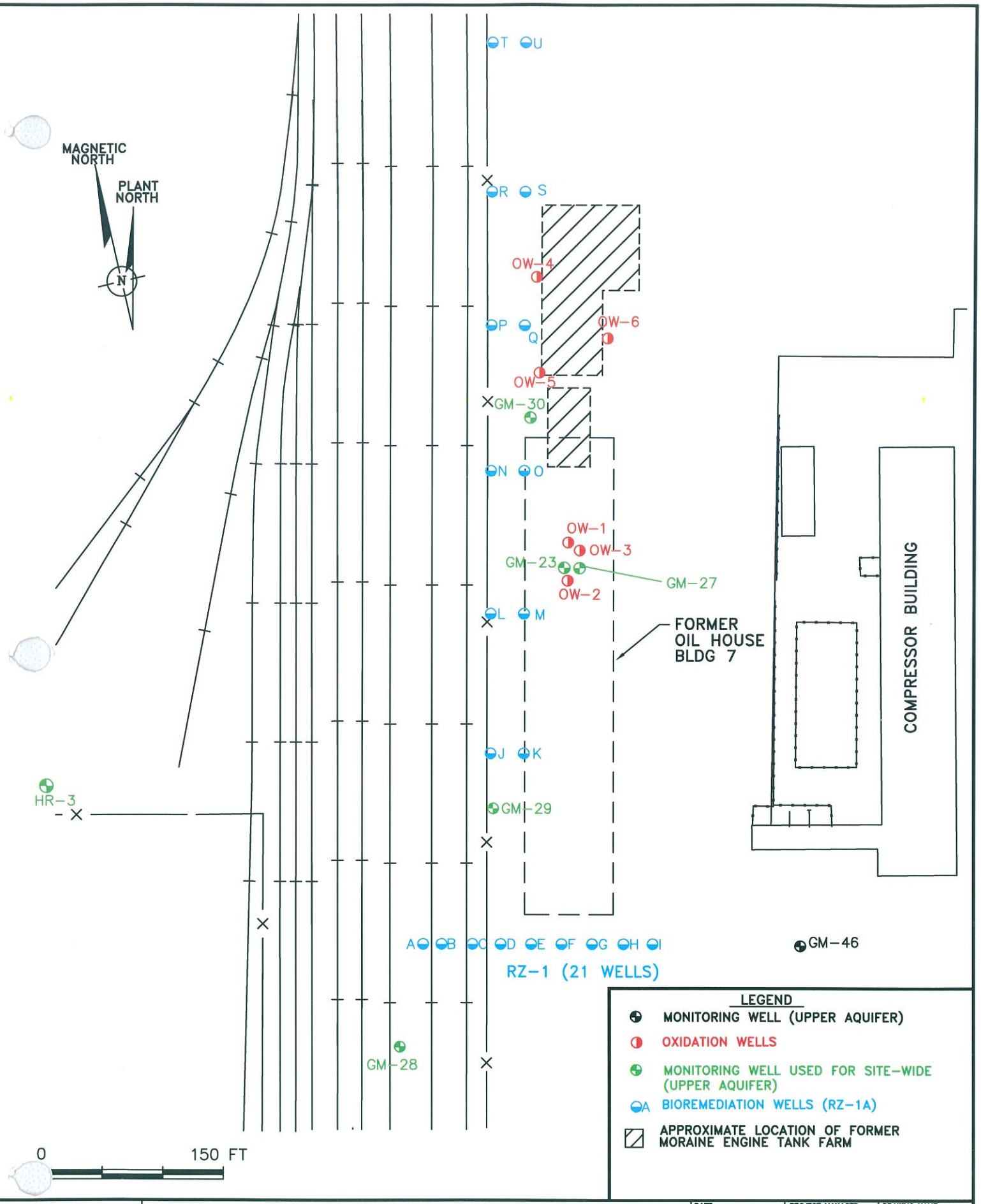
GM–20D	9/24/1999 UG/L	10/3/2000 UG/L	11/14/2001 UG/L	9/30/2002 UG/L	9/22/2003 ug/l	9/21/2004 ug/l	10/26/2005 ug/L	9/26/2006 ug/L
1,1,1–Trichloroethane	ND (1.0) U	1.6	0.64 J	ND (1) U	0.89 J	0.96 J	0.73 J	0.51 J
1,1–Dichloroethane	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1) U	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U
1,1–Dichloroethene	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1) U	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U
Benzene	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1) U	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U
cis–1,2–Dichloroethene	ND (1.0) U	ND (0.50) U	ND (0.5) U	ND (0.5) U	ND (0.5) U	ND (0.5) U	ND (1.0) U	ND (1.0) U
Ethylbenzene	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1) U	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U
Tetrachloroethene	ND (1.0) U	4.2	2.0	1.3	3.6	2.9	2.7	2.1
Toluene	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1) U	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U
trans–1,2–Dichloroethene	ND (1.0) U	ND (1.00) U	ND (0.50) U	ND (0.5) U	ND (0.5) U	ND (0.5) U	ND (1.0) U	ND (1.0) U
Trichloroethene	ND (1.0) U	14.3	5.9	3.8	12	11	11	11
Vinyl chloride	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1) U	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U
Xylene (total)	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1) U	ND (1) U	ND (1) U	ND (2.0) U	ND (2.0) U

GM–4	9/28/1999 UG/L
1,1,1–Trichloroethane	ND (1.0) U
1,1–Dichloroethane	ND (1.0) U
1,1–Dichloroethene	ND (1.0) U
Benzene	ND (1.0) U
cis–1,2–Dichloroethene	2.3
Ethylbenzene	ND (1.0) U
Tetrachloroethene	ND (1.0) U
Toluene	ND (1.0) U
trans–1,2–Dichloroethene	ND (1.0) U
Trichloroethene	13.4
Vinyl chloride	ND (1.0) U
Xylene (total)	ND (1.0) U

GM–13	9/24/1999 UG/L
1,1,1–Trichloroethane	1.9
1,1–Dichloroethane	ND (1.0) U
1,1–Dichloroethene	ND (1.0) U
Benzene	ND (1.0) U
cis–1,2–Dichloroethene	ND (1.0) U
Ethylbenzene	ND (1.0) U
Tetrachloroethene	3.6
Toluene	ND (1.0) U
trans–1,2–Dichloroethene	ND (1.0) U
Trichloroethene	31.0
Vinyl chloride	ND (1.0) U
Xylene (total)	ND (1.0) U

DN–13	11/14/2001 ug/l	9/27/2002 ug/l	9/22/2003 ug/l	9/16/2004 ug/l	10/20/2005 ug/L	9/27/2006 ug/L
1,1,1–Trichloroethane	1.1	1.1	1.1	0.84 J	1.5	0.51 J
1,1–Dichloroethane	2.5	2.5	2.4	2.2	2.0	1.5
1,1–Dichloroethene	ND (1.0) U	ND (1) U	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U
Benzene	ND (1.0) U	ND (1) U	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U
cis–1,2–Dichloroethene	6.2	7.3	6.8	6.7	5.5	6.1
Ethylbenzene	ND (1.0) U	ND (1) U	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U
Tetrachloroethene	ND (1.0) U	ND (1) U	0.31 J	0.44 J	0.38 J	0.33 J
Toluene	ND (1.0) U	ND (1) U	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U
trans–1,2–Dichloroethene	0.37 J	0.48 J	0.4 J	0.49 J	ND (1.0) U	0.41 J
Trichloroethene	5.0	6.1	6.4	6.8	7.2	5.7
Vinyl chloride	1.2	1.3	1.1	2.1	2.6	2.3
Xylene (total)	ND (1.0) U	ND (1) U	ND (1) U	ND (1) U	ND (2.0) U	ND (2.0) U

GM–11	9/24/1999 UG/L	10/2/2000 UG/L	11/14/2001 UG/L	10/1/2002 UG/L	9/24/2003 ug/l	9/21/2004 ug/l	10/26/2005 ug/L	9/25/2006 ug/L
1,1,1–Trichloroethane	ND (1.0) U	1.4	0.33 J	1	0.96 J	0.89 J	0.75 J	0.75 J
1,1–Dichloroethane	ND (1.0) U	ND (1.00) U	ND (1.0) U	0.34 J	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U
1,1–Dichloroethene	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1) U	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U
Benzene	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1) U	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U
cis–1,2–Dichloroethene	ND (1.0) U	ND (1.00) U	ND (0.50) U	0.62	ND (0.5) U	ND (0.5) U	ND (1.0) U	ND (1.0) U
Ethylbenzene	ND (1.0) U	ND (1.00) U	ND (1.0) U	ND (1) U	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U
Tetrachloroethene	1.5	3.0	1.0	2.2	2.2	2.1	1.7	2.0
Toluene	ND (1.0) U	ND (1.00) U	ND (1.0) U	0.55 U	ND (1) U	ND (1) U	ND (1.0) U	ND (1.0) U
trans–1,2–Dichloroethene	ND (1.0) U	ND (1.00) U	ND (0.50) U	ND (0.5) U	ND (0.5) U	ND (0.5) U	ND (1.0) U	ND (1.0) U
Trichloroethene	14.5	41.3	12	35	33	33	32	34



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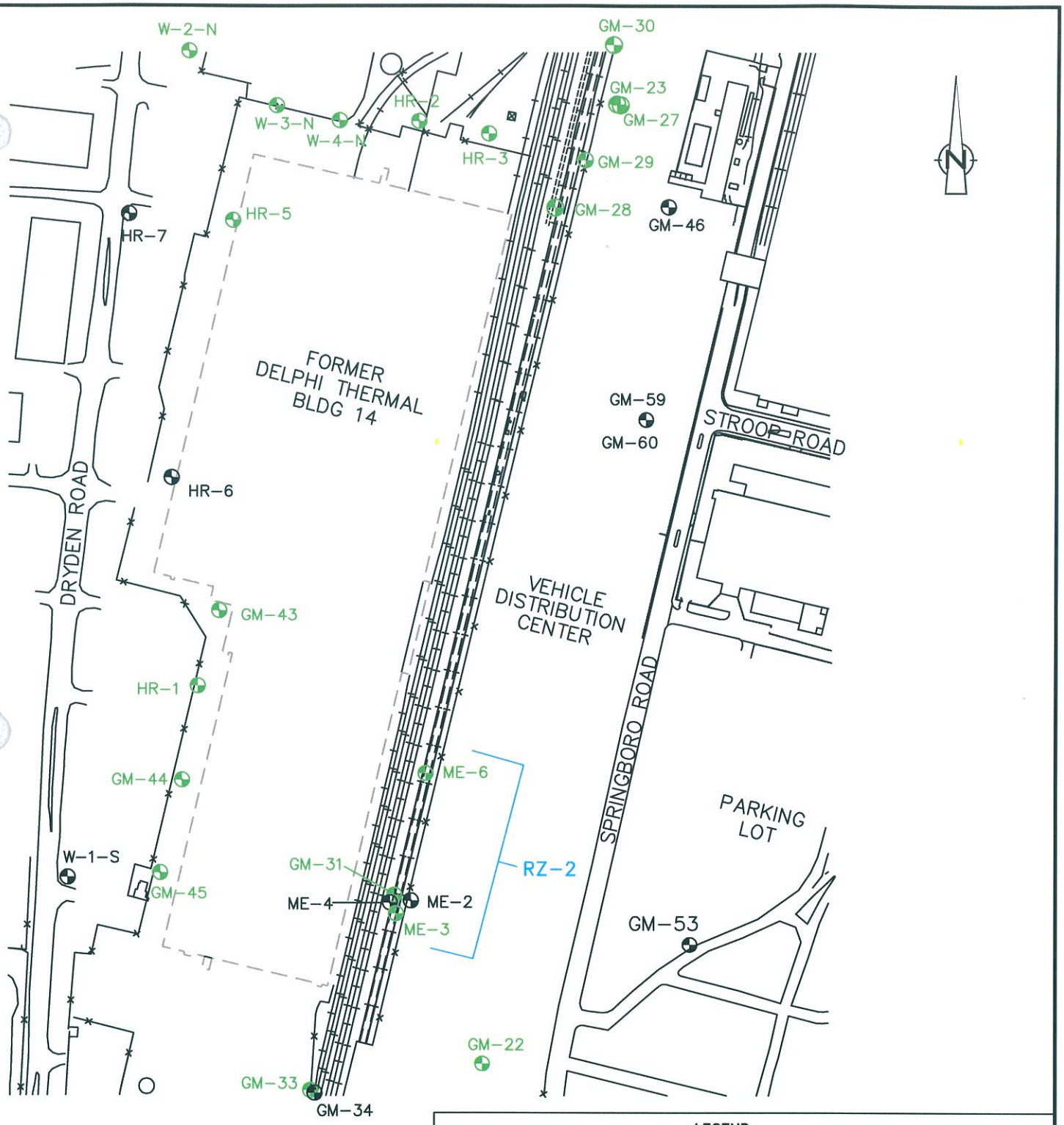
REACTIVE ZONE #1
GENERAL MOTORS CORPORATION
MORAINE, OHIO

DATE	PROJECT MANAGER	DRAWING NAME
12/28/2006	N. GILLOTTI	CRA\ANN06\ANN06-07
DRAWN	LEAD DESIGN PROF.	CHECKED
R. SMITH	J. REID	T. FORTNER
PROJECT NUMBER		FIGURE NUMBER
0H000294.0009.0003		14



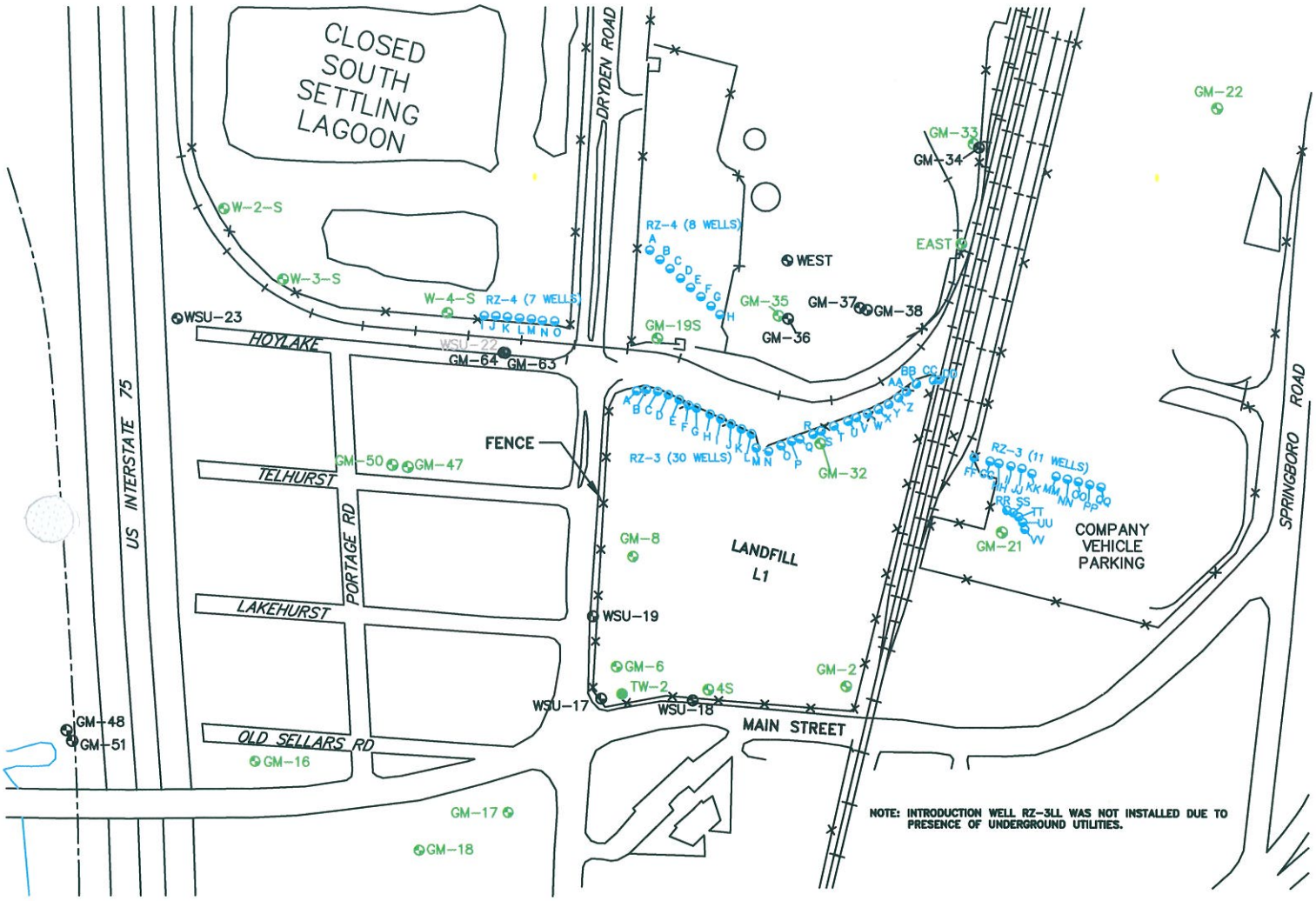
LEGEND

- MONITORING WELL (UPPER AQUIFER)
- MONITORING WELL USED FOR SITE-WIDE MONITORING (UPPER AQUIFER)
- FORMER BUILDING 14 FOOTPRINT

ARCADIS
284 Cramer Creek Court
Dublin, OH 43017
Tel: 614/764-2310 Fax: 614/764-1270

REACTIVE ZONE #2
GENERAL MOTORS CORPORATION
MORAINE, OHIO

DATE	PROJECT MANAGER	DRAWING NAME
12/28/2006	N. GILLOTTI	CRA\ANN06\ANN06-08
DRAWN	LEAD DESIGN PROF.	CHECKED
R. SMITH	J. REID	T. FORTNER
PROJECT NUMBER		FIGURE NUMBER
0H000294.0009.0003		15



NOTE: INTRODUCTION WELL RZ-3LL WAS NOT INSTALLED DUE TO PRESENCE OF UNDERGROUND UTILITIES.

LEGEND

- MONITORING WELL USED FOR SITE-WIDE MONITORING (UPPER AQUIFER)
- CARBON SOURCE INTRODUCTION WELLS REACTIVE ZONE #3 (RZ-3A)
- RECOVERY WELL (USED FOR SITE-WIDE MONITORING)
- MONITORING WELL (UPPER AQUIFER)
- WELL WSU-22 DAMAGED AND NO LONGER USABLE (WELL TO BE ABANDONED)
- RIVER LEVEE

300 FT

ARCADIS
284 Cramer Creek Court
Dublin, OH 43017
Tel: 614/764-2310 Fax: 614/764-1270

REACTIVE ZONES #3 AND #4
GENERAL MOTORS CORPORATION
MORAINE, OHIO

DATE	PROJECT MANAGER	DRAWING NAME
12/28/2006	N. GILLOTTI	CRA\ANN06\ANN06-09
DRAWN	LEAD DESIGN PROF.	CHECKED
R. SMITH	J. REID	N. GILLOTTI
PROJECT NUMBER		FIGURE NUMBER
0H000294.0009.0003		16

Appendix A

Site-Wide Groundwater VOC
Analytical Results from 1999 to 2005

Table A-1. Groundwater Analytical Results for the Upper Aquifer Wells from 1999-2005, General Motors Corporation, Moraine, Ohio.

		VOCs											
Well	Date	Benzene	1,1-DCA	1,1-DCE	cis-1,2-DCE	trans-1,2-DCE	Ethyl-benzene	PCE	Toluene	1,1,1-TCA	TCE	Vinyl Chloride	Xylenes
Upgradient of the Site													
HR-9	9/16/1999	<1.0	52.2	<1.0	20.3	3.2	<1.0	<1.0	<1.0	20.3	18.1	<1.0	<1.0
HR-9	9/18/2000	<1.0	51.0	<1.0	16.3	2.6	<1.0	<1.0	<1.0	20.5	16.9	<1.0	<1.0
HR-9	11/6/2001	< 1.4	38	0.95J	12	1.7	< 1.4	< 1.4	< 1.4	17	14	< 1.4	< 1.4
HR-9	9/19/2002	< 1.7	46	1.1J	17	2.5	< 1.7	< 1.7	< 1.7	13	15	< 1.7	< 1.7
HR-9	9/17/2003	< 1.2 U	35	< 1.2 U	11	1.5	< 1.2 U	< 1.2 U	< 1.2 U	12	11	< 1.2 U	< 1.2 U
HR-9	9/13/2004	< 2 U	45	1 J	17	2.5	< 2 U	< 2 U	< 2 U	15	13	0.44 J	< 2 U
HR-9	10/19/2005	< 1.2 U	42	0.97 J	19	2.8	< 1.2 U	< 1.2 U	< 1.2 U	14	12	0.46 J	< 2.5 U
HR-11	9/14/1999	<1.0	13.5	<1.0	3.3	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
HR-11	9/18/2000	<1.0	32.9	<1.0	18.5	2.6	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
HR-11	11/6/2001	< 1.0	33	<1.0	18	2.3	< 1.0	< 1.0	< 1.0	0.30J	< 1.0	< 1.0	< 1.0
HR-11	9/26/2002	< 1	18	< 1	6.1	0.72	< 1	< 1	< 1	< 1	< 1	< 1	< 1
HR-11	9/18/2003	< 1 U	10	< 1 U	1.7	< 0.5 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
HR-11	9/15/2004	< 1 U	7.3	< 1 U	0.45 J	< 0.5 U	< 1 U	2.2	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
HR-11	10/17/2005	< 1.0 U	6.5	< 1.0 U	0.72 J	< 1.0 U	< 1.0 U	6.0	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 2.0 U
GM-24	9/23/1999	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	2.7	<1.0	<1.0	<1.0
On-Site													
HR-8	9/16/1999	<1.0	26.4	<1.0	4.4	1.5	<1.0	<1.0	<1.0	10.6	1.6	<1.0	<1.0
HR-8	9/18/2000	<1.0	29.0	<1.0	5.6	1.8	<1.0	<1.0	<1.0	9.9	1.1	<1.0	<1.0
HR-8	11/6/2001	< 1.0	26	< 1.0	5.4	1.3	< 1.0	< 1.0	< 1.0	10	1.4	< 1.0	< 1.0
HR-8	9/19/2002	< 1.0	18	0.44J	4.8	0.85	< 1.0	< 1.0	< 1.0	11	1.8	< 1.0	< 1.0
HR-8	9/17/2003	< 1 U	13	< 1 U	2.8	0.63	< 1 U	< 1 U	< 1 U	7.8	1.3	< 1 U	< 1 U
HR-8	9/13/2004	< 1 U	8.6	0.32 J	1.5	0.45 J	< 1 U	< 1 U	< 1 U	6.4	1	< 1 U	< 1 U
HR-8	10/19/2005	< 1.0 U	5.5	0.19 J	1.3	0.28 J	< 1.0 U	0.24 J	< 1.0 U	4.4	0.66 J	< 1.0 U	< 2.0 U
W-1-N	9/17/1999	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
W-1-N	9/19/2002	< 1.0	0.36J	< 1.0	< 0.50	< 0.50	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
HR-4	9/14/1999	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.2	<1.0	<1.0	1.4	<1.0	<1.0
HR-4	9/20/2000	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
HR-4	11/6/2001	< 1.0	< 1.0	< 1.0	0.28J	< 0.50	< 1.0	0.88J	< 1.0	0.17J	1.0	< 1.0	< 1.0
HR-4	9/27/2002	< 1	< 1	< 1	< 0.5	< 0.5	< 1	0.59J	< 1	< 1	0.71J	< 1	< 1
HR-4	9/18/2003	< 1 U	< 1 U	< 1 U	< 0.5 U	< 0.5 U	< 1 U	0.55 J	< 1 U	< 1 U	0.71 J	< 1 U	< 1 U
HR-4	9/16/2004	< 1 U	0.77 J	< 1 U	< 0.5 U	< 0.5 U	< 1 U	1.3	< 1 U	< 1 U	0.5 J	< 1 U	< 1 U
HR-4	10/20/2005	< 1.0 U	1.5	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	0.39 J	< 1.0 U	< 1.0 U	0.32 J	< 1.0 U	< 2.0 U

Table A-1. Groundwater Analytical Results for the Upper Aquifer Wells from 1999-2005, General Motors Corporation, Moraine, Ohio.

		VOCs											
Well	Date	Benzene	1,1-DCA	1,1-DCE	cis-1,2-DCE	trans-1,2-DCE	Ethyl-benzene	PCE	Toluene	1,1,1-TCA	TCE	Vinyl Chloride	Xylenes
W-2-N	9/14/1999	<1.0	<1.0	<1.0	1.6	<1.0	<1.0	<1.0	<1.0	<1.0	1.7	<1.0	<1.0
W-2-N	9/19/2000	<1.0	<1.0	<1.0	1.2	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
W-2-N	11/6/2001	< 1.0	0.33J	< 1.0	1.1	< 0.50	< 1.0	< 1.0	< 1.0	0.48J	1.3	< 1.0	< 1.0
W-2-N	9/19/2002	< 1.0	0.31J	< 1.0	1.6	< 0.50	< 1.0	< 1.0	< 1.0	< 1.0	1.4	< 1.0	< 1.0
W-2-N	9/18/2003	< 1 U	< 1 U	< 1 U	1.3	< 0.5 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
W-2-N	9/16/2004	< 1 U	0.36 J	< 1 U	1.8	0.2 J	< 1 U	0.31 J	< 1 U	0.3 J	1.4	< 1 U	< 1 U
W-2-N	10/20/2005	< 1.0 U	0.28 J	< 1.0 U	1.3	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	0.91 J	< 1.0 U	< 2.0 U
W-3-N	9/17/1999	<1.0	<1.0	<1.0	291	2.6	<1.0	2.5	<1.0	<1.0	<1.0	12.8	<1.0
W-3-N	9/19/2000	<1.0	<1.0	<1.0	282	3.9	<1.0	<1.0	<1.0	<1.0	<1.0	24.0	<1.0
W-3-N	11/7/2001	< 5.6	< 5.6	< 5.6	160	2.2J	< 5.6	9.0	< 5.6	< 5.6	2.1J	7.6	< 5.6
W-3-N	9/23/2002	< 6.7	< 6.7	< 6.7	150	< 3.3	< 6.7	< 6.7	< 6.7	< 6.7	< 6.7	6.5J	< 6.7
W-3-N	9/17/2003	< 4 U	< 4 U	< 4 U	100	1.6 J	< 4 U	5.1	< 4 U	< 4 U	1.7 J	6.6	< 4 U
W-3-N	9/16/2004	< 4 U	< 4 U	< 4 U	120	1.6 J	< 4 U	0.94 J	< 4 U	< 4 U	< 4 U	6.1	< 4 U
W-3-N	10/20/2005	< 4.0 U	< 4.0 U	< 4.0 U	84	1.0 J	< 4.0 U	1.4 J	< 4.0 U	< 4.0 U	< 4.0 U	8.0	< 8.0 U
W-4-N	9/17/1999	<1.0	1.3	<1.0	2.2	<1.0	<1.0	2.1	<1.0	<1.0	9.8	<1.0	<1.0
W-4-N	9/19/2000	<1.0	<1.0	<1.0	2.0	<1.0	<1.0	<1.0	<1.0	<1.0	7.3	<1.0	<1.0
W-4-N	11/7/2001	< 1.0	0.89J	< 1.0	1.6	< 0.50	< 1.0	0.92J	< 1.0	0.33J	7.1	< 1.0	< 1.0
W-4-N	9/24/2002	< 1	1.7	< 1	5.2	0.33J	< 1	0.94J	< 1	0.44J	8.5	0.77J	< 1
W-4-N	9/17/2003	< 1 U	0.94 J	< 1 U	1.7	< 0.5 U	< 1 U	1.1	< 1 U	0.26 J	8.1	0.48 J	< 1 U
W-4-N	9/16/2004	< 1 U	1.7	< 1 U	5.8	0.38 J	< 1 U	1.7	< 1 U	0.4 J	12	0.49 J	< 1 U
W-4-N	10/20/2005	< 1.0 U	1.2	< 1.0 U	2.0	< 1.0 U	< 1.0 U	1.0	< 1.0 U	< 1.0 U	7.2	0.54 J	< 2.0 U
HR-2	9/16/1999	<1.0	3.9	<1.0	9.6	1.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
HR-2	9/19/2000	<1.0	4.6	<1.0	8.6	1.1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
HR-2	11/7/2001	< 1.0	4.2	< 1.0	8.3	1.1	< 1.0	< 1.0	< 1.0	< 1.0	0.56J	< 1.0	< 1.0
HR-2	9/24/2002	< 1	4.9	< 1	8.8	1.2	< 1	< 1	< 1	< 1	0.46J	< 1	< 1
HR-2	9/16/2003	< 1 U	4.5	< 1 U	7.2	0.96	< 1 U	< 1 U	< 1 U	< 1 U	0.4 J	< 1 U	< 1 U
HR-2	9/16/2004	< 1 U	5.6	< 1 U	7.8	1.1	< 1 U	0.37 J	< 1 U	< 1 U	0.53 J	0.23 J	< 1 U
HR-2	10/20/2005	< 1.0 U	4.4	< 1.0 U	5.0	0.78 J	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	0.35 J	0.29 J	< 2.0 U
HR-3	9/16/1999	<1.0	6.2	<1.0	6.1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
HR-3	9/19/2000	<1.0	5.1	<1.0	4.6	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
HR-3	11/7/2001	< 1.0	6.9	< 1.0	5.1	0.60	< 1.0	< 1.0	< 1.0	< 1.0	0.66J	< 1.0	< 1.0
HR-3	9/24/2002	< 1	15	< 1	9.9	1	< 1	< 1	< 1	< 1	1.4	< 1	< 1
HR-3	9/16/2003	< 1 U	13	< 1 U	9.9	1.1	< 1 U	< 1 U	< 1 U	< 1 U	1.6	< 1 U	< 1 U
HR-3	9/16/2004	< 1 U	23	< 1 U	18	1.8	< 1 U	0.32 J	< 1 U	0.27 J	8.1	< 1 U	< 1 U
HR-3	10/20/2005	< 1.0 U	18	< 1.0 U	11	1.5	< 1.0 U	< 1.0 U	< 1.0 U	0.34 J	10	< 1.0 U	< 2.0 U

Table A-1. Groundwater Analytical Results for the Upper Aquifer Wells from 1999-2005, General Motors Corporation, Moraine, Ohio.

		VOCs											
Well	Date	Benzene	1,1-DCA	1,1-DCE	cis-1,2-DCE	trans-1,2-DCE	Ethyl-benzene	PCE	Toluene	1,1,1-TCA	TCE	Vinyl Chloride	Xylenes
GM-30	9/2/1999	<10	53.8J	<10	7.5J	<10	7030J	9.5J	6950J	<10	<10	<10	23300J
GM-30	9/20/2000	2.7	50.6	<1.0	<1.0	<1.0	2290	<1.0	98.9	<1.0	<1.0	<1.0	6770
GM-30	11/13/2001	< 25	31	< 25	< 12	< 12	840	< 25	5.0J	< 25	12J	< 25	2000
GM-30	9/27/2002	< 33	34	< 33	< 17	< 17	350	< 33	< 33	< 33	< 33	< 33	1400
GM-30	9/23/2003	< 120 U	< 120 U	< 120 U	< 62 U	< 62 U	1000	< 120 U	240	< 120 U	< 120 U	< 120 U	7000
GM-30	9/14/2004	< 40 U	33 J	< 40 U	< 20 U	< 20 U	530	< 40 U	< 40 U	< 40 U	< 40 U	< 40 U	3000
GM-30	10/17/2005	< 50 U	23 J	< 50 U	< 50 U	< 50 U	620	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	3800
GM-23	9/2/1999	1.9	32.5	17.2	7530	54.5	<1.0	6250	<1.0	7.2	1460	2500	<1.0
GM-23	9/20/2000	<1.0	16.3	5.1	5620	33.2	<1.0	3470	<1.0	2.0	609	801	<1.0
GM-23	11/12/2001	< 420	< 420	< 420	8400	< 210	< 420	15000	< 420	< 420	2200	1200	< 420
GM-23	9/26/2002	< 400	< 400	< 400	7700	< 200	< 400	10000	< 400	< 400	1700	540	< 400
GM-23	9/23/2003	< 500 U	< 500 U	< 500 U	5800	< 250 U	< 500 U	12000	< 500 U	< 500 U	1600	690	< 500 U
GM-23	9/14/2004	< 500 U	< 500 U	< 500 U	4600	< 250 U	< 500 U	6700	< 500 U	< 500 U	1100	870	< 500 U
GM-23	10/17/2005	< 560 U	< 560 U	< 560 U	19000	< 560 U	< 560 U	2300	< 560 U	< 560 U	490 J	2800	< 1100 U
GM-27	9/1/1999	<1.0	2.4	<1.0	20.6	<1.0	<1.0	1.7	<1.0	<1.0	121	<1.0	<1.0
GM-27	9/20/2000	<1.0	2.2	<1.0	13.9	<1.0	<1.0	1.2	<1.0	<1.0	112	<1.0	<1.0
GM-27	11/13/2001	< 3.3	1.8J	< 3.3	13	< 1.7	< 3.3	6.8	< 3.3	< 3.3	110	< 3.3	< 3.3
GM-27	9/26/2002	< 3.3	1.7J	< 3.3	14	< 1.7	< 3.3	< 3.3	< 3.3	< 3.3	100	< 3.3	< 3.3
GM-27	9/23/2003	< 5 U	1.9 J	< 5 U	12	< 2.5 U	< 5 U	2.1 J	< 5 U	< 5 U	100	< 5 U	< 5 U
GM-27	9/15/2004	< 3.3 U	2 J	< 3.3 U	13	< 1.7 U	< 3.3 U	1.8 J	< 3.3 U	< 3.3 U	81	< 3.3 U	< 3.3 U
GM-27	10/17/2005	< 2.5 U	2.2 J	< 2.5 U	14	0.49 J	< 2.5 U	0.94 J	< 2.5 U	< 2.5 U	76	0.82 J	< 5.0 U
GM-29	9/1/1999	<1.0	4.3	1.3	320	11.1	<1.0	<20	<1.0	37.8	878	3.8	<1.0
GM-29	9/21/2000	<1.0	16.6	3.1	2871	14.4	<1.0	20.0	2.2	24.5	289	788	<1.0
GM-29	11/13/2001	< 50	< 50	< 50	1800	26	21J	17J	< 50	< 50	270	230	52
GM-29	9/25/2002	< 40	< 40	< 40	1300	21	< 40	18J	< 40	16J	310	140	< 40
GM-29	9/24/2003	< 33 U	< 33 U	< 33 U	1200	20	< 33 U	18 J	< 33 U	18 J	390	150	< 33 U
GM-29	9/15/2004	< 50 U	< 50 U	< 50 U	1200	21 J	< 50 U	20 J	< 50 U	21 J	440	230	< 50 U
GM-29	10/17/2005	< 50 U	18 J	< 50 U	1600	27 J	< 50 U	15 J	< 50 U	19 J	390	490	< 100 U
GM-28	9/1/1999	<1.0	3.3	<1.0	175	9.2	<1.0	316	<1.0	17.7	768	3.2	<1.0
GM-28	9/21/2000	<1.0	9.9	<1.0	37.0	22.3	<1.0	2.3	<1.0	5.0	1.6	12.4	<1.0
GM-28	11/15/2001	< 10	< 10	< 10	< 5.0	11	< 10	< 10	< 10	< 10	< 10	< 10	< 10
GM-28	9/24/2002	< 1	2.7	< 1	1.1	11	< 1	< 1	< 1.3 U	< 1	0.86J	< 1	< 1.2 U
GM-28	10/1/2003	< 1 U	3.3	< 1 U	0.58	4	< 1 U	< 1 U	< 1 U	< 1 U	1.6	0.53 J	< 1 U
GM-28	9/15/2004	< 1 U	3.3	< 1 U	0.41 J	1.2	< 1 U	0.88 J	< 1 U	< 1 U	1.4	0.44 J	< 1 U
GM-28	10/18/2005	< 1.0 U	4.0	< 1.0 U	0.32 J	0.63 J	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	0.66 J	1.1	< 2.0 U
GM-25	9/22/1999	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0

Table A-1. Groundwater Analytical Results for the Upper Aquifer Wells from 1999-2005, General Motors Corporation, Moraine, Ohio.

		VOCs											
Well	Date	Benzene	1,1-DCA	1,1-DCE	cis-1,2-DCE	trans-1,2-DCE	Ethyl-benzene	PCE	Toluene	1,1,1-TCA	TCE	Vinyl Chloride	Xylenes
HR-7	9/17/1999	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	9.8	<1.0	<1.0
HR-7	9/19/2002	< 1.0	< 1.0	< 1.0	0.65	< 0.50	< 1.0	< 1.0	< 1.0	< 1.0	9.4	< 1.0	< 1.0
HR-5	9/16/1999	<1.0	<1.0	<1.0	10.5	1.1	<1.0	<1.0	<1.0	<1.0	12.0	<1.0	<1.0
HR-5	9/19/2000	<1.0	<1.0	<1.0	5.6	<1.0	<1.0	<1.0	3.0	<1.0	8.1	<1.0	2.0
HR-5	11/7/2001	< 1.0	0.55J	< 1.0	7.8	0.74	< 1.0	< 1.0	< 1.0	0.17J	11	< 1.0	< 1.0
HR-5	9/23/2002	< 1	0.55J	< 1	7.5	0.58	< 1	< 1	< 1	< 1	13	< 1	< 1
HR-5	9/18/2003	< 1 U	0.42 J	< 1 U	5	0.46 J	< 1 U	< 1 U	< 1 U	< 1 U	11	< 1 U	< 1 U
HR-5	9/13/2004	< 1 U	0.43 J	< 1 U	4.8	0.44 J	< 1 U	< 1 U	< 1 U	< 1 U	11	< 1 U	< 1 U
HR-5	10/18/2005	< 1.0 U	0.54 J	< 1.0 U	4.6	0.52 J	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	13	1.1	< 2.0 U
HR-6	9/16/1999	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	2.0	<1.0	<1.0
HR-6	9/23/2002	< 1	< 1	< 1	< 0.5	< 0.5	< 1	< 1	< 1	< 1	1.5	< 1	< 1
HR-1	9/16/1999	<1.0	2.4	<1.0	5.8	3.9	<1.0	44.3	<1.0	1.6	56.0	<1.0	<1.0
HR-1	9/25/2000	<1.0	2.4	<1.0	8.5	3.2	<1.0	32.6	<1.0	1.3	56.4	<1.0	<1.0
HR-1	11/8/2001	< 3.3	2.8J	< 3.3	9.9	2.8	< 3.3	36	< 3.3	2.2J	86B	< 3.3	< 3.3
HR-1	9/23/2002	< 2	2.8	< 2	4.5	3.2	< 2	33	< 2	< 2	33	< 2	< 2
HR-1	9/18/2003	< 2 U	2.6	< 2 U	2.3	3.2	< 2 U	27	< 2 U	1 J	56	< 2 U	< 2 U
HR-1	9/13/2004	< 1 UJ	2.5	< 1 U	24	2.3	< 1 U	23	< 1 U	0.56 J	30	0.55 J	< 1 U
HR-1	10/18/2005	< 1.0 U	2.7	< 1.0 U	19	2.3	< 1.0 U	28	< 1.0 U	1.2	43	1.1	< 2.0 U
W-1-S	9/22/1999	<1.0	<1.0	<1.0	8.0	1.1	<1.0	30.9	<1.0	<1.0	11.6	<1.0	<1.0
W-1-S	9/19/2002	< 2.0	0.97J	< 2.0	6.0	1.3	< 2.0	62	< 2.0	< 2.0	16	< 2.0	< 2.0
ME-6	8/31/1999	<1.0	<1.0	<1.0	255	<1.0	<1.0	213	<1.0	2.9	474	<1.0	<1.0
ME-6	9/21/2000	<1.0	<1.0	<1.0	98.8	2.5	<1.0	6.7	1.9	<1.0	19.0	6.1	<1.0
ME-6	11/15/2001	< 2.0	2.7	< 2.0	65	1.8	< 2.0	8.2	0.42J	2.2	23	13	< 2.0
ME-6	9/25/2002	< 10	< 10	< 10	5.2	< 5	< 10	< 10	6.6J	< 10	< 10	< 10	< 10
ME-6	10/1/2003	0.46 J	7.2	< 2 U	20	< 1 U	< 2 U	12	< 2 U	13	31	2.9	< 2 U
ME-6	9/15/2004	< 1 U	6.3	0.26 J	14	0.56	< 1 U	5.3	< 1 U	4.1	9.2	2.4	< 1 U
ME-6	10/18/2005	< 1.0 U	7.0	< 1.0 U	13	0.93 J	< 1.0 U	9.8	< 1.0 U	2.2	25	5.6	< 2.0 U
ME-1	8/31/1999	<1.0	2.4	<1.0	38.2	1.5	<1.0	83.6	<1.0	13.5	292	36	<1.0
GM-31	9/1/1999	<1.0	1.3	<1.0	7.8	<1.0	<1.0	1.3	<1.0	<1.0	27.2	<1.0	<1.0
GM-31	9/21/2000	<1.0	1.1	<1.0	40.2	<1.0	<1.0	<1.0	<1.0	<1.0	8.5	<1.0	<1.0
GM-31	11/15/2001	< 4.0	3.1J	< 4.0	120	1.8J	< 4.0	< 4.0	< 4.0	< 4.0	11	7.4	< 4.0
GM-31	9/24/2002	< 6	5.9J	< 6	200	3.5	< 6	< 6	< 6	< 6	10	19	< 6
GM-31	10/1/2003	< 5 U	6	< 5 U	170	3.5	< 5 U	< 5 U	< 5 U	< 5 U	28	10	< 5 U
GM-31	9/15/2004	< 5 U	4 J	< 5 U	120	2.7	< 5 U	2.5 J	< 5 U	1.4 J	29	2.4 J	< 5 U
GM-31	10/18/2005	< 2.0 U	6.2	0.42 J	120	3.7	< 2.0 U	< 2.0 U	< 2.0 U	3.4	67	3.1	< 4.0 U

Table A-1. Groundwater Analytical Results for the Upper Aquifer Wells from 1999-2005, General Motors Corporation, Moraine, Ohio.

		VOCs											
Well	Date	Benzene	1,1-DCA	1,1-DCE	cis-1,2-DCE	trans-1,2-DCE	Ethyl-benzene	PCE	Toluene	1,1,1-TCA	TCE	Vinyl Chloride	Xylenes
ME-3	8/31/1999	<1.0	6.1	<1.0	5.7	<1.0	<1.0	57.9	<1.0	42.5	47.5	<1.0	<1.0
ME-3	9/21/2000	<1.0	3.4	<1.0	2.9	2.9	<1.0	<1.0	1.4	6.4	<1.0	2.1	<1.0
ME-3	11/15/2001	< 1.0	5.9	< 1.0	16	2.7	< 1.0	1.3	0.34J	1.6	3.8	7.3	< 1.0
ME-3	9/24/2002	< 2.5	< 2.5	< 2.5	< 1.2	< 1.2	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
ME-3	10/1/2003	0.6 J	24	< 1 U	0.96	< 0.5 U	< 1 U	< 1 U	< 1 U	0.31 J	1.5	< 1 U	< 1 U
ME-3	9/15/2004	< 1 U	18	< 1 U	2.2	< 0.5 U	< 1 U	0.21 J	< 1 U	0.53 J	1.5	1.1	< 1 U
ME-3	10/18/2005	< 1.0 U	15	< 1.0 U	1.1	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	1.6	1.9	1.6	< 2.0 U
HR-16	9/23/1999	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	2.7	<1.0	<1.0
HR-16	9/18/2002	< 1.0	< 1.0	< 1.0	0.46J	< 0.50	< 1.0	< 1.0	< 1.0	< 1.0	1.5	< 1.0	< 1.0
HR-17	9/23/1999	<1.0	<1.0	<1.0	6.2	<1.0	<1.0	15.5	<1.0	<1.0	7.4	<1.0	<1.0
HR-17	9/28/2000	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	3.7	<1.0	1.9	4.4	<1.0	<1.0
HR-17	11/8/2001	< 1.0	< 1.0	< 1.0	< 0.50	< 0.50	< 1.0	3.3	< 1.0	1.4	4.2B	< 1.0	< 1.0
HR-17	9/18/2002	< 1.0	1.5	< 1.0	5.1	1.4	< 1.0	22	< 1.0	0.39J	12	< 1.0	< 1.0
HR-17	9/25/2003	< 2 U	0.75 J	< 2 U	2.2	0.7 J	< 2 U	64	< 2 U	< 2 U	10	< 2 U	< 2 U
HR-17	9/17/2004	< 5 U	2 J	< 5 U	7.1	1.6 J	< 5 U	82	< 5 U	< 5 U	18	< 5 U	< 5 U
HR-17	10/19/2005	< 1.8 U	0.70 J	< 1.8 U	3.1	0.57 J	< 1.8 U	45	< 1.8 U	< 1.8 U	8.3	< 1.8 U	< 3.7 U
W-2-S	9/23/1999	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.9J	6.1	<1.0	<1.0
W-2-S	9/27/2000	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.6	5.0	<1.0	<1.0
W-2-S	11/8/2001	< 1.0	0.58J	< 1.0	0.49J	< 0.50	< 1.0	< 1.0	< 1.0	1.7	5.2B	< 1.0	< 1.0
W-2-S	9/18/2002	< 1.0	0.98J	< 1.0	0.90	< 0.50	< 1.0	< 1.0	< 1.0	1.5	4.9	< 1.0	< 1.0
W-2-S	9/26/2003	< 1 U	0.99 J	< 1 U	0.74	< 0.5 U	< 1 U	< 1 U	0.25 J	1.4	5.5	< 1 U	< 1 U
W-2-S	9/17/2004	< 1 U	1.3	< 1 U	1.1	< 0.5 U	< 1 U	0.55 J	< 1 U	1.5	6	< 1 U	< 1 U
W-2-S	10/19/2005	< 1.0 U	1.2	< 1.0 U	0.78 J	< 1.0 U	< 1.0 U	0.36 J	< 1.0 U	1.6	5.4	< 1.0 U	< 2.0 U
W-3-S	9/23/1999	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.1	<1.0	3.9	2.6	<1.0	<1.0
W-3-S	9/28/2000	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	2.8	2.5	<1.0	<1.0
W-3-S	11/8/2001	< 1.0	< 1.0	< 1.0	< 0.50	< 0.50	< 1.0	0.44J	< 1.0	1.6	1.5B	< 1.0	< 1.0
W-3-S	9/18/2002	< 1.0	< 1.0	< 1.0	< 0.50	< 0.50	< 1.0	0.61J	< 1.0	2.1	2.4	< 1.0	< 1.0
W-3-S	9/26/2003	< 1 U	< 1 U	< 1 U	0.34 J	< 0.5 U	< 1 U	0.81 J	< 1 U	1.8	2	< 1 U	< 1 U
W-3-S	9/17/2004	< 1 U	0.21 J	< 1 U	< 0.5 U	< 0.5 U	< 1 U	1.2	< 1 U	2.4	2.9	< 1 U	< 1 U
W-3-S	10/19/2005	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	1.0	< 1.0 U	2.5	2.9	< 1.0 U	< 2.0 U
W-4-S	9/23/1999	<1.0	1.2	<1.0	4.4	<1.0	<1.0	30.5J	<1.0	3.3	14.7J	<1.0	<1.0
W-4-S	9/28/2000	<1.0	1.0	<1.0	4.0	<1.0	<1.0	15.4	<1.0	3.0	11.3	<1.0	<1.0
W-4-S	11/8/2001	< 1.0	1.1	< 1.0	3.3	0.43J	< 1.0	13	< 1.0	2.9	8.9B	< 1.0	< 1.0
W-4-S	9/18/2002	< 1.0	0.87J	< 1.0	3.6	0.60	< 1.0	17	< 1.0	2.3	9.8	< 1.0	< 1.0
W-4-S	9/26/2003	< 1 U	0.92 J	< 1 U	3.6	0.78	< 1 U	24	0.25 J	2	13	< 1 U	< 1 U
W-4-S	9/17/2004	< 1 U	1.2	< 1 U	4.4	0.97	< 1 U	18	< 1 U	2.3	13	< 1 U	< 1 U
W-4-S	10/19/2005	< 1.0 U	1.4	< 1.0 U	4.3	1.1	< 1.0 U	20	< 1.0 U	2.4	13	< 1.0 U	< 2.0 U

Table A-1. Groundwater Analytical Results for the Upper Aquifer Wells from 1999-2005, General Motors Corporation, Moraine, Ohio.

		VOCs											
Well	Date	Benzene	1,1-DCA	1,1-DCE	cis-1,2-DCE	trans-1,2-DCE	Ethyl-benzene	PCE	Toluene	1,1,1-TCA	TCE	Vinyl Chloride	Xylenes
GM-19S	9/20/1999	<1.0	7.7	1.0	34.6	2.3	<10	46.0	<1.0	16.0	71.1	<1.0	<10
GM-19S	9/22/2000	<1.0	4.4	<1.0	37.6	2.6	<1.0	68.0	<1.0	14.5	104	<1.0	<1.0
GM-19S	11/12/2001	< 3.3	2.9J	< 3.3	26	2.0	< 3.3	64	< 3.3	7.6	97	< 3.3	< 3.3
GM-19S	9/26/2002	< 4	6.3	< 4	39	2.7	< 4	52	< 4	6.3	110	5.2	< 4
GM-19S	9/25/2003	< 5 U	8.3	1.6 J	89	2.9	< 5 U	62	< 5 U	13	140	< 5 U	< 5 U
GM-19S	9/13/2004	< 4 U	8.1	1.9 J	61	2.4	< 4 U	71	< 4 U	14	120	< 4 U	< 4 U
GM-19S	10/18/2005	< 1.7 U	9.0	1.2 J	29	1.0 J	< 1.7 U	95	< 1.7 U	13	140	1.8	< 3.3 U
EAST	9/21/1999	<1.0	5.4	<1.0	9.1	<1.0	<1.0	61.0	<1.0	21.0	56.1	<1.0	<1.0
EAST	9/22/2000	<1.0	7.7	1.2	77.3	1.8	<1.0	55.8	<1.0	22.2	97.2	3.0	<1.0
EAST	11/12/2001	< 3.3	6.2	0.90J	51	2.7	< 3.3	56	< 3.3	13	92	1.5J	< 3.3
EAST	9/23/2002	< 2	3.9	0.73J	8.8	< 1	< 2	49	< 2	10	46	< 2	< 2
EAST	9/25/2003	< 2 U	2.3	< 2 U	4.3	< 1 U	< 2 U	47	< 2 U	7.1	35	< 2 U	< 2 U
EAST	9/13/2004	< 1 U	0.72 J	0.34 J	1.6	< 0.5 U	< 1 U	40	< 1 U	5.7	23	< 1 U	< 1 U
EAST	10/18/2005	< 1.0 U	3.0	< 1.0 U	3.1	< 1.0 U	< 1.0 U	47	< 1.0 U	5.9	23	1.2	< 2.0 U
WEST	9/21/1999	<1.0	25.6	<1.0	125	<1.0	<1.0	41.3	<1.0	24.8	37.3	<1.0	<1.0
GM-33	9/25/2003	< 2.5 U	8.4	1 J	19	0.72 J	< 2.5 U	37	< 2.5 U	21	75	< 2.5 U	< 2.5 U
GM-33	9/13/2004	< 2 U	5.4	1.1 J	9.5	0.45 J	< 2 U	37	< 2 U	17	55	< 2 U	< 2 U
GM-33	10/18/2005	< 1.0 U	6.4	0.69 J	7.4	0.36 J	< 1.0 U	50	< 1.0 U	18	71	1.0	< 2.0 U
GM-35	9/25/2003	< 8 U	46	4 J	300	12	< 8 U	21	< 8 U	17	270	59	< 8 U
GM-35	9/13/2004	< 11 U	36	4.1 J	270	9.1	< 11 U	21	< 11 U	17	230	50	< 11 U
GM-35	10/18/2005	< 5.0 U	36	1.8 J	190	9.3	< 5.0 U	29	< 5.0 U	12	240	23	< 10 U
GM-32	9/22/1999	<1.0	3.3	<1.0	2.6	4.2	<1.0	1.2	1.0	<1.0	3.2	3.0	<1.0
GM-32	9/25/2000	<1.0	35.9	<1.0	<1.0	20.3	<1.0	<1.0	10.4	<1.0	<1.0	<1.0	<1.0
GM-32	11/12/2001	4.3J	6.2	< 5.0	< 2.5	2.9	0.79J	< 5.0	12	< 5.0	< 5.0	1.1J	3.0J
GM-32	9/20/2002	< 10	9.7J	< 10	< 5	< 5	< 10	< 10	< 10	< 10	< 10	< 10	< 10
GM-32	10/1/2003	1.5 J	5.5	< 2 U	< 1 U	1	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U
GM-32	9/14/2004	< 10 U	3 J	< 10 U	< 5 U	< 5 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U
GM-32	10/19/2005	< 10 U	4.9 J	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 20 U
GM-22	9/1/1999	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	3.6	<1.0	<1.0	4.0	<1.0	<1.0
GM-22	9/21/2000	<1.0	2.4	<1.0	1.9	<1.0	<1.0	1.6	<1.0	<1.0	<1.0	<1.0	<1.0
GM-22	11/13/2001	< 1.0	6.8	0.58J	8.5	0.17J	< 1.0	4.9	< 1.0	4.4	7.5	0.60J	< 1.0
GM-22	9/25/2002	< 2	< 2	< 2	< 1	< 1	< 2	2.3	< 2	0.93J	7.6	< 2	< 2
GM-22	9/24/2003	< 1 U	1	< 1 U	0.45 J	< 0.5 U	< 1 U	2.9	< 1 U	1.2	7.6	< 1 U	< 1 U
GM-22	9/14/2004	< 1 U	2.1	< 1 U	0.9	< 0.5 U	< 1 U	2.9	< 1 U	1.7	10	< 1 U	< 1 U
GM-22	10/17/2005	< 1.0 U	1.0	< 1.0 U	0.36 J	< 1.0 U	< 1.0 U	3.6	< 1.0 U	0.96 J	4.7	< 1.0 U	< 2.0 U

Table A-1. Groundwater Analytical Results for the Upper Aquifer Wells from 1999-2005, General Motors Corporation, Moraine, Ohio.

		VOCs											
Well	Date	Benzene	1,1-DCA	1,1-DCE	cis-1,2-DCE	trans-1,2-DCE	Ethyl-benzene	PCE	Toluene	1,1,1-TCA	TCE	Vinyl Chloride	Xylenes
GM-21	9/22/1999	<1.0	9.0	3.9	66.4	7.8	<1.0	<1.0	<1.0	53.1	28.7	<1.0	<1.0
GM-21	9/22/2000	<1.0	5.6	1.6	38.7	12.9	<1.0	<1.0	<1.0	15.7	189	<1.0	<1.0
GM-21	11/13/2001	< 5.0	3.8J	< 5.0	39	15	< 5.0	< 5.0	< 5.0	6.9	160	< 5.0	< 5.0
GM-21	9/25/2002	< 6.7	5J	2.6J	43	5.1	< 6.7	< 6.7	< 6.7	31	230	< 6.7	< 6.7
GM-21	9/24/2003	< 8 U	6.9 J	2 J	100	2.9 J	< 8 U	< 8 U	< 8 U	31	200	< 8 U	< 8 U
GM-21	9/14/2004	< 9.1 U	4.2 J	3.1 J	56	7.9	< 9.1 U	< 9.1 U	< 9.1 U	26	180	< 9.1 U	< 9.1 U
GM-21	10/17/2005	< 1.0 U	3.4	< 1.0 U	20	22	< 1.0 U	< 1.0 U	< 1.0 U	4.3	1.8	13	< 2.0 U
GM-8	9/20/1999	3.4	30.2	<1.0	26.2	12.0	20.7	14.8	<1.0	1.9	30.4	8.4	2.3
GM-8	9/26/2000	1.1	36.5	<1.0	1.5	5.4	12.5	<1.0	<1.0	<1.0	6.6	2.4	1.9
GM-8	11/9/2001	0.78J	40	< 1.0	2.0	3.6	0.40J	< 1.0	< 1.0	0.40J	4.4	1.9	0.39J
GM-8	9/20/2002	5.5	63	< 2	5.5	9	7.5	< 2	1.8J	< 2	< 2	5.8	1.5J
GM-8	10/1/2003	5.4	48	< 2 U	< 1 U	4.4	11	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U
GM-8	9/14/2004	4.2	15	< 1 U	< 0.5 U	1.1	19	< 1 U	< 1 U	< 1 U	< 1 U	0.48 J	1.1
GM-8	10/19/2005	3.5	16	< 1.0 U	0.24 J	0.99 J	29	< 1.0 U	0.39 J	< 1.0 U	< 1.0 U	0.73 J	< 2.0 U
GM-6	9/20/1999	<1.0	33.2	1.2	52.9	2.0	<10	81.4	<1.0	24.6	78.2	1.6	<10
GM-6	9/26/2000	<1.0	13.0	<1.0	41.0	2.2	<1.0	51.5	<1.0	12.1	56.6	3.7	<1.0
GM-6	11/9/2001	< 2.0	14	< 2.0	8.2	1.8	< 2.0	14	< 2.0	3.9	48	1.9J	< 2.0
GM-6	9/20/2002	2.2	60	< 2	43	8.6	< 2	14	< 2	1.4J	33	12	< 2
GM-6	10/2/2003	1	20	< 1 U	13	2.5	0.22 J	11	< 1 U	0.19 J	23	3.3	< 1 U
GM-6	9/14/2004	1.7	18	< 1 U	10	1.9	< 1 U	2.6	< 1 U	< 1 U	5.7	3	< 1 U
GM-6	10/19/2005	0.49 J	21	< 1.0 U	20	2.1	< 1.0 U	0.34 J	< 1.0 U	< 1.0 U	1.4	11	< 2.0 U
Downgradient of the Site													
TW-2	9/26/2000	<1.0	27.8	<1.0	22.5	2.9	10.4	5.0	<1.0	4.5	43.1	5.9	3.2
TW-2	11/9/2001	< 2.0	20	< 2.0	8.8	2.4	0.38J	8.5	< 2.0	3.9	48	2.7	< 2.0
TW-2	9/20/2002	< 2	9	< 2	26	1.4	< 2	5.9	< 2	2.2	70	2.5	< 2
TW-2	10/2/2003	1.5	5.7	< 1 U	8.3	0.59	0.86 J	4.7	< 1 U	0.66 J	24	1.4	< 1 U
TW-2	9/14/2004	2.9	22	< 1 U	5.5	2	< 1 U	< 1 U	< 1 U	< 1 U	1.5	2.5	< 1 U
TW-2	10/20/2005	2.5	12	< 1.0 U	5.3	1.4	12	< 1.0 U	3.4	< 1.0 U	< 1.0 U	4.4	5.0
4S	9/20/1999	1.6	1.6	<1.0	<1.0	<1.0	<10	<1.0	<1.0	<1.0	<1.0	<1.0	<10
4S	10/2/2003	1.6 J	7	< 2 U	< 1 U	1.7	1.7 J	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U
4S	9/14/2004	4.5 J	7.5	< 5 U	< 2.5 U	< 2.5 U	4.7 J	< 5 U	1.1 J	< 5 U	< 5 U	< 5 U	2.4 J
4S	10/19/2005	1.6 J	2.3 J	< 4.0 U	< 4.0 U	0.95 J	1.6 J	< 4.0 U	< 4.0 U	< 4.0 U	< 4.0 U	< 4.0 U	< 8.0 U

Table A-1. Groundwater Analytical Results for the Upper Aquifer Wells from 1999-2005, General Motors Corporation, Moraine, Ohio.

		VOCs											
Well	Date	Benzene	1,1-DCA	1,1-DCE	cis-1,2-DCE	trans-1,2-DCE	Ethyl-benzene	PCE	Toluene	1,1,1-TCA	TCE	Vinyl Chloride	Xylenes
GM-2	9/20/1999	<1.0	1.4	<1.0	8.4	<1.0	<10	6.0	<1.0	5.5	61.6	<1.0	<10
GM-2	9/25/2000	<1.0	3.7	<1.0	39.2	1.3	<1.0	7.7	<1.0	5.7	82.8	1.7	<1.0
GM-2	11/9/2001	< 3.3	6.1	< 3.3	26	1.1J	< 3.3	8.4	< 3.3	6.1	65	< 3.3	< 3.3
GM-2	9/20/2002	< 1	3.4	< 1	7.6	0.37J	< 1	8.7	< 1	0.75J	26	< 1	< 1
GM-2	10/2/2003	< 1 U	1.7	< 1 U	4.7	< 0.5 U	0.21 J	5.7	< 1 U	0.21 J	13	0.46 J	< 1 U
GM-2	9/14/2004	< 1 U	1.6	< 1 U	5.6	0.23 J	< 1 U	4	< 1 U	< 1 U	6.2	< 1 U	< 1 U
GM-2	10/19/2005	< 1.0 U	2.0	< 1.0 U	6.8	0.26 J	< 1.0 U	3.6	< 1.0 U	< 1.0 U	4.6	0.24 J	< 2.0 U
GM-16	9/21/1999	<1.0	<1.0	<1.0	1.7	<1.0	<1.0	44.1	<1.0	2.2	8.5	<1.0	<1.0
GM-16	9/26/2000	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	16.2	<1.0	2.5	3.5	<1.0	<1.0
GM-16	11/8/2001	< 1.0	0.31J	< 1.0	0.39J	< 0.50	< 1.0	17	< 1.0	2.2	3.6	< 1.0	< 1.0
GM-16	9/24/2002	< 2	4.1	< 2	6.2	1.6	< 2	63	< 2	1.4J	28	< 2	< 2
GM-16	9/22/2003	< 4 U	2.8 J	< 4 U	5.8	1.1 J	< 4 U	110	< 4 U	1.9 J	57	< 4 U	< 4 U
GM-16	9/16/2004	< 3.3 U	4.3	< 3.3 U	7.4	1 J	< 3.3 U	130	< 3.3 U	3.1 J	90	< 3.3 U	< 3.3 U
GM-16	10/19/2005	< 3.3 U	1.1 J	< 3.3 U	2.8 J	0.90 J	< 3.3 U	100	< 3.3 U	1.7 J	55	< 3.3 U	< 6.7 U
GM-17	9/21/1999	<1.0	26.4	<1.0	30.0	2.6	<1.0	<1.0	<1.0	6.4	28.7	1.4	<1.0
GM-17	9/27/2000	<1.0	23.9	<1.0	41.6	2.5	<1.0	24.6	<1.0	6.7	48.4	<1.0	<1.0
GM-17	11/8/2001	< 3.3	7.3	< 3.3	16	1.8	< 3.3	48	< 3.3	6.8	79	< 3.3	< 3.3
GM-17	9/19/2002	< 1.2	6.0	< 1.2	13	0.67	< 1.2	22	< 1.2	2.3	39	0.79J	< 1.2
GM-17	9/24/2003	< 1 U	1.2	< 1 U	2.9	< 0.5 U	< 1 U	12	< 1 U	1.3	24	< 1 U	< 1 U
GM-17	9/15/2004	< 1 U	4	< 1 U	11	0.64	< 1 U	3.6	< 1 U	1.1	22	0.49 J	< 1 U
GM-17	10/20/2005	< 1.0 U	5.5	< 1.0 U	9.0	0.57 J	< 1.0 U	8.1	< 1.0 U	1.4	29	2.0	< 2.0 U
GM-18	9/22/1999	<1.0	22.6	1.3	35.3	2.2	<1.0	4.9	<1.0	42.6	131	<1.0	<1.0
GM-18	9/27/2000	<1.0	10.4	<1.0	23.9	1.8	<1.0	7.8	<1.0	31.8	115	<1.0	<1.0
GM-18	11/8/2001	< 3.3	3.3	1.3J	14	1.6J	< 3.3	12	< 3.3	23	93	< 3.3	< 3.3
GM-18	9/19/2002	< 3.3	6.0	< 3.3	15	1.6J	< 3.3	28	< 3.3	18	98	< 3.3	< 3.3
GM-18	9/22/2003	< 2 U	3.7	< 2 U	8.8	< 1 U	< 2 U	24	< 2 U	10	77	0.75 J	< 2 U
GM-18	9/15/2004	< 2 U	2.2	0.46 J	5.9	< 1 U	< 2 U	20	< 2 U	5.2	53	< 2 U	< 2 U
GM-18	10/20/2005	< 1.0 U	15	0.30 J	14	1.2	< 1.0 U	21	< 1.0 U	7.0	70 J	3.0	< 2.0 U
WSU-24	9/23/1999	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.9	<1.0	2.4	17.0	<1.0	<1.0
WSU-24	9/26/2000	<1.0	<1.0	<1.0	2.7	<1.0	<1.0	1.2.	<1.0	2.1	16.8	<1.0	<1.0
WSU-24	11/9/2001	< 1.0	0.81J	< 1.0	4.0	< 0.50	< 1.0	1.6	< 1.0	2.4	18	< 1.0	< 1.0
WSU-24	9/24/2002	< 1	< 1	< 1	< 0.5	< 0.5	< 1	1.2	< 1	1.4	13	< 1	< 1
WSU-24	9/22/2003	< 1 U	< 1 U	< 1 U	< 0.5 U	< 0.5 U	< 1 U	1	< 1 U	0.67 J	7.9	< 1 U	< 1 U
WSU-24	9/16/2004	< 1 U	< 1 U	< 1 U	< 0.5 U	< 0.5 U	< 1 U	1.3	< 1 U	0.58 J	8	< 1 U	< 1 U
WSU-24	10/20/2005	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	1.2	< 1.0 U	1.5	11	< 1.0 U	< 2.0 U

Table A-1. Groundwater Analytical Results for the Upper Aquifer Wells from 1999-2005, General Motors Corporation, Moraine, Ohio.

		VOCs											
Well	Date	Benzene	1,1-DCA	1,1-DCE	cis-1,2-DCE	trans-1,2-DCE	Ethyl-benzene	PCE	Toluene	1,1,1-TCA	TCE	Vinyl Chloride	Xylenes
GM-10	9/21/1999	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.7	14.8	<1.0	<1.0
GM-10	9/27/2000	<1.0	1.4	<1.0	5.7	<1.0	<1.0	1.4	<1.0	2.5	23.2	<1.0	<1.0
GM-10	11/8/2001	< 1.0	3.4	< 1.0	16	0.93	< 1.0	1.9	< 1.0	2.7	27	1.2	< 1.0
GM-10	9/18/2002	< 1.0	0.61J	< 1.0	2.3	< 0.50	< 1.0	1.1	< 1.0	1.8	19	< 1.0	< 1.0
GM-10	9/24/2003	< 1 U	< 1 U	< 1 U	< 0.5 U	< 0.5 U	< 1 U	2.2	< 1 U	0.96 J	33	< 1 U	< 1 U
GM-10	9/14/2004	< 1 U	< 1 U	< 1 U	0.38 J	< 0.5 U	< 1 U	1.5	< 1 U	1.2	15	< 1 U	< 1 U
GM-10	10/20/2005	< 1.0 U	< 1.0 U	< 1.0 U	0.31 J	< 1.0 U	< 1.0 U	1.2	< 1.0 U	1.6	12	< 1.0 U	< 2.0 U
GM-26	9/22/1999	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
GM-26	9/27/2000	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
GM-26	11/12/2001	< 1.0	< 1.0	< 1.0	< 0.50	< 0.50	< 1.0	1.1	< 1.0	0.19J	< 1.0	< 1.0	< 1.0
GM-26	9/25/2002	< 1	< 1	< 1	< 0.5	< 0.5	< 1	0.92J	< 1	< 1	< 1	< 1	< 1
GM-26	10/1/2003	< 1 U	< 1 U	< 1 U	< 0.5 U	< 0.5 U	< 1 U	0.85 J	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
GM-26	9/16/2004	< 1 U	< 1 U	< 1 U	< 0.5 U	< 0.5 U	< 1 U	1.3	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
GM-26	10/20/2005	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	1.0	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 2.0 U

All concentrations presented in ug/l.
1,1-DCA - 1,1-Dichloroethane.
1,1-DCE - 1,1-Dichloroethene.
cis-1,2-DCE - cis-1,1-Dichloroethene.
trans-1,2-DCE - trans-1,2-Dichloroethene.
PCE - Tetrachloroethene.
1,1,1-TCA - 1,1,1-Trichloroethane.
TCE - Trichloroethene.
VOCs - Volatile Organic Compounds.

Table A-2. Groundwater Analytical Results for the Lower Aquifer Wells from 1999-2005, General Motors Corporation, Moraine, Ohio.

		VOCs											
Well	Date	Benzene	1,1-DCA	1,1-DCE	cis-1,2-DCE	trans-1,2-DCE	Ethyl-benzene	PCE	Toluene	1,1,1-TCA	TCE	Vinyl Chloride	Xylenes
Upgradient of the Site													
HR-10	9/15/1999	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
HR-10	9/29/2000	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
HR-10	11/14/2001	< 1.0	< 1.0	< 1.0	< 0.50	< 0.50	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
HR-10	9/27/2002	< 1	< 1	< 1	< 0.5	< 0.5	< 1	< 1	< 1	< 1	< 1	< 1	< 1
HR-10	9/17/2003	< 1 U	< 1 U	< 1 U	< 0.5 U	< 0.5 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
HR-10	9/20/2004	< 1 U	< 1 U	< 1 U	< 0.5 U	< 0.5 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
HR-10	10/24/2005	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 2.0 U
HR-12	9/14/1999	1.2	2.7	<1.0	1.8	<1.0	<1.0	<1.0	<1.0	<1.0UJ	<1.0	1.7	<1.0
HR-12	9/28/2000	<1.0	2.2	<1.0	2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	2.5	<1.0
HR-12	11/14/2001	< 1.0	3.6	< 1.0	2.7	0.23	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	3.8	< 1.0
HR-12	11/14/2001	< 1.0	3.6	< 1.0	2.7	0.23J	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	3.8	< 1.0
HR-12	9/26/2002	< 1	2.4	< 1	2.1	< 0.5	< 1	< 1	< 1	< 1	< 1	1.7	< 1
HR-12	9/18/2003	< 1 U	1.7	< 1 U	1.4	< 0.5 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	1.6	< 1 U
HR-12	9/21/2004	< 1 U	1.8	< 1 U	1.2	< 0.5 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	1.1	< 1 U
HR-12	10/24/2005	< 1.0 U	2.1	< 1.0 U	1.5	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	0.36 J	< 2.0 U
On-Site													
HR-14	9/15/1999	<1.0	<1.0	<1.0	7.9	<1.0	<1.0	<1.0	<1.0	<1.0	3.4	11.5	<1.0
HR-14	9/30/2002	< 1	< 1	< 1	3.6	< 0.5	< 1	< 1	< 1	< 1	1.2	< 1	< 1
HR-15	9/15/1999	<1.0	<1.0	<1.0	2.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	11.0	<1.0
HR-15	9/29/2000	<1.0	<1.0	<1.0	2.8	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	11.2	<1.0
HR-15	11/14/2001	< 1.0	< 1.0	< 1.0	0.86	< 0.50	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
HR-15	9/30/2002	< 1	< 1UJ	< 1	1	< 0.5	< 1	< 1	< 1	< 1	< 1	< 1	< 1
HR-15	9/17/2003	< 1 U	< 1 U	< 1 U	2.2	< 0.5 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	0.29 J	14	< 1 U
HR-15	9/21/2004	< 1 U	< 1 U	< 1 U	2.5	< 0.5 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	0.38 J	19	< 1 U
HR-15	10/25/2005	< 1.0 U	< 1.0 U	< 1.0 U	2.2	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	0.40 J	14	< 2.0 U
HR-13	9/15/1999	<1.0	41.4	<1.0	20.8	3.1	<1.0	<1.0	<1.0	1.6	3.4	<1.0	<1.0
HR-13	9/29/2000	<1.0	39.5	<1.0	14.1	2.5	<1.0	<1.0	<1.0	1.7	2.0	<1.0	<1.0
HR-13	11/14/2001	0.18J	15	< 1.0	6.5	0.65	< 1.0	< 1.0	< 1.0	0.74J	1.2	< 1.0	< 1.0
HR-13	9/30/2002	< 1	25	< 1	11	1.4	< 1	< 1	< 1	1.4	3.6	< 1	< 1
HR-13	9/16/2003	< 1 U	33	< 1 U	12	1.8	< 1 U	< 1 U	< 1 U	2.2	5.7	< 1 U	< 1 U
HR-13	9/21/2004	< 1 U	30	0.27 J	12	1.5	< 1 U	< 1 U	< 1 U	2.6	21	0.43 J	< 1 U
HR-13	10/25/2005	< 1.0 U	25	0.25 J	11	1.5	< 1.0 U	0.20 J	< 1.0 U	2.3	20	< 1.0 U	< 2.0 U
31	9/29/2000	<1.0	7.4	<1.0	8.4	<1.0	<1.0	<1.0	<1.0	<1.0	12.9	4.4	<1.0
31	11/15/2001	< 1.0	3.1	< 1.0	2.4	< 0.50	< 1.0	< 1.0	< 1.0	< 1.0	5.1	2.5	< 1.0
39	9/27/2002	< 1	1.6	< 1	1.3	< 0.5	< 1	< 1	< 1	< 1	3.8	0.51J	< 1
39	9/24/2003	< 1 U	0.58 J	< 1 U	0.71	< 0.5 U	< 1 U	< 1 U	< 1 U	< 1 U	0.89 J	< 1 U	< 1 U

Table A-2. Groundwater Analytical Results for the Lower Aquifer Wells from 1999-2005, General Motors Corporation, Moraine, Ohio.

		VOCs											
Well	Date	Benzene	1,1-DCA	1,1-DCE	cis-1,2-DCE	trans-1,2-DCE	Ethyl-benzene	PCE	Toluene	1,1,1-TCA	TCE	Vinyl Chloride	Xylenes
GM-39	12/10/2003	< 1 U	< 1 U	< 1 U	< 0.5 U	< 0.5 U	< 1 U	< 1 U	0.18 J	< 1 U	< 1 U	1.3	< 1 U
GM-39	9/20/2004	< 1 U	< 1 U	< 1 U	< 0.5 U	< 0.5 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	1.8	< 1 U
GM-39	10/24/2005	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	0.77 J	< 2.0 U
GM-40	12/10/2003	< 1 U	< 1 U	< 1 U	< 0.5 U	< 0.5 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	3.1	< 1 U
GM-40	9/20/2004	< 1 U	< 1 U	< 1 U	< 0.5 U	< 0.5 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	3.2	< 1 U
GM-40	10/25/2005	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	2.9	< 2.0 U
GM-41	12/10/2003	< 1 U	< 11 U	< 11 U	10	< 5.6 U	< 11 U	< 11 U	< 11 U	< 11 U	320	< 11 U	< 11 U
GM-41	9/21/2004	< 6.2 U	< 6.2 U	< 6.2 U	24	< 3.1 U	< 6.2 U	< 6.2 U	< 6.2 U	< 6.2 U	180	< 6.2 U	< 6.2 U
GM-41	10/24/2005	< 10 U	< 10 U	< 10 U	16	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	250	< 10 U	< 20 U
GM-42	12/9/2003	< 1 U	0.46 J	< 1 U	11	0.34 J	< 1 U	0.27 J	< 1 U	< 1 U	0.37 J	1	< 1 U
GM-42	9/20/2004	< 1 U	0.7 J	0.25 J	16	0.44 J	< 1 U	< 1 U	< 1 U	< 1 U	0.43 J	0.92 J	< 1 U
GM-42	10/25/2005	< 1.0 U	0.64 J	0.21 J	17	0.59 J	< 1.0 U	0.19 J	< 1.0 U	< 1.0 U	0.85 J	0.56 J	< 2.0 U
GM-19D	9/28/1999	<1.0	<1.0	<1.0	1.2	<1.0	<1.0	<1.0	<1.0	<1.0	13.5	1.5	<1.0
GM-19D	10/2/2000	<1.0	<1.0	<1.0	3.5	<1.0	<1.0	<1.0	<1.0	<1.0	2.9	15.7	<1.0
GM-19D	11/14/2001	< 1.0	< 1.0	< 1.0	0.92	< 0.50	< 1.0	< 1.0	0.38J	0.18J	3.7	13	< 1.0
GM-19D	9/26/2002	< 1	< 1	< 1	0.81	< 0.5	< 1	< 1	< 1	< 1	3.1	0.36J	< 1
GM-19D	9/25/2003	< 1 U	< 1 U	< 1 U	1.8	< 0.5 U	< 1 U	< 1 U	< 1 U	< 1 U	0.24 J	17	< 1 U
GM-19D	9/20/2004	< 1 U	< 1 U	< 1 U	2	< 0.5 U	< 1 U	< 1 U	< 1 U	0.31 J	3.5	18	< 1 U
GM-19D	10/25/2005	< 1.0 U	< 1.0 U	< 1.0 U	2.7	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	1.2	15	< 2.0 U
GM-7R	9/28/1999	<1.0	<1.0	<1.0	2.1	<1.0	<1.0	<1.0	<1.0	4.2	76.1	<1.0	<1.0
Downgradient of the Site													
GM-3	9/28/1999	<1.0	<1.0	<1.0	1.1	<1.0	<1.0	1.2	<1.0	1.7	7.5	<1.0	<1.0
GM-3	10/2/2000	<1.0	2.1	<1.0	8.3	1.1	<1.0	1.5	<1.0	1.0	9.4	<1.0	<1.0
GM-3	11/14/2001	< 1.0	0.95J	< 1.0	2.6	0.25J	< 1.0	0.48J	< 1.0	0.16J	2.9	< 1.0	< 1.0
GM-3	10/1/2002	< 1	1.8	< 1	8.9	1.2	< 1	1.4	< 1	0.74J	9.5	0.63J	< 1
GM-3	10/2/2003	< 1 U	1.6	< 1 U	5.5	0.77	0.26 J	1.7	< 1 U	0.96 J	12	< 1 U	< 1 U
GM-3	9/21/2004	< 1 U	1.8	< 1 U	4.9	0.75	< 1 U	2	< 1 U	1	13	< 1 U	< 1 U
GM-3	10/25/2005	< 1.0 U	1.6	< 1.0 U	4.7	0.66 J	< 1.0 U	2.0	< 1.0 U	0.83 J	14	< 1.0 U	< 2.0 U
GM-4	9/28/1999	<1.0	<1.0	<1.0	2.3	<1.0	<1.0	<1.0	<1.0	<1.0	13.4	<1.0	<1.0
GM-5	9/28/1999	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	3.9	<1.0	1.3	<1.0	<1.0
GM-1	9/28/1999	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	2.0	5.2	1.1	30.6	<1.0	<1.0
GM-1	10/2/2000	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	2.8	<1.0	2.2	37.2	<1.0	<1.0
GM-1	11/14/2001	< 1.0	0.29J	< 1.0	< 0.50	< 0.50	< 1.0	1.3	< 1.0	0.80J	19	< 1.0	< 1.0
GM-1	10/1/2002	< 1.4 U	0.48 J	< 1.4 U	0.95	< 0.72 U	< 1.4 U	2.3	< 1.4 U	1.3 J	39	< 1.4 U	< 1.4 U
GM-1	10/2/2003	< 1 U	< 1 U	< 1 U	< 0.5 U	< 0.5 U	< 1 U	2	< 1 U	1.2	34	< 1 U	< 1 U
GM-1	9/21/2004	< 1 U	< 1 U	< 1 U	< 0.5 U	< 0.5 U	< 1 U	2.1	< 1 U	1.2	35	< 1 U	< 1 U
GM-1	10/25/2005	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	2.1	< 1.0 U	0.95 J	34	< 1.0 U	< 2.0 U

Table A-2. Groundwater Analytical Results for the Lower Aquifer Wells from 1999-2005, General Motors Corporation, Moraine, Ohio.

		VOCs											
Well	Date	Benzene	1,1-DCA	1,1-DCE	cis-1,2-DCE	trans-1,2-DCE	Ethyl-benzene	PCE	Toluene	1,1,1-TCA	TCE	Vinyl Chloride	Xylenes
GM-15	9/24/1999	<1.0	2.4	<1.0	4.3	<1.0	<1.0	<1.0	<1.0	<1.0	4.1	<1.0	<1.0
GM-15	10/2/2000	<1.0	2.3	<1.0	2.6	<1.0	<1.0	<1.0	<1.0	<1.0	4.7	<1.0	<1.0
GM-15	11/14/2001	< 1.0	1.4	< 1.0	1.2	< 0.50	< 1.0	< 1.0	< 1.0	< 1.0	4.9	< 1.0	< 1.0
GM-15	9/27/2002	< 1	1.6	< 1	1.8	< 0.5	< 1	< 1	< 1	< 1	4.7	< 1	< 1
GM-15	9/22/2003	< 1 U	1.7	< 1 U	1.6	< 0.5 U	< 1 U	< 1 U	< 1 U	< 1 U	5.9	< 1 U	< 1 U
GM-15	9/20/2004	< 1 U	1.8	< 1 U	1.4	< 0.5 U	< 1 U	< 1 U	< 1 U	< 1 U	5.8	< 1 U	< 1 U
GM-15	10/26/2005	< 1.0 U	1.7	< 1.0 U	1.7	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	5.9	< 1.0 U	< 2.0 U
GM-14	9/24/1999	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
GM-13	9/24/1999	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	3.6	<1.0	1.9	31.0	<1.0	<1.0
GM-11	9/24/1999	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.5	<1.0	<1.0	14.5	<1.0	<1.0
GM-11	10/2/2000	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	3.0	<1.0	1.4	41.3	<1.0	<1.0
GM-11	11/14/2001	< 1.0	< 1.0	< 1.0	< 0.50	< 0.50	< 1.0	1.0	< 1.0	0.33J	12	< 1.0	< 1.0
GM-11	10/1/2002	< 1	0.34J	< 1	0.62	< 0.5	< 1	2.2	< 1	1	35	< 1	< 1
GM-11	9/24/2003	< 1 U	< 1 U	< 1 U	< 0.5 U	< 0.5 U	< 1 U	2.2	< 1 U	0.96 J	33	< 1 U	< 1 U
GM-11	9/21/2004	< 1 U	< 1 U	< 1 U	< 0.5 U	< 0.5 U	< 1 U	2.1	< 1 U	0.89 J	33	< 1 U	< 1 U
GM-11	10/26/2005	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	1.7	< 1.0 U	0.75 J	32	< 1.0 U	< 2.0 U
GM-20D	9/24/1999	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
GM-20D	10/3/2000	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	4.2	<1.0	1.6	14.3	<1.0	<1.0
GM-20D	11/14/2001	< 1.0	< 1.0	< 1.0	< 0.50	< 0.50	< 1.0	2.0	< 1.0	0.64J	5.9	< 1.0	< 1.0
GM-20D	9/30/2002	< 1	< 1	< 1	< 0.5	< 0.5	< 1	1.3	< 1	< 1	3.8	< 1	< 1
GM-20D	9/22/2003	< 1 U	< 1 U	< 1 U	< 0.5 U	< 0.5 U	< 1 U	3.6	< 1 U	0.89 J	12	< 1 U	< 1 U
GM-20D	9/21/2004	< 1 U	< 1 U	< 1 U	< 0.5 U	< 0.5 U	< 1 U	2.9	< 1 U	0.96 J	11	< 1 U	< 1 U
GM-20D	10/26/2005	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	2.7	< 1.0 U	0.73 J	11	< 1.0 U	< 2.0 U
DN-13	11/14/2001	< 1.0	2.5	< 1.0	6.2	0.37J	< 1.0	< 1.0	< 1.0	1.1	5.0	1.2	< 1.0
DN-13	9/27/2002	< 1	2.5	< 1	7.3	0.48J	< 1	< 1	< 1	1.1	6.1	1.3	< 1
DN-13	9/22/2003	< 1 U	2.4	< 1 U	6.8	0.4 J	< 1 U	0.31 J	< 1 U	1.1	6.4	1.1	< 1 U
DN-13	9/16/2004	< 1 U	2.2	< 1 U	6.7	0.49 J	< 1 U	0.44 J	< 1 U	0.84 J	6.8	2.1	< 1 U
DN-13	10/20/2005	< 1.0 U	2.0	< 1.0 U	5.5	< 1.0 U	< 1.0 U	0.38 J	< 1.0 U	1.5	7.2	2.6	< 2.0 U
GM-9	9/24/1999	<1.0	<1.0	<1.0	1.0	<1.0	<1.0	<1.0	<1.0	1.0	13.8	<1.0	<1.0
GM-9	10/3/2000	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.2	17.2	<1.0	<1.0
GM-9	11/14/2001	< 1.0	0.58J	< 1.0	1.1	< 0.50	< 1.0	0.38J	< 1.0	0.48J	8.6	< 1.0	< 1.0
GM-9	9/30/2002	< 1	0.48J	< 1	0.66	< 0.5	< 1	< 1	< 1	0.99J	16	< 1	< 1
GM-9	9/24/2003	< 1 U	0.45 J	< 1 U	0.56	< 0.5 U	< 1 U	< 1 U	< 1 U	1.3	20	< 1 U	< 1 U
GM-9	9/21/2004	< 1 U	0.6 J	< 1 U	0.97	< 0.5 U	< 1 U	< 1 U	< 1 U	1.1	16	< 1 U	< 1 U
GM-9	10/26/2005	< 1.0 U	0.59 J	< 1.0 U	0.99 J	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	0.85 J	15	< 1.0 U	< 2.0 U

Table A-2. Groundwater Analytical Results for the Lower Aquifer Wells from 1999-2005, General Motors Corporation, Moraine, Ohio.

		VOCs											
Well	Date	Benzene	1,1-DCA	1,1-DCE	cis-1,2-DCE	trans-1,2-DCE	Ethyl-benzene	PCE	Toluene	1,1,1-TCA	TCE	Vinyl Chloride	Xylenes
MT-69	9/24/1999	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
MT-69	10/3/2000	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
MT-69	11/15/2001	< 1.0	< 1.0	< 1.0	< 0.50	< 0.50	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
MT-69	9/30/2002	< 1	< 1	< 1	< 0.5	< 0.5	< 1	< 1	< 1	< 1	< 1	< 1	< 1
MT-69	10/1/2003	< 1 U	< 1 U	< 1 U	< 0.5 U	< 0.5 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
MT-69	9/27/2004	< 1 U	< 1 U	< 1 U	< 0.5 U	< 0.5 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
MT-69	10/24/2005	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 2.0 U

All concentrations presented in ug/l.
1,1-DCA - 1,1-Dichloroethane.
1,1-DCE - 1,1-Dichloroethene.
cis-1,2-DCE - cis-1,1-Dichloroethene.
trans-1,2-DCE - trans-1,2-Dichloroethene.
PCE - Tetrachloroethene.
1,1,1-TCA - 1,1,1-Trichloroethane.
TCE - Trichloroethene.
VOCs - Volatile Organic Compounds.

Appendix B

Groundwater Sampling Logs for 2006

ARCADIS

Water Sampling Log

Project	GM Sitewide Groundwater	Project No.	OH000294.9.2	Page	1
Site Location	GM Moraine, Ohio			Date	9/18/06
Site/Well No.	GM-41	Replicate No.	- N/A	Code No.	N/A
Weather	Overcast, 70's	Sampling Time:	Begin 1130	End	1250

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	733.65
Land Surface Elevation (ft)	NM
Sounded Well Depth (ft bmp)	116.21
Depth to Water (ft bmp)	26.79
Water-Level Elevation (ft)	706.86
Water Column in Well (ft)	89.42
Casing Diameter/Type	2" / pvc
Gallons in Well	14.31
Gallons Pumped/Bailed Prior to Sampling	4 gal
Sample Pump Intake Setting (ft bmp)	Midscreen
Purge Time	begin 11:51 end 12:04
Pumping Rate (gpm)	600 mL/min
Evacuation Method	Submersible pump

Field Parameters

Color	lt. brown
Odor	none
Appearance	slightly turbid
pH (s.u.)	6.76, 6.76, 6.76
Conductivity (mS/cm)	~~1.3~~ N/A
(µmhos/cm)	1390, 1390, 1390
Turbidity (NTU)	N/A
Temperature (°C)	18.0, 18.2, 18.1
Dissolved Oxygen (mg/L)	0.76, 0.63, 0.57
~~Salinity (%)~~ ORP (mv)	~~N/A~~ -88, -84, -82
Sampling Method	Low Flow
Remarks	Sample time @ 1214
	DTW Final = 26.85

Constituents Sampled	Container Description	Number	Preserv
Site-specific VOC's	40ml glass vial	3	Cool, HCL

Sampling Personnel: T Fortner / AJacobs

Well Casing Volumes

Gal./Ft.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	below measuring point	ml	milliliter	NTU	Nephelometric Turbidity Units
°C	Degrees Celsius	mS/cm	Milisiemens per centimeter	PVC	Polyvinyl chloride
ft	feet	msl	mean sea-level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not Applicable	umhos/cm	Micromhos per centimeter
mg/L	Miligrams per liter	NM	Not Measured	VOC	Volatile Organic Compounds

ARCADIS

LOW FLOW SAMPLING
GROUNDWATER FIELD PARAMETER LOG

Project Number: OH000294.0009.00002

Site Location: General Motors Corporation, Moraine, Ohio

Monitoring Well No.: GM-41

Time Pump Started: 11:51

Depth of Sampling: midscreen

Date: 9/18/2006

Parameters / Time

	11:52	11:55	11:58	12:01	12:04	12:07	12:10	12:13			
Redox Potential (millivolts)	-76.0	-82.0	-82.0	-89.0	-89.0	-88.0	-84.0	-82.0			
Dissolved Oxygen (mg/L)	3.13	1.75	2.08	1.06	1.00	0.76	0.63	0.57			
pH (s.u.)	7.60	6.82	6.78	6.77	6.76	6.76	6.76	6.76			
Specific Conductance (uS/cm)	680	1,340	1,380	1,380	1,380	1,390	1,390	1,390			
Temperature (C)	18.20	18.00	18.00	17.90	17.90	18.00	18.20	18.10			

Flow Rate: 600 ml/min

Total Depth of Well: 116.21

Time Sampled: 12:14

Depth to Water Before Purging: 26.79

Total Water Pumped: 4 gal

Depth to Water After Purging: 26.85

Comments:

ARCADIS

Water Sampling Log

Project	GM Sitewide Groundwater	Project No.	OH000294.0802	Page	1 of 1
Site Location	Moraine, Ohio			Date	9/18/06
Site/Well No.	HR-17	Replicate No.	N/A	Code No.	N/A
Weather	Cloudy; 70's	Sampling Time:	Begin 1400	End	1440

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	726.43
Land Surface Elevation (ft)	NM
Sounded Well Depth (ft bmp)	48.02
Depth to Water (ft bmp)	TF 20.15
Water-Level Elevation (ft)	~~BTC 706.28~~ TF 706.28
Water Column in Well (ft)	~~BTF~~ 27.87
Casing Diameter/Type	~~8"~~ 4" / PVC
Gallons in Well	~~5.46~~ TF 18.12
Gallons Pumped/Baited Prior to Sampling	3 gallons
Sample Pump Intake Setting (ft bmp)	middle of screen
Purge Time	begin 1415 end 1428
Pumping Rate (gpm)	6000 ml/min
Evacuation Method	Submersible pump

Field Parameters

Color	None
Odor	None
Appearance	Non-turbid
pH (s.u.)	6.92, 6.92, 6.92
Conductivity (mS/cm)	~~NA~~ TF N/A
(µmhos/cm)	~~NA~~ TF 1200, 1200, 1200
Turbidity (NTU)	N/A
Temperature (°C)	TF 17.3, 17.3, 17.3
Dissolved Oxygen (mg/L)	~~NA~~ TF
ORP (mV)	~~NA~~ TF 80, 74, 70
Sampling Method	Low Flow
Remarks	Sample time @ 1429
	DTW final = 20.15

Constituents Sampled	Container Description	Number	Preservative
Site-Specific VOCs (8260)	40 ml glass vial	3	Cool, HCl

Sampling Personnel ~~T. Manzo~~ A. Sacobs/T. Fortner

Well Casing Volumes

Gal./Ft.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	below measuring point	ml	milliliter	NTU	Nephelometric Turbidity Units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	feet	msl	mean sea-level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not Applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not Recorded	VOC	Volatile Organic Compounds

ARCADIS

LOW FLOW SAMPLING
GROUNDWATER FIELD PARAMETER LOG

Project Number: OH000294.0009.00002

Site Location: General Motors Corporation, Moraine, Ohio

Monitoring Well No.: HR-17

Time Pump Started: 14:15

Depth of Sampling: midscreen

Date: 9/18/2006

Parameters / Time

	14:16	14:19	14:22	14:25	14:28						
Redox Potential (millivolts)	100.0	89.0	80.0	74.0	70.0						
Dissolved Oxygen (mg/L)	1.00	0.61	0.50	0.45	0.44						
pH (s.u.)	7.11	6.94	6.92	6.92	6.92						
Specific Conductance (uS/cm)	1,210	1,200	1,200	1,200	1,200						
Temperature (C)	18.00	17.40	17.30	17.30	17.30						

Flow Rate: 600ml/min

Total Depth of Well: 48.02

Time Sampled: 14:29

Depth to Water Before Purging: 21.50

Total Water Pumped: 3 gal

Depth to Water After Purging: 20.15

Comments:

ARCADIS

Water Sampling Log

Project	GM Sitewide Groundwater	Project No.	OH000294.0802 9 TF	Page	1 of 1
Site Location	Moraine, Ohio			Date	9/18/06
Site/Well No.	W-2-S	Replicate No.	N/A	Code No.	N/A
Weather	Cloudy; Rain; 70's	Sampling Time: Begin	1450	End	1520

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	726.64
Land Surface Elevation (ft)	NM
Sounded Well Depth (ft bmp)	67.09
Depth to Water (ft bmp)	~~2~~ TF 21.14
Water-Level Elevation (ft)	680.69
Water Column in Well (ft)	45.95
Casing Diameter/Type	~~2~~ 4" / PVC
Gallons in Well	~~7.35~~ TF 29.87
Gallons Pumped/Bailed Prior to Sampling	3 gal.
Sample Pump Intake Setting (ft bmp)	middle of screen
Purge Time	begin 1455 end 1520
Pumping Rate (gpm)	800 mL/min
Evacuation Method	Submersible pump

Field Parameters

Color	light Grey
Odor	None
Appearance	None
pH (s.u.)	7.05, 7.05, 7.05
Conductivity (mS/cm)	N/A
(µmhos/cm)	~~N/A~~ TF 1210, 1210, 1210
Turbidity (NTU)	N/A
Temperature (°~~F~~ C)	16.3, 16.3, 16.3
Dissolved Oxygen (mg/L)	~~N/A~~ TF
ORP (mV)	~~N/A~~ TF
Sampling Method	Low Flow
Remarks	Sample time @ 1511
	DTW final = 21.15

Constituents Sampled	Container Description	Number	Preservative
Site-Specific VOCs (8260)	40 ml glass vial	3	Cool, HCl

Sampling Personnel: A. Jacobs TF ~~J. Manzo~~/T. Fortner

Well Casing Volumes

Gal./Ft.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	below measuring point	ml	milliliter	NTU	Nephelometric Turbidity Units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	feet	msl	mean sea-level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not Applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not Recorded	VOC	Volatile Organic Compounds

ARCADIS

LOW FLOW SAMPLING
GROUNDWATER FIELD PARAMETER LOG

Project Number: OH000294.0009.00002

Site Location: General Motors Corporation, Moraine, Ohio

Monitoring Well No.: W-2-S

Time Pump Started: 14:55

Depth of Sampling: midscreen

Date: 9/18/2006

Parameters

Time

	14:58	15:01	15:04	15:07	15:10						
Redox Potential (millivolts)	57.0	48.0	42.0	38.0	37.0						
Dissolved Oxygen (mg/L)	0.53	0.39	0.33	0.32	0.30						
pH (s.u.)	7.08	7.05	7.05	7.05	7.05						
Specific Conductance (uS/cm)	1,210	1,210	1,210	1,210	1,210						
Temperature (C)	16..4	16.30	16.30	16.30	16.30						

Flow Rate: 800ml/min

Total Depth of Well: 67.09

Time Sampled: 15:11

Depth to Water Before Purging: 21.14

Total Water Pumped: 3 gal

Depth to Water After Purging: 21.15

Comments

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Water Sampling Log

Project	GM Sitewide Groundwater	Project No.	OH000294.0209 TF	Page	1 of 1
Site Location	Moraine, Ohio			Date	9/18/06
Site/Well No.	W-3-S	Replicate No.	N/A	Code No.	N/A
Weather	Cloudy; Rainy 70's	Sampling Time: Begin	1525	End	1612

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	733.42
Land Surface Elevation (ft)	NM
Sounded Well Depth (ft bmp)	73.41
Depth to Water (ft bmp)	~~23.67~~ TF 23.67
Water-Level Elevation (ft)	709.75
Water Column in Well (ft)	49.74
Casing Diameter/Type	~~2" PVC~~ 4"/PVC
Gallons in Well	~~7.96 TF~~ 32.33
Gallons Pumped/Bailed Prior to Sampling	3 gal.
Sample Pump Intake Setting (ft bmp)	middle of screen
Purge Time	begin 1531 end 1558
Pumping Rate (gpm)	600 mL/min
Evacuation Method	Submersible pump

Field Parameters

Color	light Gray
Odor	None
Appearance	Non-turbid
pH (s.u.)	7.12, 7.11, 7.11
Conductivity (mS/cm)	N/A
(µmhos/cm)	~~N/A TF~~ 1190, 1180, 1180
Turbidity (NTU)	N/A
Temperature (°F)	~~7.12, 7.1 TF~~ 16.6, 16.8, 16.6
Dissolved Oxygen (mg/L)	~~N/A TF~~
ORP (mV)	~~N/A TF~~ -29, -29, -27
Sampling Method	Low Flow
Remarks	Sample time @ 1559
	DTW final = 23.67

Constituents Sampled	Container Description	Number	Preservative
Site-Specific VOCs (8260)	40 ml glass vial	3	Cool, HCl

Sampling Personnel: ~~J. Menzo~~ J. Jacobs/T. Fortner

Well Casing Volumes

Gal./Ft.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	below measuring point	ml	milliliter	NTU	Nephelometric Turbidity Units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	feet	msl	mean sea-level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not Applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not Recorded	VOC	Volatile Organic Compounds

ARCADIS

LOW FLOW SAMPLING
GROUNDWATER FIELD PARAMETER LOG

Project Number: OH000294.0009.00002

Site Location: General Motors Corporation, Moraine, Ohio

Monitoring Well No.: W-3-S

Time Pump Started: 15:31 & 15:47

Depth of Sampling: midscreen

Date: 9/18/2006

Parameters / Time

	15:32	15:35	15:38	15:41	15:44	15:49	15:52	15:55	15:58		
Redox Potential (millivolts)	-16.0	28.0	36.0	47.0	52.0	-22.0	-29.0	-29.0	-27.0		
Dissolved Oxygen (mg/L)	2.04	11.53	11.48	11.38	11.30	1.64	1.31	1.29	1.29		
pH (s.u.)	7.35	7.20	7.29	7.41	7.49	7.16	7.12	7.11	7.11		
Specific Conductance (uS/cm)	1,170	20	1	1	1	1,180	1,190	1,180	1,180		
Temperature (C)	16.70	17.20	17.70	18.20	18.60	16.80	16.60	16.80	16.60		

Flow Rate: 600ml/min

Total Depth of Well: 73.41

Time Sampled: 15:59

Depth to Water Before Purging: 23.67

Total Water Pumped: 3 gal

Depth to Water After Purging: 23.67

Comments: pumped stopped at 1544, restarted at 1547

ARCADIS

Water Sampling Log

Project	GM Sitewide Groundwater	Project No.	OH000294.09.02	Page	1 of 1
Site Location	Moraine, Ohio			Date	9/18/06
Site/Well No.	GM-16	Replicate No.	N/A	Code No.	N/A
Weather	Cloudy; Rain; 70's	Sampling Time:	Begin 1615	End	1647

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	722.30
Land Surface Elevation (ft)	NM
Sounded Well Depth (ft bmp)	~~58.45~~ ~~75~~ 100
Depth to Water (ft bmp)	~~20~~ 20.37
Water-Level Elevation (ft)	701.93
Water Column in Well (ft)	36.63
Casing Diameter/Type	2" PVC
Gallons in Well	5.86
Gallons Pumped/Bailed Prior to Sampling	2.5 gal
Sample Pump Intake Setting (ft bmp)	middle of screen
Purge Time	begin 1625 end 1639
Pumping Rate (gpm)	100 ml/min
Evacuation Method	Submersible pump

Field Parameters

Color	None
Odor	None
Appearance	Black specks
pH (s.u.)	6.95, 6.95, 6.95
Conductivity (mS/cm)	—
(µmhos/cm)	~~N/A~~ 1290, 1290, 1290
Turbidity (NTU)	N/A
Temperature (°F)	17.7, 17.6, 17.6
Dissolved Oxygen (mg/L)	~~N/A~~ 0.38, 0.34, 0.32
ORP (mV)	~~N/A~~ 57, 55, 54
Sampling Method	Low Flow
Remarks	Sample time @ 1646
	DTW final = 20.36

Constituents Sampled	Container Description	Number	Preservative
Site-Specific VOCs (8260)	40 ml glass vial	3	Cool, HCl

Sampling Personnel: Fortner/Jacobs

Well Casing Volumes

Gal./Ft.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	below measuring point	ml	milliliter	NTU	Nephelometric Turbidity Units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	feet	msl	mean sea-level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not Applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not Recorded	VOC	Volatile Organic Compounds

ARCADIS

LOW FLOW SAMPLING
GROUNDWATER FIELD PARAMETER LOG

Project Number: OH000294.0009.00002

Site Location: General Motors Corporation, Moraine, Ohio

Monitoring Well No.: GM-16

Time Pump Started: 16:25

Depth of Sampling: midscreen

Date: 9/18/2006

Parameters / Time

	16:25	16:28	16:31	16:34	16:37	16:39					
Redox Potential (millivolts)	71.0	63.0	60.0	57.0	55.0	54.0					
Dissolved Oxygen (mg/L)	3.31	0.56	0.44	0.38	0.34	0.32					
pH (s.u.)	7.20	6.96	6.95	6.95	6.95	6.95					
Specific Conductance (uS/cm)	1,300	1,290	1,290	1,290	1,290	1,290					
Temperature (C)	17.80	17.50	17.60	17.70	17.60	17.60					

Flow Rate: 600ml/min

Total Depth of Well: 57.00

Time Sampled: 16:40

Depth to Water Before Purging: 20.37

Total Water Pumped: 2.5 gal

Depth to Water After Purging: 20.36

Comments:

ARCADIS

Water Sampling Log

Project	GM Sitewide Groundwater	Project No.	OH000294.0~~8~~9.02	Page	1 of 1
Site Location	Moraine, Ohio			Date	9/18/06
Site/Well No.	GM-15	Replicate No.	N/A	Code No.	N/A
Weather	raining, 60's	Sampling Time: Begin	1648	End	1731

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	725.23
Land Surface Elevation (ft)	NM
Sounded Well Depth (ft bmp)	~~98.92~~ 98.91
Depth to Water (ft bmp)	~~20.72~~ 20.70
Water-Level Elevation (ft)	704.53
Water Column in Well (ft)	78.21
Casing Diameter/Type	2"
Gallons in Well	~~12.56~~ 12.61 gal
Gallons Pumped/Bailed Prior to Sampling	2.5 gal
Sample Pump Intake Setting (ft bmp)	middle of screen
Purge Time	begin 1654 end 1715
Pumping Rate (gpm)	500 ml/min
Evacuation Method	Submersible Pump

Field Parameters

Color	clear
Odor	none
Appearance	clear
pH (s.u.)	6.99, 6.99, 6.99
Conductivity (mS/cm)	
(µmhos/cm)	~~N/A~~ 1260, 1250, 1260
Turbidity (NTU)	N/A
Temperature (°C)	17.7, 17.8, 17.8
Dissolved Oxygen (mg/L)	~~N/A~~ 0.58, 0.43, 0.35
ORP (mV)	~~N/A~~ -46, -48, -51
Sampling Method	Low Flow
Remarks	Sample time @ 1714
	DTW final = 20.69

Constituents Sampled	Container Description	Number	Preservative
Site-Specific VOCs (8260)	40 ml glass vial	3	Cool, HCl

Sampling Personnel: A. Jacobs, ~~J. Manzo~~, T. Fortner

Well Casing Volumes

Gal./Ft.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	below measuring point	ml	milliliter	NTU	Nephelometric Turbidity Units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	feet	msl	mean sea-level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not Applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not Recorded	VOC	Volatile Organic Compounds

ARCADIS

LOW FLOW SAMPLING
GROUNDWATER FIELD PARAMETER LOG

Project Number: OH000294.0009.00002

Site Location: General Motors Corporation, Moraine, Ohio

Monitoring Well No.: GM-15

Time Pump Started: 16:54

Depth of Sampling: midscreen

Date: 9/18/2006

Parameters / Time

	16:55	16:58	17:01	17:04	17:07	17:10	17:13				
Redox Potential (millivolts)	-15.0	-40.0	-43.0	-44.0	-46.0	-48.0	-51.0				
Dissolved Oxygen (mg/L)	0.84	0.54	0.52	0.59	0.58	0.43	0.35				
pH (s.u.)	7.08	7.00	6.99	7.00	6.99	6.99	6.99				
Specific Conductance (uS/cm)	1,170	1,230	1,240	1,230	1,260	1,250	1,250				
Temperature (C)	17.90	18.10	18.20	18.70	17.70	17.80	17.80				

Flow Rate: 500 ml/min

Total Depth of Well: 98.91

Time Sampled: 17:14

Depth to Water Before Purging: 20.70

Total Water Pumped: 2.5 gal

Depth to Water After Purging: 20.69

Comments:

ARCADIS

Water Sampling Log

Project	GM Sitewide Groundwater	Project No.	OH000294.09.02 TF	Page	1 of 1
Site Location	Moraine, Ohio			Date	9/19/06
Site/Well No.	W-4-S	Replicate No.	N/A	Code No.	N/A
Weather	Sunny; ~~Cloudy~~ TF 70's	Sampling Time: Begin	1105	End	1200

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	727.68
Land Surface Elevation (ft)	NM
Sounded Well Depth (ft bmp)	71.00
Depth to Water (ft bmp)	~~2~~ TF 22.10
Water-Level Elevation (ft)	705.58
Water Column in Well (ft)	48.90
Casing Diameter/Type	4" / PVC
Gallons in Well	31.785
Gallons Pumped/Bailed Prior to Sampling	2.5 gallons
Sample Pump Intake Setting (ft bmp)	middle of screen
Purge Time	begin 1119 end 1135
Pumping Rate (gpm)	300 mL/min
Evacuation Method	Submersible pump

Field Parameters

Color	None
Odor	None
Appearance	Non-turbid
pH (s.u.)	7.00, 6.99, 6.99
Conductivity (mS/cm)	N/A
(µmhos/cm)	~~N/A~~ TF 1280, 1280, 1280
Turbidity (NTU)	N/A
Temperature (°F) (°C) TF	17.9, 17.7, 17.7
Dissolved Oxygen (mg/L)	~~N/A~~ TF 0.38, 0.32, 0.31
ORP (mV)	~~N/A~~ TF 82, 80, 79
Sampling Method	Low Flow
Remarks	Sample time @ 1136
	DTW final = 22.10

Constituents Sampled	Container Description	Number	Preservative
Site-Specific VOCs (8260)	40 ml glass vial	3	Cool, HCl
Mn&Fe Dissolved	1L plastic	1	Cool, HNO_3
Mn&Fe Total	1L plastic	1	Cool, HNO_3
TOC	40mL VOA	2	Cool, H_2SO_4
Sulfate/Chloride	250 mL plastic	1	Cool, None
Sulfide	500 mL plastic	1	Cool, ZnAc
Ethene, Ethane, Methane	40 mL VOA	2	Cool, RAK

Sampling Personnel: A. Jacobs
~~J. Manzo~~/T. Fortner

Well Casing Volumes

Gal./Ft.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	below measuring point	ml	milliliter	NTU	Nephelometric Turbidity Units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	feet	msl	mean sea-level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not Applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not Recorded	VOC	Volatile Organic Compounds

ARCADIS

LOW FLOW SAMPLING
GROUNDWATER FIELD PARAMETER LOG

Project Number: OH000294.0009.00002

Site Location: General Motors Corporation, Moraine, Ohio

Monitoring Well No.: W-4-S

Time Pump Started: 11:19

Depth of Sampling: midscreen

Date: 9/19/2006

Parameters / Time

	11:20	11:23	11:26	11:29	11:32	11:35					
Redox Potential (millivolts)	96.0	89.0	84.0	82.0	80.0	79.0					
Dissolved Oxygen (mg/L)	1.35	0.51	0.43	0.38	0.32	0.31					
pH (s.u.)	7.30	7.02	7.00	7.00	6.99	6.99					
Specific Conductance (uS/cm)	1280.000	1280.000	1280.000	1280.000	1280.000	1280.000					
Temperature (C)	17.60	17.90	17.30	17.90	17.70	17.70					

Flow Rate: 300ml/min

Total Depth of Well: 71

Time Sampled: 11:36

Depth to Water Before Purging: 22.10

Total Water Pumped: 2.5 gal

Depth to Water After Purging: 22.10

Comments: 11:26 pump stopped and restarted.

ARCADIS

Water Sampling Log

Project	GM Sitewide Groundwater	Project No.	OH000294.09.02	Page	1 of 1
Site Location	Moraine, Ohio			Date	9/19/06
Site/Well No.	GM-8	Replicate No.	N/A	Code No.	N/A
Weather	Sunny 70's	Sampling Time:	Begin 1410	End	1510

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	735.17
Land Surface Elevation (ft)	NM
Sounded Well Depth (ft bmp)	51.4
Depth to Water (ft bmp)	~~29.90~~ TF 29.90
Water-Level Elevation (ft)	705.27
Water Column in Well (ft)	21.50
Casing Diameter/Type	2" / PVC
Gallons in Well	3.44
Gallons Pumped/Bailed Prior to Sampling	2.5 gal.
Sample Pump Intake Setting (ft bmp)	middle of screen
Purge Time	begin 1345 end 1401
Pumping Rate (gpm)	6000 mL/min
Evacuation Method	Submersible pump

Field Parameters

Color	None
Odor	None
Appearance	Non-turb.
pH (s.u.)	7.31, 7.31, 7.31
Conductivity (mS/cm)	N/A
(µmhos/cm)	~~N/A~~ TF 2110, 2120, 2120
Turbidity (NTU)	N/A
Temperature (°C)	17.8, 17.9, 18.1
Dissolved Oxygen (mg/L)	~~N/A~~ TF 0.47, 0.48, 0.53
ORP (mV)	~~N/A~~ TF -162, -163, -160
Sampling Method	Low Flow
Remarks	Sample time @ 1402
	DTW final = 29.90

Constituents Sampled	Container Description	Number	Preservative
Site-Specific VOCs (8260)	40 ml glass vial	3	Cool, HCl
Mn & Fe Dissolved	1L plastic	1	Cool, HNO_3
Mn & Fe Total	1L plastic	1	Cool, HNO_3
TOC	40 ml VOA	2	Cool, H_2SO_4
Sulfate, Chloride	250 ml plastic	1	Cool, None
Sulfide	500 ml plastic	1	Cool, NaOH & ZnAc
Ethene, Ethane, Methane	40 ml VOA	2	Cool, BAK

Sampling Personnel: Fortner/Jacobs

Well Casing Volumes

Gal./Ft.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	below measuring point	ml	milliliter	NTU	Nephelometric Turbidity Units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	feet	msl	mean sea-level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not Applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not Recorded	VOC	Volatile Organic Compounds

ARCADIS

LOW FLOW SAMPLING
GROUNDWATER FIELD PARAMETER LOG

Project Number: OH000294.0009.00002

Site Location: General Motors Corporation, Moraine, Ohio

Monitoring Well No.: GM-8

Time Pump Started: 13:45

Depth of Sampling: midscreen

Date: 9/19/2006

Parameters / Time

	13:46	13:49	13:52	13:55	13:58	14:01					
Redox Potential (millivolts)	-135.0	-161.0	-162.0	-162.0	-163.0	-160.0					
Dissolved Oxygen (mg/L)	1.34	0.56	0.55	0.47	0.48	0.53					
pH (s.u.)	7.10	7.32	7.32	7.31	7.31	7.31					
Specific Conductance (uS/cm)	2,070	2,110	2,120	2,110	2,120	2,120					
Temperature (C)	17.20	17.60	17.70	17.80	17.90	18.10					

Flow Rate: 600ml/min

Total Depth of Well: 51.4

Time Sampled: 14:02

Depth to Water Before Purging: 29.90

Total Water Pumped: 2.5 gal

Depth to Water After Purging: 29.90

Comments:

ARCADIS

Water Sampling Log

Project	GM Sitewide Groundwater	Project No.	OH000294.09.02	Page	1 of 1
Site Location	Moraine, Ohio			Date	9/19/06
Site/Well No.	GM-6	Replicate No.	N/A	Code No.	N/A
Weather	Sat. Cloudy	Sampling Time:	Begin 1430	End	1507

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	730.27
Land Surface Elevation (ft)	NM
Sounded Well Depth (ft bmp)	46
Depth to Water (ft bmp)	~~2~~ TF 25.13
Water-Level Elevation (ft)	705.14
Water Column in Well (ft)	20.87
Casing Diameter/Type	2" / PVC
Gallons in Well	3.34
Gallons Pumped/Bailed Prior to Sampling	5 gal.
Sample Pump Intake Setting (ft bmp)	middle of screen
Purge Time	begin 1432 end 1455
Pumping Rate (gpm)	800 mL/min
Evacuation Method	Submersible pump

Field Parameters

Color	None
Odor	None
Appearance	Non-turbid
pH (s.u.)	6.81, 6.80, 6.80
Conductivity (mS/cm)	N/A
(µmhos/cm)	~~N/A~~ TF 1920, 1920, 1920
Turbidity (NTU)	N/A
Temperature (°C)	17.3, 17.3, 17.3
Dissolved Oxygen (mg/L)	~~N/A~~ TF 0.27, 0.24, 0.24
ORP (mV)	~~N/A~~ TF -107, -109, -111
Sampling Method	Low Flow
Remarks	Sample time @ ~~25.12~~ 1~~8~~/1456
	DTW final = ~~1456~~ 25.12

Constituents Sampled	Container Description	Number	Preservative
Site-Specific VOCs (8260)	40 ml glass vial	3	Cool, HCl
Mn & Fe Dissolved	1L plastic	1	Cool, HNO_3
Mn & Fe Total	1L plastic	1	Cool, HNO_3
TOC	40 ml VOA	2	Cool, H_2SO_4
Sulfate, Chloride	250 ml plastic	1	Cool, None
Sulfide	500 ml plastic	1	Cool, NaOH & ZnAc
Ethene, Ethane, Methane	40 ml VOA	2	Cool, BAK

Sampling Personnel: Fortner/Jacobs

Well Casing Volumes

Gal./Ft.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	below measuring point	ml	milliliter	NTU	Nephelometric Turbidity Units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	feet	msl	mean sea-level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not Applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not Recorded	VOC	Volatile Organic Compounds

ARCADIS

LOW FLOW SAMPLING
GROUNDWATER FIELD PARAMETER LOG

Project Number: OH000294.0009.00002

Site Location: General Motors Corporation, Moraine, Ohio

Monitoring Well No.: GM-6

Time Pump Started: 14:32

Depth of Sampling: midscreen

Date: 9/19/2006

Parameters / Time

	14:37	14:40	14:43	14:46	14:49						
Redox Potential (millivolts)	-102.0	-104.0	-107.0	-109.0	-111.0						
Dissolved Oxygen (mg/L)	0.50	0.36	0.27	0.24	0.24						
pH (s.u.)	6.84	6.82	6.81	6.80	6.80						
Specific Conductance (uS/cm)	1,920	1,920	1,920	1,920	1,920						
Temperature (C)	17.40	17.50	17.30	17.30	17.30						

Flow Rate: 800ml/min

Total Depth of Well: 46.25

Time Sampled: 14:50

Depth to Water Before Purging: 25.13

Total Water Pumped: 5gal

Depth to Water After Purging: 25.12

Comments:

ARCADIS

Water Sampling Log

Project	GM Sitewide Groundwater	Project No.	OH000294.09.02	Page	1 of 1
Site Location	Moraine, Ohio			Date	9/19/06
Site/Well No.	TW2	Replicate No.	N/A	Code No.	N/A
Weather	Cloudy 60's	Sampling Time:	Begin 1615	End	1458

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	733.38
Land Surface Elevation (ft)	NM
Sounded Well Depth (ft bmp)	42.05
Depth to Water (ft bmp)	~~2~~ 32.65
Water-Level Elevation (ft)	700.73
Water Column in Well (ft)	9.4
Casing Diameter/Type	~~8~~ 12"
Gallons in Well	NM
Gallons Pumped/Bailed Prior to Sampling	5 gal.
Sample Pump Intake Setting (ft bmp)	middle of screen
Purge Time	begin 1627 end 1642
Pumping Rate (gpm)	~1000 ml/min
Evacuation Method	Submersible pump

Field Parameters

Color	None
Odor	None
Appearance	Non-turbid
pH (s.u.)	6.91, 6.91, 6.91
Conductivity (mS/cm)	N/A
(µmhos/cm)	~~N/A~~ TF 1710, 1710, 1710
Turbidity (NTU)	N/A
Temperature (°C)	~~F~~ TF 17.1, 17.1, 17.1
Dissolved Oxygen (mg/L)	~~N/A~~ TF 0.34, 0.31, 0.31
ORP (mV)	~~N/A~~ TF 26, 27, 26
Sampling Method	Low Flow
Remarks	Sample time @ 1643
	DTW final = 32.61

Constituents Sampled	Container Description	Number	Preservative
Site-Specific VOCs (8260)	40 ml glass vial	3	Cool, HCl
Mn & Fe Total	1L plastic	1	Cool, HNO_3
Mn & Fe Dissolved	1L plastic	1	Cool, HNO_3
TOC	40 mL VOA	2	Cool, H_2SO_4
Sulfate, Chloride	250 mL plastic	1	Cool, None
Sulfide	500 mL plastic	1	Cool, NaOH+ZnAc
Ethene, Ethane, Methane	40 mL VOA	2	Cool, RAK

Sampling Personnel: Fortner/Jacobs

Well Casing Volumes

Gal./Ft.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	below measuring point	ml	milliliter	NTU	Nephelometric Turbidity Units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	feet	msl	mean sea-level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not Applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not Recorded	VOC	Volatile Organic Compounds

ARCADIS

LOW FLOW SAMPLING
GROUNDWATER FIELD PARAMETER LOG

Project Number: OH000294.0009.00002

Site Location: General Motors Corporation, Moraine, Ohio

Monitoring Well No.: TW2

Time Pump Started: 16:27

Depth of Sampling: midscreen

Date: 9/19/2006

Parameters / Time

	16:30	16:33	16:36	16:39	16:42						
Redox Potential (millivolts)	27.0	26.0	26.0	27.0	26.0						
Dissolved Oxygen (mg/L)	0.49	0.36	0.34	0.31	0.31						
pH (s.u.)	7.03	6.91	6.91	6.91	6.91						
Specific Conductance (uS/cm)	1,710	1,710	1,710	1,710	1,710						
Temperature (C)	17.20	17.10	17.10	17.10	17.10						

Flow Rate: 1000ml/min

Total Depth of Well: 42.05

Time Sampled: 16:43

Depth to Water Before Purging: 32.65

Total Water Pumped: 5 gal

Depth to Water After Purging: 32.61

Comments:

ARCADIS

Water Sampling Log

Project	GM Sitewide Groundwater	Project No.	OH000294.09.02	Page	1 of 1
Site Location	Moraine, Ohio			Date	9/19/06
Site/Well No.	GM-32	Replicate No.	N/A	Code No.	N/A
Weather	Cloudy ; 70's	Sampling Time:	Begin 1519	End	16:15

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	732.08
Land Surface Elevation (ft)	NM
Sounded Well Depth (ft bmp)	59.71
Depth to Water (ft bmp)	~~2nd~~ TF 26.18
Water-Level Elevation (ft)	705.90
Water Column in Well (ft)	33.53
Casing Diameter/Type	2"/PVC
Gallons in Well	5.36
Gallons Pumped/Bailed Prior to Sampling	4 gal.
Sample Pump Intake Setting (ft bmp)	middle of screen
Purge Time	begin 1531 end 1557
Pumping Rate (gpm)	700 ml/min
Evacuation Method	Submersible pump

Field Parameters

Color	yellow
Odor	Yes- molasses
Appearance	~~SI~~ turbid
pH (s.u.)	6.87, 6.84, 6.84
Conductivity (mS/cm)	N/A
(µmhos/cm)	~~N/A~~ TF 4580, 4550, 4570
Turbidity (NTU)	N/A C
Temperature (°F)	TF 17.7, 17.7, 17.7
Dissolved Oxygen (mg/L)	~~N/A~~ TF 0.25, 0.22, 0.21
ORP (mV)	~~N/A~~ TF -193, -193, -193
Sampling Method	Low Flow
Remarks	Sample time @ 1556
	DTW final = 26.20

Constituents Sampled	Container Description	Number	Preservative
Site-Specific VOCs (8260)	40 ml glass vial	3	Cool, HCl
Mn & Fe Dissolved	1 L plastic	1	Cool, HNO_3
Mn & Fe Total	1 L plastic	1	Cool, HNO_3
TOC	40 ml VOA	2	Cool, H_2SO_4
Sulfate, Chloride	250 ml plastic	1	Cool, None
Sulfide	500 ml plastic	1	Cool, NaOH & ZnAc
Ethene, Ethane, Methane	40 ml VOA	2	Cool, BAK

Sampling Personnel: Fortner/Jacobs

Well Casing Volumes

Gal./Ft.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	below measuring point	ml	milliliter	NTU	Nephelometric Turbidity Units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	feet	msl	mean sea-level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not Applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not Recorded	VOC	Volatile Organic Compounds

ARCADIS

LOW FLOW SAMPLING
GROUNDWATER FIELD PARAMETER LOG

Project Number: OH000294.0009.00002

Site Location: General Motors Corporation, Moraine, Ohio

Monitoring Well No.: GM-32

Time Pump Started: 15:31

Depth of Sampling: midscreen

Date: 9/19/2006

Parameters / Time

	15:34	15:37	15:40	15:43	15:46	15:49	15:52	15:55			
Redox Potential (millivolts)	-204.0	-192.0	-191.0	-192.0	-192.0	-193.0	-193.0	-193.0			
Dissolved Oxygen (mg/L)	0.42	0.30	0.33	0.41	0.31	0.25	0.22	0.21			
pH (s.u.)	7.22	7.01	6.96	6.92	6.89	6.87	6.84	6.84			
Specific Conductance (uS/cm)	5,180	4,780	4,660	4,580	4,560	4,580	4,550	4,510			
Temperature (C)	17.50	17.60	17.70	17.70	17.70	17.70	17.70	17.70			

Flow Rate: 700ml/min

Total Depth of Well: 59.71

Time Sampled: 15:56

Depth to Water Before Purging: 26.18

Total Water Pumped: 7.5gal

Depth to Water After Purging: 26.20

Comments:

ARCADIS

Water Sampling Log

Project	6M Annual	Project No.	01T000294.9.2	Page	1
Site Location	Moraine, Ohio			Date	9/20/06
Site/Well No.	45	Replicate No.	N/A	Code No.	N/A
Weather	Clear, 60's	Sampling Time:	Begin 0935	End	1035

Evacuation Data

Measuring Point	TOC
MP Elevation (ft)	731.36
Land Surface Elevation (ft)	NM
Sounded Well Depth (ft bmp)	666.65
Depth to Water (ft bmp)	26.05
Water-Level Elevation (ft)	705.31
Water Column in Well (ft)	40.6
Casing Diameter/Type	4"
Gallons in Well	26.39
Gallons Pumped/Bailed Prior to Sampling	9 gal
Sample Pump Intake Setting (ft bmp)	Mid screen
Purge Time	begin 9:50 end ~~10:25~~ 1023
Pumping Rate (gpm)	600 ml/min
Evacuation Method	submercible pump

Field Parameters

Color	Clear
Odor	none
Appearance	blk specks
pH (s.u.)	7.42, 7.41, 7.41
Conductivity (mS/cm)	N/A
(µmhos/cm)	2140, 2130, 2110
Turbidity (NTU)	N/A
Temperature (°C)	16.32, 16.31, 16.31
Dissolved Oxygen (mg/L)	1.56, 1.53, 0.87
~~Salinity (%)~~ ORP (mv)	-191, -190, -188
Sampling Method	~~Grab~~ low flow NFS
Remarks	Sampled @ 1024
	DTW final = 26.06

Constituents Sampled	Container Description	Number	Preserv
Site-specific VOC's	40ml glass	3	Cool, HCl

Sampling Personnel: A. JACOBS / T. Fortner

Well Casing Volumes

Gal./Ft.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	below measuring point	ml	milliliter	NTU	Nephelometric Turbidity Units
°C	Degrees Celsius	mS/cm	Milisiemens per centimeter	PVC	Polyvinyl chloride
ft	feet	msl	mean sea-level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not Applicable	umhos/cm	Micromhos per centimeter
mg/L	Miligrams per liter	NM	Not Measured	VOC	Volatile Organic Compounds

ARCADIS

LOW FLOW SAMPLING
GROUNDWATER FIELD PARAMETER LOG

Project Number: OH000294.0009.00002

Site Location: General Motors Corporation, Moraine, Ohio

Monitoring Well No.: 4S

Time Pump Started: 9:50

Depth of Sampling: midscreen

Date: 9/20/2006

Parameters / Time

	9:53	9:56	9:59	10:02	10:05	10:08	10:11	10:14	10:17	10:20	10:23
Redox Potential (millivolts)	-208.0	-225.0	-217.0	-220.0	-209.0	-200.0	-195.0	-193.0	-191.0	-190.0	-188.0
Dissolved Oxygen (mg/L)	1.57	0.84	0.38	0.65	0.36	0.38	0.41	0.43	1.56	1.53	0.81
pH (s.u.)	7.50	7.80	7.69	7.71	7.60	7.53	7.47	7.45	7.42	7.41	7.41
Specific Conductance (uS/cm)	2,340	2,380	2,310	2,320	2,270	2,200	2,170	2,160	2,140	2,130	2,110
Temperature (C)	15.94	16.21	16.21	16.33	16.30	16.31	16.33	16.33	16.32	16.31	16.38

Flow Rate: 600ml/min

Total Depth of Well: 66.65

Time Sampled: 10:24

Depth to Water Before Purging: 26.05

Total Water Pumped: 9 gal

Depth to Water After Purging: 26.06

Comments:

ARCADIS

Water Sampling Log

Project	GM Sitewide Groundwater	Project No.	OH000294.0802 (9 MW-3)	Page	1 of 1
Site Location	Moraine, Ohio			Date	9-20-06
Site/Well No.	GM-1	Replicate No.	—	Code No.	—
Weather	Clear, 60's	Sampling Time: Begin	10:36	End	1115

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	735.74
Land Surface Elevation (ft)	NM
Sounded Well Depth (ft bmp)	~~101.86~~ 101.98 (MW-3)
Depth to Water (ft bmp)	~~2~~ 30.24
Water-Level Elevation (ft)	705.5
Water Column in Well (ft)	71.74
Casing Diameter/Type	2"
Gallons in Well	11.48
Gallons Pumped/Bailed Prior to Sampling	5gal
Sample Pump Intake Setting (ft bmp)	middle of screen
Purge Time	begin 10:49 end 11:06
Pumping Rate (gpm)	800ml/min
Evacuation Method	Submersible Pump

Field Parameters

Color	clear
Odor	none
Appearance	clear
pH (s.u.)	7.09, 7.08, 7.08
Conductivity (mS/cm)	N/A
(µmhos/cm)	~~N/A~~ (MW-3) 1190, 1200, 1200
Turbidity (NTU)	N/A
Temperature (°C)	14.13, 15.97, 15.72
Dissolved Oxygen (mg/L)	~~N/A~~ (MW-3) 0.64, 0.46, 0.33
ORP (mV)	~~N/A~~ (MW-3) 21, 23, 26
Sampling Method	Low Flow
Remarks	Sample time @ 11:07
	DTW final = 30.24

Constituents Sampled	Container Description	Number	Preservative
Site-Specific VOCs (8260)	40 ml glass vial	3	Cool, HCl

Sampling Personnel: ~~J. Manzo~~ T. Fortner / J. Manzo

Well Casing Volumes

Gal./Ft.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	below measuring point	ml	milliliter	NTU	Nephelometric Turbidity Units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	feet	msl	mean sea-level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not Applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not Recorded	VOC	Volatile Organic Compounds

ARCADIS

LOW FLOW SAMPLING
GROUNDWATER FIELD PARAMETER LOG

Project Number: OH000294.0009.00002

Site Location: General Motors Corporation, Moraine, Ohio

Monitoring Well No.: GM-1

Time Pump Started: 10:49

Depth of Sampling: midscreen

Date: 9/20/2006

Parameters / Time

	10:51	10:54	10:57	11:00	11:03	11:06					
Redox Potential (millivolts)	10.0	11.0	14.0	21.0	23.0	26.0					
Dissolved Oxygen (mg/L)	1.24	0.69	0.67	0.64	0.46	0.33					
pH (s.u.)	7.27	7.15	7.12	7.09	7.08	7.08					
Specific Conductance (uS/cm)	1,160	1,190	1,190	1,190	1,200	1,200					
Temperature (C)	15.82	16.05	16.13	16.13	15.93	15.72					

Flow Rate: 800ml/min

Total Depth of Well: 101.98

Time Sampled: 11:07

Depth to Water Before Purging: 30.24

Total Water Pumped: 5 gal

Depth to Water After Purging: 30.24

Comments:

ARCADIS

Water Sampling Log

Project	GM Sitewide Groundwater	Project No.	OH000294.09.02	Page	1 of 1
Site Location	Moraine, Ohio			Date	9-20-02
Site/Well No.	GM-2	Replicate No.	—	Code No.	—
Weather	cloudy, 60's	Sampling Time:	Begin 1116	End	1150

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	735.81
Land Surface Elevation (ft)	NM
Sounded Well Depth (ft bmp)	~~56.2~~ 56.47
Depth to Water (ft bmp)	30.20
Water-Level Elevation (ft)	705.61
Water Column in Well (ft)	26.27
Casing Diameter/Type	2"
Gallons in Well	4.20
Gallons Pumped/Bailed Prior to Sampling	5 gal
Sample Pump Intake Setting (ft bmp)	middle of screen
Purge Time	begin 1119 end 1136
Pumping Rate (gpm)	900ml/min
Evacuation Method	Submersible pump

Field Parameters

Color	Clear
Odor	none
Appearance	clear
pH (s.u.)	7.02, 7.02, 7.02
Conductivity (mS/cm)	N/A
(µmhos/cm)	~~N/A~~ 1730, 1730, 1730
Turbidity (NTU)	N/A
Temperature (°F)	16.48, 16.56, 16.59
Dissolved Oxygen (mg/L)	~~N/A~~ 0.30, 0.29, 0.29
ORP (mV)	~~N/A~~ 45, 45, 46
Sampling Method	Low Flow
Remarks	Sample time @ 1137
	DTW final = 30.21

Constituents Sampled	Container Description	Number	Preservative
Site-Specific VOCs (8260)	40 ml glass vial	3	Cool, HCl
Mn & Fe total	1L plastic	1	cool, HNO_3
Mn & Fe Dissolved	1L plastic	1	Cool, HNO_3
Sulfate & Chlorides	250ml plastic	1	Cool, None
Sulfide	500ml plastic	1	cool, NaOH, & ZnAc
TOC	40ml VOA	2	Cool, H_2SO_4
Ethene, Ethane, Methane	40ml VOA	2	cool, BAK

Sampling Personnel: Fortner/Jacobs

Well Casing Volumes

Gal./Ft.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	below measuring point	ml	milliliter	NTU	Nephelometric Turbidity Units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	feet	msl	mean sea-level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not Applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not Recorded	VOC	Volatile Organic Compounds

ARCADIS

LOW FLOW SAMPLING
GROUNDWATER FIELD PARAMETER LOG

Project Number: OH000294.0009.00002

Site Location: General Motors Corporation, Moraine, Ohio

Monitoring Well No.: GM-2

Time Pump Started: 11:19

Depth of Sampling: midscreen

Date: 9/20/2006

Parameters	Time										
	11:24	11:27	11:30	11:33	11:36						
Redox Potential (millivolts)	45.0	44.0	45.0	45.0	45.0						
Dissolved Oxygen (mg/L)	0.37	0.32	0.30	0.29	0.29						
pH (s.u.)	7.03	7.02	7.02	7.02	7.02						
Specific Conductance (uS/cm)	1,730	1,730	1,730	1,730	1,730						
Temperature (C)	16.36	16.39	16.48	16.56	16.59						

Flow Rate: 900ml/min

Total Depth of Well: 56.47

Time Sampled: 11:37

Depth to Water Before Purging: 30.20

Total Water Pumped: 5 gal

Depth to Water After Purging: 30.21

Comments:

ARCADIS

Water Sampling Log

Project	GM Sitewide Groundwater	Project No.	OH000294.09.02	Page	1 of 1
Site Location	Moraine, Ohio			Date	9-20-06
Site/Well No.	GM-21	Replicate No.	DUP2	Code No.	N/A
Weather	cloudy 60's	Sampling Time: Begin	1350	End	1520

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	724.70
Land Surface Elevation (ft)	NM
Sounded Well Depth (ft bmp)	~~54.79~~ 54.50
Depth to Water (ft bmp)	~~19.15~~ 19.14
Water-Level Elevation (ft)	705.56
Water Column in Well (ft)	35.36
Casing Diameter/Type	2" PVC
Gallons in Well	5.66
Gallons Pumped/Bailed Prior to Sampling	5gal
Sample Pump Intake Setting (ft bmp)	middle of screen
Purge Time	begin ~~1405~~ 1413 end 1431
Pumping Rate (gpm)	600 mL/min
Evacuation Method	Submersible pump

Field Parameters

Color	clear to lt. ~~gray~~ gray
Odor	odor
Appearance	black specks
pH (s.u.)	6.89, 6.91, 6.90
Conductivity (mS/cm)	N/A
(µmhos/cm)	~~N/A~~ 1570, 1570, 1580
Turbidity (NTU)	N/A
Temperature (°C)	17.69, 17.24, 16.94
Dissolved Oxygen (mg/L)	~~N/A~~ 0.29, 0.27, 0.2
ORP (mV)	~~N/A~~ -135, -136, -137
Sampling Method	Low Flow
Remarks	Sample time @ 1432
	DTW final = 19.15
	EB2 sampled @ 1451 on tubing.

Constituents Sampled	Container Description	Number	Preservative
Site-Specific VOCs (8260)	40 ml glass vial	3	Cool, HCl
Mn & Fe Dissolved	1L plastic	1	Cool, HNO_3
Mn & Fe Total	1L plastic	1	Cool, HNO_3
TOC	40 ml VOA	2	Cool, H_2SO_4
Sulfate, Chloride	250 ml plastic	1	Cool, None
Sulfide	500 ml plastic	1	Cool, NaOH & ZnAc
Ethene, Ethane, Methane	40 ml VOA	2	Cool, BAK

Sampling Personnel: Fortner/Jacobs

Well Casing Volumes

Gal./Ft.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	below measuring point	ml	milliliter	NTU	Nephelometric Turbidity Units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	feet	msl	mean sea-level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not Applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not Recorded	VOC	Volatile Organic Compounds

ARCADIS

LOW FLOW SAMPLING
GROUNDWATER FIELD PARAMETER LOG

Project Number: OH000294.0009.00002

Site Location: General Motors Corporation, Moraine, Ohio

Monitoring Well No.: GM-21

Time Pump Started: 14:13

Depth of Sampling: midscreen

Date: 9/20/2006

Parameters / Time

	14:16	14:19	14:22	14:25	14:28	14:31					
Redox Potential (millivolts)	-128.0	-131.0	-134.0	-135.0	-136.0	-137.0					
Dissolved Oxygen (mg/L)	0.36	0.27	0.27	0.29	0.27	0.25					
pH (s.u.)	6.89	6.90	6.89	6.89	6.91	6.90					
Specific Conductance (uS/cm)	1,570	1,580	1,570	1,570	1,570	1,580					
Temperature (C)	17.29	17.79	17.31	17.69	17.24	16.94					

Flow Rate: 600ml/min

Total Depth of Well: 54.5

Time Sampled: 14:32

Depth to Water Before Purging: 19.14

Total Water Pumped: 5 gal

Depth to Water After Purging: 19.15

Comments: DUP2; EB2 @ 1451 on tubing.

ARCADIS

Water Sampling Log

Project	GM Sitewide Groundwater	Project No.	OH000294.09.02	Page	1 of 1
Site Location	Moraine, Ohio			Date	9-20-06
Site/Well No.	GM-22	Replicate No.	—	Code No.	—
Weather	cloudy, 60's	Sampling Time:	Begin 1521	End	1620

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	731.63
Land Surface Elevation (ft)	NM
Sounded Well Depth (ft bmp)	~~56.5~~ 57.20
Depth to Water (ft bmp)	~~25.0~~ 25.02
Water-Level Elevation (ft)	706.61
Water Column in Well (ft)	32.18
Casing Diameter/Type	2"
Gallons in Well	5.15
Gallons Pumped/Bailed Prior to Sampling	6.5 gal
Sample Pump Intake Setting (ft bmp)	middle of screen
Purge Time	begin 1531 end 1547
Pumping Rate (gpm)	1000ml/min
Evacuation Method	Submersible ~~Peristaltic~~ pump

Field Parameters

Color	clear
Odor	none
Appearance	Black specks
pH (s.u.)	6.97, 6.97, 6.97
Conductivity (mS/cm)	N/A
(µmhos/cm)	~~N/A~~ 2060, 2080, 2050
Turbidity (NTU)	N/A
Temperature (°F)	17.45, 17.44, 17.46
Dissolved Oxygen (mg/L)	~~N/A~~
ORP (mV)	~~N/A~~ 0.27, 0.26, 0.27
Sampling Method	Low Flow
Remarks	Sample time @ 1548
	DTW final = 25.01

Constituents Sampled	Container Description	Number	Preservative
Site-Specific VOCs (8260)	40 ml glass vial	3	Cool, HCl
Mn & Fe Dissolved	1L plastic	1	Cool, HNO_3
Mn & Fe Total	1L plastic	1	Cool, HNO_3
TOC	40 ml VOA	2	Cool, H_2SO_4
Sulfate, Chloride	250 ml plastic	1	Cool, None
Sulfide	500 ml plastic	1	Cool, NaOH & ZnAc
Ethene, Ethane, Methane	40 ml VOA	2	Cool, BAK

Sampling Personnel: Fortner/Jacobs

Well Casing Volumes

Gal./Ft.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	below measuring point	ml	milliliter	NTU	Nephelometric Turbidity Units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	feet	msl	mean sea-level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not Applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not Recorded	VOC	Volatile Organic Compounds

ARCADIS

LOW FLOW SAMPLING
GROUNDWATER FIELD PARAMETER LOG

Project Number: OH000294.0009.00002

Site Location: General Motors Corporation, Moraine, Ohio

Monitoring Well No.: GM-22

Time Pump Started: 15:31

Depth of Sampling: midscreen

Date: 9/20/2006

Parameters / Time

	15:32	15:35	15:38	15:41	15:44	15:47					
Redox Potential (millivolts)	58.0	49.0	48.0	49.0	50.0	51.0					
Dissolved Oxygen (mg/L)	1.39	0.47	0.32	0.27	0.26	0.27					
pH (s.u.)	7.08	6.98	6.98	6.97	6.97	6.97					
Specific Conductance (uS/cm)	1,820	1,950	2,020	2,060	2,080	2,080					
Temperature (C)	17.48	17.88	17.51	17.45	17.44	17.46					

Flow Rate: 1000ml/min

Total Depth of Well: 57.2

Time Sampled: 15:48

Depth to Water Before Purging: 25.02

Total Water Pumped: 5.5 gal

Depth to Water After Purging: 25.01

Comments:

ARCADIS

Water Sampling Log

Project	GM Sitewide Groundwater	Project No.	OH000294.09.02	Page	1 of 1
Site Location	Moraine, Ohio			Date	9/20/06
Site/Well No.	GM-30	Replicate No.	—	Code No.	—
Weather	Cloudy, 60's	Sampling Time: Begin	1635	End	1815

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	734.73
Land Surface Elevation (ft)	NM
Sounded Well Depth (ft bmp)	~~36.97~~ 36.60
Depth to Water (ft bmp)	~~26.65~~ 26.65
Water-Level Elevation (ft)	~~726.08~~ 708.08
Water Column in Well (ft)	9.95
Casing Diameter/Type	2"
Gallons in Well	1.59
Gallons Pumped/Bailed Prior to Sampling	1 Sgal
Sample Pump Intake Setting (ft bmp)	middle of screen
Purge Time	begin 1646 end 1732
Pumping Rate (gpm)	~~600~~ 200 ml/min
Evacuation Method	Submersible pump

Field Parameters

Color	lt. grey
Odor	odor / v. pungent
Appearance	NMS ~~slightly~~ turbid
pH (s.u.)	6.54, 6.53, 6.58
Conductivity (mS/cm)	N/A
(µmhos/cm)	~~N/A~~ 2510, 2510, 2500
Turbidity (NTU)	N/A
Temperature (°F)	17.11, 16.98, 17.90
Dissolved Oxygen (mg/L)	~~N/A~~
ORP (mV)	~~N/A~~ -116, -118, -93
Sampling Method	Low Flow
Remarks	Sample time @ 1733
	DTW final = 26.59
	visible sheen, grayish, immediately precipitated when introduced into ZnAc preserved bottle. pungent, smoking odor

Constituents Sampled	Container Description	Number	Preservative
Site-Specific VOCs (8260)	40 ml glass vial	3	Cool, HCl
Mn & Fe Dissolved	1L plastic	1	Cool, HNO_3
Mn & Fe Total	1L plastic	1	Cool, HNO_3
TOC	40 ml VOA	2	Cool, H_2SO_4
Sulfate, Chloride	250 ml plastic	1	Cool, None
Sulfide	500 ml plastic	1	Cool, NaOH & ZnAc
Ethene, Ethane, Methane	40 ml VOA	2	Cool, BAK

Sampling Personnel: Fortner/Jacobs

Well Casing Volumes

Gal./Ft.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	below measuring point	ml	milliliter	NTU	Nephelometric Turbidity Units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	feet	msl	mean sea-level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not Applicable	umhos/cm	Micromhos per centimeter
		NR	Not Recorded	VOC	Volatile Organic Compounds

ARCADIS

LOW FLOW SAMPLING
GROUNDWATER FIELD PARAMETER LOG

Project Number: OH000294.0009.00002

Site Location: General Motors Corporation, Moraine, Ohio

Monitoring Well No.: GM-30

Time Pump Started: 16:46

Depth of Sampling: midscreen

Date: 9/20/2006

Parameters / Time

	16:48	16:51	16:54	16:57	17:00	17:03	17:29				
Redox Potential (millivolts)	-104.0	-107.0	-111.0	-113.0	-116.0	-118.0	-93.0				
Dissolved Oxygen (mg/L)	0.58	0.40	0.47	0.36	0.30	0.29	0.55				
pH (s.u.)	6.57	5.54	6.54	6.54	6.54	6.53	6.58				
Specific Conductance (uS/cm)	2,570	2,540	2,510	2,510	2,510	2,510	2,500				
Temperature (C)	17.27	17.73	17.52	17.44	17.11	16.98	17.90				

Flow Rate: 800 ml/min

Total Depth of Well: 36.6

Time Sampled: 17:33

Depth to Water Before Purging: 26.65

Total Water Pumped: 15 gal

Depth to Water After Purging: 26.59

Comments: 1706 pump stopped. Restarted at 1724

ARCADIS

Water Sampling Log

Project	GM Sitewide Groundwater	Project No.	OH000294.09.02	Page	1 of 1
Site Location	Moraine, Ohio			Date	9-21-06
Site/Well No.	GM-26	Replicate No.	DUP3/MSMSD	Code No.	N/A
Weather	Clear, ~~F~~ 60's	Sampling Time: Begin	845	End	9:38

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	722.29
Land Surface Elevation (ft)	NM
Sounded Well Depth (ft bmp)	~~58.44~~ 58.49
Depth to Water (ft bmp)	~~2~~ 18.09
Water-Level Elevation (ft)	704.20
Water Column in Well (ft)	40.40
Casing Diameter/Type	2"
Gallons in Well	6.46
Gallons Pumped/Bailed Prior to Sampling	4gal
Sample Pump Intake Setting (ft bmp)	middle of screen
Purge Time	begin 9:03 end 9:17
Pumping Rate (gpm)	1000ml/min
Evacuation Method	Submersible pump

Field Parameters

Color	clolorless
Odor	none
Appearance	clear
pH (s.u.)	7.12, 7.16, 7.17
Conductivity (mS/cm)	N/A
(µmhos/cm)	~~N/A~~ 1150, 1190, 1150
Turbidity (NTU)	N/A
Temperature (°C)	15.62, 15.55, 15.33
Dissolved Oxygen (mg/L)	~~N/A~~ 3.45, 3.43, 3.41
ORP (mV)	~~N/A~~ 139, 132, 128
Sampling Method	Low Flow
Remarks	Sample time @ 9:18
	DTW final = 18.09
	EB3@9:30 on Pump

Constituents Sampled	Container Description	Number	Preservative
Site-Specific VOCs (8260)	40 ml glass vial	8/2	Cool, HCl

Sampling Personnel: Fortner/Jacobs

Well Casing Volumes

Gal./Ft.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	below measuring point	ml	milliliter	NTU	Nephelometric Turbidity Units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	feet	msl	mean sea-level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not Applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not Recorded	VOC	Volatile Organic Compounds

ARCADIS

LOW FLOW SAMPLING
GROUNDWATER FIELD PARAMETER LOG

Project Number: OH000294.0009.00002

Site Location: General Motors Corporation, Moraine, Ohio

Monitoring Well No.: GM-26

Time Pump Started: 9:03

Depth of Sampling: midscreen

Date: 9/21/2006

Parameters / Time

	9:05	9:08	9:11	9:14	9:17						
Redox Potential (millivolts)	168.0	147.0	139.0	132.0	128.0						
Dissolved Oxygen (mg/L)	3.64	3.45	3.45	3.43	3.41						
pH (s.u.)	6.79	7.03	7.12	7.16	7.17						
Specific Conductance (uS/cm)	1,140	1,140	1,150	1,140	1,150						
Temperature (C)	15.56	16.12	15.62	15.55	15.33						

Flow Rate: 1000ml/min

Total Depth of Well: 58.49

Time Sampled: 9:18

Depth to Water Before Purging: 18.09

Total Water Pumped: 4 gal

Depth to Water After Purging: 18.09

Comments: DUP3; MS/MSD; EB3@9:30 on pump.

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Water Sampling Log

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Project	GM Sitewide Groundwater	Project No.	OH000294.06.02	Page	1 of 1
Site Location	Moraine, Ohio			Date	7-21-06
Site/Well No.	HR-8	Replicate No.	NA	Code No.	NA
Weather	Clear, sunny hi 80's	Sampling Time: Begin	1015	End	11:10

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	743.42
Land Surface Elevation (ft)	NM
Sounded Well Depth (ft bmp)	~~66.15~~ ~~67.00~~ ~~37.18~~ ?
Depth to Water (ft bmp)	~~35.09~~ 35.09
Water-Level Elevation (ft)	708.33
Water Column in Well (ft)	31.91
Casing Diameter/Type	2"
Gallons in Well	5.10
Gallons Pumped/Bailed Prior to Sampling	3.5 gal
Sample Pump Intake Setting (ft bmp)	middle of screen
Purge Time	begin 1030 end 1049
Pumping Rate (gpm)	500 ml/min
Evacuation Method	Submersible pump

Field Parameters

Color	clear
Odor	none
Appearance	blk specks
pH (s.u.)	7.14, 7.13, 7.12
Conductivity (mS/cm)	N/A
(µmhos/cm)	~~N/A~~ 1200, 1210, 1220
Turbidity (NTU)	N/A
Temperature (°F)	16.9, 16.7, 16.7
Dissolved Oxygen (mg/L)	~~N/A~~ 4.58, 4.65, 4.85
ORP (mV)	~~N/A~~ -56, -53, -48
Sampling Method	Low Flow
Remarks	Sample time @ 1050
	DTW final = 35.09

Constituents Sampled	Container Description	Number	Preservative
Site-Specific VOCs (8260)	40 ml glass vial	3	Cool, HCl

Sampling Personnel: Jacobs ~~J. Manzo~~/T. Fortner

Well Casing Volumes

Gal./Ft.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	below measuring point	ml	milliliter	NTU	Nephelometric Turbidity Units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	feet	msl	mean sea-level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not Applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not Recorded	VOC	Volatile Organic Compounds

ARCADIS

LOW FLOW SAMPLING
GROUNDWATER FIELD PARAMETER LOG

Project Number: OH000294.0005.00002

Site Location: General Motors Corporation, Moraine, Ohio

Monitoring Well No.: HR-8

Time Pump Started: 10:30

Depth of Sampling: midscreen

Date: 9/21/2006

Parameters / Time

	10:31	10:34	10:37	10:40	10:43	10:46	10:49				
Redox Potential (millivolts)	-22.0	-27.0	-35.0	-45.0	-56.0	-53.0	-48.0				
Dissolved Oxygen (mg/L)	4.05	4.03	4.22	4.32	4.58	4.65	4.85				
pH (s.u.)	7.17	7.13	7.13	7.13	7.14	7.13	7.12				
Specific Conductance (uS/cm)	1,210	1,210	1,210	1,200	1,200	1,210	1,220				
Temperature (C)	16.33	16.58	16.74	16.93	16.90	16.70	16.70				

Flow Rate: 800ml/min

Total Depth of Well: 67

Time Sampled: 10:50

Depth to Water Before Purging: 35.09

Total Water Pumped: 3.5 gal

Depth to Water After Purging: 35.09

Comments:

ARCADIS

Water Sampling Log

Project	GM Sitewide Groundwater	Project No.	OH000294.0602	Page	1 of 1
Site Location	Moraine, Ohio			Date	9-21-06
Site/Well No.	HR-9	Replicate No.	N/A	Code No.	N/A
Weather	Clear sunny 60's	Sampling Time: Begin	1112	End	~~1135~~ 1140

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	743.51
Land Surface Elevation (ft)	NM
Sounded Well Depth (ft bmp)	69.61 70.54
Depth to Water (ft bmp)	2nd 34.84
Water-Level Elevation (ft)	708.67
Water Column in Well (ft)	35.70
Casing Diameter/Type	2"
Gallons in Well	5.71
Gallons Pumped/Bailed Prior to Sampling	4 gal
Sample Pump Intake Setting (ft bmp)	middle of screen
Purge Time	begin 1115 end 1129
Pumping Rate (gpm)	500ml/min
Evacuation Method	Submersible pump

Field Parameters

Color	clear
Odor	none
Appearance	clear
pH (s.u.)	6.84, 6.83, 6.83
Conductivity (mS/cm)	N/A
(µmhos/cm)	~~N/A~~ 1460, 1460, 1460
Turbidity (NTU)	~~N/A~~ N/A
Temperature (°F)	15.81, 15.83, 15.88
Dissolved Oxygen (mg/L)	~~N/A~~ 0.44, 0.37, 0.40
ORP (mV)	~~N/A~~ 555, 558
Sampling Method	Low Flow
Remarks	Sample time @ 1130
	DTW final = 34.84

Constituents Sampled	Container Description	Number	Preservative
Site-Specific VOCs (8260)	40 ml glass vial	3	Cool, HCl

Sampling Personnel: ~~J. Manzo~~/T. Fortner

Well Casing Volumes

Gal./Ft.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	below measuring point	ml	milliliter	NTU	Nephelometric Turbidity Units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	feet	msl	mean sea-level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not Applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not Recorded	VOC	Volatile Organic Compounds

ARCADIS

LOW FLOW SAMPLING
GROUNDWATER FIELD PARAMETER LOG

Project Number: OH000294.0009.00002

Site Location: General Motors Corporation, Moraine, Ohio

Monitoring Well No.: HR-9

Time Pump Started: 11:15

Depth of Sampling: midscreen

Date: 9/21/2006

Parameters / Time

	11:17	11:20	11:23	11:26	11:29						
Redox Potential (millivolts)	59.0	54.0	55.0	56.0	58.0						
Dissolved Oxygen (mg/L)	0.91	0.53	0.44	0.37	0.40						
pH (s.u.)	6.88	6.85	6.84	6.83	6.83						
Specific Conductance (uS/cm)	1,430	1,440	1,460	1,460	1,460						
Temperature (C)	15.71	15.77	15.81	15.83	15.88						

Flow Rate: 500ml/min

Total Depth of Well: 70.54

Time Sampled: 11:30

Depth to Water Before Purging: 34.84

Total Water Pumped: 4 gal

Depth to Water After Purging: 34.84

Comments:

ARCADIS

Water Sampling Log

Project	GM Sitewide Groundwater	Project No.	OH000294.09.02	Page	1 of 1
Site Location	Moraine, Ohio			Date	9-21-06
Site/Well No.	GM-19S	Replicate No.	NA	Code No.	NA
Weather	Clear, Sunny, 70's	Sampling Time:	Begin 1330	End	1445

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	730.85
Land Surface Elevation (ft)	NM
Sounded Well Depth (ft bmp)	55.04 55.70
Depth to Water (ft bmp)	~~24.97~~ 24.97
Water-Level Elevation (ft)	705.88
Water Column in Well (ft)	30.73
Casing Diameter/Type	2" PVC
Gallons in Well	4.92
Gallons Pumped/Bailed Prior to Sampling	5 gal
Sample Pump Intake Setting (ft bmp)	middle of screen
Purge Time	begin 1400 end 1418
Pumping Rate (gpm)	400 ml/min
Evacuation Method	Submersible pump

Field Parameters

Color	clear
Odor	none
Appearance	clear
pH (s.u.)	6.82, 6.83, 6.84
Conductivity (mS/cm)	N/A
(µmhos/cm)	~~N/A~~ 2160, 2160, 2150
Turbidity (NTU)	N/A
Temperature (°C)	17.95, 17.92, 17.9
Dissolved Oxygen (mg/L)	~~N/A~~ 0.39, 0.33, 0.30
ORP (mV)	~~N/A~~ -82, -82, -82
Sampling Method	Low Flow
Remarks	Sample time @ 1419
	DTW final = 24.97

Constituents Sampled	Container Description	Number	Preservative
Site-Specific VOCs (8260)	40 ml glass vial	3	Cool, HCl
Mn & Fe Dissolved	1L plastic	1	Cool, HNO_3
Mn & Fe Total	1L plastic	1	Cool, HNO_3
TOC	40 ml VOA	2	Cool, H_2SO_4
Sulfate, Chloride	250 ml plastic	1	Cool, None
Sulfide	500 ml plastic	1	Cool, NaOH & ZnAc
Ethene, Ethane, Methane	40 ml VOA	2	Cool, BAK

Sampling Personnel: Fortner/Jacobs

Well Casing Volumes

Gal./Ft.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	below measuring point	ml	milliliter	NTU	Nephelometric Turbidity Units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	feet	msl	mean sea-level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not Applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not Recorded	VOC	Volatile Organic Compounds

ARCADIS

LOW FLOW SAMPLING
GROUNDWATER FIELD PARAMETER LOG

Project Number: OH000294.0009.00002

Site Location: General Motors Corporation, Moraine, Ohio

Monitoring Well No.: GM-19S

Time Pump Started: 14:00

Depth of Sampling: midscreen

Date: 9/21/2006

Parameters / Time

	14:01	14:03	14:06	14:09	14:12	14:15	14:18				
Redox Potential (millivolts)	-66.0	-76.0	-79.0	-82.0	-82.0	-82.0	-82.0				
Dissolved Oxygen (mg/L)	2.49	1.51	0.82	0.50	0.39	0.33	0.30				
pH (s.u.)	6.66	6.78	6.81	6.82	6.82	6.83	6.84				
Specific Conductance (uS/cm)	2,150	2,160	2,160	2,160	2,160	2,160	2,150				
Temperature (C)	18.43	18.33	18.07	17.98	17.95	17.92	17.90				

Flow Rate: 400ml/min

Total Depth of Well: 55.7

Time Sampled: 14:19

Depth to Water Before Purging: 24.97

Total Water Pumped: 5 gal

Depth to Water After Purging: 24.97

Comments:

ARCADIS

Water Sampling Log

Project	GM Sitewide Groundwater	Project No.	OH000294.09.02	Page	1 of 1
Site Location	Moraine, Ohio			Date	9-21-06
Site/Well No.	EAST	Replicate No.	N/A	Code No.	N/A
Weather	Sunny 70's	Sampling Time:	Begin 1540	End	1640

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	730.98
Land Surface Elevation (ft)	NM
Sounded Well Depth (ft bmp)	~~72.28~~ 72.14
Depth to Water (ft bmp)	~~24.72~~ 24.70
Water-Level Elevation (ft)	706.28
Water Column in Well (ft)	47.44
Casing Diameter/Type	2" / PVC
Gallons in Well	~~7.72~~ 7.59
Gallons Pumped/Bailed Prior to Sampling	4 gal
Sample Pump Intake Setting (ft bmp)	middle of screen
Purge Time	begin 1550 end 1609
Pumping Rate (gpm)	600 ml/min
Evacuation Method	Submersible pump

Field Parameters

Color	lt. brown
Odor	none
Appearance	Slightly turbid
pH (s.u.)	6.87, 6.88, 6.88
Conductivity (mS/cm)	N/A
(µmhos/cm)	~~N/A~~ 3140, 2130, 2120
Turbidity (NTU)	N/A
Temperature (°F)	18.08, 18.01, 18.03
Dissolved Oxygen (mg/L)	~~N/A~~ 0.39, 0.44, 0.52
ORP (mV)	~~N/A~~ 98, 101, 104
Sampling Method	Low Flow
Remarks	Sample time @ 1610
	DTW final = 24.71

Constituents Sampled	Container Description	Number	Preservative
Site-Specific VOCs (8260)	40 ml glass vial	3	Cool, HCl
Mn & Fe Dissolved	1 L plastic	1	Cool, HNO_3
Mn & Fe Total	1 L plastic	1	Cool, HNO_3
TOC	40 ml VOA	2	Cool, H_2SO_4
Sulfate, Chloride	250 ml plastic	1	Cool, None
Sulfide	500 ml plastic	1	Cool, NaOH & ZnAc
Ethene, Ethane, Methane	40 ml VOA	2	Cool, BAK

Sampling Personnel: Fortner/Jacobs

Well Casing Volumes

Gal./Ft.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	below measuring point	ml	milliliter	NTU	Nephelometric Turbidity Units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	feet	msl	mean sea-level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not Applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not Recorded	VOC	Volatile Organic Compounds

ARCADIS

LOW FLOW SAMPLING
GROUNDWATER FIELD PARAMETER LOG

Project Number: OH000294.0009.00002

Site Location: Moraine, Ohio

Monitoring Well No.: EAST

Time Pump Started: 15:50

Depth of Sampling: midscreen

Date: 9/21/2006

Parameters / Time

	15:57	16:00	16:03	16:06	16:09						
Redox Potential (millivolts)	99.0	97.0	98.0	101.0	104.0						
Dissolved Oxygen (mg/L)	0.56	0.45	0.39	0.44	0.52						
pH (s.u.)	6.89	6.88	6.87	6.88	6.88						
Specific Conductance (uS/cm)	2,160	2,150	2,140	2,130	2,120						
Temperature (C)	18.16	18.06	18.08	18.01	18.03						

Flow Rate: 600ml/min

Total Depth of Well: 72.14

Time Sampled: 16:10

Depth to Water Before Purging: 24.70

Total Water Pumped: 4 gal

Depth to Water After Purging: 24.71

Comments:

ARCADIS

Water Sampling Log — Annual Groundwater Sampling

Project	OH000294.9.2	Project No.	OH000294.9.2	Page	1
Site Location	GM Moraine, OH			Date	9-21-06
Site/Well No.	GM-33	Replicate No.	N/A	Code No.	N/A
Weather	Sunny, 70's	Sampling Time: Begin	1650	End	1730

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	729.77
Land Surface Elevation (ft)	NM
Sounded Well Depth (ft bmp)	54.59
Depth to Water (ft bmp)	23.45
Water-Level Elevation (ft)	706.32
Water Column in Well (ft)	31.14
Casing Diameter/Type	2" PVC
Gallons in Well	4.98
Gallons Pumped/Bailed Prior to Sampling	4 gal
Sample Pump Intake Setting (ft bmp)	Mid screen
Purge Time	begin 1651 end 17:09
Pumping Rate (gpm)	700ml/min
Evacuation Method	submercible pump

Field Parameters

Color	lt. brown
Odor	none
Appearance	v. slightly turbid
pH (s.u.)	6.89, 6.89, 6.89
Conductivity (mS/cm)	N/A
(µmhos/cm)	2060, 2070, 2070
Turbidity (NTU)	N/A
Temperature (°C)	17.64, 17.64, 17.5
Dissolved Oxygen (mg/L)	0.63, 0.54, 0.46
~~Salinity (%)~~ ORP (mV)	99, 94, 87
Sampling Method	grab
Remarks	Sampled @ 17:10
	DTW Final = 23.45

Constituents Sampled	Container Description	Number	Preserv
Site Specific VOC	40mL VOA	#3	Cool, HCl

Sampling Personnel: A. Jacobs / T. Fortner

Well Casing Volumes

Gal./Ft.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	below measuring point	ml	milliliter	NTU	Nephelometric Turbidity Units
°C	Degrees Celsius	mS/cm	Milisiemens per centimeter	PVC	Polyvinyl chloride
ft	feet	msl	mean sea-level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not Applicable	umhos/cm	Micromhos per centimeter
mg/L	Miligrams per liter	NM	Not Measured	VOC	Volatile Organic Compounds

ARCADIS

LOW FLOW SAMPLING
GROUNDWATER FIELD PARAMETER LOG

Project Number: OH000294.0009.00002

Site Location: General Motors Corporation, Moraine, Ohio

Monitoring Well No.: GM-33

Time Pump Started: 16:51

Depth of Sampling: midscreen

Date: 9/21/2006

Parameters / Time

	16:54	16:57	17:00	17:03	17:06	17:09					
Redox Potential (millivolts)	116.0	108.0	104.0	99.0	94.0	87.0					
Dissolved Oxygen (mg/L)	0.74	0.94	0.80	0.63	0.54	0.46					
pH (s.u.)	6.92	6.91	6.90	6.89	6.89	6.89					
Specific Conductance (uS/cm)	2,070	2,050	2,060	2,060	2,070	2,070					
Temperature (C)	17.60	17.69	17.66	17.64	17.64	17.56					

Flow Rate: 700ml/min

Total Depth of Well: 54.59

Time Sampled: 17:10

Depth to Water Before Purging: 23.45

Total Water Pumped: 4 gal

Depth to Water After Purging: 23.45

Comments:

ARCADIS

Water Sampling Log

Project: GM Annual Sampling | Project No.: 01000294.9.2 | Page: 1
Site Location: Moraine, Ohio | Date: 9-22-06
Site/Well No.: GM-35 | Replicate No.: N/A | Code No.: N/A
Weather: raining, 60's | Sampling Time: Begin 815 End 852

Evacuation Data

Measuring Point	Top Of Casing
MP Elevation (ft)	731.27
Land Surface Elevation (ft)	NM
Sounded Well Depth (ft bmp)	66.55
Depth to Water (ft bmp)	25.52
Water-Level Elevation (ft)	705.75
Water Column in Well (ft)	41.03
Casing Diameter/Type	2" pvc
Gallons in Well	6.56
Gallons Pumped/Bailed Prior to Sampling	5gal
Sample Pump Intake Setting (ft bmp)	Mid Screen
Purge Time	begin 8:26 end 842
Pumping Rate (gpm)	700ml/min
Evacuation Method	Submersible pump

Field Parameters

Color	Amber
Odor	~~effes~~ none
Appearance	non turbid
pH (s.u.)	8.58, 8.58, 8.59
Conductivity (mS/cm)	N/A
(µmhos/cm)	6910, 6690, 6480
Turbidity (NTU)	N/A
Temperature (°C)	17.71, 17.70, 17.67
Dissolved Oxygen (mg/L)	0.28, 0.27, 0.24
Salinity (%)	N/A
Sampling Method	grab
Remarks	Sampled @ 8:43
	DTW final = 25.49
	effervesces.

Constituents Sampled	Container Description	Number	Preserv
Sitespec. VOC's	40ml VOA	3	cool, HCl

Sampling Personnel: AJAcobs/+ Former

Well Casing Volumes

Gal./Ft.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	below measuring point	ml	milliliter	NTU	Nephelometric Turbidity Units
°C	Degrees Celsius	mS/cm	Milisiemens per centimeter	PVC	Polyvinyl chloride
ft	feet	msl	mean sea-level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not Applicable	umhos/cm	Micromhos per centimeter
mg/L	Miligrams per liter	NM	Not Measured	VOC	Volatile Organic Compounds

ARCADIS

LOW FLOW SAMPLING
GROUNDWATER FIELD PARAMETER LOG

Project Number: OH000294.0009.00002

Site Location: General Motors Corporation, Moraine, Ohio

Monitoring Well No.: GM-35

Time Pump Started: 8:26

Depth of Sampling: midscreen

Date: 9/22/2006

Parameters

Time

	8:27	8:30	8:33	8:36	8:39	8:42					
Redox Potential (millivolts)	-237.0	-272.0	-281.0	-286.0	-288.0	-292.0					
Dissolved Oxygen (mg/L)	1.39	0.35	0.31	0.28	0.27	0.24					
pH (s.u.)	8.65	8.58	8.52	8.58	8.58	8.59					
Specific Conductance (uS/cm)	12,800	10,200	7,430	6,910	6,690	6,480					
Temperature (C)	17.50	17.65	17.73	17.71	17.70	17.67					

Flow Rate: 700ml/min

Total Depth of Well: 66.55

Time Sampled: 8:43

Depth to Water Before Purging: 25.52

Total Water Pumped: 5 gal

Depth to Water After Purging: 25.49

Comments

ARCADIS

Water Sampling Log

Project	GM Annual Sampling	Project No.	OH000294.9.2	Page	1
Site Location	Maraine, OH			Date	9-22-06
Site/Well No.	GM-43'	Replicate No.	N/A	Code No.	N/A
Weather	Raining, 60's	Sampling Time: Begin	9:02	End	9:35

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	729
Land Surface Elevation (ft)	NM
Sounded Well Depth (ft bmp)	750.05
Depth to Water (ft bmp)	22.25
Water-Level Elevation (ft)	706.75
Water Column in Well (ft)	27.80
Casing Diameter/Type	2"
Gallons in Well	4.45
Gallons Pumped/Bailed Prior to Sampling	3.5 gal
Sample Pump Intake Setting (ft bmp)	Midscreen
Purge Time	begin 9:10 end 9:24
Pumping Rate (gpm)	800ml/min
Evacuation Method	submersible pump

Field Parameters

Color	lt. brown
Odor	none
Appearance	slightly turbid
pH (s.u.)	6.99, 6.96, 6.95
Conductivity (mS/cm)	N/A
(µmhos/cm)	1330, 1330, 1330
Turbidity (NTU)	N/A
Temperature (°C)	16.33, 16.29, 16.2
Dissolved Oxygen (mg/L)	0.38, 0.33, 0.33
~~Salinity (%)~~ ORP mV	37, 44, 47
Sampling Method	~~grab~~ Low Flow
Remarks	Sampled @ 9:25
	DTW final = 22.25

Constituents Sampled	Container Description	Number	Preserv
Site specific VOC's	40ml glass vial	3	Cool, HCl

Sampling Personnel: A. Jacobs / T. Factor

Well Casing Volumes

Gal./Ft.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	below measuring point	ml	milliliter	NTU	Nephelometric Turbidity Units
°C	Degrees Celsius	mS/cm	Milisiemens per centimeter	PVC	Polyvinyl chloride
ft	feet	msl	mean sea-level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not Applicable	umhos/cm	Micromhos per centimeter
mg/L	Miligrams per liter	NM	Not Measured	VOC	Volatile Organic Compounds

ARCADIS

LOW FLOW SAMPLING
GROUNDWATER FIELD PARAMETER LOG

Project Number: OH000294.0009.00002

Site Location: General Motors Corporation, Moraine, Ohio

Monitoring Well No.: GM-43

Time Pump Started: 9:10

Depth of Sampling: midscreen

Date: 9/22/2006

Parameters / Time

	9:12	9:15	9:18	9:21	9:24						
Redox Potential (millivolts)	22.0	31.0	37.0	44.0	47.0						
Dissolved Oxygen (mg/L)	0.51	0.39	0.38	0.33	0.33						
pH (s.u.)	7.16	7.02	6.99	6.96	6.95						
Specific Conductance (uS/cm)	1,320	1,320	1,330	1,330	1,330						
Temperature (C)	16.11	16.29	16.33	16.29	16.28						

Flow Rate: 800ml/min

Total Depth of Well: 50.05

Time Sampled: 9:25

Depth to Water Before Purging: 22.25

Total Water Pumped: 3.5 gal

Depth to Water After Purging: 22.25

Comments:

ARCADIS

Water Sampling Log

Project: GM Annual Sampling Project No.: OH000244.9.2 Page: 1

Site Location: Moraine, Ohio Date: 9-22-0(

Site/Well No.: GM-45 Replicate No.: N/A Code No.: N/A

Weather: Raining, 60's Sampling Time: Begin 9:38 End 10:12

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	729.75
Land Surface Elevation (ft)	NM
Sounded Well Depth (ft bmp)	67.50
Depth to Water (ft bmp)	22.72
Water-Level Elevation (ft)	707.03
Water Column in Well (ft)	44.78
Casing Diameter/Type	2" PVC
Gallons in Well	7.16
Gallons Pumped/Bailed Prior to Sampling	4 gal
Sample Pump Intake Setting (ft bmp)	Mid screen
Purge Time	begin 9:46 end 10:00
Pumping Rate (gpm)	800 ml/min
Evacuation Method	Submersible pump

Field Parameters

Color	clear
Odor	none
Appearance	slightly turbid
pH (s.u.)	6.95, 6.95, 6.93
Conductivity (mS/cm)	N/A ~~1490, 1490, 14~~
(µmhos/cm)	1490, 1490, 1490
Turbidity (NTU)	N/A
Temperature (°C)	16.87, 16.~~88~~, 16.9
Dissolved Oxygen (mg/L)	0.33, 0.32, 0.2
~~Salinity (%)~~ ORP (mV)	74, 71, 66
Sampling Method	~~grab~~ Low Flow
Remarks	Sampled 10:01
	DTW Final = 22.74

Constituents Sampled	Container Description	Number	Preserv
Site specific VOCs	40ml glass vial	3	cool, HCl

Sampling Personnel: A Jacobs / T Fortner

Well Casing Volumes

Gal./Ft.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	below measuring point	ml	milliliter	NTU	Nephelometric Turbidity Units
°C	Degrees Celsius	mS/cm	Milisiemens per centimeter	PVC	Polyvinyl chloride
ft	feet	msl	mean sea-level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not Applicable	umhos/cm	Micromhos per centimeter
mg/L	Miligrams per liter	NM	Not Measured	VOC	Volatile Organic Compounds

ARCADIS

LOW FLOW SAMPLING
GROUNDWATER FIELD PARAMETER LOG

Project Number: OH000294.0009.00002

Site Location: General Motors Corporation, Moraine, Ohio

Monitoring Well No.: GM-45

Time Pump Started: 9:46

Depth of Sampling: midscreen

Date: 9/22/2006

Parameters / Time

	9:49	9:52	9:55	9:57	10:00						
Redox Potential (millivolts)	89.0	79.0	74.0	71.0	66.0						
Dissolved Oxygen (mg/L)	0.60	0.37	0.33	0.32	0.28						
pH (s.u.)	6.99	6.96	6.95	6.95	6.95						
Specific Conductance (uS/cm)	1,480	1,490	1,490	1,490	1,490						
Temperature (C)	16.76	16.87	16.87	16.88	16.90						

Flow Rate: 800ml/min

Total Depth of Well: 67.50

Time Sampled: 10:01

Depth to Water Before Purging: 22.72

Total Water Pumped: 4 gal

Depth to Water After Purging: 22.74

Comments:

ARCADIS

Water Sampling Log

Project: GM Sitewide Groundwater | Project No.: OH000294.0802 | Page: 1 of 1

Site Location: Moraine, Ohio | Date: 9-22-06

Site/Well No.: HR-5 | Replicate No.: N/A | Code No.: N/A

Weather: Raining 60's | Sampling Time: Begin 10:15 End 10:57

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	734.27
Land Surface Elevation (ft)	NM
Sounded Well Depth (ft bmp)	~~57.1~~ 58.86
Depth to Water (ft bmp)	~~27~~ 26.91
Water-Level Elevation (ft)	707.36
Water Column in Well (ft)	31.95
Casing Diameter/Type	2"
Gallons in Well	5.11
Gallons Pumped/Bailed Prior to Sampling	7 gal
Sample Pump Intake Setting (ft bmp)	middle of screen
Purge Time	begin 1026 end 10:57
Pumping Rate (gpm)	900 ml/min
Evacuation Method	Submersible pump

Field Parameters

Color	clear
Odor	none
Appearance	non-turbid
pH (s.u.)	7.03, 6.99, 6.99
Conductivity (mS/cm)	N/A
(µmhos/cm)	~~N/A~~ 1170, 1170, 1170
Turbidity (NTU)	N/A
Temperature (°F)	15.52, 15.50, 15.50
Dissolved Oxygen (mg/L)	~~N/A~~ 0.63, 0.30, 0.29
ORP (mV)	~~N/A~~ -48, -56, -59
Sampling Method	Low Flow
Remarks	Sample time @ 10:58
	DTW final = 27.92

Constituents Sampled	Container Description	Number	Preservative
Site-Specific VOCs (8260)	40 ml glass vial	3	Cool, HCl

Sampling Personnel: A JACOBS ~~J. Manzo~~/T. Fortner

Well Casing Volumes

Gal./Ft.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	below measuring point	ml	milliliter	NTU	Nephelometric Turbidity Units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	feet	msl	mean sea-level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not Applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not Recorded	VOC	Volatile Organic Compounds

ARCADIS

LOW FLOW SAMPLING
GROUNDWATER FIELD PARAMETER LOG

Project Number: OH000294.0009.00002

Site Location: General Motors Corporation, Moraine, Ohio

Monitoring Well No.: HR-5

Time Pump Started: 10:26

Depth of Sampling: midscreen

Date: 9/22/2006

Parameters / Time

	10:29	10:32	10:35	10:38	10:41	10:44	10:47				
Redox Potential (millivolts)	-48.0	-55.0	-60.0	-42.0	-48.0	-56.0	-59.0				
Dissolved Oxygen (mg/L)	0.68	0.43	0.33	3.11	0.63	0.30	0.29				
pH (s.u.)	7.03	7.00	6.99	6.96	7.03	6.99	6.99				
Specific Conductance (uS/cm)	1,170	1,170	1,170	1,170	1,170	1,170	1,170				
Temperature (C)	15.77	15.78	15.78	15.65	15.52	15.50	15.50				

Flow Rate: 900ml/min

Total Depth of Well: 58.86

Time Sampled: 10:48

Depth to Water Before Purging: 26.91

Total Water Pumped: 7 gal

Depth to Water After Purging: 27.92

Comments:

ARCADIS

Water Sampling Log

Project	GM Sitewide Groundwater	Project No.	OH000294.09.02	Page	1 of 1
Site Location	Moraine, Ohio			Date	9-22-06
Site/Well No.	W-2-N	Replicate No.	DUP4	Code No.	N/A
Weather	raining, 60's	Sampling Time:	Begin 1135	End	1218

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	731.68
Land Surface Elevation (ft)	NM
Sounded Well Depth (ft bmp)	~~59.44~~ 68.90
Depth to Water (ft bmp)	@ 23.94
Water-Level Elevation (ft)	707.74
Water Column in Well (ft)	44.96
Casing Diameter/Type	4" PVC
Gallons in Well	29.22
Gallons Pumped/Bailed Prior to Sampling	5 gal
Sample Pump Intake Setting (ft bmp)	middle of screen
Purge Time	begin 1146 end 1200
Pumping Rate (gpm)	900ml/min
Evacuation Method	Submersible pump

Field Parameters

Color	Orange
Odor	none
Appearance	a translucent
pH (s.u.)	7.05, 7.05 7.05
Conductivity (mS/cm)	N/A
(µmhos/cm)	~~N/A~~ 1190, 1190, 1180
Turbidity (NTU)	N/A
Temperature (°F)	15.00, 15.09, 15.08
Dissolved Oxygen (mg/L)	~~N/A~~ 0.29, 0.29, 0.25
ORP (mV)	~~N/A~~ -111, -113, -114
Sampling Method	Low Flow
Remarks	Sample time @ 12:01
	DTW final = 23.94
	EB4 @ 12:15 on tubing

Constituents Sampled	Container Description	Number	Preservative
Site-Specific VOCs (8260)	40 ml glass vial	3	Cool, HCl

Sampling Personnel: Fortner/Jacobs

Well Casing Volumes

Gal./Ft.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	below measuring point	ml	milliliter	NTU	Nephelometric Turbidity Units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	feet	msl	mean sea-level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not Applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not Recorded	VOC	Volatile Organic Compounds

ARCADIS

LOW FLOW SAMPLING
GROUNDWATER FIELD PARAMETER LOG

Project Number: OH000294.0009.00002

Site Location: General Motors Corporation, Moraine, Ohio

Monitoring Well No.: W-2-N

Time Pump Started: 11:46

Depth of Sampling: midscreen

Date: 9/22/2006

Parameters / Time

	11:49	11:52	11:55	11:57	12:00						
Redox Potential (millivolts)	-106.0	-105.0	-111.0	-113.0	-114.0						
Dissolved Oxygen (mg/L)	0.54	0.36	0.29	0.29	0.25						
pH (s.u.)	7.07	7.05	7.05	7.05	7.05						
Specific Conductance (uS/cm)	1,190	1,190	1,190	1,190	1,180						
Temperature (C)	15.00	15.06	15.06	15.09	15.08						

Flow Rate: 900ml/min

Total Depth of Well: 68.9

Time Sampled: 12:01

Depth to Water Before Purging: 23.94

Total Water Pumped: 5 gal

Depth to Water After Purging: 23.94

Comments:

ARCADIS

Water Sampling Log

Project	GM Sitewide Groundwater	Project No.	OH000294.0007.02	Page	1 of 1
Site Location	Moraine, Ohio			Date	9-22-06
Site/Well No.	GM-3	Replicate No.	NA	Code No.	NA
Weather	Rainy, 60's	Sampling Time: Begin	1315	End	1400

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	730.44
Land Surface Elevation (ft)	NM
Sounded Well Depth (ft bmp)	~~101.8~~ 101.13
Depth to Water (ft bmp)	~~2"~~ 25.31
Water-Level Elevation (ft)	705.13
Water Column in Well (ft)	75.82
Casing Diameter/Type	2" PVC
Gallons in Well	12.13
Gallons Pumped/Bailed Prior to Sampling	5 gal
Sample Pump Intake Setting (ft bmp)	middle of screen
Purge Time	begin 1323 end 13:39
Pumping Rate (gpm)	800 ml/min
Evacuation Method	Submersible Pump

Field Parameters

Color	clear
Odor	none
Appearance	transparent
pH (s.u.)	6.91, 6.91, 6.90
Conductivity (mS/cm)	N/A
(µmhos/cm)	~~N/A~~ 1240, 1240, 1240
Turbidity (NTU)	N/A
Temperature (°C)	16.44, 16.43, 16.38
Dissolved Oxygen (mg/L)	~~N/A~~ 0.36, 0.34, 0.30
ORP (mV)	~~N/A~~ 84, 80, 69
Sampling Method	Low Flow
Remarks	Sample time @ 13:40
	DTW final = 25.33

Constituents Sampled	Container Description	Number	Preservative
Site-Specific VOCs (8260)	40 ml glass vial	3	Cool, HCl

Sampling Personnel A. Jacobs
~~J. Manzo~~/T. Fortner

Well Casing Volumes

Gal./Ft.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	below measuring point	ml	milliliter	NTU	Nephelometric Turbidity Units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	feet	msl	mean sea-level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not Applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not Recorded	VOC	Volatile Organic Compounds

ARCADIS

LOW FLOW SAMPLING
GROUNDWATER FIELD PARAMETER LOG

Project Number: OH000294.0009.00002

Site Location: General Motors Corporation, Moraine, Ohio

Monitoring Well No.: GM-3

Time Pump Started: 13:23

Depth of Sampling: midscreen

Date: 9/22/2006

Parameters / Time

	13:27	13:30	13:33	13:36	13:39						
Redox Potential (millivolts)	94.0	89.0	84.0	80.0	69.0						
Dissolved Oxygen (mg/L)	0.47	0.40	0.36	0.34	0.30						
pH (s.u.)	6.93	6.91	6.91	6.91	6.90						
Specific Conductance (uS/cm)	1,240	1,240	1,240	1,240	1,240						
Temperature (C)	16.43	16.44	16.44	16.43	16.38						

Flow Rate: 800ml/min

Total Depth of Well: 101.13

Time Sampled: 13:40

Depth to Water Before Purging: 25.31

Total Water Pumped: 5 gal

Depth to Water After Purging: 25.33

Comments:

ARCADIS

Water Sampling Log

9

Project	GM Sitewide Groundwater	Project No.	OH000294.0602	Page	1 of 1
Site Location	Moraine, Ohio			Date	9-25-06
Site/Well No.	HR-2	Replicate No.	N/A	Code No.	N/A
Weather	overcast, 60's	Sampling Time: Begin	845	End	9:33

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	734.75
Land Surface Elevation (ft)	NM
Sounded Well Depth (ft bmp)	~~58.45~~ 59.09
Depth to Water (ft bmp)	26.91
Water-Level Elevation (ft)	707.84
Water Column in Well (ft)	32.18
Casing Diameter/Type	2" PVC
Gallons in Well	5.15
Gallons Pumped/Bailed Prior to Sampling	5gal
Sample Pump Intake Setting (ft bmp)	middle of screen
Purge Time	begin 9:06 end 9:24
Pumping Rate (gpm)	400ml/min
Evacuation Method	Submersible pump

Field Parameters

Color	Clear
Odor	none
Appearance	non-turbid
pH (s.u.)	6.92, 6.92, 6.92
Conductivity (mS/cm)	N/A
(µmhos/cm)	~~N/A~~ 1210, 1220, 1220
Turbidity (NTU)	N/A
Temperature (°F)	14.57, 14.47, 14.45
Dissolved Oxygen (mg/L)	~~N/A~~ .41, .37, .33
ORP (mV)	~~N/A~~ 35, 34, 33
Sampling Method	Low Flow
Remarks	Sample time @ 9:25
	DTW final = 26.91

Constituents Sampled	Container Description	Number	Preservative
Site-Specific VOCs (8260)	40 ml glass vial	3	Cool, HCl

Sampling Personnel A. Jacobs / ~~J. Manzo~~/T. Fortner

Well Casing Volumes

Gal./Ft.	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	below measuring point	ml	milliliter	NTU	Nephelometric Turbidity Units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	feet	msl	mean sea-level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not Applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not Recorded	VOC	Volatile Organic Compounds

ARCADIS

LOW FLOW SAMPLING
GROUNDWATER FIELD PARAMETER LOG

Project Number: OH000294.0009.00002

Site Location: General Motors Corporation, Moraine, Ohio

Monitoring Well No.: HR-2

Time Pump Started: 9:06

Depth of Sampling: midscreen

Date: 9/25/2006

Parameters / Time

	9:09	9:12	9:15	9:18	9:21	9:24					
Redox Potential (millivolts)	77.0	56.0	38.0	35.0	34.0	33.0					
Dissolved Oxygen (mg/L)	0.71	0.66	0.54	0.41	0.37	0.33					
pH (s.u.)	6.88	6.91	6.91	6.92	6.92	6.92					
Specific Conductance (uS/cm)	1,200	1,200	1,210	1,210	1,220	1,220					
Temperature (C)	14.30	14.50	14.65	14.57	1220.00	14.45					

Flow Rate: 400ml/min

Total Depth of Well: 59.09

Time Sampled: 9:25

Depth to Water Before Purging: 26.91

Total Water Pumped: 5 gal

Depth to Water After Purging: 26.91

Comments:

ARCADIS

Water Sampling Log

Project	GM Sitewide Groundwater	Project No.	OH000294.09.02	Page	1 of 1
Site Location	Moraine, Ohio			Date	9-25-06
Site/Well No.	HR-3	Replicate No.	NA	Code No.	NA
Weather	cloudy, 60's	Sampling Time: Begin	935	End	10:00

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	736.75
Land Surface Elevation (ft)	NM
Sounded Well Depth (ft bmp)	~~61.85~~ 62.57
Depth to Water (ft bmp)	~~28.94~~ 28.94
Water-Level Elevation (ft)	707.81
Water Column in Well (ft)	33.63
Casing Diameter/Type	2" PVC
Gallons in Well	5.38
Gallons Pumped/Bailed Prior to Sampling	2.5 gal
Sample Pump Intake Setting (ft bmp)	middle of screen
Purge Time	begin 9:41 end 9:54
Pumping Rate (gpm)	500 ml/min
Evacuation Method	Submersible pump

Field Parameters

Color	clear
Odor	none
Appearance	clear
pH (s.u.)	6.91, 6.90, 6.90
Conductivity (mS/cm)	N/A
(µmhos/cm)	~~N/A~~ 1370, 1370, 1370
Turbidity (NTU)	N/A
Temperature (°F)	14.67, 14.77, 14.70
Dissolved Oxygen (mg/L)	~~N/A~~ .44, .40, .35
ORP (mV)	~~N/A~~ 17, 18, 19
Sampling Method	Low Flow
Remarks	Sample time @ 9:55
	DTW final = 28.94

Constituents Sampled	Container Description	Number	Preservative
Site-Specific VOCs (8260)	40 ml glass vial	3	Cool, HCl

Sampling Personnel: ~~J. Manzo~~/T. Fortner (Jacobs)

Well Casing Volumes

Gal./Ft.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	below measuring point	ml	milliliter	NTU	Nephelometric Turbidity Units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	feet	msl	mean sea-level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not Applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not Recorded	VOC	Volatile Organic Compounds

ARCADIS

LOW FLOW SAMPLING
GROUNDWATER FIELD PARAMETER LOG

Project Number: OH000294.0009.00002

Site Location: General Motors Corporation, Moraine, Ohio

Monitoring Well No.: HR-3

Time Pump Started: 9:41

Depth of Sampling: midscreen

Date: 9/25/2006

Parameters / Time

	9:43	9:45	9:48	9:51	9:54						
Redox Potential (millivolts)	26.0	17.0	17.0	18.0	19.0						
Dissolved Oxygen (mg/L)	0.71	0.53	0.44	0.40	0.35						
pH (s.u.)	6.95	6.92	6.91	6.90	6.90						
Specific Conductance (uS/cm)	1,360	1,360	1,370	1,370	1,370						
Temperature (C)	14.37	14.37	14.67	14.77	14.70						

Flow Rate: 500ml/min

Total Depth of Well: 62.57

Time Sampled: 9:55

Depth to Water Before Purging: 28.94

Total Water Pumped: 2.5 gal

Depth to Water After Purging: 28.94

Comments:

ARCADIS

Water Sampling Log

Project	GM Sitewide Groundwater	Project No.	OH000294.0902	Page	1 of 1
Site Location	Moraine, Ohio			Date	9-25-06
Site/Well No.	HR-13	Replicate No.	NA	Code No.	NA
Weather	cloudy, 60's	Sampling Time: Begin	1000	End	1031

Evacuation Data

Measuring Point	Top of PVC Casing
MP Elevation (ft)	735.03
Land Surface Elevation (ft)	NM
Sounded Well Depth (ft bmp)	~~86.85~~ 87.91
Depth to Water (ft bmp)	27.22
Water-Level Elevation (ft)	707.81
Water Column in Well (ft)	60.69
Casing Diameter/Type	4" PVC
Gallons in Well	39.45
Gallons Pumped/Bailed Prior to Sampling	4 gal
Sample Pump Intake Setting (ft bmp)	middle of screen
Purge Time	begin 1006 end 10:20
Pumping Rate (gpm)	500ml/min
Evacuation Method	Submersible Pump

Field Parameters

Color	Clear
Odor	none
Appearance	clear
pH (s.u.)	6.90, 6.90, 6.90
Conductivity (mS/cm)	~~N/A 1320, 1320, 1320~~
(µmhos/cm)	~~N/A~~ 1320, 1320, 1320
Turbidity (NTU)	N/A
Temperature (°F)	14.33, 14.33, 14.36
Dissolved Oxygen (mg/L)	~~N/A~~ 0.41, 0.37, 0.37
ORP (mV)	~~N/A~~ 37, 36, 36
Sampling Method	Low Flow
Remarks	Sample time @ 10:21
	DTW final = 27.21

Constituents Sampled	Container Description	Number	Preservative
Site-Specific VOCs (8260)	40 ml glass vial	3	Cool, HCl

Sampling Personnel: ~~J. Manzo~~/T. Fortner

Well Casing Volumes

Gal./Ft.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	below measuring point	ml	milliliter	NTU	Nephelometric Turbidity Units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	feet	msl	mean sea-level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not Applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not Recorded	VOC	Volatile Organic Compounds

ARCADIS

LOW FLOW SAMPLING
GROUNDWATER FIELD PARAMETER LOG

Project Number: OH000294.0009.00002

Site Location: General Motors Corporation, Moraine, Ohio

Monitoring Well No.: HR-13

Time Pump Started: 10:06

Depth of Sampling: midscreen

Date: 9/25/2006

Parameters / Time

	10:08	10:11	10:14	10:17	10:20						
Redox Potential (millivolts)	54.0	38.0	37.0	36.0	36.0						
Dissolved Oxygen (mg/L)	0.69	0.43	0.41	0.37	0.37						
pH (s.u.)	6.94	6.91	6.90	6.90	6.90						
Specific Conductance (uS/cm)	1,320	1,320	1,320	1,320	1,320						
Temperature (C)	14.25	14.31	14.33	14.33	14.36						

Flow Rate: 500ml/min

Total Depth of Well: 87.91

Time Sampled: 10:21

Depth to Water Before Purging: 27.22

Total Water Pumped: 4 gal

Depth to Water After Purging: 27.21

Comments:

ARCADIS

Water Sampling Log

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Project: GM Sitewide Groundwater | Project No.: OH000294.0802 | Page: 1 of 1

Site Location: Moraine, Ohio | Date: 9-25-06

Site/Well No.: HR-4 | Replicate No.: NA | Code No.: NA

Weather: cloudy, 60s | Sampling Time: Begin 1036 End 1117

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	742.60
Land Surface Elevation (ft)	NM
Sounded Well Depth (ft bmp)	~~66.60~~ 65.05
Depth to Water (ft bmp)	34.36
Water-Level Elevation (ft)	708.24
Water Column in Well (ft)	30.69
Casing Diameter/Type	2" PVC
Gallons in Well	4.91
Gallons Pumped/Bailed Prior to Sampling	2.5 gal
Sample Pump Intake Setting (ft bmp)	middle of screen
Purge Time	begin 1052 end 1106
Pumping Rate (gpm)	600 ml/min
Evacuation Method	Submersible pump

Field Parameters

Color	None
Odor	None
Appearance	Non-turbid
pH (s.u.)	7.00, 6.99, 6.99
Conductivity (mS/cm)	N/A
(µmhos/cm)	~~N/A~~ ~~1330~~ 1320, 1320, 1330
Turbidity (NTU)	N/A
Temperature (°F)	15.48, 15.63, 15.66
Dissolved Oxygen (mg/L)	~~N/A~~ .38, .37, .36
ORP (mV)	~~N/A~~ -33, -39, -40
Sampling Method	Low Flow
Remarks	Sample time @ 1107
	DTW final = 34.35

Constituents Sampled	Container Description	Number	Preservative
Site-Specific VOCs (8260)	40 ml glass vial	3	Cool, HCl

Sampling Personnel: ~~J. Manzo~~ AJT/OBS/T. Fortner

Well Casing Volumes

Gal./Ft.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	below measuring point	ml	milliliter	NTU	Nephelometric Turbidity Units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	feet	msl	mean sea-level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not Applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not Recorded	VOC	Volatile Organic Compounds

ARCADIS

LOW FLOW SAMPLING
GROUNDWATER FIELD PARAMETER LOG

Project Number: OH000294.0009.00002

Site Location: General Motors Corporation, Moraine, Ohio

Monitoring Well No.: HR-4

Time Pump Started: 10:52

Depth of Sampling: midscreen

Date: 9/25/2006

Parameters / Time

	10:54	10:57	11:00	11:03	11:06						
Redox Potential (millivolts)	5.0	-17.0	-33.0	-39.0	-40.0						
Dissolved Oxygen (mg/L)	0.65	0.47	0.38	0.37	0.36						
pH (s.u.)	7.04	7.00	7.00	6.99	6.99						
Specific Conductance (uS/cm)	1,320	1,320	1,320	1,320	1,330						
Temperature (C)	15.17	15.36	15.48	15.63	15.66						

Flow Rate: 600ml/min

Total Depth of Well: 65.05

Time Sampled: 11:07

Depth to Water Before Purging: 34.36

Total Water Pumped: 2.5

Depth to Water After Purging: 34.35

Comments:

ARCADIS

Water Sampling Log

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Project	GM Sitewide Groundwater	Project No.	OH000294.0802	Page	1 of 1
Site Location	Moraine, Ohio			Date	9-25-06
Site/Well No.	GM-9	Replicate No.	N/A	Code No.	N/A
Weather	cloudy 60's	Sampling Time: Begin	1126	End	1201

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	724.07
Land Surface Elevation (ft)	NM
Sounded Well Depth (ft bmp)	~~99.41~~ 99.79
Depth to Water (ft bmp)	19.29
Water-Level Elevation (ft)	704.78
Water Column in Well (ft)	80.50
Casing Diameter/Type	2" PVC
Gallons in Well	12.88
Gallons Pumped/Bailed Prior to Sampling	2.5 gal
Sample Pump Intake Setting (ft bmp)	middle of screen
Purge Time	begin 1136 end 1149
Pumping Rate (gpm)	400 ml/min
Evacuation Method	Submersible Pump

Field Parameters

Color	Clear
Odor	none
Appearance	blackspecks
pH (s.u.)	7.08, 7.08, 7.07
Conductivity (mS/cm)	N/A
(µmhos/cm)	~~N/A~~ 1080, 1080, 1080
Turbidity (NTU)	N/A
Temperature (°C)	16.26, 16.84, 15.60
Dissolved Oxygen (mg/L)	~~N/A~~ .48, .56, .41
ORP (mV)	~~N/A~~ -39, -38, -38
Sampling Method	Low Flow
Remarks	Sample time @ 1150
	DTW final = 1929

Constituents Sampled	Container Description	Number	Preservative
Site-Specific VOCs (8260)	40 ml glass vial	3	Cool, HCl

Sampling Personnel ~~J. Manzo~~/T. Fortner

Well Casing Volumes

Gal./Ft.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	below measuring point	ml	milliliter	NTU	Nephelometric Turbidity Units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	feet	msl	mean sea-level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not Applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not Recorded	VOC	Volatile Organic Compounds

ARCADIS

LOW FLOW SAMPLING
GROUNDWATER FIELD PARAMETER LOG

Project Number: OH000294.0009.00002

Site Location: General Motors Corporation, Moraine, Ohio

Monitoring Well No.: GM-9

Time Pump Started: 11:36

Depth of Sampling: midscreen

Date: 9/25/2006

Parameters / Time

	11:37	11:40	11:43	11:46	11:49						
Redox Potential (millivolts)	-34.0	-38.0	-39.0	-38.0	-28.0						
Dissolved Oxygen (mg/L)	0.64	0.45	0.48	0.56	0.41						
pH (s.u.)	7.14	7.10	7.08	7.08	7.07						
Specific Conductance (uS/cm)	1,080	1,080	1,080	1,080	1,080						
Temperature (C)	15.63	16.21	16.26	16.84	15.60						

Flow Rate: 400ml/min

Total Depth of Well: 99.79

Time Sampled: 11:50

Depth to Water Before Purging: 19.29

Total Water Pumped: 2.5 gal

Depth to Water After Purging: 19.29

Comments:

ARCADIS

Water Sampling Log

Project	GM Sitewide Groundwater	Project No.	OH000294.09.02	Page	1 of 1
Site Location	Moraine, Ohio			Date	9-25-09
Site/Well No.	GM-11	Replicate No.	N/A	Code No.	N/A
Weather	Sunny @ 60's	Sampling Time: Begin	1300	End	1344

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	723.71
Land Surface Elevation (ft)	NM
Sounded Well Depth (ft bmp)	~~100~~ 99.20
Depth to Water (ft bmp)	~~99~~ 18.76
Water-Level Elevation (ft)	704.95
Water Column in Well (ft)	80.44
Casing Diameter/Type	2" PVC
Gallons in Well	12.87
Gallons Pumped/Bailed Prior to Sampling	2.5 gal
Sample Pump Intake Setting (ft bmp)	middle of screen
Purge Time	begin 1316 end 1329
Pumping Rate (gpm)	400ml/min
Evacuation Method	Submersible Pump

Field Parameters

Color	light tan
Odor	none
Appearance	Slightly turbid
pH (s.u.)	6.97, 6.96, 6.96
Conductivity (mS/cm)	N/A
(µmhos/cm)	~~N/A~~ 1150, 1160, 1160
Turbidity (NTU)	N/A
Temperature (°C)	17.01, 17.04, 16.92
Dissolved Oxygen (mg/L)	~~N/A~~ 0.48, 0.40, 0.38
ORP (mV)	~~N/A~~ 21, 28, 29
Sampling Method	Low Flow
Remarks	Sample time @ 1330
	DTW final = 18.76

Constituents Sampled	Container Description	Number	Preservative
Site-Specific VOCs (8260)	40 ml glass vial	3	Cool, HCl

Sampling Personnel: ~~J. Manze~~/T. Fortner, Jacobs

Well Casing Volumes

Gal./Ft.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	below measuring point	ml	milliliter	NTU	Nephelometric Turbidity Units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	feet	msl	mean sea-level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not Applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not Recorded	VOC	Volatile Organic Compounds

ARCADIS

LOW FLOW SAMPLING
GROUNDWATER FIELD PARAMETER LOG

Project Number: OH000294.0009.00002

Site Location: General Motors Corporation, Moraine, Ohio

Monitoring Well No.: GM-11

Time Pump Started: 13:16

Depth of Sampling: midscreen

Date: 9/25/2006

Parameters / Time

	13:18	13:21	13:24	13:27	13:30						
Redox Potential (millivolts)	-22.0	9.0	21.0	28.0	29.0						
Dissolved Oxygen (mg/L)	1.41	0.61	0.48	0.40	0.38						
pH (s.u.)	7.31	7.00	6.97	6.96	6.96						
Specific Conductance (uS/cm)	608	1,120	1,150	1,160	1,160						
Temperature (C)	17.17	17.09	17.01	17.04	16.92						

Flow Rate: 600ml/min

Total Depth of Well: 99.2

Time Sampled: 13:31

Depth to Water Before Purging: 18.76

Total Water Pumped: 2.5 gal

Depth to Water After Purging: 18.76

Comments:

ARCADIS

Water Sampling Log

Project	GM Sitewide Groundwater	Project No.	OH000294.09.02	Page	1 of 1
Site Location	Moraine, Ohio			Date	9-25-06
Site/Well No.	W-4-N	Replicate No.	NA	Code No.	NA
Weather	Sunny 60's	Sampling Time: Begin	1355	End	1426

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	731.63
Land Surface Elevation (ft)	NM
Sounded Well Depth (ft bmp)	~~66.2~~ 68.45
Depth to Water (ft bmp)	~~23~~ 23.81
Water-Level Elevation (ft)	707.82
Water Column in Well (ft)	44.64
Casing Diameter/Type	4" PVC
Gallons in Well	29.16
Gallons Pumped/Bailed Prior to Sampling	4.5 gal
Sample Pump Intake Setting (ft bmp)	middle of screen
Purge Time	begin 1404 end 1418
Pumping Rate (gpm)	1000 ml/min
Evacuation Method	Submersible pump

Field Parameters

Color	Clear
Odor	none
Appearance	non turbid
pH (s.u.)	6.95, 6.94, 6.94
Conductivity (mS/cm)	NA
(µmhos/cm)	~~NA~~ 1260, 1260, 1260
Turbidity (NTU)	N/A
Temperature (°F)	16.08, 16.11, 16.18
Dissolved Oxygen (mg/L)	~~NA~~ .34, .31, .28
ORP (mV)	~~N/A~~ -75, -77, -77
Sampling Method	Low Flow
Remarks	Sample time @ 1419
	DTW final = 23.81

Constituents Sampled	Container Description	Number	Preservative
Site-Specific VOCs (8260)	40 ml glass vial	3	Cool, HCl

Sampling Personnel: Fortner/Jacobs

Well Casing Volumes

Gal./Ft.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	below measuring point	ml	milliliter	NTU	Nephelometric Turbidity Units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	feet	msl	mean sea-level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not Applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not Recorded	VOC	Volatile Organic Compounds

ARCADIS

LOW FLOW SAMPLING
GROUNDWATER FIELD PARAMETER LOG

Project Number: OH000294.0009.00002

Site Location: General Motors Corporation, Moraine, Ohio

Monitoring Well No.: W-4-N

Time Pump Started: 14:04

Depth of Sampling: midscreen

Date: 9/25/2006

Parameters / Time

	14:06	14:09	14:12	14:15	14:18						
Redox Potential (millivolts)	-69.0	-74.0	-75.0	-77.0	-77.0						
Dissolved Oxygen (mg/L)	0.70	0.37	0.34	0.31	0.28						
pH (s.u.)	7.00	6.95	6.95	6.94	6.94						
Specific Conductance (uS/cm)	1,270	1,260	1,260	1,260	1,260						
Temperature (C)	16.11	16.06	16.08	16.11	16.18						

Flow Rate: 1000ml/min

Total Depth of Well: 68.45

Time Sampled: 14:19

Depth to Water Before Purging: 23.81

Total Water Pumped: 4.5 gal

Depth to Water After Purging: 23.81

Comments:

ARCADIS

Water Sampling Log

Project	GM Sitewide Groundwater	Project No.	OH000294.09.02	Page	1 of 1
Site Location	Moraine, Ohio			Date	~~9-22-06~~ 9-25-06
Site/Well No.	W-3-N	Replicate No.	N/A	Code No.	N/A
Weather	raining, 60's	Sampling Time: Begin	1433	End	1505

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	733.66
Land Surface Elevation (ft)	NM
Sounded Well Depth (ft bmp)	~~57.5~~ 58.19
Depth to Water (ft bmp)	~~2~~ 25.87
Water-Level Elevation (ft)	707.79
Water Column in Well (ft)	32.32
Casing Diameter/Type	4" PVC
Gallons in Well	21.00
Gallons Pumped/Bailed Prior to Sampling	3 gal
Sample Pump Intake Setting (ft bmp)	middle of screen
Purge Time	begin 1439 end 1456
Pumping Rate (gpm)	350 ml/min
Evacuation Method	Submersible pump

Field Parameters

Color	lt. tan
Odor	none
Appearance	Slightly turbid
pH (s.u.)	7.05, 7.05, 7.05
Conductivity (mS/cm)	N/A
(µmhos/cm)	~~N/A~~ 1140, 1140, 1140
Turbidity (NTU)	N/A
Temperature (°F)	17.08, 17.44, 17.73
Dissolved Oxygen (mg/L)	~~N/A~~ .35, .30, .28
ORP (mV)	~~N/A~~ -136, -139, -146
Sampling Method	Low Flow
Remarks	Sample time @ 1457
	DTW final = 25.87

Constituents Sampled	Container Description	Number	Preservative
Site-Specific VOCs (8260)	40 ml glass vial	3	Cool, HCl

Sampling Personnel: Fortner/Jacobs

Well Casing Volumes

Gal./Ft.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	below measuring point	ml	milliliter	NTU	Nephelometric Turbidity Units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	feet	msl	mean sea-level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not Applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not Recorded	VOC	Volatile Organic Compounds

ARCADIS

LOW FLOW SAMPLING
GROUNDWATER FIELD PARAMETER LOG

Project Number: OH000294.0009.00002

Site Location: General Motors Corporation, Moraine, Ohio

Monitoring Well No.: W-3-N

Time Pump Started: 14:39

Depth of Sampling: midscreen

Date: 9/25/2006

Parameters / Time

	14:41	14:44	14:47	14:50	14:53	14:56					
Redox Potential (millivolts)	-126.0	-133.0	-133.0	-136.0	-139.0	-140.0					
Dissolved Oxygen (mg/L)	1.04	0.51	0.42	0.35	0.30	0.28					
pH (s.u.)	7.08	7.05	7.06	7.05	7.05	7.05					
Specific Conductance (uS/cm)	1,150	1,140	1,140	1,140	1,140	1,140					
Temperature (C)	18.16	18.86	17.05	17.08	17.44	17.73					

Flow Rate: 350ml/min

Total Depth of Well: 58.19

Time Sampled: 14:57

Depth to Water Before Purging: 25.87

Total Water Pumped: 3 gal

Depth to Water After Purging: 25.87

Comments:

ARCADIS

Water Sampling Log

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Project	GM Sitewide Groundwater	Project No.	OH000294.08.02	Page	1 of 1
Site Location	Moraine, Ohio			Date	9-25-06
Site/Well No.	HR-15	Replicate No.	DUP5, MS/MSD3	Code No.	N/A
Weather	Sunny, 60's	Sampling Time: Begin	1506	End	1543

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	733.74
Land Surface Elevation (ft)	NM
Sounded Well Depth (ft bmp)	~~101.69~~ 103.90
Depth to Water (ft bmp)	~~26.70~~ 26.16
Water-Level Elevation (ft)	~~706.04~~ 707.58
Water Column in Well (ft)	77.74
Casing Diameter/Type	4" PVC
Gallons in Well	50.53
Gallons Pumped/Bailed Prior to Sampling	3.5 gal
Sample Pump Intake Setting (ft bmp)	middle of screen
Purge Time	begin 1508 end 1522
Pumping Rate (gpm)	600 ml/min
Evacuation Method	Submersible Pump

Field Parameters

Color	None
Odor	None
Appearance	Non-turbid
pH (s.u.)	6.96, 6.95, 6.95
Conductivity (mS/cm)	N/A
(µmhos/cm)	~~N/A~~ 1200, 1200, 1200
Turbidity (NTU)	N/A
Temperature (°F)	16.26, 16.54, 16.71
Dissolved Oxygen (mg/L)	~~N/A~~ 42, 40, 36
ORP (mV)	~~N/A~~ -102, -105, -106
Sampling Method	Low Flow
Remarks	Sample time @ 1523
	DTW final = 26.18
	EB5 @ 1530 on tubing

Constituents Sampled	Container Description	Number	Preservative
Site-Specific VOCs (8260)	40 ml glass vial	3	Cool, HCl

Sampling Personnel AJACOBS
~~J. Manzo~~/T. Fortner

Well Casing Volumes

Gal./Ft.	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	below measuring point	ml	milliliter	NTU	Nephelometric Turbidity Units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	feet	msl	mean sea-level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not Applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not Recorded	VOC	Volatile Organic Compounds

ARCADIS

LOW FLOW SAMPLING
GROUNDWATER FIELD PARAMETER LOG

Project Number: OH000294.0009.00002

Site Location: General Motors Corporation, Moraine, Ohio

Monitoring Well No.: HR-15

Time Pump Started: 15:08

Depth of Sampling: midscreen

Date: 9/25/2006

Parameters / Time

	15:10	15:13	15:16	15:19	15:22						
Redox Potential (millivolts)	-96.0	-100.0	-102.0	-105.0	-106.0						
Dissolved Oxygen (mg/L)	1.31	0.49	0.42	0.40	0.36						
pH (s.u.)	7.13	6.96	6.96	6.95	6.95						
Specific Conductance (uS/cm)	1,100	1,190	1,200	1,200	1,200						
Temperature (C)	16.39	16.22	16.26	16.54	16.71						

Flow Rate: 600ml/min

Total Depth of Well: 103.9

Time Sampled: 15:23

Depth to Water Before Purging: 26.16

Total Water Pumped: 3.5 gal

Depth to Water After Purging: 26.18

Comments: DUP5; MS/MSD 3; EB5 at 1530 on tubing

ARCADIS

Water Sampling Log

Project	GM Sitewide Groundwater	Project No.	OH000294.0902	Page	1 of 1
Site Location	Moraine, Ohio			Date	9-25-06
Site/Well No.	HR-1	Replicate No.	NA	Code No.	NA
Weather	Sunny 60's	Sampling Time: Begin	1550	End	1621

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	732.71
Land Surface Elevation (ft)	NM
Sounded Well Depth (ft bmp)	~~59.36~~ 59.90
Depth to Water (ft bmp)	~~26.10~~ 26.10
Water-Level Elevation (ft)	706.61
Water Column in Well (ft)	33.80
Casing Diameter/Type	2" PVC
Gallons in Well	5.41
Gallons Pumped/Bailed Prior to Sampling	4.5 gal
Sample Pump Intake Setting (ft bmp)	midscreen
Purge Time	begin 1556 end 1613
Pumping Rate (gpm)	500 ml/min
Evacuation Method	Submersible pump

Field Parameters

Color	Clear
Odor	none
Appearance	non-turbid
pH (s.u.)	6.96, 6.96, 6.96
Conductivity (mS/cm)	N/A
(µmhos/cm)	~~N/A~~ 1310, 1310, 1310
Turbidity (NTU)	N/A
Temperature (°F)	16.70, 16.75, 16.72
Dissolved Oxygen (mg/L)	~~N/A~~ .38, .34, .32
ORP (mV)	~~N/A~~ 40, 41, 41
Sampling Method	Low Flow
Remarks	Sample time @ 1614
	DTW final = 26.10

Constituents Sampled	Container Description	Number	Preservative
Site-Specific VOCs (8260)	40 ml glass vial	3	Cool, HCl

Sampling Personnel: ~~J. Manzo/T. Fortner~~ A. JACOBS

Well Casing Volumes

Gal./Ft.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	below measuring point	ml	milliliter	NTU	Nephelometric Turbidity Units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	feet	msl	mean sea-level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not Applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not Recorded	VOC	Volatile Organic Compounds

ARCADIS

LOW FLOW SAMPLING
GROUNDWATER FIELD PARAMETER LOG

Project Number: OH000294.0009.00002

Site Location: General Motors Corporation, Moraine, Ohio

Monitoring Well No.: HR-1

Time Pump Started: 15:56

Depth of Sampling: midscreen

Date: 9/25/2006

Parameters / Time

	15:58	16:01	16:04	16:07	16:10	16:13					
Redox Potential (millivolts)	49.0	40.0	39.0	40.0	41.0	41.0					
Dissolved Oxygen (mg/L)	0.94	0.62	0.50	0.38	0.34	0.32					
pH (s.u.)	7.04	6.97	6.97	6.96	6.96	6.96					
Specific Conductance (uS/cm)	1,320	1,310	1,310	1,310	1,310	1,310					
Temperature (C)	17.37	17.13	17.08	16.70	16.75	16.72					

Flow Rate: 500ml/min

Total Depth of Well: 59.9

Time Sampled: 16:14

Depth to Water Before Purging: 26.10

Total Water Pumped: 4.5 gal

Depth to Water After Purging: 26.10

Comments:

ARCADIS

Water Sampling Log

Project: GM Sitewide Groundwater | Project No.: OH000294.08.02 | Page: 1 of 1

Site Location: Moraine, Ohio | Date: 9-25-06

Site/Well No.: HR-11 | Replicate No.: N/A | Code No.: N/A

Weather: sunny, 60's | Sampling Time: Begin 1634 End 1709

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	743.33
Land Surface Elevation (ft)	NM
Sounded Well Depth (ft bmp)	~~68.95~~ 69.55
Depth to Water (ft bmp)	~~?~~ 34.48
Water-Level Elevation (ft)	708.85
Water Column in Well (ft)	35.07
Casing Diameter/Type	2" PVC
Gallons in Well	5.61
Gallons Pumped/Bailed Prior to Sampling	5.5 gal
Sample Pump Intake Setting (ft bmp)	middle of screen
Purge Time	begin 1640 end 1657
Pumping Rate (gpm)	1000 ml/min
Evacuation Method	Submersible pump

Field Parameters

Color	lt. grey
Odor	none
Appearance	slightly turbid
pH (s.u.)	6.81, 6.81, 6.81
Conductivity (mS/cm)	N/A
(µmhos/cm)	~~N/A~~ 1200, 1210, 1210
Turbidity (NTU)	N/A
Temperature (°F)	17.03, 16.75, 16.62
Dissolved Oxygen (mg/L)	~~N/A~~ .33, .33, .33
ORP (mV)	~~N/A~~ 44, 38, 33
Sampling Method	Low Flow
Remarks	Sample time @ 1658
	DTW final = ~~34.48~~ 34.49

Constituents Sampled	Container Description	Number	Preservative
Site-Specific VOCs (8260)	40 ml glass vial	3	Cool, HCl

Sampling Personnel: ~~J. Manzo/T.~~ AJACOBS, Fortner

Well Casing Volumes

Gal./Ft.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	below measuring point	ml	milliliter	NTU	Nephelometric Turbidity Units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	feet	msl	mean sea-level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not Applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not Recorded	VOC	Volatile Organic Compounds

ARCADIS

LOW FLOW SAMPLING
GROUNDWATER FIELD PARAMETER LOG

Project Number: OH000294.0009.00002

Site Location: General Motors Corporation, Moraine, Ohio

Monitoring Well No.: HR-11

Time Pump Started: 16:40

Depth of Sampling: midscreen

Date: 9/25/2006

Parameters / Time

	16:42	16:45	16:48	16:51	16:54	16:57					
Redox Potential (millivolts)	69.0	61.0	53.0	44.0	38.0	33.0					
Dissolved Oxygen (mg/L)	1.45	0.48	0.37	0.33	0.33	0.33					
pH (s.u.)	6.89	6.83	6.82	6.81	6.81	6.81					
Specific Conductance (uS/cm)	1,200	1,200	1,200	1,200	1,210	1,210					
Temperature (C)	16.86	17.15	17.20	17.03	16.75	16.62					

Flow Rate: 1000ml/min

Total Depth of Well: 69.55

Time Sampled: 16:58

Depth to Water Before Purging: 34.48

Total Water Pumped: 5.5 gal

Depth to Water After Purging: 34.49

Comments:

ARCADIS

Water Sampling Log

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Project	GM Sitewide Groundwater	Project No.	OH000294.0~~3~~.02	Page	1 of 1
Site Location	Moraine, Ohio			Date	9-26-06
Site/Well No.	HR-12	Replicate No.	N/A	Code No.	N/A
Weather	Sunny 60's	Sampling Time: Begin	9:00	End	1016

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	742.64
Land Surface Elevation (ft)	NM
Sounded Well Depth (ft bmp)	~~134.5~~ 131.25
Depth to Water (ft bmp)	~~39.82~~ 33.82
Water-Level Elevation (ft)	708.82
Water Column in Well (ft)	~~94.75~~ 97.43
Casing Diameter/Type	4" PVC
Gallons in Well	~~62.68~~ 63.33
Gallons Pumped/Bailed Prior to Sampling	3 gal
Sample Pump Intake Setting (ft bmp)	middle of screen
Purge Time	begin 939 end 953
Pumping Rate (gpm)	400ml/min
Evacuation Method	Submersible Pump

Field Parameters

Color	clear
Odor	none
Appearance	non-turbid
pH (s.u.)	6.90, 6.92, 6.93
Conductivity (mS/cm)	N/A
(µmhos/cm)	~~N/A~~ 1310, 1300, 1300
Turbidity (NTU)	N/A
Temperature (°F)	15.95, 16.10, 16.23
Dissolved Oxygen (mg/L)	~~N/A~~ .48, .47, .41
ORP (mV)	~~N/A~~ -94, -97, -99
Sampling Method	Low Flow
Remarks	Sample time @ 9:54
	DTW final = 33.82

Constituents Sampled	Container Description	Number	Preservative
Site-Specific VOCs (8260)	40 ml glass vial	3	Cool, HCl

Sampling Personnel ~~J. Manzo~~ Jacobs/T. Fortner

Well Casing Volumes

Gal./Ft.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	below measuring point	ml	milliliter	NTU	Nephelometric Turbidity Units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	feet	msl	mean sea-level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not Applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not Recorded	VOC	Volatile Organic Compounds

ARCADIS

LOW FLOW SAMPLING
GROUNDWATER FIELD PARAMETER LOG

Project Number: OH000294.0009.00002

Site Location: General Motors Corporation, Moraine, Ohio

Monitoring Well No.: HR-12

Time Pump Started: 9:39

Depth of Sampling: midscreen

Date: 9/26/2006

Parameters / Time

	9:41	9:44	9:47	9:50	9:53						
Redox Potential (millivolts)	-70.0	-87.0	-94.0	-97.0	-99.0						
Dissolved Oxygen (mg/L)	0.86	0.52	0.48	0.47	0.41						
pH (s.u.)	6.62	6.84	6.90	6.92	6.93						
Specific Conductance (uS/cm)	1,300	1,310	1,310	1,300	1,300						
Temperature (C)	15.83	15.86	15.95	16.10	16.23						

Flow Rate: 400ml/min

Total Depth of Well: 131.25

Time Sampled: 9:54

Depth to Water Before Purging: 33.82

Total Water Pumped: 3 gal

Depth to Water After Purging: 33.82

Comments:

ARCADIS

Water Sampling Log

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Project	GM Sitewide Groundwater	Project No.	OH000294.0802	Page	1 of 1
Site Location	Moraine, Ohio			Date	9-26-06
Site/Well No.	HR-10	Replicate No.	NA	Code No.	NA
Weather	Sun 40s	Sampling Time:	Begin 1017	End	11:05

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	742.81
Land Surface Elevation (ft)	NM
Sounded Well Depth (ft bmp)	~~126.9~~ 128.92
Depth to Water (ft bmp)	~~2~~ 34.04
Water-Level Elevation (ft)	~~613.89~~ 708.77
Water Column in Well (ft)	94.88
Casing Diameter/Type	4"
Gallons in Well	61.67
Gallons Pumped/Bailed Prior to Sampling	3gal
Sample Pump Intake Setting (ft bmp)	middle of screen
Purge Time	begin 1032 end 1047
Pumping Rate (gpm)	500 ml/min
Evacuation Method	Submersible pump

Field Parameters

Color	clear
Odor	none
Appearance	non-turbid
pH (s.u.)	6.97, 6.96, 6.96
Conductivity (mS/cm)	N/A
(µmhos/cm)	~~N/A~~ 1280, 1280, 1280
Turbidity (NTU)	N/A
Temperature (°F)	15.66, 15.79, 15.95
Dissolved Oxygen (mg/L)	~~N/A~~ .47, .39, .38
ORP (mV)	~~N/A~~ -112, -112, -113
Sampling Method	Low Flow
Remarks	Sample time @ 1048
	DTW final = 34.04

Constituents Sampled	Container Description	Number	Preservative
Site-Specific VOCs (8260)	40 ml glass vial	3	Cool, HCl

Sampling Personnel A JACOBS ~~J. Manzo~~/T. Fortner

Well Casing Volumes

Gal./Ft.	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	below measuring point	ml	milliliter	NTU	Nephelometric Turbidity Units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	feet	msl	mean sea-level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not Applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not Recorded	VOC	Volatile Organic Compounds

ARCADIS

LOW FLOW SAMPLING
GROUNDWATER FIELD PARAMETER LOG

Project Number: OH000294.0009.00002

Site Location: General Motors Corporation, Moraine, Ohio

Monitoring Well No.: HR-10

Time Pump Started: 10:32

Depth of Sampling: midscreen

Date: 9/26/2006

Parameters / Time

	10:35	10:38	10:41	10:44	10:47						
Redox Potential (millivolts)	-115.0	-112.0	-112.0	-112.0	-113.0						
Dissolved Oxygen (mg/L)	0.96	0.54	0.47	0.39	0.38						
pH (s.u.)	7.17	6.99	6.97	6.96	6.96						
Specific Conductance (uS/cm)	1,280	1,280	1,280	1,280	1,280						
Temperature (C)	15.52	15.52	15.50	15.79	15.95						

Flow Rate: 500ml/min

Time Sampled: 10:48

Total Water Pumped: 3 gal

Total Depth of Well: 128.92

Depth to Water Before Purging: 34.04

Depth to Water After Purging: 34.04

Comments:

ARCADIS

Water Sampling Log

9

Project	GM Sitewide Groundwater	Project No.	OH000294.08.02	Page	1 of 1
Site Location	Moraine, Ohio			Date	9-26-05
Site/Well No.	GM-19D	Replicate No.	NA	Code No.	NA
Weather	Sunny 70's	Sampling Time: Begin	1115	End	1158

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	730.25
Land Surface Elevation (ft)	NM
Sounded Well Depth (ft bmp)	~~151~~ 148.20
Depth to Water (ft bmp)	~~2~~ 24.66
Water-Level Elevation (ft)	705.59
Water Column in Well (ft)	123.54
Casing Diameter/Type	4" PVC
Gallons in Well	80.30
Gallons Pumped/Bailed Prior to Sampling	~~5~~ ~~8~~ 4 gal
Sample Pump Intake Setting (ft bmp)	middle of screen
Purge Time	begin 1125 end 1141
Pumping Rate (gpm)	800 ml/min
Evacuation Method	Submersible Pump

Field Parameters

Color	clear
Odor	none
Appearance	non-turbid
pH (s.u.)	6.95, 6.95, 6.95
Conductivity (mS/cm)	N/A
(µmhos/cm)	~~N/A~~ 1340, 1340, 1330
Turbidity (NTU)	N/A
Temperature (°C)	17.81, 17.98, 18.02
Dissolved Oxygen (mg/L)	~~N/A~~ .45, .44, .43
ORP (mV)	~~N/A~~ -100, -101, -101
Sampling Method	Low Flow
Remarks	Sample time @ 1142
	DTW final = 24.66

Constituents Sampled	Container Description	Number	Preservative
Site-Specific VOCs (8260)	40 ml glass vial	3	Cool, HCl

Sampling Personnel AJACOBS
J. Manzo/T. Fortner

Well Casing Volumes

Gal./Ft.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	below measuring point	ml	milliliter	NTU	Nephelometric Turbidity Units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	feet	msl	mean sea-level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not Applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not Recorded	VOC	Volatile Organic Compounds

ARCADIS

LOW FLOW SAMPLING
GROUNDWATER FIELD PARAMETER LOG

Project Number: OH000294.0009.00002

Site Location: General Motors Corporation, Moraine, Ohio

Monitoring Well No.: GM-19D

Time Pump Started: 11:25

Depth of Sampling: midscreen

Date: 9/26/2006

Parameters / Time

	11:29	11:32	11:35	11:38	11:41						
Redox Potential (millivolts)	-95.0	-99.0	-100.0	-101.0	-101.0						
Dissolved Oxygen (mg/L)	0.57	0.67	0.45	0.44	0.43						
pH (s.u.)	6.96	6.95	6.95	6.95	6.95						
Specific Conductance (uS/cm)	1,340	1,350	1,340	1,340	1,330						
Temperature (C)	17.68	17.74	17.81	17.98	18.02						

Flow Rate: 800ml/min

Total Depth of Well: 148.2

Time Sampled: 11:42

Depth to Water Before Purging: 24.66

Total Water Pumped: 4 gal

Depth to Water After Purging: 24.66

Comments:

ARCADIS

Water Sampling Log

Project	GM Annual Sampling	Project No.	OH000994.9.2	Page	1
Site Location	GM Moraine, OH			Date	9-26-06
Site/Well No.	GM-40	Replicate No.	N/A	Code No.	N/A
Weather	Sunny, 70's	Sampling Time:	Begin 1300	End	1357

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	727.04
Land Surface Elevation (ft)	NM
Sounded Well Depth (ft bmp)	149.80
Depth to Water (ft bmp)	20.91
Water-Level Elevation (ft)	706.13
Water Column in Well (ft)	128.89
Casing Diameter/Type	2" PVC
Gallons in Well	20.62
Gallons Pumped/Bailed Prior to Sampling	4 gal
Sample Pump Intake Setting (ft bmp)	Midscreen
Purge Time	begin 1122 end 1337
Pumping Rate (gpm)	600 ml/min
Evacuation Method	Submersible pump

Field Parameters

Color	clear
Odor	Slight Odor
Appearance	non ~~EE~~ turbid
pH (s.u.)	6.96, 6.96, 6.96
Conductivity (mS/cm)	N/A
(µmhos/cm)	1260, 1260, 1270
Turbidity (NTU)	N/A
Temperature (°C)	17.34, 17.46, 17.4
Dissolved Oxygen (mg/L)	.46, .42, .41
~~Salinity (%)~~ ORP (mv)	-138, -135, -134
Sampling Method	Low Flow
Remarks	Sampled @ 1338
	DTW FINAL = 20.91

Constituents Sampled	Container Description	Number	Preserv
Site-Specific VOC's	40ml glass vial	3	cool, HCl

Sampling Personnel: A JACOBS / T Farmer

Well Casing Volumes

Gal./Ft.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	below measuring point	ml	milliliter	NTU	Nephelometric Turbidity Units
°C	Degrees Celsius	mS/cm	Milisiemens per centimeter	PVC	Polyvinyl chloride
ft	feet	msl	mean sea-level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not Applicable	umhos/cm	Micromhos per centimeter
mg/L	Miligrams per liter	NM	Not Measured	VOC	Volatile Organic Compounds

ARCADIS

LOW FLOW SAMPLING
GROUNDWATER FIELD PARAMETER LOG

Project Number: OH000294.0009.00002

Site Location: General Motors Corporation, Moraine, Ohio

Monitoring Well No.: GM-40

Time Pump Started: 11:22

Depth of Sampling: midscreen

Date: 9/26/2006

Parameters / Time

	13:25	13:28	13:31	13:34	13:37						
Redox Potential (millivolts)	-146.0	-143.0	-138.0	-135.0	-134.0						
Dissolved Oxygen (mg/L)	0.78	0.50	0.46	0.42	0.41						
pH (s.u.)	7.11	7.01	6.96	6.96	6.96						
Specific Conductance (uS/cm)	1,170	1,230	1,260	1,260	1,270						
Temperature (C)	17.44	17.50	17.34	17.46	17.42						

Flow Rate: 600ml/min

Total Depth of Well: 149.8

Time Sampled: 13:38

Depth to Water Before Purging: 20.91

Total Water Pumped: 4 gal

Depth to Water After Purging: 20.91

Comments:

ARCADIS

Water Sampling Log

Project: GM Annual Sampling | Project No.: OH000294.9.2 | Page: 1
Site Location: GM Moraine, OH | Date: 9-26-06
Site/Well No.: GM-42 | Replicate No.: N/A | Code No.: N/A
Weather: Sunny 70's | Sampling Time: Begin 1402 End 1502

Evacuation Data

Measuring Point	Top of casing
MP Elevation (ft)	729.16
Land Surface Elevation (ft)	NM
Sounded Well Depth (ft bmp)	150.20
Depth to Water (ft bmp)	23.24
Water-Level Elevation (ft)	705.92
Water Column in Well (ft)	126.96
Casing Diameter/Type	~~20.31~~ 2" PVC
Gallons in Well	20.31
Gallons Pumped/Bailed Prior to Sampling	2.5 gal
Sample Pump Intake Setting (ft bmp)	midscreen
Purge Time	begin 1430 end 1444
Pumping Rate (gpm)	400 ml/min
Evacuation Method	Submersible pump

Field Parameters

Color	Clear, Cloudy
Odor	none
Appearance	Slightly turbid
pH (s.u.)	6.86, 6.85, 6.88
Conductivity (mS/cm)	N/A
(µmhos/cm)	1230, 1230, 1230
Turbidity (NTU)	N/A
Temperature (°C)	18.72, 18.65, 18.52
Dissolved Oxygen (mg/L)	.48, .42, .42
~~Salinity (%)~~ ORP	~~N/A~~ -82, -52, -51
Sampling Method	Low Flow
Remarks	Sampled @ 1445
	DTW FINAL = 23.30

Constituents Sampled	Container Description	Number	Preserv
Site-specific VOC's	40ml glass vial	3	cool, HCl

Sampling Personnel: N Jacobs / T Fortner

Well Casing Volumes

Gal./Ft.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	below measuring point	ml	milliliter	NTU	Nephelometric Turbidity Units
°C	Degrees Celsius	mS/cm	Milisiemens per centimeter	PVC	Polyvinyl chloride
ft	feet	msl	mean sea-level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not Applicable	umhos/cm	Micromhos per centimeter
mg/L	Miligrams per liter	NM	Not Measured	VOC	Volatile Organic Compounds

ARCADIS

LOW FLOW SAMPLING
GROUNDWATER FIELD PARAMETER LOG

Project Number: OH000294.0009.00002

Site Location: General Motors Corporation, Moraine, Ohio

Monitoring Well No.: GM-42

Time Pump Started: 14:30

Depth of Sampling: midscreen

Date: 9/26/2006

Parameters / Time

	14:32	14:35	14:38	14:41	14:44						
Redox Potential (millivolts)	-70.0	-78.0	-82.0	-82.0	-81.0						
Dissolved Oxygen (mg/L)	0.67	0.51	0.48	0.42	0.42						
pH (s.u.)	6.66	6.82	6.86	6.88	6.88						
Specific Conductance (uS/cm)	1,220	1,220	1,230	1,230	1,230						
Temperature (C)	18.61	18.80	18.72	18.65	18.52						

Flow Rate: 400ml/min

Total Depth of Well: 150.2

Time Sampled: 14:45

Depth to Water Before Purging: 23.24

Total Water Pumped: 2.5 gal

Depth to Water After Purging: 23.30

Comments:

ARCADIS

Water Sampling Log

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Project: GM Sitewide Groundwater | Project No.: OH000294.0802 | Page 1 of 1

Site Location: Moraine, Ohio | Date: 9-26-06

Site/Well No.: MT-69 | Replicate No.: NA | Code No.: N/A

Weather: Sunny, 70's | Sampling Time: Begin 1511 | End

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	722.71
Land Surface Elevation (ft)	NM
Sounded Well Depth (ft bmp)	137.97
Depth to Water (ft bmp)	18.60
Water-Level Elevation (ft)	704.11
Water Column in Well (ft)	119.37
Casing Diameter/Type	8" STEEL
Gallons in Well	*Note >175.47
Gallons Pumped/Bailed Prior to Sampling	2.5gal
Sample Pump Intake Setting (ft bmp)	middle of screen
Purge Time	begin 1518 end 1534
Pumping Rate (gpm)	400 ml/min
Evacuation Method	Submersible Pump

Field Parameters

Color	clear
Odor	none
Appearance	non turbid
pH (s.u.)	8.25, 8.25, 8.26
Conductivity (mS/cm)	N/A
(µmhos/cm)	~~N/A~~ 469, 469, 467
Turbidity (NTU)	N/A
Temperature (°C)	17.79, 17.93, 18.10
Dissolved Oxygen (mg/L)	~~N/A~~ 1.46, 1.42, 1.39
ORP (mV)	~~N/A~~ -289, -291, -296
Sampling Method	Low Flow
Remarks	Sample time @ 1535
	DTW final = 19.11
	*Gallons in well not calculated b/c of incorrect factor ~~gpf~~

Constituents Sampled	Container Description	Number	Preservative
Site-Specific VOCs (8260)	40 ml glass vial	3	Cool, HCl

Sampling Personnel: AJA COBS / ~~J. Manzo~~/T. Fortner

Well Casing Volumes

Gal./Ft.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

8"

bmp	below measuring point	ml	milliliter	NTU	Nephelometric Turbidity Units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	feet	msl	mean sea-level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not Applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not Recorded	VOC	Volatile Organic Compounds

3.14 ~~x 8~~ x 8"

ARCADIS

LOW FLOW SAMPLING
GROUNDWATER FIELD PARAMETER LOG

Project Number: OH000294.0009.00002

Site Location: General Motors Corporation, Moraine, Ohio

Monitoring Well No.: MT-69

Time Pump Started: 15:18

Depth of Sampling: midscreen

Date: 9/26/2006

Parameters / Time

	15:22	15:25	15:28	15:31	15:34						
Redox Potential (millivolts)	-301.0	-296.0	-289.0	-291.0	-296.0						
Dissolved Oxygen (mg/L)	0.64	0.47	0.46	0.42	0.39						
pH (s.u.)	8.26	8.25	8.25	8.25	8.26						
Specific Conductance (uS/cm)	470	470	469	469	469						
Temperature (C)	16.74	17.65	17.79	17.93	18.10						

Flow Rate: 400ml/min

Total Depth of Well: 137.97

Time Sampled: 15:35

Depth to Water Before Purging: 18.60

Total Water Pumped: 2.5 gal

Depth to Water After Purging: 19.11

Comments:

ARCADIS

Water Sampling Log

Project: GM Sitewide Groundwater | Project No.: OH000294.0902 | Page: 1 of 1

Site Location: Moraine, Ohio | Date: 9-26-06

Site/Well No.: GM-20D | Replicate No.: N/A | Code No.: N

Weather: Sunny, 70's | Sampling Time: Begin 16:50 End 1715

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	727.26
Land Surface Elevation (ft)	NM
Sounded Well Depth (ft bmp)	~~99.6~~ 99.91
Depth to Water (ft bmp)	~~21~~ 21.65
Water-Level Elevation (ft)	705.61
Water Column in Well (ft)	78.26
Casing Diameter/Type	4" PVC
Gallons in Well	50.86
Gallons Pumped/Bailed Prior to Sampling	2.5 gal
Sample Pump Intake Setting (ft bmp)	middle of screen
Purge Time	begin 1653 end 1713
Pumping Rate (gpm)	700 ml/min
Evacuation Method	Submersible Pump

Field Parameters

Color	Clear
Odor	none
Appearance	non turbid
pH (s.u.)	6.94, 6.93, 6.92
Conductivity (mS/cm)	N/A
(µmhos/cm)	~~N/A~~ 1140, 1140, 1140
Turbidity (NTU)	N/A
Temperature (°C)	15.80, 15.80, 15.71
Dissolved Oxygen (mg/L)	~~N/A~~ 1.10, 1.04, 1.02
ORP (mV)	~~N/A~~ 64, 63, 62
Sampling Method	Low Flow
Remarks	Sample time @ 1713
	DTW final = 21.61

Constituents Sampled	Container Description	Number	Preservative
Site-Specific VOCs (8260)	40 ml glass vial	3	Cool, HCl

Sampling Personnel: A James, ~~J. Manzo~~/T. Fortner

Well Casing Volumes

Gal./Ft.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	below measuring point	ml	milliliter	NTU	Nephelometric Turbidity Units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	feet	msl	mean sea-level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not Applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not Recorded	VOC	Volatile Organic Compounds

ARCADIS

LOW FLOW SAMPLING
GROUNDWATER FIELD PARAMETER LOG

Project Number: OH000294.0009.00002

Site Location: General Motors Corporation, Moraine, Ohio

Monitoring Well No.: GM-20D

Time Pump Started: 16:58

Depth of Sampling: midscreen

Date: 9/26/2006

Parameters

Time

	17:00	17:03	17:06	17:09	17:12						
Redox Potential (millivolts)	80.0	70.0	64.0	63.0	62.0						
Dissolved Oxygen (mg/L)	1.70	1.23	1.10	1.04	1.02						
pH (s.u.)	7.19	6.99	6.94	6.93	6.92						
Specific Conductance (uS/cm)	1,140	1,140	1,140	1,140	1,140						
Temperature (C)	15.86	15.83	15.80	15.80	15.77						

Flow Rate: 700ml/min

Total Depth of Well: 99.91

Time Sampled: 17:13

Depth to Water Before Purging: 21.65

Total Water Pumped: 2.5 gal

Depth to Water After Purging: 21.61

Comments:

ARCADIS

Water Sampling Log

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Project	GM Sitewide Groundwater	Project No.	OH000294.0802	Page	1 of 1
Site Location	Moraine, Ohio			Date	9-26-06
Site/Well No.	WSU-24	Replicate No.	~~A~~ DUP6	Code No.	~~NR~~
Weather	Sunny 70s	Sampling Time: Begin	1720	End	1755

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	725.10
Land Surface Elevation (ft)	NM
Sounded Well Depth (ft bmp)	~~65.51~~ ~~99.94~~ 65.56
Depth to Water (ft bmp)	~~X~~ 19.51
Water-Level Elevation (ft)	705.59
Water Column in Well (ft)	46.05
Casing Diameter/Type	2" PVC
Gallons in Well	7.37
Gallons Pumped/Bailed Prior to Sampling	2.5 gal
Sample Pump Intake Setting (ft bmp)	midscreen
Purge Time	begin 1725 end 1740
Pumping Rate (gpm)	400 ml/min
Evacuation Method	Submersible pump

Field Parameters

Color	clear
Odor	none
Appearance	non turbid
pH (s.u.)	6.89, 6.88, 6.88
Conductivity (mS/cm)	N/A
(µmhos/cm)	~~N/A~~ 1300, 1300, 1300
Turbidity (NTU)	N/A
Temperature (°C)	16.73, 16.69, 16.83
Dissolved Oxygen (mg/L)	~~N/A~~ 4.67, 4.69, 4.67
ORP (mV)	~~N/A~~ 83, 82, 83
Sampling Method	Low Flow
Remarks	Sample time @ 1741
	DTW final = 19.51
	EB6@1750 on pump

Constituents Sampled	Container Description	Number	Preservative
Site-Specific VOCs (8260)	40 ml glass vial	3	Cool, HCl

Sampling Personnel JJA/CBS ~~J. Manzo~~/T. Fortner

Well Casing \J. Manzo/T. Fortner

Gal./Ft.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	below measuring point	ml	milliliter	NTU	Nephelometric Turbidity Units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	feet	msl	mean sea-level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not Applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not Recorded	VOC	Volatile Organic Compounds

ARCADIS

LOW FLOW SAMPLING
GROUNDWATER FIELD PARAMETER LOG

Project Number: OH000294.0009.00002

Site Location: General Motors Corporation, Moraine, Ohio

Monitoring Well No.: WSU-24

Time Pump Started: 17:25

Depth of Sampling: midscreen

Date: 9/26/2006

Parameters / Time

	17:28	17:31	17:34	17:37	17:40						
Redox Potential (millivolts)	92.0	85.0	83.0	82.0	83.0						
Dissolved Oxygen (mg/L)	5.06	4.73	4.67	4.69	4.67						
pH (s.u.)	6.99	6.91	6.89	6.88	6.88						
Specific Conductance (uS/cm)	1,300	1,300	1,300	1,300	1,300						
Temperature (C)	16.72	16.57	16.73	16.69	16.69						

Flow Rate: 400ml/min

Total Depth of Well: 65.56

Time Sampled: 17:41

Depth to Water Before Purging: 19.51

Total Water Pumped: 2.5

Depth to Water After Purging: 19.51

Comments: DUP6; EB6@17:50 on pump

ARCADIS

Water Sampling Log

Project	GM Sitewide Groundwater	Project No.	OH000294.09.02	Page	1 of 1
Site Location	Moraine, Ohio			Date	9-27-06
Site/Well No.	ME-6	Replicate No.	N/A	Code No.	N/A
Weather	sunny, 60's	Sampling Time: Begin	7:58	End	8:52

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	735.91
Land Surface Elevation (ft)	NM
Sounded Well Depth (ft bmp)	~~NM~~ 35.98
Depth to Water (ft bmp)	~~26.22~~ 26.22
Water-Level Elevation (ft)	709.69
Water Column in Well (ft)	9.76
Casing Diameter/Type	2" PVC
Gallons in Well	1.56
Gallons Pumped/Bailed Prior to Sampling	5gals
Sample Pump Intake Setting (ft bmp)	~~middle of screen~~ N/A
Purge Time	begin 810 end 8:25
Pumping Rate (gpm)	~~Bailed~~ N/A
Evacuation Method	~~Submersible pump~~ Bailer

Field Parameters

Color	grey
Odor	slight odor
Appearance	blk specs
pH (s.u.)	6.15, 6.79, 6.98
Conductivity (mS/cm)	N/A
(µmhos/cm)	~~N/A~~ 1440, 1390, 1370
Turbidity (NTU)	~~N/A~~ 219, 191, 131
Temperature (°F)	16.49, 16.74, 16.75
Dissolved Oxygen (mg/L)	~~N/A~~ 9.54, 9.42, 9.44
ORP (mV)	~~N/A~~ ~~-8~~ -8, -113, -134
Sampling Method	~~Low Flow~~ ~~grab~~ TF bailer
Remarks	Sample time @ 8:25
	DTW final = 26.22

Constituents Sampled	Container Description	Number	Preservative
Site-Specific VOCs (8260)	40 ml glass vial	3	Cool, HCl
Mn & Fe Dissolved	1 L plastic	1	Cool, HNO_3
Mn & Fe Total	1 L plastic	1	Cool, HNO_3
TOC	40 ml VOA	2	Cool, H_2SO_4
Sulfate, Chloride	250 ml plastic	1	Cool, None
Sulfide	500 ml plastic	1	Cool, NaOH & ZnAc
Ethene, Ethane, Methane	40 ml VOA	2	Cool, BAK

Sampling Personnel: Fortner/Jacobs

Well Casing Volumes

Gal./Ft.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	below measuring point	ml	milliliter	NTU	Nephelometric Turbidity Units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	feet	msl	mean sea-level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not Applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not Recorded	VOC	Volatile Organic Compounds

ARCADIS

Water Sampling Log

Project	GM Sitewide Groundwater	Project No.	OH000294.09.02	Page	1 of 1
Site Location	Moraine, Ohio			Date	9-27-05
Site/Well No.	ME-3	Replicate No.	NA	Code No.	NA
Weather	Sunny 60's	Sampling Time:	Begin 856	End	930

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	732.59
Land Surface Elevation (ft)	NM
Sounded Well Depth (ft bmp)	~~NM~~ 37.07
Depth to Water (ft bmp)	~~NM~~ 26.22
Water-Level Elevation (ft)	706.37
Water Column in Well (ft)	10.85
Casing Diameter/Type	~~2"~~ 2" PVC
Gallons in Well	1.74
Gallons Pumped/Bailed Prior to Sampling	5 gal
Sample Pump Intake Setting (ft bmp)	~~middle of screen~~ N/A
Purge Time	begin 900 end 9:09
Pumping Rate (gpm)	— N/A
Evacuation Method	~~Submersible pump~~ Bailed

Field Parameters

Color	lt. tan
Odor	none
Appearance	silt specks
pH (s.u.)	7.08, ~~7.45~~ 7.12, 7.05
Conductivity (mS/cm)	N/A
(µmhos/cm)	~~N/A~~ 2020, 2190, 2180
Turbidity (NTU)	~~N/A~~ 319, ~~444~~ 170, 227
Temperature (°F/C)	16.85, ~~15.19~~ ~~16.66~~ 16.66, 17.08
Dissolved Oxygen (mg/L)	~~N/A~~ 9.48, ~~10.17~~ 9.57, 9.43
ORP (mV)	~~N/A~~ -105, ~~-110~~ -117, -101
Sampling Method	~~Low Flow~~ grab Bailer
Remarks	Sample time @ 9:10
	DTW final = 26.22

Constituents Sampled	Container Description	Number	Preservative
Site-Specific VOCs (8260)	40 ml glass vial	3	Cool, HCl
Mn & Fe Dissolved	1L plastic	1	Cool, HNO_3
Mn & Fe Total	1L plastic	1	Cool, HNO_3
TOC	40 ml VOA	2	Cool, H_2SO_4
Sulfate, Chloride	250 ml plastic	1	Cool, None
Sulfide	500 ml plastic	1	Cool, NaOH & ZnAc
Ethene, Ethane, Methane	40 ml VOA	2	Cool, BAK

Sampling Personnel: Fortner/Jacobs

Well Casing Volumes

Gal./Ft.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	below measuring point	ml	milliliter	NTU	Nephelometric Turbidity Units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	feet	msl	mean sea-level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not Applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not Recorded	VOC	Volatile Organic Compounds

ARCADIS

Water Sampling Log

Project	GM Sitewide Groundwater	Project No.	OH000294.09.02	Page	1 of 1
Site Location	Moraine, Ohio			Date	9-27-06
Site/Well No.	GM-31	Replicate No.	N/A	Code No.	NA
Weather	Sunny 60's	Sampling Time: Begin	936	End	1011

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	735.23
Land Surface Elevation (ft)	NM
Sounded Well Depth (ft bmp)	~~64~~ 63.95
Depth to Water (ft bmp)	~~25~~ 25.64
Water-Level Elevation (ft)	709.59
Water Column in Well (ft)	38.31
Casing Diameter/Type	2" PVC
Gallons in Well	6.13
Gallons Pumped/Bailed Prior to Sampling	3.5 gal
Sample Pump Intake Setting (ft bmp)	middle of screen
Purge Time	begin 9:46 end 9:59
Pumping Rate (gpm)	700 ml/min
Evacuation Method	Submersible pump

Field Parameters

Color	lt. tan
Odor	none
Appearance	slightly turbid
pH (s.u.)	7.08, 7.09, 7.09
Conductivity (mS/cm)	N/A
(µmhos/cm)	~~N/A~~ 1880, 1870, 1870
Turbidity (NTU)	N/A
Temperature (°F)	17.98, 17.97, 17.94
Dissolved Oxygen (mg/L)	~~N/A~~ .47, .44, .46
ORP (mV)	~~N/A~~ 7, -23, -58
Sampling Method	Low Flow
Remarks	Sample time @ 1000
	DTW final = 26.39

Constituents Sampled	Container Description	Number	Preservative
Site-Specific VOCs (8260)	40 ml glass vial	3	Cool, HCl
Mn & Fe Dissolved	1L plastic	1	Cool, HNO_3
Mn & Fe Total	1L plastic	1	Cool, HNO_3
TOC	40 ml VOA	2	Cool, H_2SO_4
Sulfate, Chloride	250 ml plastic	1	Cool, None
Sulfide	500 ml plastic	1	Cool, NaOH & ZnAc
Ethene, Ethane, Methane	40 ml VOA	2	Cool, BAK

Sampling Personnel: Fortner/Jacobs

Well Casing Volumes

Gal./Ft.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	below measuring point	ml	milliliter	NTU	Nephelometric Turbidity Units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	feet	msl	mean sea-level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not Applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not Recorded	VOC	Volatile Organic Compounds

ARCADIS

LOW FLOW SAMPLING
GROUNDWATER FIELD PARAMETER LOG

Project Number: OH000294.0009.00002

Site Location: General Motors Corporation, Moraine, Ohio

Monitoring Well No.: GM-31

Time Pump Started: 9:46

Depth of Sampling: midscreen

Date: 9/27/2006

Parameters / Time

	9:47	9:50	9:53	9:56	9:59						
Redox Potential (millivolts)	-19.0	-14.0	-7.0	-23.0	-58.0						
Dissolved Oxygen (mg/L)	1.14	0.52	0.47	0.44	0.46						
pH (s.u.)	7.10	7.07	7.08	7.09	7.09						
Specific Conductance (uS/cm)	1,840	1,860	1,880	1,870	1,870						
Temperature (C)	17.75	17.84	17.98	17.97	17.94						

Flow Rate: 700 ml/min

Total Depth of Well: 63.95

Time Sampled: 10:00

Depth to Water Before Purging: 25.64

Total Water Pumped: 3.5 gal

Depth to Water After Purging: 26.39

Comments:

DIS

Sampling Log

	GM Sitewide Groundwater	Project No.	OH000294.09.02	Page	1 of 1
Location	Moraine, Ohio			Date	9-27-06
Site/Well No.	GM-28	Replicate No.	N/A	Code No.	N/A
Weather	Sunny 60's	Sampling Time:	Begin 1016	End	1050

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	738.02
Land Surface Elevation (ft)	NM
Sounded Well Depth (ft bmp)	~~47.15~~ ~~37.28~~ 47.15
Depth to Water (ft bmp)	~~28.75~~ 28.75
Water-Level Elevation (ft)	709.27
Water Column in Well (ft)	18.40
Casing Diameter/Type	2" PVC
Gallons in Well	2.94
Gallons Pumped/Bailed Prior to Sampling	4 gal
Sample Pump Intake Setting (ft bmp)	middle of screen
Purge Time	begin 1022 end 1036
Pumping Rate (gpm)	~400 ml/min
Evacuation Method	Submersible pump

Field Parameters

Color	lt. grey
Odor	none
Appearance	cloudy
pH (s.u.)	7.11, 7.10, 7.08
Conductivity (mS/cm)	N/A
(µmhos/cm)	~~N/A~~ 1910, 1900, 1880
Turbidity (NTU)	N/A
Temperature (°F) (°C)	16.38, 16.31, 16.33
Dissolved Oxygen (mg/L)	~~N/A~~ .35, .31, .29
ORP (mV)	~~N/A~~ -184, -185, -183
Sampling Method	Low Flow
Remarks	Sample time @ 1037
	DTW final = 28.70

Constituents Sampled	Container Description	Number	Preservative
Site-Specific VOCs (8260)	40 ml glass vial	3	Cool, HCl
Mn & Fe Dissolved	1L plastic	1	Cool, HNO_3
Mn & Fe Total	1L plastic	1	Cool, HNO_3
TOC	40 ml VOA	2	Cool, H_2SO_4
Sulfate, Chloride	250 ml plastic	1	Cool, None
Sulfide	500 ml plastic	1	Cool, NaOH & ZnAc
Ethene, Ethane, Methane	40 ml VOA	2	Cool, BAK

Sampling Personnel: Fortner/Jacobs

Well Casing Volumes

Gal./Ft.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	below measuring point	ml	milliliter	NTU	Nephelometric Turbidity Units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	feet	msl	mean sea-level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not Applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not Recorded	VOC	Volatile Organic Compounds

ARCADIS

LOW FLOW SAMPLING
GROUNDWATER FIELD PARAMETER LOG

Project Number: OH000294.0009.00002

Site Location: General Motors Corporation, Moraine, Ohio

Monitoring Well No.: GM-28

Time Pump Started: 10:22

Depth of Sampling: midscreen

Date: 9/27/2006

Parameters / Time

	10:25	10:27	10:30	10:33	10:36						
Redox Potential (millivolts)	-180.0	-184.0	-184.0	-185.0	-183.0						
Dissolved Oxygen (mg/L)	0.58	0.38	0.35	0.31	0.29						
pH (s.u.)	7.13	7.12	7.11	7.10	7.08						
Specific Conductance (uS/cm)	1,950	1,930	1,910	1,900	1,880						
Temperature (C)	16.55	16.49	16.38	16.31	16.33						

Flow Rate: 400ml/min

Total Depth of Well: 37.28

Time Sampled: 10:37

Depth to Water Before Purging: 28.75

Total Water Pumped: 4 gal

Depth to Water After Purging: 28.70

Comments:

ARCADIS

Water Sampling Log

Project	GM Sitewide Groundwater	Project No.	OH000294.09.02	Page	1 of 1
Site Location	Moraine, Ohio			Date	9-28-06
Site/Well No.	GM-10	Replicate No.	NA	Code No.	NA
Weather	Sunny 70's	Sampling Time: Begin	1320	End	1402

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	723.90
Land Surface Elevation (ft)	NM
Sounded Well Depth (ft bmp)	~~49.54~~ 49.65
Depth to Water (ft bmp)	~~29~~ 19.08
Water-Level Elevation (ft)	713.82
Water Column in Well (ft)	30.57
Casing Diameter/Type	2" PVC
Gallons in Well	4.89
Gallons Pumped/Bailed Prior to Sampling	4.5 gal
Sample Pump Intake Setting (ft bmp)	middle of screen
Purge Time	begin 1332 end 1350
Pumping Rate (gpm)	700 ml/min
Evacuation Method	Submersible pump

Field Parameters

Color	Clear
Odor	none
Appearance	non turbid
pH (s.u.)	6.92, 6.93, 6.94
Conductivity (mS/cm)	N/A
(µmhos/cm)	~~N/A~~ 1320, 1320, 1320
Turbidity (NTU)	N/A
Temperature (°C)	16.28, 16.24, 16.30
Dissolved Oxygen (mg/L)	~~N/A~~ 1.14, 1.02, 0.95
ORP (mV)	~~N/A~~ 117, 104, 95
Sampling Method	Low Flow
Remarks	Sample time @ 1351
	DTW final = 19.03

Constituents Sampled	Container Description	Number	Preservative
Site-Specific VOCs (8260)	40 ml glass vial	3	Cool, HCl

Sampling Personnel: Fortner/Jacobs

Well Casing Volumes

Gal./Ft.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	below measuring point	ml	milliliter	NTU	Nephelometric Turbidity Units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	feet	msl	mean sea-level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not Applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not Recorded	VOC	Volatile Organic Compounds

ARCADIS

LOW FLOW SAMPLING
GROUNDWATER FIELD PARAMETER LOG

Project Number: OH000294.0009.00002

Site Location: Moraine, Ohio

Monitoring Well No.: GM-10

Time Pump Started: 13:32

Depth of Sampling: midscreen

Date: 9/27/2006

Parameters / Time

	13:35	13:38	13:41	13:44	13:47	13:50					
Redox Potential (millivolts)	162.0	143.0	127.0	117.0	104.0	95.0					
Dissolved Oxygen (mg/L)	1.81	1.49	1.24	1.14	1.02	0.95					
pH (s.u.)	6.72	6.83	6.90	6.92	6.93	6.94					
Specific Conductance (uS/cm)	1,330	1,330	1,320	1,320	1,320	1,320					
Temperature (C)	16.50	16.32	16.28	16.28	16.24	16.30					

Flow Rate: 700ml/min

Total Depth of Well: 49.65

Time Sampled: 13:51

Depth to Water Before Purging: 19.08

Total Water Pumped: 4.5 gal

Depth to Water After Purging: 19.03

Comments:

ARCADIS

Water Sampling Log

Project	GM Sitewide Groundwater	Project No.	OH000294.09.02	Page	1 of 1
Site Location	Moraine, Ohio			Date	9-27-06
Site/Well No.	GM-17	Replicate No.	NA	Code No.	NA
Weather	Sunny 70's	Sampling Time: Begin	14:05	End	14:37

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	723.84
Land Surface Elevation (ft)	NM
Sounded Well Depth (ft bmp)	~~39.4~~ 49.50
Depth to Water (ft bmp)	~~2~~ 18.78
Water-Level Elevation (ft)	705.06
Water Column in Well (ft)	30.72
Casing Diameter/Type	2" PVC
Gallons in Well	4.92
Gallons Pumped/Bailed Prior to Sampling	3 gal
Sample Pump Intake Setting (ft bmp)	middle of screen
Purge Time	begin 1412 end 1426
Pumping Rate (gpm)	700ml/min
Evacuation Method	Submersible pump

Field Parameters

Color	clear
Odor	none
Appearance	Moderate
pH (s.u.)	~~7.7~~ 7.00, 7.00, 7.00
Conductivity (mS/cm)	N/A
(µmhos/cm)	~~N/A~~ 1680, 1680, 1680
Turbidity (NTU)	N/A
Temperature (°F)	17.06, 17.11, 17.23
Dissolved Oxygen (mg/L)	~~N/A~~ .36, .33, .30
ORP (mV)	~~N/A~~ -29, -39, -40
Sampling Method	Low Flow
Remarks	Sample time @ 1427
	DTW final = 18.74

Constituents Sampled	Container Description	Number	Preservative
Site-Specific VOCs (8260)	40 ml glass vial	3	Cool, HCl

Sampling Personnel: Fortner/Jacobs

Well Casing Volumes

Gal./Ft.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	below measuring point	ml	milliliter	NTU	Nephelometric Turbidity Units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	feet	msl	mean sea-level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not Applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not Recorded	VOC	Volatile Organic Compounds

ARCADIS

LOW FLOW SAMPLING
GROUNDWATER FIELD PARAMETER LOG

Project Number: OH000294.0009.00002

Site Location: General Motors Corporation, Moraine, Ohio

Monitoring Well No.: GM-17

Time Pump Started: 14:12

Depth of Sampling: midscreen

Date: 9/27/2006

Parameters / Time

	14:14	14:17	14:20	14:23	14:26						
Redox Potential (millivolts)	57.0	-1.0	-29.0	-39.0	-40.0						
Dissolved Oxygen (mg/L)	0.70	0.47	0.36	0.33	0.30						
pH (s.u.)	7.03	7.00	7.00	7.00	7.00						
Specific Conductance (uS/cm)	1,690	1,680	1,680	1,680	1,680						
Temperature (C)	17.60	17.14	17.06	17.11	17.23						

Flow Rate: 700ml/min

Total Depth of Well: 49.5

Time Sampled: 14:27

Depth to Water Before Purging: 18.78

Total Water Pumped: 3 gal

Depth to Water After Purging: 18.74

Comments:

ARCADIS

Water Sampling Log

Project	Site Wide Annual	Project No.	OH000294.9.2	Page	1 of 1
Site Location	GM Moraine, OH			Date	9-27-06
Site/Well No.	DN-13	Replicate No.	N/A	Code No.	NA
Weather	Sunny 70's	Sampling Time:	Begin ~~1440~~ 1435	End	1450

Evacuation Data

Measuring Point	N/A
MP Elevation (ft)	
Land Surface Elevation (ft)	
Sounded Well Depth (ft bmp)	
Depth to Water (ft bmp)	
Water-Level Elevation (ft)	
Water Column in Well (ft)	
Casing Diameter/Type	
Gallons in Well	
Gallons Pumped/Bailed Prior to Sampling	
Sample Pump Intake Setting (ft bmp)	N/A
Purge Time	begin 1435 end 1443
Pumping Rate (gpm)	N/A
Evacuation Method	Submersible production pump

Field Parameters

Color	None
Odor	None
Appearance	Non-turbid
pH (s.u.)	NM
Conductivity (mS/cm)	
(µmhos/cm)	
Turbidity (NTU)	
Temperature (°C)	
Dissolved Oxygen (mg/L)	
Salinity (%)	NM
Sampling Method	From Spicket
Remarks	Sampled @ 1444

Constituents Sampled	Container Description	Number	Preserv
Site-specific VOC's	40ml glass vial	3	Cool, HCl

Sampling Personnel: Fortner / Jacobs

Well Casing Volumes

Gal./Ft.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	below measuring point	ml	milliliter	NTU	Nephelometric Turbidity Units
°C	Degrees Celsius	mS/cm	Milisiemens per centimeter	PVC	Polyvinyl chloride
ft	feet	msl	mean sea-level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not Applicable	umhos/cm	Micromhos per centimeter
mg/L	Miligrams per liter	NM	Not Measured	VOC	Volatile Organic Compounds

ARCADIS

Water Sampling Log

Project	GM Sitewide Groundwater	Project No.	OH000294.09.02	Page	1 of 1
Site Location	Moraine, Ohio			Date	9-27-06
Site/Well No.	GM-18	Replicate No.	NA	Code No.	N/A
Weather	Sunny 70's	Sampling Time: Begin	1455	End	1530

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	723.80
Land Surface Elevation (ft)	NM
Sounded Well Depth (ft bmp)	~~53.99~~ 54.15
Depth to Water (ft bmp)	~~2~~ 18.87
Water-Level Elevation (ft)	704.93
Water Column in Well (ft)	35.28
Casing Diameter/Type	2" PVC
Gallons in Well	5.64
Gallons Pumped/Bailed Prior to Sampling	3 gal
Sample Pump Intake Setting (ft bmp)	middle of screen
Purge Time	begin 15:00 end 1514
Pumping Rate (gpm)	800ml/min
Evacuation Method	Submersible pump

Field Parameters

Color	clear
Odor	none
Appearance	non-turbid
pH (s.u.)	6.92, 6.92, 6.92
Conductivity (mS/cm)	N/A
(µmhos/cm)	~~N/A~~ 1820, 1820, 1820
Turbidity (NTU)	N/A
Temperature (°F)	17.41, 17.35, 17.33
Dissolved Oxygen (mg/L)	~~N/A~~ .39, .37, .32
ORP (mV)	~~N/A~~ -37, -31, -27
Sampling Method	Low Flow
Remarks	Sample time @ 1515
	DTW final = 18.81

Constituents Sampled	Container Description	Number	Preservative
Site-Specific VOCs (8260)	40 ml glass vial	3	Cool, HCl

Sampling Personnel: Fortner/Jacobs

Well Casing Volumes

Gal./Ft.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	below measuring point	ml	milliliter	NTU	Nephelometric Turbidity Units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	feet	msl	mean sea-level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not Applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not Recorded	VOC	Volatile Organic Compounds

ARCADIS

LOW FLOW SAMPLING
GROUNDWATER FIELD PARAMETER LOG

Project Number: OH000294.0009.00002

Site Location: General Motors Corporation, Moraine, Ohio

Monitoring Well No.: GM-18

Time Pump Started: 15:00

Depth of Sampling: midscreen

Date: 9/27/2006

Parameters / Time

	15:02	15:05	15:08	15:11	15:14						
Redox Potential (millivolts)	13.0	-17.0	-37.0	-31.0	-27.0						
Dissolved Oxygen (mg/L)	0.89	0.46	0.39	0.37	0.32						
pH (s.u.)	7.00	6.93	6.92	6.92	6.92						
Specific Conductance (uS/cm)	1,810	1,810	1,820	1,820	1,820						
Temperature (C)	17.58	17.39	17.61	17.35	17.33						

Flow Rate: 800 ml/min

Total Depth of Well: 54.15

Time Sampled: 15:15

Depth to Water Before Purging: 18.87

Total Water Pumped: 3 gal

Depth to Water After Purging: 18.81

Comments:

ARCADIS

Water Sampling Log

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Project: GM Sitewide Groundwater | Project No. OH000294.0802 | Page 1 of 1

Site Location: Moraine, Ohio | Date: 9-27-06

Site/Well No.: GM-39 | Replicate No.: NA | Code No.: NA

Weather: Sunny, 70's | Sampling Time: Begin 1537 End 1617

Evacuation Data

Measuring Point	Top of casing
MP Elevation (ft)	730.95
Land Surface Elevation (ft)	NM
Sounded Well Depth (ft bmp)	116.60
Depth to Water (ft bmp)	23.09
Water-Level Elevation (ft)	707.86
Water Column in Well (ft)	93.51
Casing Diameter/Type	2" PVC
Gallons in Well	14.96
Gallons Pumped/Bailed Prior to Sampling	4 gal
Sample Pump Intake Setting (ft bmp)	middle of screen
Purge Time	begin 1545 end 1601
Pumping Rate (gpm)	1000 ml/min
Evacuation Method	Submersible Pump

Field Parameters

Color	lt. gray
Odor	none
Appearance	slightly turbid
pH (s.u.)	6.87, 6.86, 6.86
Conductivity (mS/cm)	N/A
(µmhos/cm)	~~N/A~~ 1660, 1650, 1640
Turbidity (NTU)	N/A
Temperature (°F)	16.59, 16.58, 16.47
Dissolved Oxygen (mg/L)	~~N/A~~ .40, .36, .35
ORP (mV)	~~N/A~~ -128, -127, -126
Sampling Method	Low Flow
Remarks	Sample time @ 1602
	DTW final = 23.04

Constituents Sampled	Container Description	Number	Preservative
Site-Specific VOCs (8260)	40 ml glass vial	3	Cool, HCl

Sampling Personnel: Jacobs ~~J. Manzo~~/T. Fortner

Well Casing Volumes

Gal./Ft.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	below measuring point	ml	milliliter	NTU	Nephelometric Turbidity Units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	feet	msl	mean sea-level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not Applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not Recorded	VOC	Volatile Organic Compounds

ARCADIS

LOW FLOW SAMPLING
GROUNDWATER FIELD PARAMETER LOG

Project Number: OH000294.0009.00002

Site Location: General Motors Corporation, Moraine, Ohio

Monitoring Well No.: GM-39

Time Pump Started: 15:45

Depth of Sampling: midscreen

Date: 9/27/2006

Parameters / Time

	15:49	15:52	15:55	15:58	16:01						
Redox Potential (millivolts)	-134.0	-130.0	-128.0	-127.0	-126.0						
Dissolved Oxygen (mg/L)	1.23	0.47	0.40	0.36	0.35						
pH (s.u.)	7.01	6.89	6.87	6.86	6.86						
Specific Conductance (uS/cm)	1,580	1,660	1,660	1,650	1,640						
Temperature (C)	16.61	16.57	16.59	16.58	16.47						

Flow Rate: 1000 ml/min

Time Sampled: 16:02

Total Water Pumped: 4 gal

Total Depth of Well: 116.6

Depth to Water Before Purging: 23.09

Depth to Water After Purging: 23.04

Comments:

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Water Sampling Log

Project	GM Sitewide Groundwater	Project No.	OH000294.09.02	Page	1 of 1
Site Location	Moraine, Ohio			Date	9-28-06
Site/Well No.	GM-27	Replicate No.	DUP1 / MS/MSD	Code No.	N/A
Weather	Cloudy; 50's - rain	Sampling Time:	Begin 830	End	0936

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	730.57
Land Surface Elevation (ft)	NM
Sounded Well Depth (ft bmp)	~~47.49~~ TF 46.60
Depth to Water (ft bmp)	~~2~~ TF 22.64
Water-Level Elevation (ft)	707.93
Water Column in Well (ft)	23.96
Casing Diameter/Type	2" PVC
Gallons in Well	3.83
Gallons Pumped/Bailed Prior to Sampling	5 gallons
Sample Pump Intake Setting (ft bmp)	middle of screen
Purge Time	begin 0844 end 0906
Pumping Rate (gpm)	600 mL/min
Evacuation Method	Submersible pump

Field Parameters

Color	light tan
Odor	None
Appearance	turbid
pH (s.u.)	6.85, 6.86, 6.86
Conductivity (mS/cm)	N/A
(µmhos/cm)	~~N/A~~ TF 1430, 1430, 1420
Turbidity (NTU)	N/A
Temperature (°F/°C)	16.51, 16.51, 16.56
Dissolved Oxygen (mg/L)	~~N/A~~ TF
ORP (mV)	~~N/A~~ TF
Sampling Method	Low Flow
Remarks	Sample time @ 0907
	DTW final = 22.65
	EB7 @ 0921
	tubing

Constituents Sampled	Container Description	Number	Preservative
Site-Specific VOCs (8260)	40 ml glass vial	8/2	Cool, HCl

Sampling Personnel: Fortner/Jacobs

Well Casing Volumes

Gal./Ft.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	below measuring point	ml	milliliter	NTU	Nephelometric Turbidity Units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	feet	msl	mean sea-level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not Applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not Recorded	VOC	Volatile Organic Compounds

ARCADIS

LOW FLOW SAMPLING
GROUNDWATER FIELD PARAMETER LOG

Project Number: OH000294.0009.00002

Site Location: General Motors Corporation, Moraine, Ohio

Monitoring Well No.: GM-27

Time Pump Started: 8:44

Depth of Sampling: middle of screen

Date: 9/28/2006

Parameters / Time

	8:45	8:48	8:51	8:54	8:57	9:00	9:03	9:06			
Redox Potential (millivolts)	167.0	153.0	136.0	81.0	44.0	25.0	22.0	20.0			
Dissolved Oxygen (mg/L)	0.83	0.44	0.40	0.35	0.32	0.29	0.28	0.28			
pH (s.u.)	6.37	6.75	6.76	6.83	6.85	6.85	6.86	6.86			
Specific Conductance (uS/cm)	592	1,250	1,360	1,410	1,420	1,420	1,430	1,420			
Temperature (C)	16.36	16.60	16.62	16.61	16.51	16.51	16.51	16.50			

Flow Rate: 600 ml/min

Total Depth of Well: 46.6

Time Sampled: 9:07

Depth to Water Before Purging: 22.64

Total Water Pumped: 5 gallons

Depth to Water After Purging: 22.65

Comments: EB7 at 0921 on tubing; DUP7 and MS/MSD also taken at this well.

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Water Sampling Log

Project	GM Sitewide Groundwater	Project No.	OH000294.09.02	Page	1 of 1
Site Location	Moraine, Ohio			Date	9/28/06
Site/Well No.	GM-29	Replicate No.	N/A	Code No.	N/A
Weather	Cloudy; rain; 50's	Sampling Time:	Begin 0935	End	1012

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	730.78
Land Surface Elevation (ft)	NM
Sounded Well Depth (ft bmp)	33.78
Depth to Water (ft bmp)	~~NM~~ 23.67
Water-Level Elevation (ft)	707.11
Water Column in Well (ft)	10.11
Casing Diameter/Type	2" PVC
Gallons in Well	1.62
Gallons Pumped/Bailed Prior to Sampling	3 gallons
Sample Pump Intake Setting (ft bmp)	middle of screen
Purge Time	begin 0936 end 0952
Pumping Rate (gpm)	400 mL/min
Evacuation Method	Submersible pump

Field Parameters

Color	lt tan
Odor	none
Appearance	slightly turbid
pH (s.u.)	6.93, 6.94, 6.94
Conductivity (mS/cm)	N/A
(µmhos/cm)	~~NM~~ 2170, 2160, 2170
Turbidity (NTU)	N/A
Temperature (°F) (°C)	16.71, 16.70, 16.69
Dissolved Oxygen (mg/L)	~~NM~~
ORP (mV)	~~NM~~ -166, -167, -168
Sampling Method	Low Flow
Remarks	Sample time @ 0953
	DTW final = 23.66

Constituents Sampled	Container Description	Number	Preservative
Site-Specific VOCs (8260)	40 ml glass vial	3	Cool, HCl
Mn & Fe Dissolved	1L plastic	1	Cool, HNO_3
Mn & Fe Total	1L plastic	1	Cool, HNO_3
TOC	40 ml VOA	2	Cool, H_2SO_4
Sulfate, Chloride	250 ml plastic	1	Cool, None
Sulfide	500 ml plastic	1	Cool, NaOH & ZnAc
Ethene, Ethane, Methane	40 ml VOA	2	Cool, BAK

Sampling Personnel: Fortner/Jacobs

Well Casing Volumes

Gal./Ft.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	below measuring point	ml	milliliter	NTU	Nephelometric Turbidity Units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	feet	msl	mean sea-level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not Applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not Recorded	VOC	Volatile Organic Compounds

ARCADIS

LOW FLOW SAMPLING
GROUNDWATER FIELD PARAMETER LOG

Project Number: OH000294.0009.00002

Site Location: General Motors Corporation, Moraine, Ohio

Monitoring Well No.: GM-29

Time Pump Started: 9:36

Depth of Sampling: middle of screen

Date: 9/28/2006

Parameters / Time

	9:37	9:40	9:43	9:46	9:49	9:52					
Redox Potential (millivolts)	-140.0	-158.0	-165.0	-166.0	-167.0	-168.0					
Dissolved Oxygen (mg/L)	0.92	0.44	0.33	0.31	0.28	0.29					
pH (s.u.)	6.76	6.89	6.92	6.93	6.94	6.94					
Specific Conductance (uS/cm)	2,130	2,150	2,150	2,170	2,160	2,170					
Temperature (C)	16.46	16.74	16.75	16.71	16.70	16.69					

Flow Rate: 400 ml/min

Total Depth of Well: 33.78

Time Sampled: 9:53

Depth to Water Before Purging: 23.67

Total Water Pumped: 3 gallons

Depth to Water After Purging: 23.66

Comments:

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Water Sampling Log

Project	GM Sitewide Groundwater	Project No.	OH000294.09.02	Page	1 of 1
Site Location	Moraine, Ohio			Date	9/28/06
Site/Well No.	GM-23	Replicate No.	N/A	Code No.	N/A
Weather	Cloudy; 60's	Sampling Time:	Begin ~~1030~~ 1020 JF	End	1116

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	731
Land Surface Elevation (ft)	NM
Sounded Well Depth (ft bmp)	~~NM~~ JF 32.30
Depth to Water (ft bmp)	~~NM~~ JF 23.18
Water-Level Elevation (ft)	707.82
Water Column in Well (ft)	9.12
Casing Diameter/Type	2" / PVC
Gallons in Well	1.46
Gallons Pumped/Bailed Prior to Sampling	5 gallons
Sample Pump Intake Setting (ft bmp)	middle of screen
Purge Time	begin 1032 end 1035
Pumping Rate (gpm)	800 mL/min
Evacuation Method	Submersible pump

Field Parameters

Color	None
Odor	~~Mod~~ Slight
Appearance	Non-turbid, sheen
pH (s.u.)	6.68, 6.68, 6.69
Conductivity (mS/cm)	N/A
(µmhos/cm)	~~NM~~ JF 2770, 2750, 2740
Turbidity (NTU)	N/A
Temperature (°C)	16.78, 16.80, 16.78
Dissolved Oxygen (mg/L)	~~NM~~ JF 0.35, 0.39, 0.40
ORP (mV)	~~NM~~ JF -102, -105, -108
Sampling Method	Low Flow
Remarks	Sample time @ 1036
	DTW final = 23.18

Constituents Sampled	Container Description	Number	Preservative
Site-Specific VOCs (8260)	40 ml glass vial	3	Cool, HCl
Mn & Fe Dissolved	1 L plastic	1	Cool, HNO_3
Mn & Fe Total	1 L plastic	1	Cool, HNO_3
TOC	40 ml VOA	2	Cool, H_2SO_4 *
Sulfate, Chloride	250 ml plastic	1	Cool, None
Sulfide	500 ml plastic	1	Cool, NaOH & ZnAc
Ethene, Ethane, Methane	40 ml VOA	2	Cool, BAK

Sampling Personnel: Fortner/Jacobs

Well Casing Volumes

Gal./Ft.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	below measuring point	ml	milliliter	NTU	Nephelometric Turbidity Units
°C	Degrees Celsius	mS/cm	Millisiemens per centimeter	PVC	Polyvinyl chloride
ft	feet	msl	mean sea-level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not Applicable	umhos/cm	Micromhos per centimeter
mg/L	Milligrams per liter	NR	Not Recorded	VOC	Volatile Organic Compounds

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LOW FLOW SAMPLING
GROUNDWATER FIELD PARAMETER LOG

Project Number: OH000294.0009.00002

Site Location: General Motors Corporation, Moraine, Ohio

Monitoring Well No.: GM-23

Time Pump Started: 10:22

Depth of Sampling: middle of screen

Date: 9/28/2006

Parameters / Time

	10:23	10:26	10:29	10:32	10:35						
Redox Potential (millivolts)	-88.0	-95.0	-102.0	-105.0	-108.0						
Dissolved Oxygen (mg/L)	0.84	0.40	0.35	0.39	0.40						
pH (s.u.)	6.69	6.67	6.68	6.68	6.69						
Specific Conductance (uS/cm)	2,730	2,790	2,770	2,750	2,740						
Temperature (C)	16.74	16.75	16.78	16.80	16.78						

Flow Rate: 800 ml/min

Total Depth of Well: 32.30

Time Sampled: 10:36

Depth to Water Before Purging: 23.18

Total Water Pumped: 4 gallons

Depth to Water After Purging: 23.19

Comments:

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Appendix C

Groundwater Analytical Database for 2006

Table C-1. Summary of Groundwater VOC Analytical Results from Upper/Lower Aquifer Monitoring Wells in September 2006, General Motors Corporation, Moraine, Ohio.

		Upgradient of the Site		On-Site			
	Units	HR-9 9/21/2006 Upper Aquifer	HR-11 9/25/2006 Upper Aquifer	HR-8 9/21/2006 Upper Aquifer	HR-4 9/25/2006 Upper Aquifer	W-2-N 9/22/2006 Upper Aquifer	DUP 9/22/2006 QA/QC
Volatile Organic Compounds							
1,1,1-Trichloroethane	ug/l	16	< 1 U	4.2	< 1 U	0.25 J	0.25 J
1,1-Dichloroethane	ug/l	36	6.7	6.1	1.6	0.29 J	0.26 J
1,1-Dichloroethene	ug/l	0.65 J	< 1 U	< 1 U	< 1 U	< 1 UJ	< 1 UJ
Benzene	ug/l	< 1.4 U	< 1 U	< 1 U	< 1 U	< 1 UJ	< 1 UJ
cis-1,2-Dichloroethene	ug/l	15	0.31 J	0.92 J	0.26 J	1.4 J	1.4 J
Ethylbenzene	ug/l	< 1.4 U	< 1 U	< 1 U	< 1 U	< 1 UJ	< 1 UJ
Tetrachloroethene	ug/l	< 1.4 U	< 1 U	< 1 U	0.41 J	< 1 UJ	< 1 UJ
Toluene	ug/l	< 1.4 U	< 1 U	< 1 U	< 1 U	< 1 UJ	< 1 UJ
trans-1,2-Dichloroethene	ug/l	2.5	< 1 U	0.3 J	< 1 U	0.18 J	0.17 J
Trichloroethene	ug/l	13	< 1 U	0.55 J	0.34 J	1 J	1.1 J
Vinyl chloride	ug/l	< 1.4 U	< 1 U	< 1 U	< 1 U	< 1 UJ	< 1 UJ
Xylene (total)	ug/l	< 2.9 U	< 2 U	< 2 U	< 2 U	< 2 UJ	< 2 UJ

ug/l - Micrograms per liter.
< - Constituent not detected above laboratory reporting limit shown.
J - Value is estimated.
U - Constituent not detected above laboratory reporting limit shown.

Table C-1. Summary of Groundwater VOC Analytical Results from Upper/Lower Aquifer Monitoring Wells in September 2006, General Motors Corporation, Moraine, Ohio.

		On-Site					
	Units	W-3-N 9/25/2006 Upper Aquifer	W-4-N 9/25/2006 Upper Aquifer	HR-2 9/25/2006 Upper Aquifer	HR-5 9/22/2006 Upper Aquifer	HR-3 9/25/2006 Upper Aquifer	HR-1 9/25/2006 Upper Aquifer
Volatile Organic Compounds							
1,1,1-Trichloroethane	ug/l	< 5 U	< 1 U	< 1 U	< 1 UJ	< 1 U	0.57 J
1,1-Dichloroethane	ug/l	< 5 U	1.3	5.2	0.41 J	10	1.7
1,1-Dichloroethene	ug/l	< 5 U	< 1 U	< 1 U	< 1 UJ	< 1 U	< 1.7 U
Benzene	ug/l	< 5 U	< 1 U	< 1 U	< 1 UJ	< 1 U	< 1.7 U
cis-1,2-Dichloroethene	ug/l	140	2.4	5.6	5.2 J	8.2	14
Ethylbenzene	ug/l	< 5 U	< 1 U	< 1 U	< 1 UJ	< 1 U	< 1.7 U
Tetrachloroethene	ug/l	< 5 U	0.96 J	< 1 U	0.27 J	< 1 U	< 1.7 U
Toluene	ug/l	< 5 U	< 1 U	< 1 U	< 1 UJ	< 1 U	< 1.7 U
trans-1,2-Dichloroethene	ug/l	1.9 J	0.19 J	0.79 J	0.46 J	0.99 J	1.4 J
Trichloroethene	ug/l	< 5 U	7.6	0.48 J	13 J	7.2	50
Vinyl chloride	ug/l	9.6	0.56 J	< 1 U	0.22 J	< 1 U	< 1.7 U
Xylene (total)	ug/l	< 10 U	< 2 U	< 2 U	< 2 UJ	< 2 U	< 3.3 U

ug/l - Micrograms per liter.
< - Constituent not detected above laboratory reporting limit shown.
J - Value is estimated.
U - Constituent not detected above laboratory reporting limit shown.

Table C-1. Summary of Groundwater VOC Analytical Results from Upper/Lower Aquifer Monitoring Wells in September 2006, General Motors Corporation, Moraine, Ohio.

		On-Site					
	Units	GM-30 9/20/2006 Upper Aquifer	GM-23 9/28/2006 Upper Aquifer	GM-27 9/28/2006 Upper Aquifer	DUP 9/28/2006 QA/QC	GM-29 9/28/2006 Upper Aquifer	GM-28 9/27/2006 Upper Aquifer
Volatile Organic Compounds							
1,1,1-Trichloroethane	ug/l	< 33 U	< 330 U	< 2.5 U	< 2 U	17 J	< 1 U
1,1-Dichloroethane	ug/l	25 J	< 330 U	2.6	2.5	15 J	4.2
1,1-Dichloroethene	ug/l	< 33 U	< 330 U	< 2.5 U	< 2 U	< 33 U	< 1 U
Benzene	ug/l	< 33 U	< 330 U	< 2.5 U	< 2 U	< 33 U	< 1 U
cis-1,2-Dichloroethene	ug/l	< 33 U	11000	14	14	1300	0.26 J
Ethylbenzene	ug/l	570	< 330 U	< 2.5 U	< 2 U	< 33 U	< 1 U
Tetrachloroethene	ug/l	< 33 U	370	1 J	0.94 J	15 J	< 1 U
Toluene	ug/l	5.8 J	< 330 U	< 2.5 U	< 2 U	< 33 U	< 1 U
trans-1,2-Dichloroethene	ug/l	< 33 U	270 J	1 J	0.92 J	20 J	0.66 J
Trichloroethene	ug/l	< 33 U	95 J	80	78	310	0.43 J
Vinyl chloride	ug/l	< 33 U	4100	< 2.5 U	0.52 J	210	0.42 J
Xylene (total)	ug/l	2500	< 670 U	< 5 U	< 4 U	< 67 U	< 2 U

ug/l - Micrograms per liter.
< - Constituent not detected above laboratory reporting limit shown.
J - Value is estimated.
U - Constituent not detected above laboratory reporting limit shown.

Table C-1. Summary of Groundwater VOC Analytical Results from Upper/Lower Aquifer Monitoring Wells in September 2006, General Motors Corporation, Moraine, Ohio.

		On-Site					
	Units	ME-6 9/27/2006 Upper Aquifer	GM-31 9/27/2006 Upper Aquifer	ME-3 9/27/2006 Upper Aquifer	GM-43 9/22/2006 Upper Aquifer	GM-45 9/22/2006 Upper Aquifer	GM-22 9/20/2006 Upper Aquifer
Volatile Organic Compounds							
1,1,1-Trichloroethane	ug/l	1.4	2.3 J	1.1	< 5 UJ	3.5 J	0.47 J
1,1-Dichloroethane	ug/l	6.3	5.1	8.5	3.7 J	3.1 J	1.1
1,1-Dichloroethene	ug/l	< 1.4 U	< 4 U	< 1 U	< 5 UJ	< 8 UJ	< 1 U
Benzene	ug/l	< 1.4 U	< 4 U	< 1 U	< 5 UJ	< 8 UJ	< 1 U
cis-1,2-Dichloroethene	ug/l	27	110	3.5	120 J	54 J	0.28 J
Ethylbenzene	ug/l	< 1.4 U	< 4 U	< 1 U	< 5 UJ	< 8 UJ	< 1 U
Tetrachloroethene	ug/l	13	< 4 U	1.9	21 J	230 J	3.2
Toluene	ug/l	< 1.4 U	< 4 U	< 1 U	< 5 UJ	< 8 UJ	< 1 U
trans-1,2-Dichloroethene	ug/l	1.3 J	2.9 J	0.34 J	5.7 J	2.7 J	< 1 U
Trichloroethene	ug/l	32	65	2.4	98 J	230 J	3
Vinyl chloride	ug/l	11	1.2 J	2.2	< 5 UJ	< 8 UJ	< 1 U
Xylene (total)	ug/l	< 2.9 U	< 8 U	< 2 U	< 10 UJ	< 16 UJ	< 2 U

ug/l - Micrograms per liter.
< - Constituent not detected above laboratory reporting limit shown.
J - Value is estimated.
U - Constituent not detected above laboratory reporting limit shown.

Table C-1. Summary of Groundwater VOC Analytical Results from Upper/Lower Aquifer Monitoring Wells in September 2006, General Motors Corporation, Moraine, Ohio.

		On-Site					
	Units	GM-19S 9/21/2006 Upper Aquifer	EAST 9/21/2006 Upper Aquifer	GM-33 9/21/2006 Upper Aquifer	GM-35 9/22/2006 Upper Aquifer	GM-32 9/19/2006 Upper Aquifer	GM-21 9/20/2006 Upper Aquifer
Volatile Organic Compounds							
1,1,1-Trichloroethane	ug/l	9.7 J	10	18	5.5 J	< 10 U	12
1,1-Dichloroethane	ug/l	7 J	3.2	4.5	26 J	3.7 J	8.6
1,1-Dichloroethene	ug/l	< 22 U	0.59 J	1.1 J	< 5 UJ	< 10 U	0.19 J
Benzene	ug/l	< 22 U	< 1.4 U	< 1.7 U	< 5 UJ	< 10 U	< 1 U
cis-1,2-Dichloroethene	ug/l	660	4.1	6.9	160 J	< 10 U	14
Ethylbenzene	ug/l	< 22 U	< 1.4 U	< 1.7 U	< 5 UJ	< 10 U	< 1 U
Tetrachloroethene	ug/l	9.1 J	41	37	14 J	< 10 U	< 1 U
Toluene	ug/l	< 22 U	< 1.4 U	< 1.7 U	< 5 UJ	< 10 U	< 1 U
trans-1,2-Dichloroethene	ug/l	10 J	< 1.4 U	0.44 J	11 J	< 10 U	4.3
Trichloroethene	ug/l	11 J	29	64	130 J	< 10 U	5.9
Vinyl chloride	ug/l	< 22 U	< 1.4 U	< 1.7 U	13 J	< 10 U	9.3
Xylene (total)	ug/l	< 44 U	< 2.9 U	< 3.3 U	< 10 UJ	< 20 U	< 2 U

ug/l - Micrograms per liter.
< - Constituent not detected above laboratory reporting limit shown.
J - Value is estimated.
U - Constituent not detected above laboratory reporting limit shown.

Table C-1. Summary of Groundwater VOC Analytical Results from Upper/Lower Aquifer Monitoring Wells in September 2006, General Motors Corporation, Moraine, Ohio.

			On-Site				
	Units	DUP 9/20/2006 QA/QC	HR-17 9/18/2006 Upper Aquifer	W-2-S 9/18/2006 Upper Aquifer	W-3-S 9/18/2006 Upper Aquifer	W-4-S 9/19/2006 Upper Aquifer	GM-8 9/19/2006 Upper Aquifer
Volatile Organic Compounds							
1,1,1-Trichloroethane	ug/l	12	< 1 U	1.8	2.5	1.7	< 5 U
1,1-Dichloroethane	ug/l	8.7	0.6 J	1.2	< 1 U	1.3	18
1,1-Dichloroethene	ug/l	0.23 J	< 1 U	< 1 U	< 1 U	< 1 U	< 5 U
Benzene	ug/l	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	2.1 J
cis-1,2-Dichloroethene	ug/l	14	4.6	1.2	< 1 U	4.3	2.1 J
Ethylbenzene	ug/l	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 5 U
Tetrachloroethene	ug/l	< 1 U	34	< 1 U	0.6 J	18	< 5 U
Toluene	ug/l	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 5 U
trans-1,2-Dichloroethene	ug/l	4.3	0.46 J	< 1 U	< 1 U	1	1 J
Trichloroethene	ug/l	5.5	5.6	5.1	3.4	12	< 5 U
Vinyl chloride	ug/l	9.8	< 1 U	< 1 U	< 1 U	< 1 U	3.2 J
Xylene (total)	ug/l	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 10 U

ug/l - Micrograms per liter.
< - Constituent not detected above laboratory reporting limit shown.
J - Value is estimated.
U - Constituent not detected above laboratory reporting limit shown.

Table C-1. Summary of Groundwater VOC Analytical Results from Upper/Lower Aquifer Monitoring Wells in September 2006, General Motors Corporation, Moraine, Ohio.

		Downgradient of the Site					
	Units	GM-6 9/19/2006 Upper Aquifer	TW-2 9/19/2006 Upper Aquifer	4S 9/20/2006 Upper Aquifer	GM-2 9/20/2006 Upper Aquifer	GM-16 9/18/2006 Upper Aquifer	GM-17 9/27/2006 Upper Aquifer
Volatile Organic Compounds							
1,1,1-Trichloroethane	ug/l	< 1 U	0.55 J	< 1 U	< 1 U	2.1	0.46 J
1,1-Dichloroethane	ug/l	16	3.4	5.6	2.1	1.1 J	3.2
1,1-Dichloroethene	ug/l	< 1 U	< 1 U	< 1 U	< 1 U	< 1.4 U	< 1 U
Benzene	ug/l	< 1 U	< 1 U	0.7 J	< 1 U	< 1.4 U	< 1 U
cis-1,2-Dichloroethene	ug/l	18	11	0.25 J	7.7	3.8	9.5
Ethylbenzene	ug/l	< 1 U	< 1 U	0.52 J	< 1 U	< 1.4 U	< 1 U
Tetrachloroethene	ug/l	< 1 U	7	< 1 U	2.6	98	11
Toluene	ug/l	< 1 U	< 1 U	< 1 U	< 1 U	< 1.4 U	< 1 U
trans-1,2-Dichloroethene	ug/l	1.6	0.38 J	0.75 J	0.34 J	1 J	0.49 J
Trichloroethene	ug/l	0.35 J	32	< 1 U	5.1	51	24
Vinyl chloride	ug/l	7.3	0.27 J	< 1 U	0.61 J	< 1.4 U	0.54 J
Xylene (total)	ug/l	< 2 U	< 2 U	< 2 U	< 2 U	< 2.9 U	< 2 U

ug/l - Micrograms per liter.
< - Constituent not detected above laboratory reporting limit shown.
J - Value is estimated.
U - Constituent not detected above laboratory reporting limit shown.

Table C-1. Summary of Groundwater VOC Analytical Results from Upper/Lower Aquifer Monitoring Wells in September 2006, General Motors Corporation, Moraine, Ohio.

		Downgradient of the Site				Downgradient	
	Units	GM-18 9/27/2006 Upper Aquifer	WSU-24 9/26/2006 Upper Aquifer	DUP 9/26/2006 QA/QC	GM-10 9/27/2006 Upper Aquifer	GM-26 9/21/2006 Upper Aquifer	DUP 9/21/2006 QA/QC
Volatile Organic Compounds							
1,1,1-Trichloroethane	ug/l	6.2	0.65 J	0.73 J	0.9 J	< 1 U	< 1 U
1,1-Dichloroethane	ug/l	17	< 1 U	< 1 U	0.29 J	< 1 U	< 1 U
1,1-Dichloroethene	ug/l	< 2.9 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Benzene	ug/l	< 2.9 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
cis-1,2-Dichloroethene	ug/l	21	< 1 U	< 1 U	0.77 J	< 1 U	< 1 U
Ethylbenzene	ug/l	< 2.9 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Tetrachloroethene	ug/l	15	0.81 J	0.99 J	0.98 J	0.91 J	1
Toluene	ug/l	< 2.9 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
trans-1,2-Dichloroethene	ug/l	2 J	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Trichloroethene	ug/l	72	10	11	11	< 1 U	< 1 U
Vinyl chloride	ug/l	2.5 J	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Xylene (total)	ug/l	< 5.7 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U

ug/l - Micrograms per liter.
< - Constituent not detected above laboratory reporting limit shown.
J - Value is estimated.
U - Constituent not detected above laboratory reporting limit shown.

Table C-1. Summary of Groundwater VOC Analytical Results from Upper/Lower Aquifer Monitoring Wells in September 2006, General Motors Corporation, Moraine, Ohio.

		Upgradient of the Site		On-Site			
	Units	HR-10 9/26/2006 Lower Aquifer	HR-12 9/26/2006 Lower Aquifer	HR-15 9/25/2006 Lower Aquifer	DUP 9/25/2006 QA/QC	HR-13 9/25/2006 Lower Aquifer	GM-39 9/27/2006 Lower Aquifer
Volatile Organic Compounds							
1,1,1-Trichloroethane	ug/l	< 1 U	< 1 U	< 1 U	< 1 U	2	< 1 U
1,1-Dichloroethane	ug/l	< 1 U	2.1	< 1 U	< 1 U	22	< 1 U
1,1-Dichloroethene	ug/l	< 1 U	< 1 U	< 1 U	< 1 U	0.18 J	< 1 U
Benzene	ug/l	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
cis-1,2-Dichloroethene	ug/l	< 1 U	1.3	2.2	2.1	9	< 1 U
Ethylbenzene	ug/l	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Tetrachloroethene	ug/l	< 1 U	< 1 U	< 1 U	< 1 U	0.2 J	< 1 U
Toluene	ug/l	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
trans-1,2-Dichloroethene	ug/l	< 1 U	< 1 U	< 1 U	< 1 U	1.4	< 1 U
Trichloroethene	ug/l	< 1 U	< 1 U	0.5 J	0.51 J	15	< 1 U
Vinyl chloride	ug/l	< 1 U	< 1 U	13	13	< 1 U	1.7
Xylene (total)	ug/l	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U

ug/l - Micrograms per liter.
< - Constituent not detected above laboratory reporting limit shown.
J - Value is estimated.
U - Constituent not detected above laboratory reporting limit shown.

Table C-1. Summary of Groundwater VOC Analytical Results from Upper/Lower Aquifer Monitoring Wells in September 2006, General Motors Corporation, Moraine, Ohio.

		On-Site				Downgradient of the Site	
	Units	GM-40 9/26/2006 Lower Aquifer	GM-41 9/18/2006 Lower Aquifer	GM-42 9/26/2006 Lower Aquifer	GM-19D 9/26/2006 Lower Aquifer	GM-3 9/22/2006 Lower Aquifer	GM-1 9/20/2006 Lower Aquifer
Volatile Organic Compounds							
1,1,1-Trichloroethane	ug/l	< 1 U	< 4 U	< 1 U	< 1 U	0.59 J	0.76 J
1,1-Dichloroethane	ug/l	< 1 U	< 4 U	0.5 J	< 1 U	2 J	< 1 U
1,1-Dichloroethene	ug/l	< 1 U	< 4 U	< 1 U	< 1 U	< 1 UJ	< 1 U
Benzene	ug/l	< 1 U	< 4 U	< 1 U	< 1 U	< 1 UJ	< 1 U
cis-1,2-Dichloroethene	ug/l	< 1 U	11	14	2	6.1 J	< 1 U
Ethylbenzene	ug/l	< 1 U	< 4 U	< 1 U	< 1 U	< 1 UJ	< 1 U
Tetrachloroethene	ug/l	< 1 U	< 4 U	< 1 U	< 1 U	2.1 J	2.1
Toluene	ug/l	< 1 U	< 4 U	< 1 U	< 1 U	< 1 UJ	< 1 U
trans-1,2-Dichloroethene	ug/l	< 1 U	< 4 U	0.44 J	< 1 U	1 J	< 1 U
Trichloroethene	ug/l	< 1 U	210	0.64 J	1.4	13 J	34
Vinyl chloride	ug/l	3.9	< 4 U	0.45 J	18	0.27 J	< 1 U
Xylene (total)	ug/l	< 2 U	< 8 U	< 2 U	< 2 U	< 2 UJ	< 2 U

ug/l - Micrograms per liter.
< - Constituent not detected above laboratory reporting limit shown.
J - Value is estimated.
U - Constituent not detected above laboratory reporting limit shown.

Table C-1. Summary of Groundwater VOC Analytical Results from Upper/Lower Aquifer Monitoring Wells in September 2006, General Motors Corporation, Moraine, Ohio.

		Downgradient of the Site					
	Units	GM-15 9/18/2006 Lower Aquifer	GM-11 9/25/2006 Lower Aquifer	GM-20D 9/26/2006 Lower Aquifer	DN-13 9/27/2006 Lower Aquifer	GM-9 9/25/2006 Lower Aquifer	MT-69 9/26/2006 Lower Aquifer
Volatile Organic Compounds							
1,1,1-Trichloroethane	ug/l	< 1 U	0.75 J	0.51 J	0.51 J	0.44 J	< 1 U
1,1-Dichloroethane	ug/l	1.6	< 1 U	< 1 U	1.5	0.48 J	< 1 U
1,1-Dichloroethene	ug/l	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Benzene	ug/l	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
cis-1,2-Dichloroethene	ug/l	1.2	< 1 U	< 1 U	6.1	0.85 J	< 1 U
Ethylbenzene	ug/l	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Tetrachloroethene	ug/l	< 1 U	2	2.1	0.33 J	< 1 U	< 1 U
Toluene	ug/l	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
trans-1,2-Dichloroethene	ug/l	< 1 U	< 1 U	< 1 U	0.41 J	< 1 U	< 1 U
Trichloroethene	ug/l	6.3	34	11	5.7	6.6	< 1 U
Vinyl chloride	ug/l	< 1 U	< 1 U	< 1 U	2.3	< 1 U	< 1 U
Xylene (total)	ug/l	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U

ug/l - Micrograms per liter.
< - Constituent not detected above laboratory reporting limit shown.
J - Value is estimated.
U - Constituent not detected above laboratory reporting limit shown.

Table C-1. Summary of Groundwater VOC Analytical Results from Upper/Lower Aquifer Monitoring Wells in September 2006, General Motors Corporation, Moraine, Ohio.

		Equipment Blanks						
	Units	EB 9/19/2006 QA/QC	EB 9/20/2006 QA/QC	EB 9/21/2006 QA/QC	EB 9/22/2006 QA/QC	EB 9/25/2006 QA/QC	EB 9/26/2006 QA/QC	EB 9/28/2006 QA/QC
Volatile Organic Compounds								
1,1,1-Trichloroethane	ug/l	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
1,1-Dichloroethane	ug/l	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
1,1-Dichloroethene	ug/l	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Benzene	ug/l	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
cis-1,2-Dichloroethene	ug/l	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Ethylbenzene	ug/l	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Tetrachloroethene	ug/l	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Toluene	ug/l	< 1 U	0.21 J	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
trans-1,2-Dichloroethene	ug/l	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Trichloroethene	ug/l	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Vinyl chloride	ug/l	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Xylene (total)	ug/l	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U

ug/l - Micrograms per liter.
< - Constituent not detected above laboratory reporting limit shown.
J - Value is estimated.
U - Constituent not detected above laboratory reporting limit shown.

Table C-1. Summary of Groundwater VOC Analytical Results from Upper/Lower Aquifer Monitoring Wells in September 2006, General Motors Corporation, Moraine, Ohio.

		Trip Blanks							
	Units	TB 9/18/2006 QA/QC	TB 9/19/2006 QA/QC	TB 9/20/2006 QA/QC	TB 9/21/2006 QA/QC	TB 9/22/2006 QA/QC	TB 9/25/2006 QA/QC	TB 9/26/2006 QA/QC	TB 9/28/2006 QA/QC
Volatile Organic Compounds									
1,1,1-Trichloroethane	ug/l	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
1,1-Dichloroethane	ug/l	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
1,1-Dichloroethene	ug/l	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Benzene	ug/l	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
cis-1,2-Dichloroethene	ug/l	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Ethylbenzene	ug/l	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Tetrachloroethene	ug/l	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Toluene	ug/l	< 1 U	< 1 U	< 1 U	0.19 J	0.18 J	0.18 J	0.18 J	0.2 J
trans-1,2-Dichloroethene	ug/l	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Trichloroethene	ug/l	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Vinyl chloride	ug/l	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Xylene (total)	ug/l	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U

ug/l - Micrograms per liter.
< - Constituent not detected above laboratory reporting limit shown.
J - Value is estimated.
U - Constituent not detected above laboratory reporting limit shown.

Appendix D

Soil Boring and Well Construction Logs for RZ-4

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Log of Boring: RZ-4A

General Motors Corporation — Moraine, Ohio

Depth (feet)	Blows (/6 in.)	Recovery (Inches)	OVA (PPM)	Sample Analysis	Sample Type	Graphic Log	Soil Class.	Description	Depth to Water
0	N/A	0						No recovery	
2	N/A	24	1.9				CL	SILTY CLAY Black-dark gray, fine-medium gravel (30%), soft, medium plasticity, moist	
4	N/A	24	0.9				CL	Same as above	
6	N/A	24	2.2				SP	SAND Brown, medium-coarse, fine-medium gravel (30%), moist	
8	N/A	24	0.8				SP	Same as above	
10	N/A	24	0.0				SP	Same as above, fine-coarse gravel (30%)	
12									

☒ Composite Sample to Lab ■ Grab Sample to Lab ▦ Split-Spoon Not Analyzed

Drilling Co.: Boart Longyear
Driller: M. Osterberg
Drilling Method: Rotosonic
Drilling Fluid: Water

Geologist: T. Fortner
Total Depth: 60
Surface Elev.: 726.146
North Coor.: 1937.34929

Begin Drilling: 7/14/06 @ 1020
End Drilling: 7/14/06 @ 1200
Converted to Well: Y Well I.D.: RZ-4A
East Coor.: 5167.33957

Remarks:

Project No.: OH000294.0009.0004B Datum: TOC Elev. 725.709 Filename: July 2006

ARCADIS

Log of Boring: RZ-4A

General Motors Corporation — Moraine, Ohio

Depth (feet)	Blows (/6 in.)	Recovery (Inches)	OVA (PPM)	Sample Analysis	Sample Type	Graphic Log	Soil Class.	Description	Depth to Water
12	N/A	24	4.1				SP	Same as above	
14	N/A	24	4.0				SP	Same as above	
16	N/A	24	1.2				SP	Same as above	
18	N/A	24	4.1				SP	Same as above	
20	N/A	24	4.3				GP	GRAVEL Cobbles with trace fine-medium sand, dry (mostly dolomite)	
22	N/A	24	5.5				SP	SILTY SAND Brown, fine-medium, fine gravel (40%), poorly graded, wet	▼
24									

☒ Composite Sample to Lab ■ Grab Sample to Lab ▦ Split-Spoon Not Analyzed

Drilling Co.: Boart Longyear
Driller: M. Osterberg
Drilling Method: Rotosonic
Drilling Fluid: Water

Geologist: T. Fortner
Total Depth: 60
Surface Elev.: 726.146
North Coor.: 1937.34929

Begin Drilling: 7/14/06 @ 1020
End Drilling: 7/14/06 @ 1200
Converted to Well: Y Well I.D.: RZ-4A
East Coor.: 5167.33957

Remarks:

Project No.: OH000294.0009.0004B Datum: TOC Elev. 725.709 Filename: July 2006

ARCADIS

Log of Boring: RZ-4A

General Motors Corporation — Moraine, Ohio

Depth (feet)	Blows (/6 in.)	Recovery (Inches)	OVA (PPM)	Sample Analysis	Sample Type	Graphic Log	Soil Class.	Description	Depth to Water
24	N/A	24	0.0				SP	Same as above	
26	N/A	24	0.0				GP	GRAVEL Fine, medium-coarse sand (30%), wet	
28	N/A	24	0.0				SP	SAND Brown, medium-coarse, fine to medium gravel (20%), cobbles (5%), poorly graded, wet	
30	N/A	24	0.0				SP	Same as above	
32	N/A	24	0.0				SP	Same as above	
34	N/A	24	0.0				SP	Same as above	
36									

☒ Composite Sample to Lab ■ Grab Sample to Lab ⊡ Split-Spoon Not Analyzed

Drilling Co.: Boart Longyear
Driller: M. Osterberg
Drilling Method: Rotosonic
Drilling Fluid: Water

Geologist: T. Fortner
Total Depth: 60
Surface Elev.: 726.146
North Coor.: 1937.34929

Begin Drilling: 7/14/06 @ 1020
End Drilling: 7/14/06 @ 1200
Converted to Well: Y Well I.D.: RZ-4A
East Coor.: 5167.33957

Remarks:

Project No.: OH000294.0009.0004B Datum: TOC Elev. 725.709 Filename: July 2006

ARCADIS

Log of Boring: RZ-4A

General Motors Corporation — Moraine, Ohio

Depth (feet)	Blows (/6 in.)	Recovery (Inches)	OVA (PPM)	Sample Analysis	Sample Type	Graphic Log	Soil Class.	Description	Depth to Water
36	N/A	24	0.0				SP	Same as above, fine-medium gravel (30%), no cobbles	
38	N/A	24	0.0				SP	Same as above	
40	N/A	24	0.0				SP	SAND Brown, fine, with some silt, poorly graded, wet	
42	N/A	24	0.9				SP	Same as above	
44	N/A	24	0.0				SP	Same as above	
46	N/A	24	1.9				SP	SAND Brown, medium-coarse, fine-medium gravel (10%), wet	
48									

☒ Composite Sample to Lab ■ Grab Sample to Lab ▨ Split-Spoon Not Analyzed

Drilling Co.: Boart Longyear
Driller: M. Osterberg
Drilling Method: Rotosonic
Drilling Fluid: Water

Geologist: T. Fortner
Total Depth: 60
Surface Elev.: 726.146
North Coor.: 1937.34929

Begin Drilling: 7/14/06 @ 1020
End Drilling: 7/14/06 @ 1200
Converted to Well: Y Well I.D.: RZ-4A
East Coor.: 5167.33957

Remarks:

Project No.: OH000294.0009.0004B Datum: TOC Elev. 725.709 Filename: July 2006

ARCADIS

Log of Boring: RZ-4A

General Motors Corporation — Moraine, Ohio

Depth (feet)	Blows (/6 in.)	Recovery (Inches)	OVA (PPM)	Sample Analysis	Sample Type	Graphic Log	Soil Class.	Description	Depth to Water
48	N/A	24	0.1				SP	Same as above	
50	N/A	24	1.7				SP	Same as above, no gravel	
52	N/A	24	1.0				SP	Same as above	
54	N/A	24	2.2				CL	SILTY CLAY Brown, stiff, fine gravel (20%), low plasticity, moist	
56	N/A	24	4.7				SM	SILTY SAND Gray, fine-medium, poorly graded, moist	
58	N/A	24	4.8				SM	Same as above	
60							CL	SILTY CLAY	

☒ Composite Sample to Lab ■ Grab Sample to Lab ⬚ Split-Spoon Not Analyzed

Drilling Co.: Boart Longyear
Driller: M. Osterberg
Drilling Method: Rotosonic
Drilling Fluid: Water

Geologist: T. Fortner
Total Depth: 60
Surface Elev.: 726.146
North Coor.: 1937.34929

Begin Drilling: 7/14/06 @ 1020
End Drilling: 7/14/06 @ 1200
Converted to Well: Y Well I.D.: RZ-4A
East Coor.: 5167.33957

Remarks:

Project No.: OH000294.0009.0004B Datum: TOC Elev. 725.709 Filename: July 2006

ARCADIS

Log of Boring: RZ-4A

General Motors Corporation — Moraine, Ohio

Depth (feet)	Blows (/6 in.)	Recovery (Inches)	OVA (PPM)	Sample Analysis	Sample Type	Graphic Log	Soil Class.	Description	Depth to Water
60								Gray, stiff, brittle low plasticity, fine gravel (10-20%), dry End of boring	
62									
64									
66									
68									
70									
72									

☒ Composite Sample to Lab ■ Grab Sample to Lab ▨ Split-Spoon Not Analyzed

Drilling Co.: Boart Longyear
Driller: M. Osterberg
Drilling Method: Rotosonic
Drilling Fluid: Water

Geologist: T. Fortner
Total Depth: 60
Surface Elev.: 726.146
North Coor.: 1937.34929

Begin Drilling: 7/14/06 @ 1020
End Drilling: 7/14/06 @ 1200
Converted to Well: Y Well I.D.: RZ-4A
East Coor.: 5167.33957

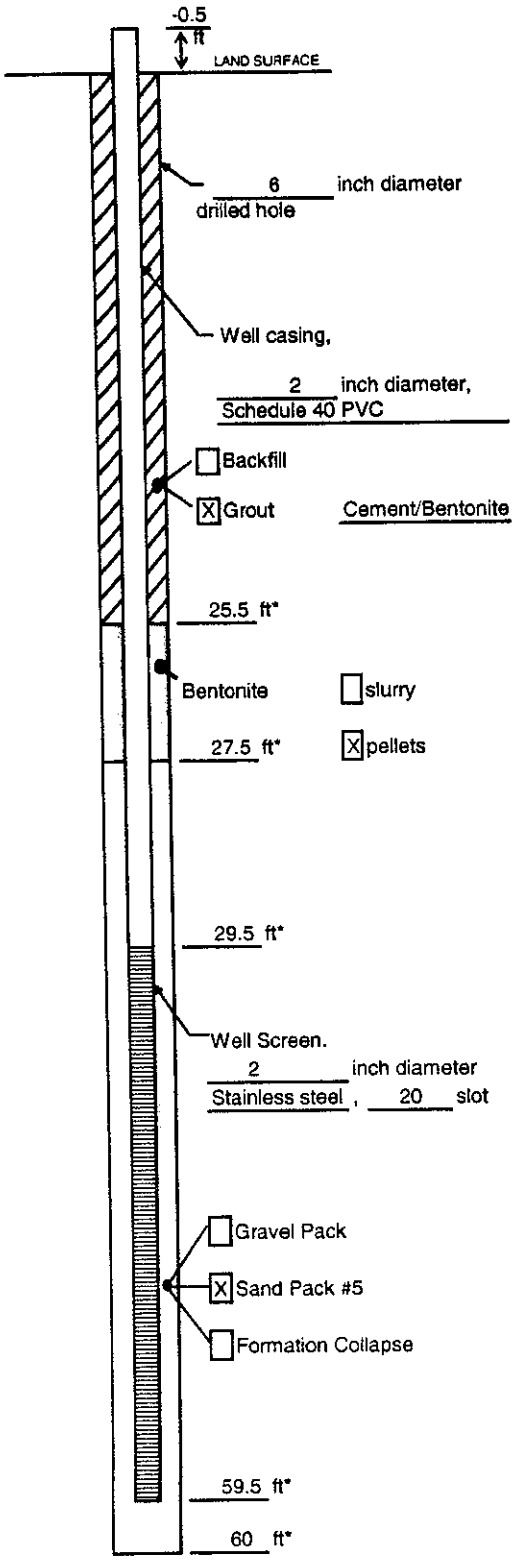
Remarks:

Project No.: OH000294.0009.0004B Datum: TOC Elev. 725.709 Filename: July 2006

ARCADIS

Well Construction Log

(Unconsolidated)



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.
* Depth Below Land Surface

Project General Motors Corporation Well RZ-4A

Town/City Moraine

County Montgomery State Ohio

Permit No. NA

Land-Surface (LS) Elevation and Datum:

726.146 feet [x] Surveyed

[ ] Estimated

Installation Date(s) 7/14/2006

Drilling Method Rotosonic

Drilling Contractor Boart Longyear

Drilling Fluid Water

Development Technique(s) and Date(s)

Pumping - surge with pump 7/28/06

Fluid Loss During Drilling ~150 gallons

Water Removed During Development 210 gallons

Static Depth to Water 19.1 feet below M.P.

Pumping Depth to Water NM feet below M.P.

Pumping Duration NM hours

Yield NM gpm Date 7/28/06

Specific Capacity NM gpm/ft

Well Purpose Introduction well

Remarks TOC Elevation = 725.709

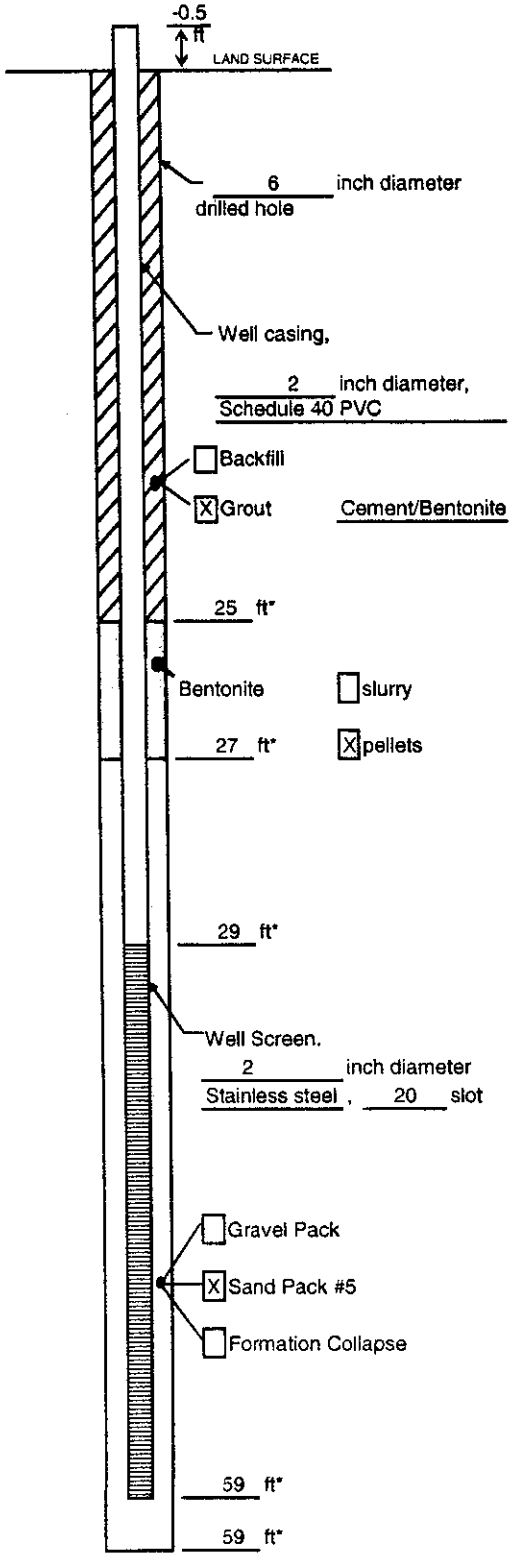
Clear non-turbid

Prepared by C. Catlett

ARCADIS

Well Construction Log

(Unconsolidated)



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

* Depth Below Land Surface

Project General Motors Corporation Well RZ-4B

Town/City Moraine

County Montgomery State Ohio

Permit No. NA

Land-Surface (LS) Elevation and Datum:

726.160 feet [x] Surveyed

[ ] Estimated

Installation Date(s) 7/15/2006

Drilling Method Rotosonic

Drilling Contractor Boart Longyear

Drilling Fluid Water

Development Technique(s) and Date(s)

Pumping - surge with pump 7/28/06

Fluid Loss During Drilling ~150 gallons

Water Removed During Development 240 gallons

Static Depth to Water 19.2 feet below M.P.

Pumping Depth to Water NM feet below M.P.

Pumping Duration NM hours

Yield NM gpm Date 7/28/06

Specific Capacity NM gpm/ft

Well Purpose Introduction well

Remarks TOC Elevation = 725.767

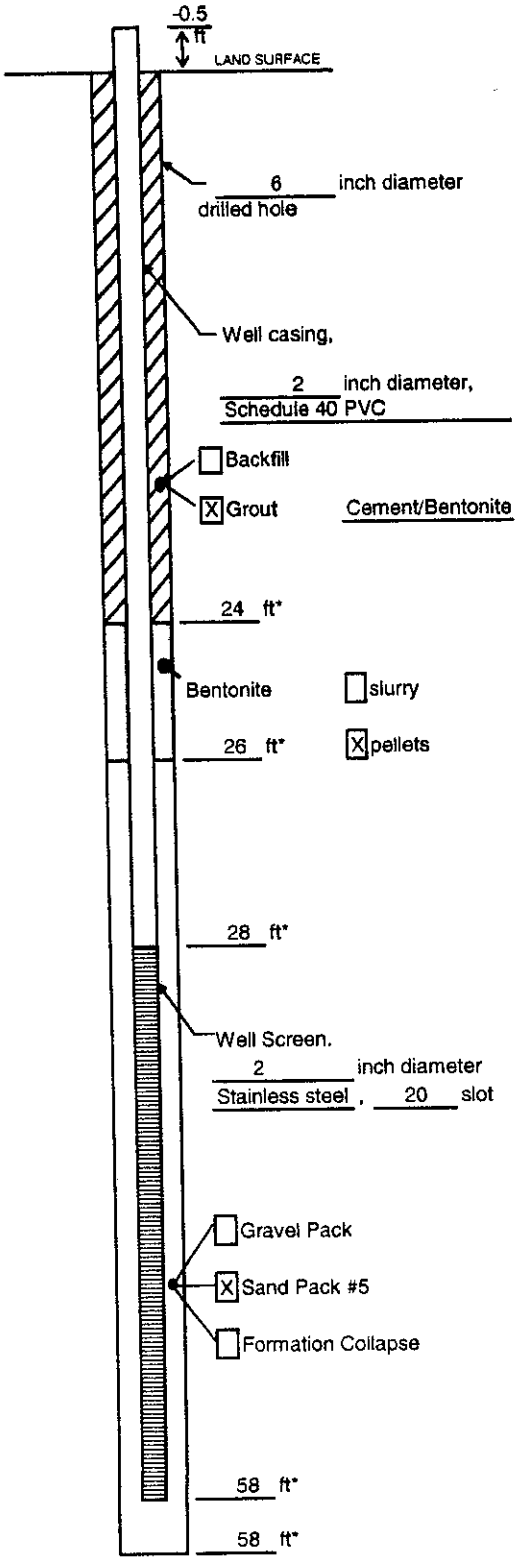
Clear non-turbid

Prepared by C. Catlett

ARCADIS

Well Construction Log

(Unconsolidated)



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

* Depth Below Land Surface

Project General Motors Corporation Well RZ-4C

Town/City Moraine

County Montgomery State Ohio

Permit No. NA

Land-Surface (LS) Elevation and Datum:

727.059 feet [X] Surveyed

[ ] Estimated

Installation Date(s) 7/16/2006

Drilling Method Rotosonic

Drilling Contractor Boart Longyear

Drilling Fluid Water

Development Technique(s) and Date(s)

Pumping - surge with pump 7/28/06

Fluid Loss During Drilling ~150 gallons

Water Removed During Development 240 gallons

Static Depth to Water 20.02 feet below M.P.

Pumping Depth to Water NM feet below M.P.

Pumping Duration NM hours

Yield NM gpm Date 7/28/06

Specific Capacity NM gpm/ft

Well Purpose Introduction well

Remarks TOC Elevation = 726.598

Clear non-turbid

Prepared by C. Catlett

ARCADIS

Log of Boring: RZ-4D

General Motors Corporation — Moraine, Ohio

Depth (feet)	Blows (/6 in.)	Recovery (Inches)	OVA (PPM)	Sample Analysis	Sample Type	Graphic Log	Soil Class.	Description	Depth to Water
0		0						No recovery	
2	N/A	24	6.1				FILL	FILL Black, silt, gravel, sand, ashbits of wood, glass and metal, dry	
4	N/A	24	0.2				CL	SANDY CLAY Brown, fine, fine-medium gravel (10%), medium plasticity, soft, moist	
6	N/A	24	2.4				CL	Same as above	
8	N/A	24	0.6				SW	SAND/GRAVEL Brown, fine-medium sand, fine-medium gravel, well graded, dry	
10	N/A	24	5.4				CL	SANDY CLAY Brown, fine sand, fine-medium gravel (10%), soft, medium plasticity, moist	
12									

☒ Composite Sample to Lab ■ Grab Sample to Lab ▯ Split-Spoon Not Analyzed

Drilling Co.: Boart Longyear
Driller: M. Osterberg
Drilling Method: Rotosonic
Drilling Fluid: Water

Geologist: T. Fortner
Total Depth: 65
Surface Elev.: 727.549
North Coor.: 1893.66411

Begin Drilling: 7/14/06 @ 1407
End Drilling: 7/14/06 @ 1616
Converted to Well: Y Well I.D.: RZ-4D
East Coor.: 5246.27240

Remarks:

Project No.: OH000294.0009.0004B Datum: TOC Elev. 727.075 Filename: July 2006

ARCADIS

Log of Boring: RZ-4D

General Motors Corporation — Moraine, Ohio

Depth (feet)	Blows (/6 in.)	Recovery (Inches)	OVA (PPM)	Sample Analysis	Sample Type	Graphic Log	Soil Class.	Description	Depth to Water
12	N/A	24	7.2				SP	SAND Brown, fine-medium, coarse gravel (5%), poorly graded, dry	
14	N/A	24	8.1				SP	Same as above	
16	N/A	24	0.0				SW	Same as above, fine-medium gravel (10%)	
18	N/A	24	0.0				SW	Same as above	
20	N/A	24	0.0				SW	Same as above	
22	N/A	24	0.0				SW	Same as above, wet	▼
24									

☒ Composite Sample to Lab ■ Grab Sample to Lab ▨ Split-Spoon Not Analyzed

Drilling Co.: Boart Longyear
Driller: M. Osterberg
Drilling Method: Rotosonic
Drilling Fluid: Water

Geologist: T. Fortner
Total Depth: 65
Surface Elev.: 727.549
North Coor.: 1893.66411

Begin Drilling: 7/14/06 @ 1407
End Drilling: 7/14/06 @ 1616
Converted to Well: Y Well I.D.: RZ-4D
East Coor.: 5246.27240

Remarks:

Project No.: OH000294.0009.0004B Datum: TOC Elev. 727.075 Filename: July 2006

ARCADIS

Log of Boring: RZ-4D

General Motors Corporation — Moraine, Ohio

Depth (feet)	Blows (/6 in.)	Recovery (Inches)	OVA (PPM)	Sample Analysis	Sample Type	Graphic Log	Soil Class.	Description	Depth to Water
24	N/A	24	0.0				SW	Same as above, medium-coarse sand, medium gravel (5%)	
26	N/A	24	0.0				SW	Same as above	
28	N/A	24	0.0				SW	Same as above	
30	N/A	24	0.0				GW	GRAVEL Brown, fine-coarse, coarse sand (20%), well graded, wet	
32	N/A	24	0.0				GW	Same as above	
34	N/A	24	0.0				SW	SAND Brown, medium-coarse, fine gravel (30%), well graded, wet	
36									

☒ Composite Sample to Lab ■ Grab Sample to Lab ⬚ Split-Spoon Not Analyzed

Drilling Co.: Boart Longyear
Driller: M. Osterberg
Drilling Method: Rotosonic
Drilling Fluid: Water

Geologist: T. Fortner
Total Depth: 65
Surface Elev.: 727.549
North Coor.: 1893.66411

Begin Drilling: 7/14/06 @ 1407
End Drilling: 7/14/06 @ 1616
Converted to Well: Y Well I.D.: RZ-4D
East Coor.: 5246.27240

Remarks:

Project No.: OH000294.0009.0004B Datum: TOC Elev. 727.075 Filename: July 2006

ARCADIS

Log of Boring: RZ-4D

General Motors Corporation — Moraine, Ohio

Depth (feet)	Blows (/6 in.)	Recovery (Inches)	OVA (PPM)	Sample Analysis	Sample Type	Graphic Log	Soil Class.	Description	Depth to Water
36	N/A	24	0.0				SW	Same as above	
38	N/A	24	0.0				SM	SILTY SAND Brown, fine, poorly graded, wet	
40	N/A	24	0.0				SW	SAND Brown, medium-coarse, trace medium gravel, well graded, wet	
42	N/A	24	0.0				SW	Same as above	
44	N/A	24	0.0				SW	Same as above	
46	N/A	24	0.0				SW	Same as above	
48									

☒ Composite Sample to Lab ■ Grab Sample to Lab ▨ Split-Spoon Not Analyzed

Drilling Co.: Boart Longyear
Driller: M. Osterberg
Drilling Method: Rotosonic
Drilling Fluid: Water

Geologist: T. Fortner
Total Depth: 65
Surface Elev.: 727.549
North Coor.: 1893.66411

Begin Drilling: 7/14/06 @ 1407
End Drilling: 7/14/06 @ 1616
Converted to Well: Y Well I.D.: RZ-4D
East Coor.: 5246.27240

Remarks:

Project No.: OH000294.0009.0004B Datum: TOC Elev. 727.075 Filename: July 2006

ARCADIS

Log of Boring: RZ-4D

General Motors Corporation — Moraine, Ohio

Depth (feet)	Blows (/6 in.)	Recovery (Inches)	OVA (PPM)	Sample Analysis	Sample Type	Graphic Log	Soil Class.	Description	Depth to Water
48	N/A	24	0.0				SW	Same as above	
50	N/A	24	0.0				SW	Same as above	
52	N/A	24	0.0				SW	Same as above	
54	N/A	24	0.0				SW	Same as above	
56	N/A	24	0.0				SW	Same as above	
							CL	CLAY Gray, stiff, fine gravel (10%), low plasticity, dry	
58	N/A	24	0.0				CL	Same as above	
60									

☒ Composite Sample to Lab ■ Grab Sample to Lab ▯ Split-Spoon Not Analyzed

Drilling Co.: Boart Longyear
Driller: M. Osterberg
Drilling Method: Rotosonic
Drilling Fluid: Water

Geologist: T. Fortner
Total Depth: 65
Surface Elev.: 727.549
North Coor.: 1893.66411

Begin Drilling: 7/14/06 @ 1407
End Drilling: 7/14/06 @ 1616
Converted to Well: Y Well I.D.: RZ-4D
East Coor.: 5246.27240

Remarks:

Project No.: OH000294.0009.0004B Datum: TOC Elev. 727.075 Filename: July 2006

ARCADIS

Log of Boring: RZ-4D

General Motors Corporation — Moraine, Ohio

Depth (feet)	Blows (/6 in.)	Recovery (Inches)	OVA (PPM)	Sample Analysis	Sample Type	Graphic Log	Soil Class.	Description	Depth to Water
60	N/A	24	0.0				CL	SANDY CLAY Gray, fine sand, fine gravel (10%), high plasticity, moist	
62	N/A	24	0.0				CL	Same as above	
64	N/A	12	0.0				CL	Same as above	
								End of boring	
66									
68									
70									
72									

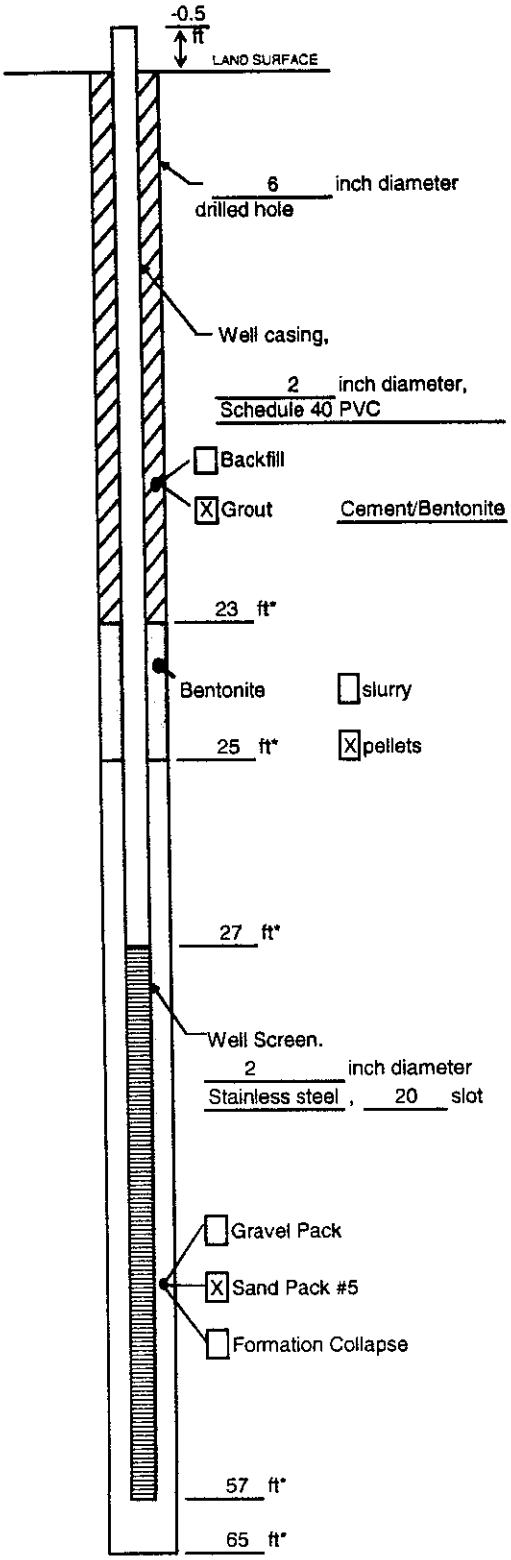
☒ Composite Sample to Lab ■ Grab Sample to Lab ⊟ Split-Spoon Not Analyzed

Drilling Co.: Boart Longyear
Driller: M. Osterberg
Drilling Method: Rotosonic
Drilling Fluid: Water
Geologist: T. Fortner
Total Depth: 65
Surface Elev.: 727.549
North Coor.: 1893.66411
Begin Drilling: 7/14/06 @ 1407
End Drilling: 7/14/06 @ 1616
Converted to Well: Y Well I.D.: RZ-4D
East Coor.: 5246.27240
Remarks:
Project No.: OH000294.0009.0004B
Datum: TOC Elev. 727.075
Filename: July 2006

ARCADIS

Well Construction Log

(Unconsolidated)



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

* Depth Below Land Surface

Project General Motors Corporation Well RZ-4D

Town/City Moraine

County Montgomery State Ohio

Permit No. NA

Land-Surface (LS) Elevation and Datum:

727.549 feet [x] Surveyed

[ ] Estimated

Installation Date(s) 7/14/2006

Drilling Method Rotosonic

Drilling Contractor Boart Longyear

Drilling Fluid Water

Development Technique(s) and Date(s)

Pumping - surge with pump 7/28/06

Fluid Loss During Drilling ~150 gallons

Water Removed During Development 240 gallons

Static Depth to Water 20.5 feet below M.P.

Pumping Depth to Water NM feet below M.P.

Pumping Duration NM hours

Yield NM gpm Date 7/28/06

Specific Capacity NM gpm/ft

Well Purpose Introduction well

Remarks TOC Elevation = 727.075

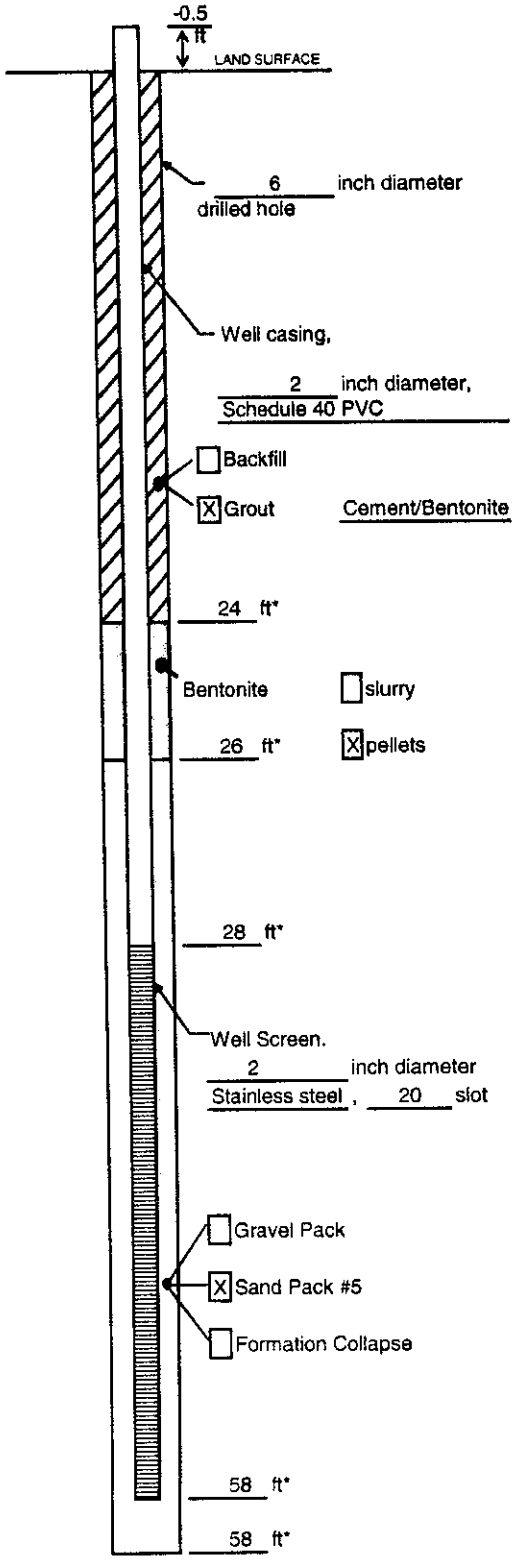
Clear non-turbid

Prepared by C. Catlett

ARCADIS

Well Construction Log

(Unconsolidated)



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

* Depth Below Land Surface

Project General Motors Corporation Well RZ-4E

Town/City Moraine

County Montgomery State Ohio

Permit No. NA

Land-Surface (LS) Elevation and Datum:

727.910 feet [x] Surveyed

[ ] Estimated

Installation Date(s) 7/16/2006

Drilling Method Rotosonic

Drilling Contractor Boart Longyear

Drilling Fluid Water

Development Technique(s) and Date(s)

Pumping - surge with pump 7/28/06

Fluid Loss During Drilling ~150 gallons

Water Removed During Development 210 gallons

Static Depth to Water 20.83 feet below M.P.

Pumping Depth to Water NM feet below M.P.

Pumping Duration NM hours

Yield NM gpm Date 7/28/06

Specific Capacity NM gpm/ft

Well Purpose Introduction well

Remarks TOC Elevation = 727.399

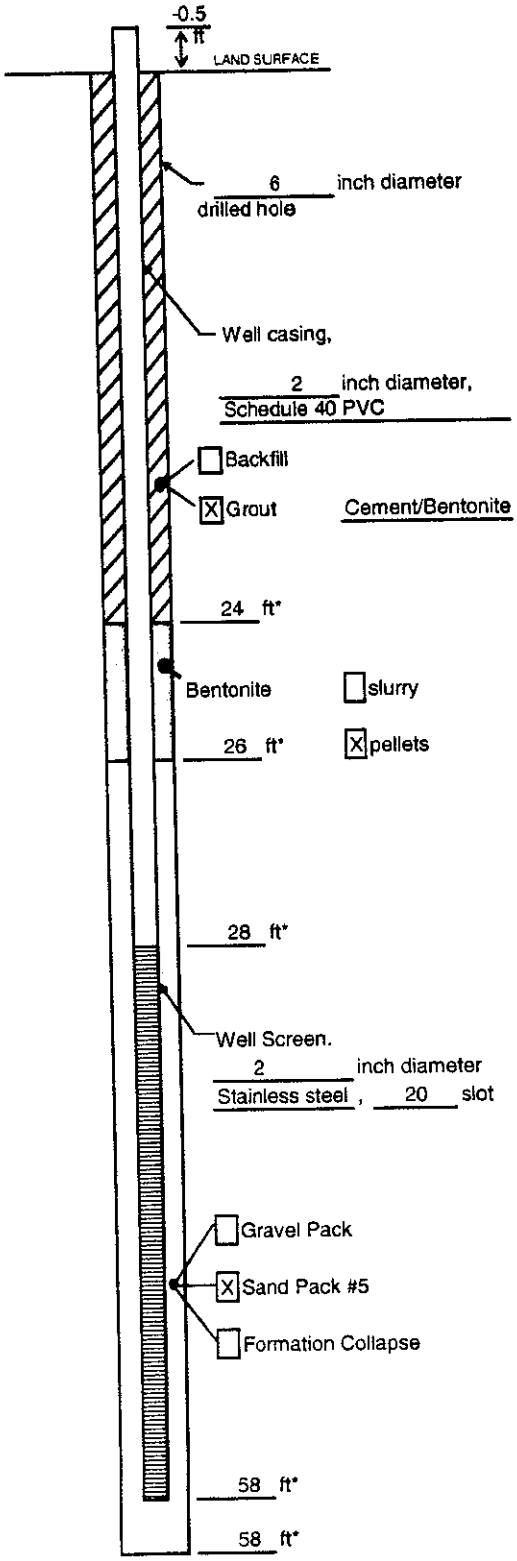
Clear non-turbid

Prepared by C. Catlett

ARCADIS

Well Construction Log

(Unconsolidated)



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

* Depth Below Land Surface

Project General Motors Corporation Well RZ-4F

Town/City Moraine

County Montgomery State Ohio

Permit No. NA

Land-Surface (LS) Elevation and Datum:

728.253 feet [x] Surveyed

[ ] Estimated

Installation Date(s) 7/15/2006

Drilling Method Rotosonic

Drilling Contractor Boart Longyear

Drilling Fluid Water

Development Technique(s) and Date(s)

Pumping - surge with pump 7/27/06

Fluid Loss During Drilling ~150 gallons

Water Removed During Development 240 gallons

Static Depth to Water 21.15 feet below M.P.

Pumping Depth to Water NM feet below M.P.

Pumping Duration NM hours

Yield NM gpm Date 7/27/06

Specific Capacity NM gpm/ft

Well Purpose Introduction well

Remarks TOC Elevation = 727.739

Clear non-turbid

Prepared by C. Catlett

ARCADIS

Log of Boring: RZ-4G

General Motors Corporation — Moraine, Ohio

Depth (feet)	Blows (/6 in.)	Recovery (Inches)	OVA (PPM)	Sample Analysis	Sample Type	Graphic Log	Soil Class.	Description	Depth to Water
0								No recovery	
2	N/A	24	4.5				FILL	FILL Black, silt, sand, gravel, glass, wood, and metal, moist	
4	N/A	24	6.1				SW	SAND Black, sand and gravel, loose, wet, odor	
6	N/A	24	1.3				CL	SANDY CLAY Grayish-brown, gravel (15%), medium stiff, moist	
8	N/A	24	2.1				SW	SAND Yellowish brown, gravel (20%), loose, moist	
10	N/A	24	1.6				SW	SAND Brown, medium-coarse, fine-medium gravel (10%), loose, moist	
12									

☒ Composite Sample to Lab ■ Grab Sample to Lab ⬚ Split-Spoon Not Analyzed

Drilling Co.: Boart Longyear
Driller: M. Osterberg
Drilling Method: Rotosonic
Drilling Fluid: Water

Geologist: C. Catlett
Total Depth: 60
Surface Elev.: 728.547
North Coor.: 1850.65783

Begin Drilling: 7/15/06 @ 0732
End Drilling: 7/16/06 @ 0840
Converted to Well: Y Well I.D.: RZ-4G
East Coor.: 5324.55440

Remarks:

Project No.: OH000294.0008.00002 Datum: TOC Elev. 728.159 Filename: July 2006

ARCADIS

Log of Boring: RZ-4G

General Motors Corporation — Moraine, Ohio

Depth (feet)	Blows (/6 in.)	Recovery (Inches)	OVA (PPM)	Sample Analysis	Sample Type	Graphic Log	Soil Class.	Description	Depth to Water
12	N/A	24	1.2				SW	Same as above	
14	N/A	24	0.7				SW	Same as above, gravel (15%), moist	
16	N/A	24	0.6				SW	Same as above	
18	N/A	24	0.7				SW	Same as above	
20	N/A	24	0.6				SW	Same as above, gravel (10%)	
22	N/A	24	0.7				SW	Same as above, wet at 24'	
24									

☒ Composite Sample to Lab ■ Grab Sample to Lab ▯ Split-Spoon Not Analyzed

Drilling Co.: Boart Longyear
Driller: M. Osterberg
Drilling Method: Rotosonic
Drilling Fluid: Water
Geologist: C. Catlett
Total Depth: 60
Surface Elev.: 728.547
North Coor.: 1850.65783
Begin Drilling: 7/15/06 @ 0732
End Drilling: 7/16/06 @ 0840
Converted to Well: Y Well I.D.: RZ-4G
East Coor.: 5324.55440
Remarks:
Project No.: OH000294.0008.00002
Datum: TOC Elev. 728.159
Filename: July 2006

ARCADIS

Log of Boring: RZ-4G

General Motors Corporation — Moraine, Ohio

Depth (feet)	Blows (/6 in.)	Recovery (Inches)	OVA (PPM)	Sample Analysis	Sample Type	Graphic Log	Soil Class.	Description	Depth to Water
24	N/A	24	0.0				SW	Same as above	
							SW	Same as above	
26	N/A	24	0.0				SW	Same as above	
28	N/A	24	0.0				SW	Same as above	
30	N/A	24	0.0				SW	SAND Brown, medium-coarse, gravel (10%), loose, wet	
32	N/A	24	0.0				SW	Same as above	
34	N/A	24	0.0				SW	Same as above	
36									

☒ Composite Sample to Lab ■ Grab Sample to Lab ▦ Split-Spoon Not Analyzed

Drilling Co.: Boart Longyear
Driller: M. Osterberg
Drilling Method: Rotosonic
Drilling Fluid: Water

Geologist: C. Catlett
Total Depth: 60
Surface Elev.: 728.547
North Coor.: 1850.65783

Begin Drilling: 7/15/06 @ 0732
End Drilling: 7/16/06 @ 0840
Converted to Well: Y Well I.D.: RZ-4G
East Coor.: 5324.55440

Remarks:

Project No.: OH000294.0008.00002 Datum: TOC Elev. 728.159 Filename: July 2006

ARCADIS

Log of Boring: RZ-4G

General Motors Corporation — Moraine, Ohio

Depth (feet)	Blows (/6 in.)	Recovery (Inches)	OVA (PPM)	Sample Analysis	Sample Type	Graphic Log	Soil Class.	Description	Depth to Water
36	N/A	24	0.0				SW	Same as above	
38	N/A	24	0.0				SW	Same as above, sand coarse, coarse gravel (50%)	
40	N/A	24	0.0				SW	Same as above	
42	N/A	24	0.0				SW	Same as above, medium-coarse sand, gravel (10%)	
44	N/A	24	0.0				SW	SAND Brown, fine-medium sand, trace gravel, loose, wet	
46	N/A	24	0.0				SW	Same as above	
48									

☒ Composite Sample to Lab ■ Grab Sample to Lab ▦ Split-Spoon Not Analyzed

Drilling Co.: Boart Longyear
Driller: M. Osterberg
Drilling Method: Rotosonic
Drilling Fluid: Water

Geologist: C. Catlett
Total Depth: 60
Surface Elev.: 728.547
North Coor.: 1850.65783

Begin Drilling: 7/15/06 @ 0732
End Drilling: 7/16/06 @ 0840
Converted to Well: Y Well I.D.: RZ-4G
East Coor.: 5324.55440

Remarks:

Project No.: OH000294.0008.00002 Datum: TOC Elev. 728.159 Filename: July 2006

ARCADIS

Log of Boring: RZ-4G

General Motors Corporation — Moraine, Ohio

Depth (feet)	Blows (/6 in.)	Recovery (Inches)	OVA (PPM)	Sample Analysis	Sample Type	Graphic Log	Soil Class.	Description	Depth to Water
48	N/A	24	0.0				SW	Same as above	
50	N/A	24	0.0				SW	Same as above	
52	N/A	24	0.0				SW	Same as above	
54	N/A	24	0.0				SM	SILTY SAND Yellowish brown, trace gravel, stiff, very moist	
							CL	SILTY CLAY Gray, little sand, trace gravel, very stiff, low plasticity	
56	N/A	24	0.0				CL	Same as above	
58	N/A	24	0.0				CL	CLAY Gray, silty clay, trace fine gravel, very stiff (till)	
60									

☒ Composite Sample to Lab ■ Grab Sample to Lab ⬚ Split-Spoon Not Analyzed

Drilling Co.: Boart Longyear
Driller: M. Osterberg
Drilling Method: Rotosonic
Drilling Fluid: Water
Geologist: C. Catlett
Total Depth: 60
Surface Elev.: 728.547
North Coor.: 1850.65783
Begin Drilling: 7/15/06 @ 0732
End Drilling: 7/16/06 @ 0840
Converted to Well: Y Well I.D.: RZ-4G
East Coor.: 5324.55440
Remarks:
Project No.: OH000294.0008.00002
Datum: TOC Elev. 728.159
Filename: July 2006

ARCADIS

Log of Boring: RZ-4G

General Motors Corporation — Moraine, Ohio

Depth (feet)	Blows (/6 in.)	Recovery (Inches)	OVA (PPM)	Sample Analysis	Sample Type	Graphic Log	Soil Class.	Description	Depth to Water
60								End of boring	
62									
64									
66									
68									
70									
72									

☒ Composite Sample to Lab ■ Grab Sample to Lab ▦ Split-Spoon Not Analyzed

Drilling Co.: Boart Longyear
Driller: M. Osterberg
Drilling Method: Rotosonic
Drilling Fluid: Water

Geologist: C. Catlett
Total Depth: 60
Surface Elev.: 728.547
North Coor.: 1850.65783

Begin Drilling: 7/15/06 @ 0732
End Drilling: 7/16/06 @ 0840
Converted to Well: Y Well I.D.: RZ-4G
East Coor.: 5324.55440

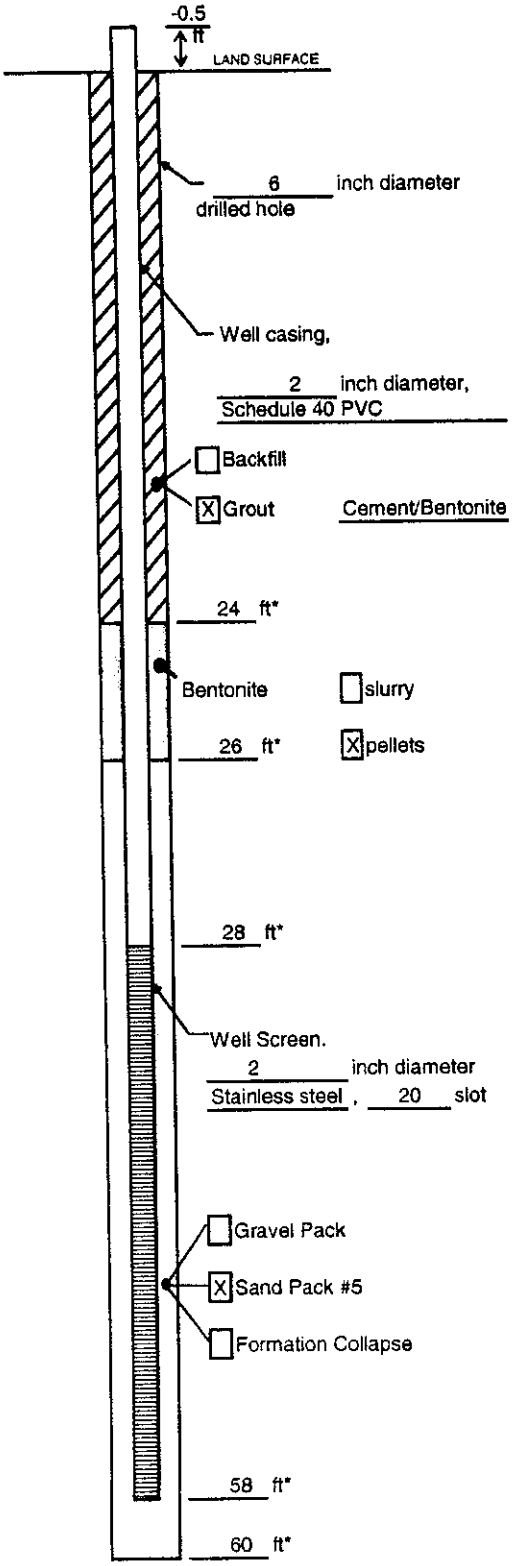
Remarks:

Project No.: OH000294.0008.00002 Datum: TOC Elev. 728.159 Filename: July 2006

ARCADIS

Well Construction Log

(Unconsolidated)



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

* Depth Below Land Surface

Project General Motors Corporation Well RZ-4G

Town/City Moraine

County Montgomery State Ohio

Permit No. NA

Land-Surface (LS) Elevation and Datum:

728.547 feet [x] Surveyed

[ ] Estimated

Installation Date(s) 7/15/2006

Drilling Method Rotosonic

Drilling Contractor Boart Longyear

Drilling Fluid Water

Development Technique(s) and Date(s)

Pumping - surge with pump 7/27/06

Fluid Loss During Drilling ~150 gallons

Water Removed During Development 240 gallons

Static Depth to Water 21.55 feet below M.P.

Pumping Depth to Water NM feet below M.P.

Pumping Duration NM hours

Yield NM gpm Date 7/27/06

Specific Capacity NM gpm/ft

Well Purpose Introduction well

Remarks TOC Elevation = 728.159

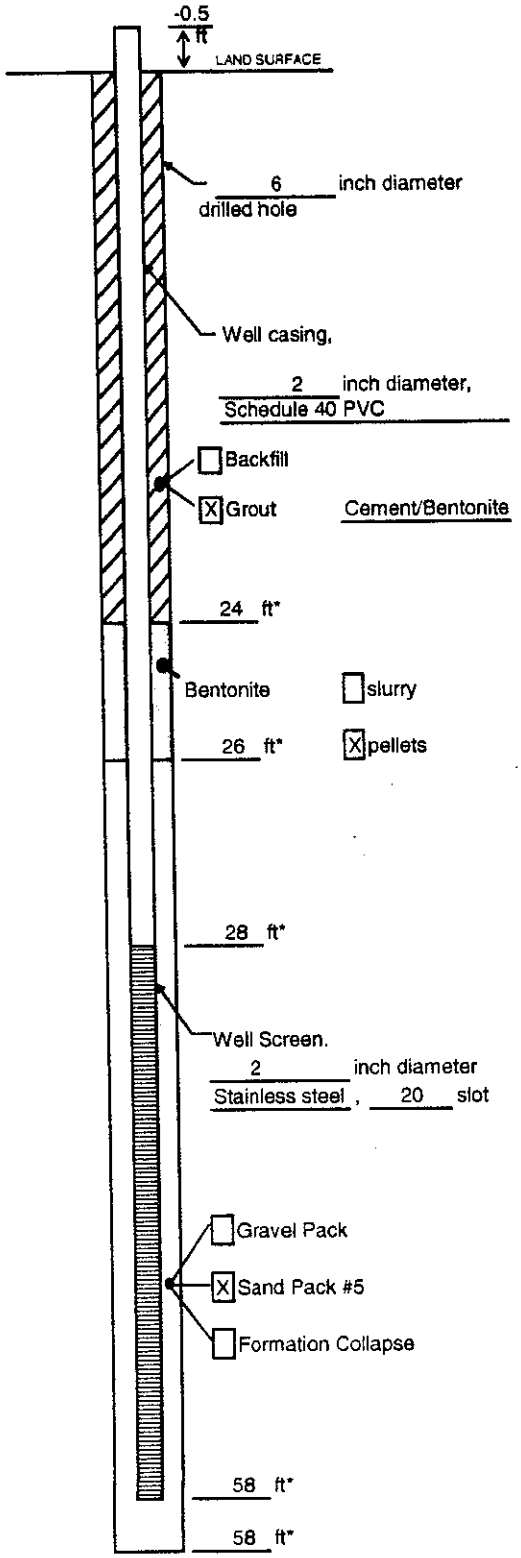
Clear non-turbid

Prepared by C. Catlett

ARCADIS

Well Construction Log

(Unconsolidated)



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

* Depth Below Land Surface

Project General Motors Corporation Well RZ-4H

Town/City Moraine

County Montgomery State Ohio

Permit No. NA

Land-Surface (LS) Elevation and Datum:

NM feet ☐ Surveyed ☐ Estimated

Installation Date(s) 7/15/2006

Drilling Method Rotosonic

Drilling Contractor Boart Longyear

Drilling Fluid Water

Development Technique(s) and Date(s)

Pumping - surge with pump 7/27/06

Fluid Loss During Drilling ~150 gallons

Water Removed During Development 210 gallons

Static Depth to Water 22.17 feet below M.P.

Pumping Depth to Water NM feet below M.P.

Pumping Duration NM hours

Yield NM gpm Date 7/27/06

Specific Capacity NM gpm/ft

Well Purpose Introduction well

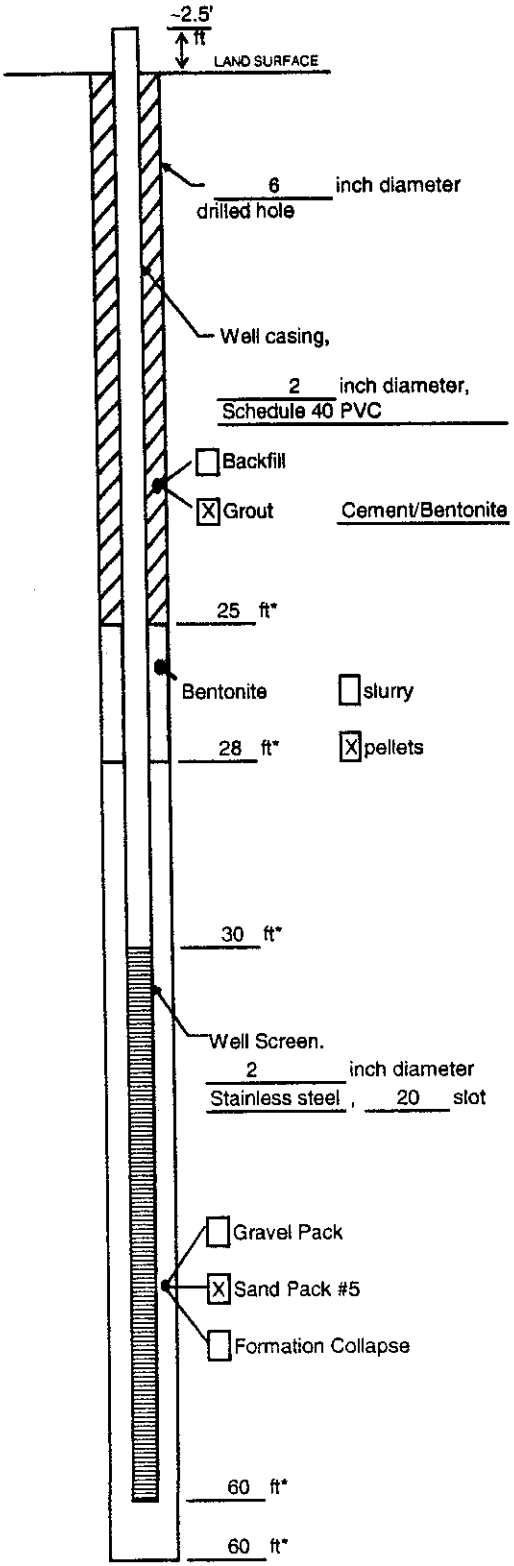
Remarks Clear non-turbid

Prepared by C. Catlett

ARCADIS

Well Construction Log

(Unconsolidated)



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

* Depth Below Land Surface

Project General Motors Corporation Well RZ-4I

Town/City Moraine

County Montgomery State Ohio

Permit No. NA

Land-Surface (LS) Elevation and Datum:

724.428 feet [x] Surveyed

[ ] Estimated

Installation Date(s) 7/17/2006

Drilling Method Rotosonic

Drilling Contractor Boart Longyear

Drilling Fluid Water

Development Technique(s) and Date(s)

Pumping - surge with pump 7/28/06

Fluid Loss During Drilling ~250 gallons

Water Removed During Development 240 gallons

Static Depth to Water 22.3 feet below M.P.

Pumping Depth to Water NM feet below M.P.

Pumping Duration 1.00 hours

Yield 4 gpm Date 7/28/06

Specific Capacity NM gpm/ft

Well Purpose Introduction well

Remarks TOC Elevation = 728.553

Clear non-turbid

Prepared by J. Manzo

ARCADIS

Log of Boring: RZ-4J

General Motors Corporation — Moraine, Ohio

Depth (feet)	Blows (/6 in.)	Recovery (Inches)	OVA (PPM)	Sample Analysis	Sample Type	Graphic Log	Soil Class.	Description	Depth to Water
0								No recovery	
2								No recovery	
4	N/A	24	0.0				SW	SAND Brown, fine-medium, medium-coarse gravel (15%), loose, dry	
6	N/A	24	0.7				SW	SAND Light grayish brown, fine-medium, medium-coarse gravel (15%), loose, dry	
8	N/A	24	0.3				SW	Same as above	
10	N/A	24	2.7				SW	Same as above	
12									

☒ Composite Sample to Lab ■ Grab Sample to Lab ▦ Split-Spoon Not Analyzed

Drilling Co.: Boart Longyear
Driller: M. Osterberg
Drilling Method: Rotosonic
Drilling Fluid: Water

Geologist: C. Catlett
Total Depth: 65
Surface Elev.: 724.428
North Coor.: 1690.15438

Begin Drilling: 7/16/06 @ 1635
End Drilling: 7/16/06 @ 1810
Converted to Well: Y Well I.D.: RZ-4J
East Coor.: 4887.95475

Remarks:

Project No.: OH000294.0009.0004B Datum: TOC Elev. 727.965 Filename: July 2006

ARCADIS

Log of Boring: RZ-4J

General Motors Corporation — Moraine, Ohio

Depth (feet)	Blows (/6 in.)	Recovery (Inches)	OVA (PPM)	Sample Analysis	Sample Type	Graphic Log	Soil Class.	Description	Depth to Water
12	N/A	24	2.4				SW	Same as above	
14	N/A	24	5.3				SW	Same as above	
16	N/A	24	5.1				SW	Same as above	
18	N/A	24	5.2				SW	Same as above	
20	N/A	24	2.7				SW	Same as above	
22	N/A	24	1.6				SW	Same as above	
24									

☒ Composite Sample to Lab ■ Grab Sample to Lab ◫ Split-Spoon Not Analyzed

Drilling Co.: Boart Longyear
Driller: M. Osterberg
Drilling Method: Rotosonic
Drilling Fluid: Water

Geologist: C. Catlett
Total Depth: 65
Surface Elev.: 724.428
North Coor.: 1690.15438

Begin Drilling: 7/16/06 @ 1635
End Drilling: 7/16/06 @ 1810
Converted to Well: Y Well I.D.: RZ-4J
East Coor.: 4887.95475

Remarks:

Project No.: OH000294.0009.0004B Datum: TOC Elev. 727.965 Filename: July 2006

ARCADIS

Log of Boring: RZ-4J

General Motors Corporation — Moraine, Ohio

Depth (feet)	Blows (/6 in.)	Recovery (Inches)	OVA (PPM)	Sample Analysis	Sample Type	Graphic Log	Soil Class.	Description	Depth to Water
24	N/A	24	4.7				SW	Same as above	
26	N/A	24	3.9				SW	SAND Brown, coarse sand with fine-medium gravel (20%), loose, wet	▼
28	N/A	24	3.3				SW	Same as above	
30	N/A	24	8.7				SW	Same as above	
32	N/A	24	9.4				SW	Same as above	
34	N/A	24	6.6				SP	SAND Brown, medium sand, loose, wet	
36									

☒ Composite Sample to Lab ■ Grab Sample to Lab ▨ Split-Spoon Not Analyzed

Drilling Co.: Boart Longyear
Driller: M. Osterberg
Drilling Method: Rotosonic
Drilling Fluid: Water

Geologist: C. Catlett
Total Depth: 65
Surface Elev.: 724.428
North Coor.: 1690.15438

Begin Drilling: 7/16/06 @ 1635
End Drilling: 7/16/06 @ 1810
Converted to Well: Y Well I.D.: RZ-4J
East Coor.: 4887.95475

Remarks:

Project No.: OH000294.0009.0004B Datum: TOC Elev. 727.965 Filename: July 2006

ARCADIS

Log of Boring: RZ-4J

General Motors Corporation — Moraine, Ohio

Depth (feet)	Blows (/6 in.)	Recovery (Inches)	OVA (PPM)	Sample Analysis	Sample Type	Graphic Log	Soil Class.	Description	Depth to Water
36	N/A	24	0.0				SP	Same as above	
38	N/A	24	5.6				SW	SAND Brown, sand and gravel (20%), loose, wet	
40	N/A	24	9.6				SP	SAND Brown, medium sand, loose, wet	
42	N/A	24	0.0				SP	Same as above	
44	N/A	24	6.2				SP	Same as above	
46	N/A	24	0.0				SW	Same as above, gravel (10%)	
48									

☒ Composite Sample to Lab ■ Grab Sample to Lab ▨ Split-Spoon Not Analyzed

Drilling Co.: Boart Longyear
Driller: M. Osterberg
Drilling Method: Rotosonic
Drilling Fluid: Water

Geologist: C. Catlett
Total Depth: 65
Surface Elev.: 724.428
North Coor.: 1690.15438

Begin Drilling: 7/16/06 @ 1635
End Drilling: 7/16/06 @ 1810
Converted to Well: Y Well I.D.: RZ-4J
East Coor.: 4887.95475

Remarks:

Project No.: OH000294.0009.0004B Datum: TOC Elev. 727.965 Filename: July 2006

ARCADIS

Log of Boring: RZ-4J

General Motors Corporation — Moraine, Ohio

Depth (feet)	Blows (/6 in.)	Recovery (Inches)	OVA (PPM)	Sample Analysis	Sample Type	Graphic Log	Soil Class.	Description	Depth to Water
48	N/A	24	5.8				SW	SAND Brown, medium-coarse sand, loose, wet	
50	N/A	24	0.0				SW	SAND Brown, sand with gravel (5-10%), loose, wet	
52	N/A	24	5.8				SW	Same as above	
54	N/A	24	0.0				SW	Same as above	
							ROCK	Boulder	
56							ROCK	Same as above	
58							ROCK	Same as above	
60									

☒ Composite Sample to Lab ■ Grab Sample to Lab ▦ Split-Spoon Not Analyzed

Drilling Co.: Boart Longyear
Driller: M. Osterberg
Drilling Method: Rotosonic
Drilling Fluid: Water

Geologist: C. Catlett
Total Depth: 65
Surface Elev.: 724.428
North Coor.: 1690.15438

Begin Drilling: 7/16/06 @ 1635
End Drilling: 7/16/06 @ 1810
Converted to Well: Y Well I.D.: RZ-4J
East Coor.: 4887.95475

Remarks:

Project No.: OH000294.0009.0004B
Datum: TOC Elev. 727.965
Filename: July 2006

ARCADIS

Log of Boring: RZ-4J

General Motors Corporation — Moraine, Ohio

Depth (feet)	Blows (/6 in.)	Recovery (Inches)	OVA (PPM)	Sample Analysis	Sample Type	Graphic Log	Soil Class.	Description	Depth to Water
60							ROCK	Same as above	
	N/A	12	0.0				CL	SILTY CLAY Gray, little sand, trace gravel, dense	
62	N/A	24	4.1				CL	Same as above	
64	N/A	12	4.0				CL	Same as above	
								End of boring	
66									
68									
70									
72									

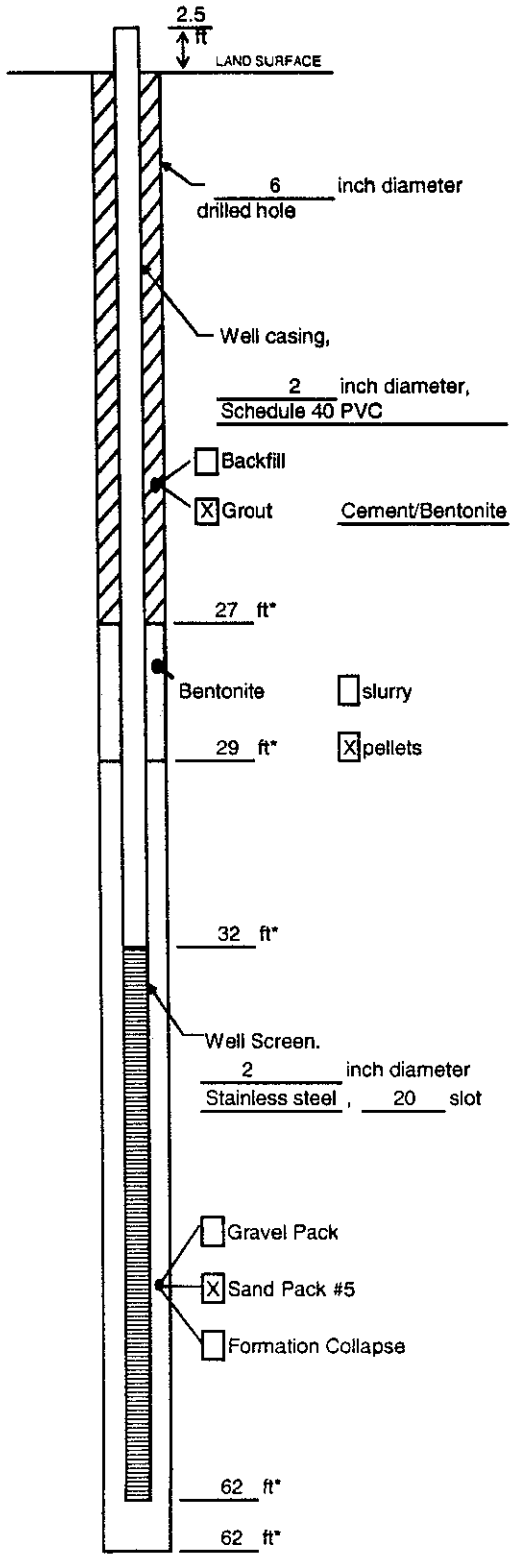
☒ Composite Sample to Lab ■ Grab Sample to Lab ▨ Split-Spoon Not Analyzed

Drilling Co.: Boart Longyear
Driller: M. Osterberg
Drilling Method: Rotosonic
Drilling Fluid: Water
Geologist: C. Catlett
Total Depth: 65
Surface Elev.: 724.428
North Coor.: 1690.15438
Begin Drilling: 7/16/06 @ 1635
End Drilling: 7/16/06 @ 1810
Converted to Well: Y Well I.D.: RZ-4J
East Coor.: 4887.95475
Remarks:
Project No.: OH000294.0009.0004B
Datum: TOC Elev. 727.965
Filename: July 2006

ARCADIS

Well Construction Log

(Unconsolidated)



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

* Depth Below Land Surface

Project General Motors Corporation Well RZ-4J

Town/City Moraine

County Montgomery State Ohio

Permit No. NA

Land-Surface (LS) Elevation and Datum:

724.262 feet [X] Surveyed

[ ] Estimated

Installation Date(s) 7/16-7/17/06

Drilling Method Rotosonic

Drilling Contractor Boart Longyear

Drilling Fluid Water

Development Technique(s) and Date(s)

Pumping - surge with pump 7/29/06

Fluid Loss During Drilling ~200 gallons

Water Removed During Development 240 gallons

Static Depth to Water 21.66 feet below M.P.

Pumping Depth to Water NM feet below M.P.

Pumping Duration 1.00 hours

Yield 4 gpm Date 7/29/06

Specific Capacity NM gpm/ft

Well Purpose Introduction well

Remarks TOC Elevation = 727.965

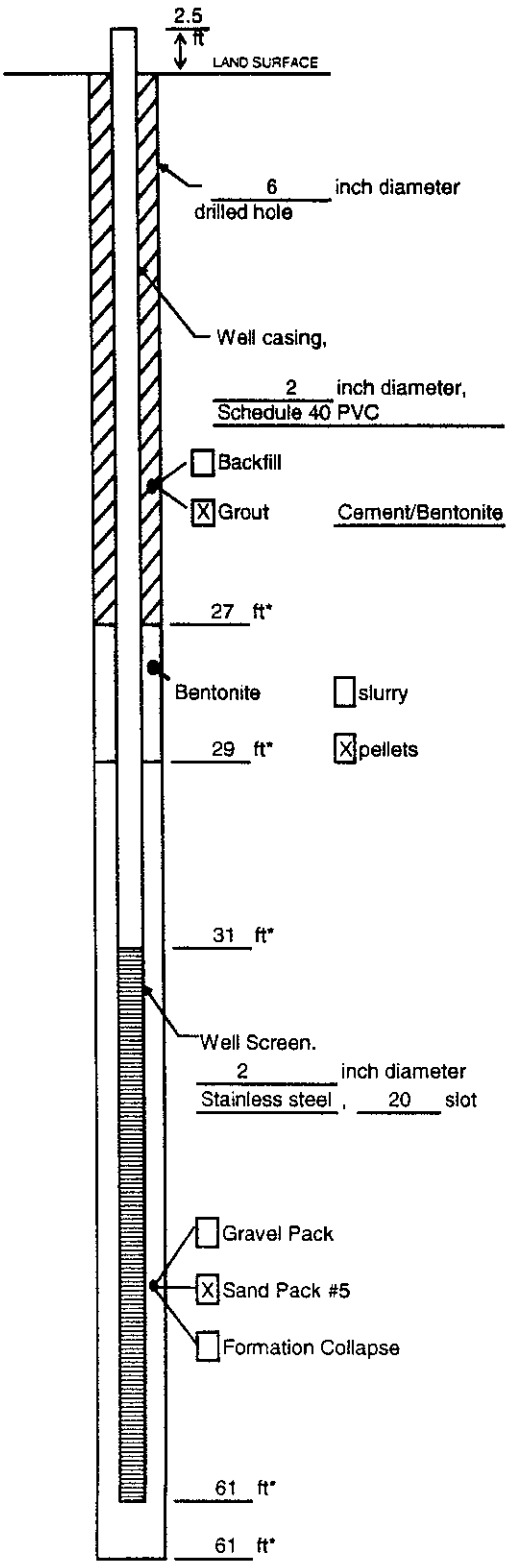
Clear non-turbid

Prepared by J. Manzo

ARCADIS

Well Construction Log

(Unconsolidated)



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

* Depth Below Land Surface

Project General Motors Corporation Well RZ-4K

Town/City Moraine

County Montgomery State Ohio

Permit No. NA

Land-Surface (LS) Elevation and Datum:

724.677 feet [x] Surveyed

[ ] Estimated

Installation Date(s) 7/26/2006

Drilling Method Rotosonic

Drilling Contractor Boart Longyear

Drilling Fluid Water

Development Technique(s) and Date(s)

Pumping - surge with pump 7/29/06

Fluid Loss During Drilling ~200 gallons

Water Removed During Development 240 gallons

Static Depth to Water 21.22 feet below M.P.

Pumping Depth to Water NM feet below M.P.

Pumping Duration 1.20 hours

Yield 3 gpm Date 7/29/06

Specific Capacity NM gpm/ft

Well Purpose Introduction well

Remarks TOC Elevation = 727.530

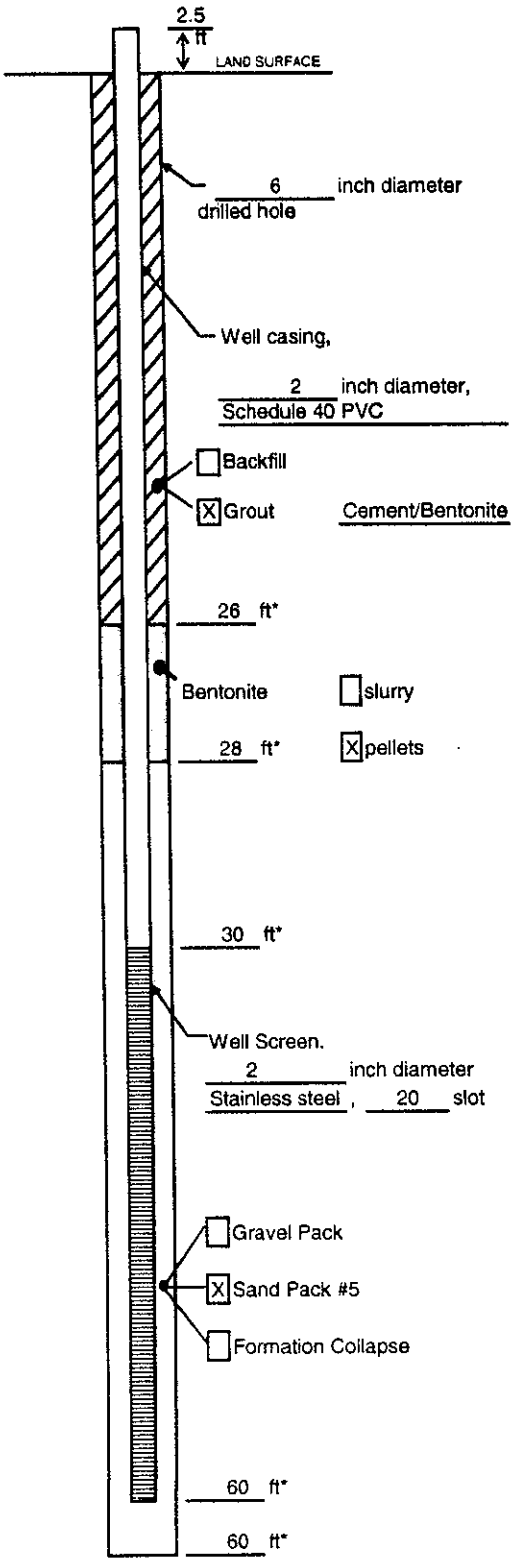
Clear non-turbid

Prepared by T. Fortner

ARCADIS

Well Construction Log

(Unconsolidated)



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

* Depth Below Land Surface

Project General Motors Corporation Well RZ-4L

Town/City Moraine

County Montgomery State Ohio

Permit No. NA

Land-Surface (LS) Elevation and Datum:

725.289 feet [x] Surveyed

[ ] Estimated

Installation Date(s) 7/19/2006

Drilling Method Rotosonic

Drilling Contractor Boart Longyear

Drilling Fluid Water

Development Technique(s) and Date(s)

Pumping - surge with pump 7/29/06

Fluid Loss During Drilling ~200 gallons

Water Removed During Development 240 gallons

Static Depth to Water 21.22 feet below M.P.

Pumping Depth to Water NM feet below M.P.

Pumping Duration 1.00 hours

Yield 4 gpm Date 7/29/06

Specific Capacity NM gpm/ft

Well Purpose Introduction well

Remarks TOC Elevation = 727.539

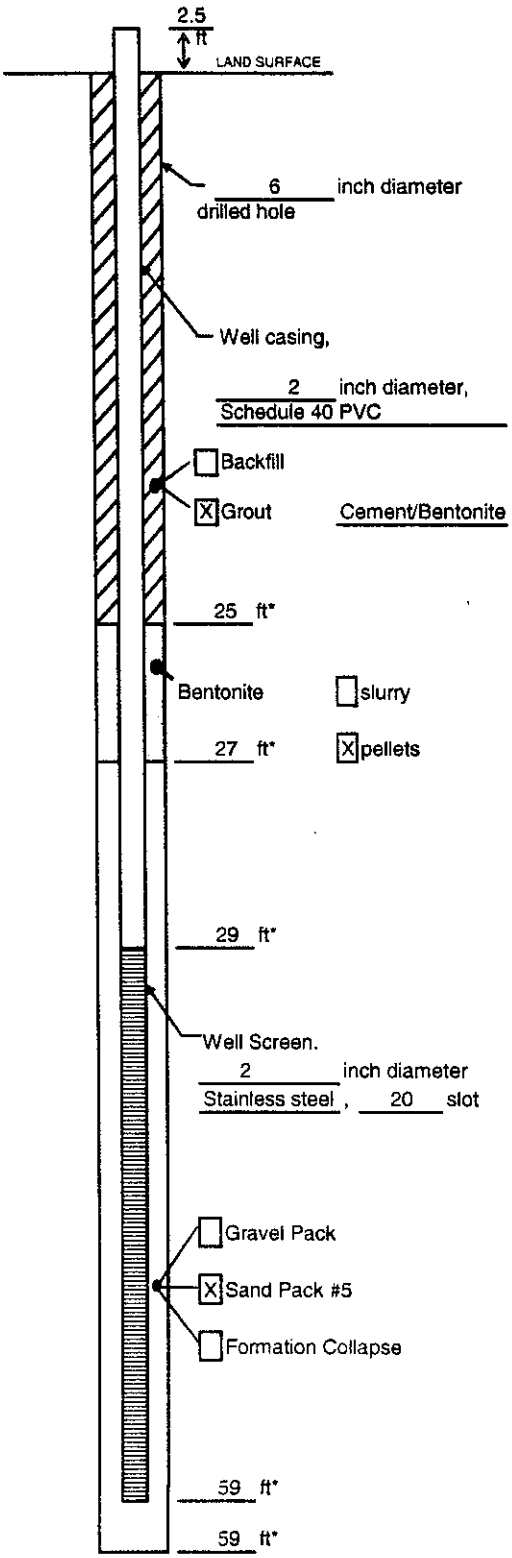
Clear non-turbid

Prepared by T. Fortner

ARCADIS

Well Construction Log

(Unconsolidated)



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

* Depth Below Land Surface

Project General Motors Corporation Well RZ-4M

Town/City Moraine

County Montgomery State Ohio

Permit No. NA

Land-Surface (LS) Elevation and Datum:

725.466 feet [X] Surveyed

[ ] Estimated

Installation Date(s) 7/19/2006

Drilling Method Rotosonic

Drilling Contractor Boart Longyear

Drilling Fluid Water

Development Technique(s) and Date(s)

Pumping - surge with pump 7/29/06

Fluid Loss During Drilling ~200 gallons

Water Removed During Development 240 gallons

Static Depth to Water 20.57 feet below M.P.

Pumping Depth to Water NM feet below M.P.

Pumping Duration 1.20 hours

Yield 3 gpm Date 7/29/06

Specific Capacity NM gpm/ft

Well Purpose Introduction well

Remarks TOC Elevation = 726.898

Clear non-turbid

Prepared by T. Fortner

ARCADIS

Log of Boring: RZ-4N

General Motors Corporation — Moraine, Ohio

Depth (feet)	Blows (/6 in.)	Recovery (Inches)	OVA (PPM)	Sample Analysis	Sample Type	Graphic Log	Soil Class.	Description	Depth to Water
0	N/A	24	0.0				ML	CLAYEY SILT Brown, organic rich, gravel (25%), hard, dry	
2	N/A	24	0.0				ML	Same as above	
4	N/A	24	0.0				SM	SILTY SAND Fine-coarse, fine-coarse gravel and cobbles (25%), well graded, dry	
6	N/A	24	0.0				SM	Same as above	
8	N/A	24	0.0				SM	Same as above	
10	N/A	24	0.0				SW	SAND Fine-coarse, fine-coarse gravel (25%), trace cobbles, trace silt, well graded, dry	
12									

☒ Composite Sample to Lab ■ Grab Sample to Lab ▨ Split-Spoon Not Analyzed

Drilling Co.: Boart Longyear
Driller: M. Osterberg
Drilling Method: Rotosonic
Drilling Fluid: Water

Geologist: J. Manzo
Total Depth: 60
Surface Elev.: 725.710
North Coor.: 1703.08968

Begin Drilling: 7/17/06 @ 0953
End Drilling: 7/17/06 @ 1109
Converted to Well: Y Well I.D.: RZ-4N
East Coor.: 4987.64606

Remarks:

Project No.: OH000294.0009.0004B Datum: TOC Elev. 726.189 Filename: July 2006

ARCADIS

Log of Boring: RZ-4N

General Motors Corporation — Moraine, Ohio

Depth (feet)	Blows (/6 in.)	Recovery (Inches)	OVA (PPM)	Sample Analysis	Sample Type	Graphic Log	Soil Class.	Description	Depth to Water
12	N/A	24	0.0				SW	Same as above	
14	N/A	24	0.0				SW	Same as above	
16	N/A	12	0.0				SW	Same as above	
18	N/A	12	0.0				SW	Same as above	
20	N/A	12	0.0				SW	Same as above	
22	N/A	12	0.0				SW	Same as above, sand (60%), gravel (40%), dry to slightly moist	
24									

☒ Composite Sample to Lab ■ Grab Sample to Lab ▥ Split-Spoon Not Analyzed

Drilling Co.: Boart Longyear
Driller: M. Osterberg
Drilling Method: Rotosonic
Drilling Fluid: Water

Geologist: J. Manzo
Total Depth: 60
Surface Elev.: 725.710
North Coor.: 1703.08968

Begin Drilling: 7/17/06 @ 0953
End Drilling: 7/17/06 @ 1109
Converted to Well: Y Well I.D.: RZ-4N
East Coor.: 4987.64606

Remarks:

Project No.: OH000294.0009.0004B Datum: TOC Elev. 726.189 Filename: July 2006

ARCADIS

Log of Boring: RZ-4N

General Motors Corporation — Moraine, Ohio

Depth (feet)	Blows (/6 in.)	Recovery (Inches)	OVA (PPM)	Sample Analysis	Sample Type	Graphic Log	Soil Class.	Description	Depth to Water
24	N/A	12	0.0				SW	Same as above, wet at 25'	
26	N/A	12	0.0				SW	Same as above	
28	N/A	12	0.0				GW	GRAVEL Fine, coarse sand (40%), trace cobbles, well graded, wet	
30	N/A	12	0.0				GW	Same as above	
32	N/A	12	0.0				GW	Same as above	
34	N/A	8	0.0				GW	Same as above	
36									

☒ Composite Sample to Lab ■ Grab Sample to Lab ⬚ Split-Spoon Not Analyzed

Drilling Co.: Boart Longyear
Driller: M. Osterberg
Drilling Method: Rotosonic
Drilling Fluid: Water

Geologist: J. Manzo
Total Depth: 60
Surface Elev.: 725.710
North Coor.: 1703.08968

Begin Drilling: 7/17/06 @ 0953
End Drilling: 7/17/06 @ 1109
Converted to Well: Y Well I.D.: RZ-4N
East Coor.: 4987.64606

Remarks:

Project No.: OH000294.0009.0004B Datum: TOC Elev. 726.189 Filename: July 2006

ARCADIS

Log of Boring: RZ-4N

General Motors Corporation — Moraine, Ohio

Depth (feet)	Blows (/6 in.)	Recovery (Inches)	OVA (PPM)	Sample Analysis	Sample Type	Graphic Log	Soil Class.	Description	Depth to Water
36	N/A	8	0.0				SW	Same as above, trace large cobbles	
38	N/A	8	0.0				SW	Same as above	
40	N/A	8	0.0				SW	Same as above	
42	N/A	8	0.0				SW	Same as above	
44	N/A	8	0.0				SW	Same as above	
46	N/A	8	0.0				SW	Same as above	
48									

☒ Composite Sample to Lab ■ Grab Sample to Lab ▯ Split-Spoon Not Analyzed

Drilling Co.: Boart Longyear
Driller: M. Osterberg
Drilling Method: Rotosonic
Drilling Fluid: Water

Geologist: J. Manzo
Total Depth: 60
Surface Elev.: 725.710
North Coor.: 1703.08968

Begin Drilling: 7/17/06 @ 0953
End Drilling: 7/17/06 @ 1109
Converted to Well: Y Well I.D.: RZ-4N
East Coor.: 4987.64606

Remarks:

Project No.: OH000294.0009.0004B Datum: TOC Elev. 726.189 Filename: July 2006

ARCADIS

Log of Boring: RZ-4N

General Motors Corporation — Moraine, Ohio

Depth (feet)	Blows (/6 in.)	Recovery (Inches)	OVA (PPM)	Sample Analysis	Sample Type	Graphic Log	Soil Class.	Description	Depth to Water
48	N/A	8	0.0				SW	Same as above	
50	N/A	8	0.0				SW	Same as above	
52	N/A	8	0.0				SW	Same as above	
54	N/A	24	0.0				SW	Same as above	
56	N/A	24	0.0				SW	Same as above	
58	N/A	24	0.0				CL	SILTY CLAY Gray, hard, trace cobbles, gravel (10%), low plasticity, dry	
60									

☒ Composite Sample to Lab ■ Grab Sample to Lab ⊡ Split-Spoon Not Analyzed

Drilling Co.: Boart Longyear
Driller: M. Osterberg
Drilling Method: Rotosonic
Drilling Fluid: Water

Geologist: J. Manzo
Total Depth: 60
Surface Elev.: 725.710
North Coor.: 1703.08968

Begin Drilling: 7/17/06 @ 0953
End Drilling: 7/17/06 @ 1109
Converted to Well: Y Well I.D.: RZ-4N
East Coor.: 4987.64606

Remarks:

Project No.: OH000294.0009.0004B Datum: TOC Elev. 726.189 Filename: July 2006

ARCADIS

Log of Boring: RZ-4N

General Motors Corporation — Moraine, Ohio

Depth (feet)	Blows (/6 in.)	Recovery (Inches)	OVA (PPM)	Sample Analysis	Sample Type	Graphic Log	Soil Class.	Description	Depth to Water
60								End of boring	
62									
64									
66									
68									
70									
72									

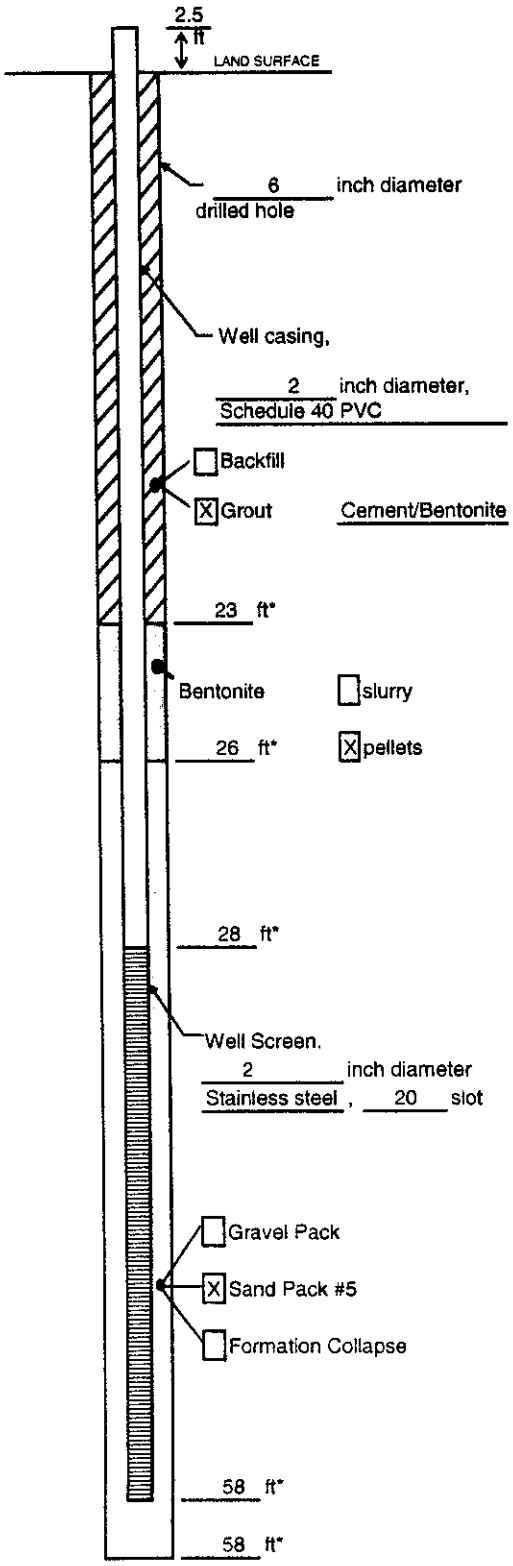
☒ Composite Sample to Lab ■ Grab Sample to Lab ▥ Split-Spoon Not Analyzed

Drilling Co.: Boart Longyear
Driller: M. Osterberg
Drilling Method: Rotosonic
Drilling Fluid: Water
Geologist: J. Manzo
Total Depth: 60
Surface Elev.: 725.710
North Coor.: 1703.08968
Begin Drilling: 7/17/06 @ 0953
End Drilling: 7/17/06 @ 1109
Converted to Well: Y Well I.D.: RZ-4N
East Coor.: 4987.64606
Remarks:
Project No.: OH000294.0009.0004B
Datum: TOC Elev. 726.189
Filename: July 2006

ARCADIS

Well Construction Log

(Unconsolidated)



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

* Depth Below Land Surface

Project General Motors Corporation Well RZ-4N

Town/City Moraine

County Montgomery State Ohio

Permit No. NA

Land-Surface (LS) Elevation and Datum:

725.710 feet [x] Surveyed

[ ] Estimated

Installation Date(s) 7/17/2006

Drilling Method Rotosonic

Drilling Contractor Boart Longyear

Drilling Fluid Water

Development Technique(s) and Date(s)

Pumping - surge with pump 7/29/06

Fluid Loss During Drilling ~250 gallons

Water Removed During Development 250 gallons

Static Depth to Water 19.85 feet below M.P.

Pumping Depth to Water NM feet below M.P.

Pumping Duration 1.10 hours

Yield 4 gpm Date 7/29/06

Specific Capacity NM gpm/ft

Well Purpose Introduction well

Remarks TOC Elevation = 726.189

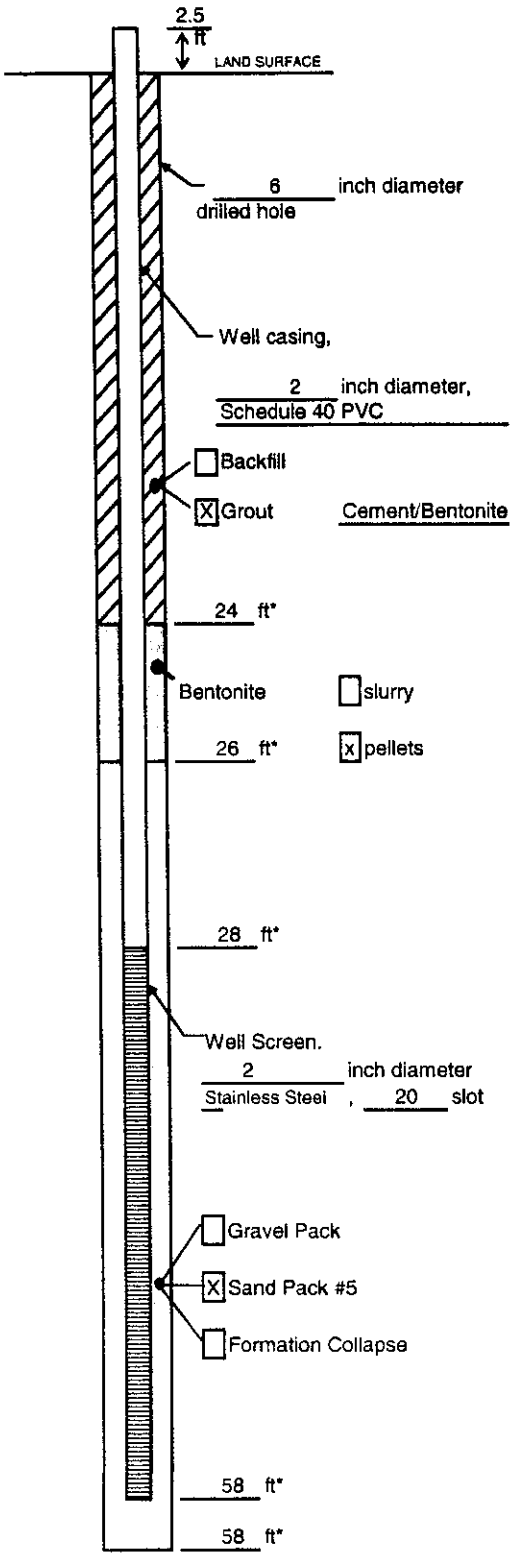
Clear non-turbid

Prepared by J. Manzo

ARCADIS

Well Construction Log

(Unconsolidated)



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

* Depth Below Land Surface

Project General Motors Corporation Well RZ-4O

Town/City Moraine

County Montgomery State Ohio

Permit No. NA

Land-Surface (LS) Elevation and Datum:

726.356 feet [x] Surveyed

[ ] Estimated

Installation Date(s) 7/18/2006

Drilling Method Rotosonic

Drilling Contractor Boart Longyear

Drilling Fluid Water

Development Technique(s) and Date(s)

Pumping - surge with pump 7/29/06

Fluid Loss During Drilling ~200 gallons

Water Removed During Development 240 gallons

Static Depth to Water 20.12 feet below M.P.

Pumping Depth to Water NM feet below M.P.

Pumping Duration 1.2 hours

Yield 3 gpm Date 7/29/06

Specific Capacity NM gpm/ft

Well Purpose Introduction Well

Remarks TOC Elevation = 726.465

Clear-Non-Turbid

Prepared by T. Fortner

Appendix E

In-Situ Reactive Zones
Performance Results for 2006

In-Situ Reactive Zones Performance Results

As described in Section 3.1.1 of the Site-Wide Groundwater Monitoring Report for 2006 (Monitoring Report), the carbon solution delivery network consists of four reactive zones, RZ-1, RZ-2 (in operation from 1999 to 2002), and RZ-3 (East and West) and newly installed RZ-4 (East and West). During 2006, a carbon solution was introduced into the groundwater through introduction points at RZ-1, RZ-3 (East and West), and RZ-4 (East and West) shown on Figures 14, and 16 of the Monitoring Report, respectively. No carbon was introduced into RZ-2 (Figure 15 of the Monitoring Report) in 2006. RZ-1 was originally installed in 1999 as a nine well barrier downgradient of the Former Oil House Area source area, and then based on the performance of the ERD technology, RZ-1 was expanded into portions of the Former Oil House Area source area by the addition of 12 introduction points in 2002. RZ-3 was originally installed in 1999 and has been operated as a cut-off barrier (30 wells in RZ-3 East and 11 wells in RZ-3 West) to mitigate further downgradient VOC migration. In 2005, RZ-3 East was modified by the addition of 5 introduction wells (RZ-3RR through RZ-3VV) and cessation of introduction in 5 existing wells (RZ-3MM through RZ-3QQ) to improve performance at the far eastern edge of the plume. Using data obtained from the Supplemental Groundwater Investigation conducted in 2006, RZ-4 was designed and installed to address VOC concentrations present west of RZ-3 West. RZ-4 consists of 15 introduction wells, 7 wells in RZ-4 West and 8 wells in RZ-4 East. The RZ-4 West wells are located in the southeast corner of the closed South Settling Lagoon and the RZ-4 East wells are located north of Landfill L1 and west of the Waste Pile/Staging Area. Introductions began in RZ-4 in August 2006. The following sections discuss the monitoring completed to assess the effectiveness of the in-situ reactive zones and the results of this monitoring.

Reactive Zone Monitoring

Operation of the reactive zones was monitored through the collection of field parameter measurements, and laboratory analyses of biogeochemical indicator parameters and volatile organic compounds (VOCs), according to the Site-Wide Groundwater Monitoring Plan (ARCADIS G&M, Inc. 2002). Field parameter measurements included: pH, specific conductivity, dissolved oxygen (DO), oxidation-reduction potential (ORP), and temperature. Biogeochemical parameters included manganese (total and dissolved), iron (total and dissolved), sulfate, sulfide, total organic carbon (TOC), chlorides, light hydrocarbons (ethane and ethene), and methane. The monitored VOCs included: benzene, toluene, ethylbenzene, xylenes, tetrachloroethene (PCE), trichloroethene (TCE), cis-1,2-dichloroethene (cis-1,2-DCE), vinyl chloride, 1,1,1-trichloroethane (1,1,1-TCA), 1,1-dichloroethane (1,1-DCA), 1,1-dichloroethene (1,1-DCE), and trans-1,2-dichloroethene (trans-1,2-DCE). The VOC data collected are presented in Tables 11 through 16 of the Monitoring Report. The bioattenuation parameter data is presented on Tables 17 through 22. An evaluation of pertinent monitoring data is presented in the following sections.

The operational monitoring data collected, as indicated above, can be broadly categorized as: (i) "primary" operational monitoring data, which tracks the actual operation of the remediation system and determines whether the operation is proceeding as planned, and (ii) "secondary"

operational monitoring data, which assists in the occasional troubleshooting of the system. The secondary data becomes important in the event that degradation of the VOCs is not proceeding as expected, and the cause cannot be determined from the primary operational monitoring data. The primary operational monitoring data includes pH, TOC, VOCs, ethene, ethane, and methane. Secondary operational monitoring data includes dissolved manganese, dissolved iron, sulfate, and ORP. The primary operational data for select monitoring wells is discussed below and presented graphically on Figures E-1 through E-11.

The purpose of upgradient and downgradient monitor wells, separate from the introduction points within the reactive zones, is to collect and compare data before and after biodegradation by the stimulated microbial population. Locations of these wells are shown on Figures 14 through 16 of the Monitoring Report.

- At RZ-1, GM-29 is designated as the upgradient monitor well, while GM-28 is designated as the downgradient monitor well. These wells are ideally positioned, relative to estimated groundwater travel time, approximately 100 days upgradient and 100 days downgradient from the original introduction wells installed to create the RZ-1 introduction zone (line of nine introduction wells, RZ-1A through 1I, placed in an East-West direction). GM-29 is located within the area of the RZ-1 expansion wells (twelve introduction wells placed in two rows north of the original nine wells, RZ-1J through 1U). Therefore, GM-23 is also used as an upgradient monitoring point because this well is located within the source area and not within the RZ-1 reactive zone.

- At RZ-2, existing monitor wells, screened at the top of the water table, were used for introduction points in this area during the initial phase of this remedial action. After a period of introduction in all ME-series wells, it was decided to stop introducing into the most upgradient (ME-6) and downgradient (ME-3) wells so they could be used for RZ-2 monitoring. Groundwater quality was also monitored at GM-31, which is an upper aquifer monitor well screened at the top of the regional clay till, below the RZ-2 introduction zone. RZ-2 has been inactive since 2002.

- For RZ-3 West, monitor wells EAST and GM-19S are used as the upgradient wells. It should be noted that as of August 2006 GM-19S is now the downgradient monitoring well for RZ-4 East. At RZ-3 West, GM-32, which is within the introduction zone due to its location being constrained by the proximity of Landfill L1, is designated as the downgradient monitor well. Results at GM-32 are analyzed with caution, as this well is located in the early stages of the reactive zone due to its proximity to the introduction points. Annual data collected from GM-8 and GM-6, which are further downgradient from the introduction zone and located along the west side of Landfill L1, have also been evaluated with respect to monitoring the performance of RZ-3 West. At RZ-3 West, carbon solution is introduced in thirty wells, RZ-3A through RZ-2DD.

- For RZ-3 East, GM-22 is designated as the upgradient monitor well and GM-21 is designated as the downgradient monitor well. At RZ-3 East, carbon solution is introduced in the original wells, RZ-3FF through RZ-3KK, and five new wells, RZ-3RR through RZ-3VV.

- For RZ-4 East monitoring well EAST is used as the upgradient monitoring well and GM-19S is used at the downgradient monitoring well. For RZ-4 West monitoring well pair GM-63 and GM-64 are used as the downgradient monitoring wells. This well pair has screened intervals in the intermediate and deep portions of the upper aquifer. Monitoring well W-4-S is also used as a sidegradient monitoring well for RZ-4 West.

In 2006, in general, a target volume of 800 to 900 gallons of 5 percent molasses solution was injected into the introduction wells of RZ-1 during February, March, May, June, August, September, and December. No carbon was injected in RZ-2 during 2006. The introduction wells at RZ-3 West and RZ-3 East introduction wells RZ-3FF through RZ-3KK received a target volume of 1,600 to 1,800 gallons of 5 percent molasses solution monthly in general in January through December. The RZ-3 East replacement wells (RZ-3RR through RZ-3VV) received a target volume of 1,600 to 1,800 gallons of 3 percent molasses solution in 2006. Introductions began in RZ-4 in August 2006 and a target volume of 3,000 gallons of 2 percent molasses solution was injected into the RZ-4 wells in August through December 2006. It should be noted that in November and December 2006 introductions were limited in RZ-4 West due to access issues into the closed South Settling Lagoon area. GM is working to improve access to these introduction wells to ensure the full introductions are completed in 2007. Adjustments to the introduction procedures were made based upon evaluation of monitoring results and the variability in acceptance rates of the more concentrated solution into the formation. Table 24 in the monitoring report presents the carbon solution introduction volumes for different introduction wells in 2006.

Analysis of Primary Operational Monitoring Data

The primary operational data is comprised of a limited number of variables that are monitored at a frequency necessary to supply the information required for the operation of the remediation system. The entire data set is presented in Tables 11 through 22 of the Monitoring Report. These tables are organized such that upgradient and downgradient changes can be easily identified for each reactive zone from 1999 to 2006. Figures E-1 through E-11 present the primary operational data (pH, TOC, methane, VOCs, ethane, and ethene) graphically for monitoring wells used for monitoring the effectiveness of each of the IRZs (GM-23, GM-28, GM-29, ME-6, GM-31, ME-3, GM-32, GM-8, GM-6, GM-21, and GM-19S). Because of the limited data available for evaluation for monitoring well pair GM-63/GM-64 no graphs have been prepared for these wells. The graphs are organized to allow a simple comparison of the trends in each monitoring well for pH, TOC, methane, VOCs, ethane, and ethene. A discussion of the primary operational data is provided below.

pH

The preferred pH range for reductive dechlorination is between 6 and 8, and the acceptable pH range extends from 5 to 9. All pH measurements collected in 2006 from all upgradient and downgradient monitoring wells were in the preferred pH range.

Total Organic Carbon/Methane

At RZ-1, the reductive dechlorination process is continuing effectively even though the TOC levels at the designated downgradient well, GM-28, is 7 milligrams per liter (mg/L) which is below background levles. Considering the differences in the VOC concentrations at the upgradient wells GM-29 and GM-23, and the VOC concentrations at GM-28, the RZ is performing as an effective barrier, reducing the total VOC concentrations from approximately 1,887 micrograms per liter (µg/L) in GM-29 and 15,835 µg/L in GM-23 (September 2006) to less than 6 µg/L at GM-28 (September 2006). Based on the TOC values in RZ-1, the carbon has been consumed at a high rate and the reactive zone ends at some location in between the RZ-1 introduction wells and GM-28. Methane concentrations in GM-28 continue to be sustained above background concentrations which provides evidence that methanogenesis is occurring and further indicating that the desired reducing conditions are being achieved in the reactive zone. TOC concentrations at GM-29 have increased slightly since introductions began at the RZ-1 expansion wells and methane concentrations in GM-29 continue to remain well above the background levels observed in this monitoring well in the 1999 sampling before the start of carbon introductions.

As indicated previously, no carbon was injected in the RZ-2 wells during 2006, resulting in an overall reduction of TOC in this area. Additionally methane concentrations in this area have reduced to background levels.

TOC and methane concentrations at RZ-3 West downgradient well GM-32 were sustained above background levels through 2006. TOC concentrations observed at further downgradient wells GM-8 and GM-6 showed little change in TOC and methane concentrations from 2005 to 2006. Due to the distance of downgradient well GM-6 to RZ-3 West, TOC concentrations above background levels would not be expected in this well. TOC and methane concentrations observed at GM-21, which is the downgradient well for RZ-3 East, showed a decrease in 2006 as compared to 2005. However, the December 2006 data showed an increase in TOC and methane for this well and continued degradation of chlorinated VOCs in this area has been observed, indicating that the reactive zone is creating an effective reducing environment.

Analytical results from GM-19S, the downgradient monitoring well for RZ-4 East, showed a spike in TOC and methane concentrations in the September 2006 sampling event above background concentrations followed by a slight decrease in TOC and methane concentrations in the December 2006 sampling event (Table 22 of the Monitoring Report and Figure E-11). This spike in TOC and methane occured approximately 40 days after the start of introductions in the RZ-4 East wells. The data indicates that the carbon introductions are providing a carbon source to

begin establishing ERD conditions. This data should be evaluated with caution because this reactive zone is new and not fully established. Additionally, limited sampling data is available to evaluate the performance of this reactive zone. TOC and methane concentrations in monitoring well pair GM-63/-64 (downgradient of RZ-4 West) remained at background levels in 2006. During 2006 access issues to the RZ-4 West wells hindered the delivery of the carbon solution to the RZ-4 wells therefore the target volume for these wells was not introduced in November and December 2006. Additionally the data indicates that the RZ is not yet established.

VOC Analytical Results

The groundwater analytical data for the site-specific list of VOCs are presented in Table 11 for RZ-1, Table 12 for RZ-2, Table 13 for RZ-3 West, Table 14 for RZ-3 East and Table 15 for RZ-4 West and Table 16 for RZ-4 East in the Monitoring Report. Additionally, the degradation of PCE and TCE (parent compounds) to cis-1,2-DCE, vinyl chloride (daughter products), and ethene and ethane (end products) are provided with the pH, TOC, and methane data for the upgradient monitor wells at RZ-1 (GM-29 and GM-23) and downgradient monitor wells in RZ-1, RZ-2, RZ-3 West, RZ-3 East, RZ-4 West on Figures E-1 through E-11, respectively.

The following bullets summarize the observations and trends evident among the four reactive zones at the GM Moraine Facilities which indicate that enhanced reduction of the targeted chlorinated VOCs is progressing as a result of the carbon introduction process:

- Comparing the 2006 profiles of chlorinated compounds in the upgradient and downgradient wells in RZ-1 (Figures E-1 and E-3, respectively), it was found that degradation of the chlorinated VOCs was sustained throughout 2006. The concentrations of PCE, TCE, vinyl chloride, cis-1,2-DCE and 1,1,1-TCA in GM-28 were all below 1.0 µg/L, while 1,1-dichloroethane was detected at a concentration of 4.2 µg/L. Concentrations of the final end products (ethene and ethane) decreased in 2006 to 73 µg/L from 81µg/L in 2005. This decrease in end-products was due to the absence of source material, indicating that most of the VOCs originally present downgradient of the RZ-1 barrier have degraded. The total VOCs concentrations in GM-29 have decreased slightly in 2006 as compared to 2005 (2,559 µg/L in 2005 and 1,725.8 µg/L in 2006). This decrease is attributed to a slight decrease in TCE (310 µg/L in 2005 and 220 µg/L in 2006) and vinyl chloride (210 µg/L in 2005 and 150 µg/L in 2006). Additionally, the high ethene concentration noted at GM-29 in 2005 persisted in 2006 (1,600 µg/L in 2005 and 750 µg/L in 2006). The elevated ethene concentration is most likely due to the carbon introduction at the RZ-1 expansion wells (RZ-1J through RZ-1U), which are located west and north of GM-29. The introduction of carbon at these wells is likely resulting in a redox recovery zone near GM-29 and the presence of higher ethane, ethene and methane concentrations noted in GM-29. Total VOC concentrations in GM-23 decreased from 17,853.3 µg/L in the 1999 baseline sampling to 15,835 µg/L in 2006. The concentrations of all VOC constituents in GM-23 showed a decrease except for vinyl chloride which increased from 2,800 µg/L in 2005 to 4,100 µg/L in 2006. This well predominantly contained PCE, TCE, cis-1,2-DCE, and vinyl chloride. This well is upgradient to the original RZ-1 barrier and is within the zone of

influence of carbon introductions conducted in the Former Oil House Area in wells OW-1 through OW-3 which resulted in solubilizing previously adsorbed VOCs to be treated by RZ-1.

- The concentrations of PCE, TCE, cis-1,2-DCE, and vinyl chloride at downgradient monitor well ME-3 in RZ-2 decreased to non-detectable levels by the end of 2002. No carbon was injected since 2003. The latest data at ME-3 show total VOCs of 19.94 µg/L, with the maximum contributor being 1,1-DCA (concentration at 8.5 µg/L), which is a daughter product of 1,1,1-TCA degradation. Total VOC concentrations in ME-3 in 2006 were similar to those observed in 2005.

- At RZ-3 West, concentrations of PCE, TCE, 1,1,1-TCA, cis-1,2-DCE, and vinyl chloride monitored at GM-32, located within the influence of the introduction zone, remained at non-detectable levels at the end of 2006 (Table 13 of the Monitoring Report). The only VOC detected at GM-32 was 1,1-DCA at a concentration of 3.7 µg/L. It is important to note that GM-32 is close to the introduction zone, and the fact that PCE, TCE, cis-1,2-DCE, and vinyl chloride are below detection at GM-32 indicates the dechlorination is proceeding very rapidly in this area.

- Data from monitor wells GM-8 and GM-6, which are located further downgradient of RZ-3 West along the west side of Landfill L1, are also being considered to evaluate the effect of carbon introductions at RZ-3 West. Concentrations of PCE, TCE, and 1,1,1-TCA at GM-8 remained below their respective detection limits at the end of 2006. Though GM-6 is located further downgradient, concentrations of PCE and TCE have consistently decreased since 1998. Some decreases in all VOC constituents were noted from 2005 to 2006 in GM-6. It is expected that consistent carbon introduction at RZ-3 West will eventually reduce the concentrations of all chlorinated VOCs at GM-6. It is important to realize that though GM-6 is located in the redox recovery zone for RZ-3 West (because of the distance from the introduction zone), the effectiveness of the enhanced reductive dechlorination in this downgradient area may be adversely affected by the proximity of GM-6 to groundwater recovery well TW-2 which draws fresh, oxygenated groundwater into the area, thereby limiting the ability to develop the desired reducing conditions.

- Continual decrease in concentrations of chlorinated VOCs was evident from the data collected from GM-21, which is the downgradient monitor well for RZ-3 East, in 2006. Concentrations of total VOCs decreased to 54.29 µg/L in 2006 from 64.5 µg/L in 2005. Total VOCs in GM-21 from the December 2006 sampling event were further reduced to 29.8 µg/L.

- Data from monitoring well GM-19S, downgradient of RZ-4 East shows an a decrease in PCE and TCE (parent) concentrations and an increase in cis-1,2-DCE (daughter) concentrations from background in the samples following the start of carbon introductions at RZ-4 East (Table 16 of the monitoring report and Figure E-11). Additionally, total VOCs in GM-19S increased from 290 µg/L in 2005 to 706.8 µg/L in September 2006 indicating that as the aquifer is converted to a more reducing environment solubilizing previously adsorbed VOCs for

biodegradation is occuring. This data should be analyzed with caution, however, because this reactive zone is new and not fully established and because of limited data available to evaluate the performance of this reactive zone.

- The concentrations of VOCs at the influent to the air-stripper tower are being monitored on a monthly basis since the startup of the air stripper unit on January 31, 1996 (Figure 5 of the Monitoring Report). The first monitoring event was in February 1996, and the introduction of carbon in RZ-3 commenced in December 1999. On reviewing the data presented in Figure 5, it can be observed that the concentrations of VOCs in 2006 remained consistent with the 2005 monitoring data.

Conclusions

The following observations and conclusions can be made:

- Existing aquifer conditions have been converted to more reducing conditions within and downgradient of the reactive zones through the introduction of a carbon source, as evidenced by the changes in field and bioattenuation parameters;

- The target compounds (PCE and TCE) have been effectively reduced to daughter products (cis-1,2-DCE and vinyl chloride) and ultimately to end products (ethene and ethane) based on a review of the VOC results;

- Levels of vinyl chloride were consistently low to non-detect in all downgradient wells, indicating degradation of cis-1,2-DCE to ethene and ethane;

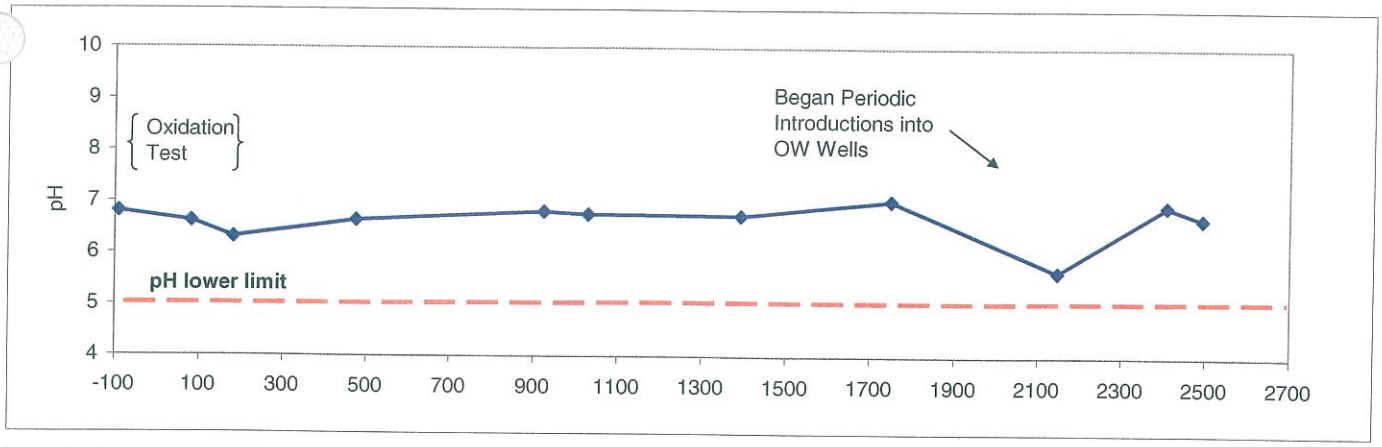
- The primary and secondary operational monitoring data from RZ-2 will continue to be evaluated, along with the results of the Corrective Measures Supplemental Groundwater Investigation, to determine if modifications to the carbon source introductions are necessary;

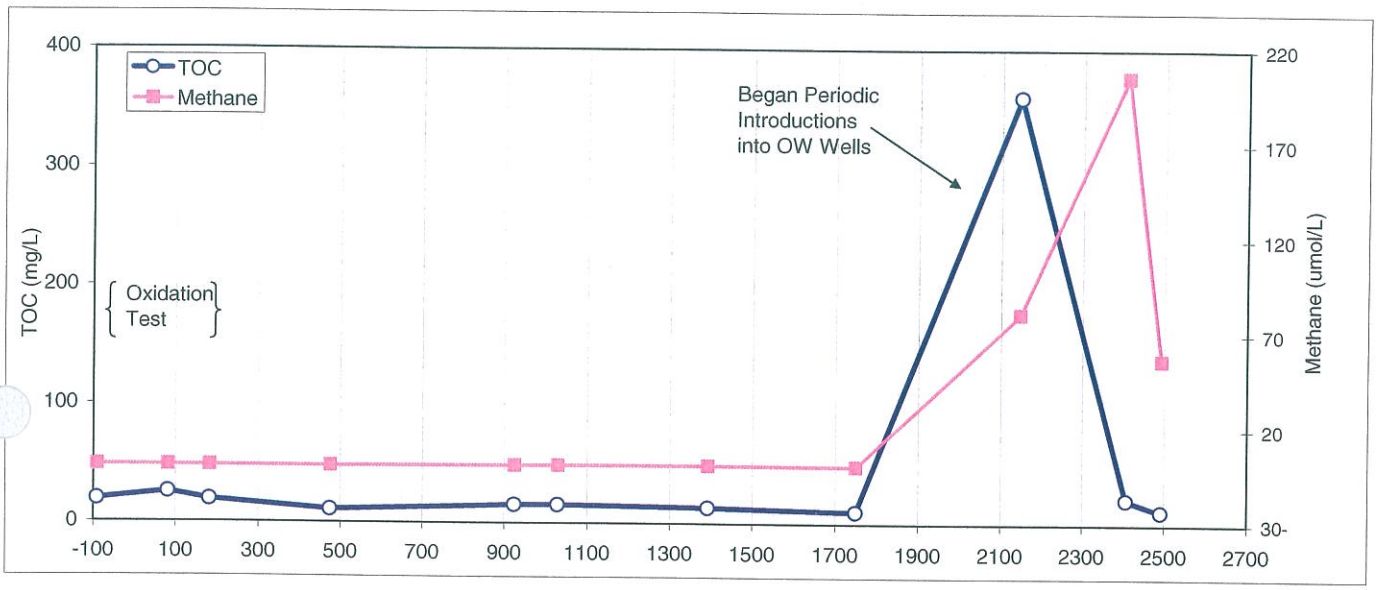
- VOC concentrations at RZ-3 East (GM-21) have decreased in response to carbon introductions, since the enhanced design of the introduction system in RZ-3 East in 2005. TOC levels, as well as other primary and secondary operational monitoring data, indicate that the effects of carbon introductions have reached the area monitored by GM-21; and,

- VOC concentrations at RZ-4, as well as other operational monitoring data, will continue to be evaluated in 2007 as reducing conditions are established and the desired results are achieved.

Overall, the process of enhanced reductive dechlorination at this site has been successful in achieving the desired reduction of VOC concentrations. In 2007 GM will evaluate if modifications to the RZs are needed based on water quality and performance monitoring data.

Figure E-1
GM-23 ERD Analysis





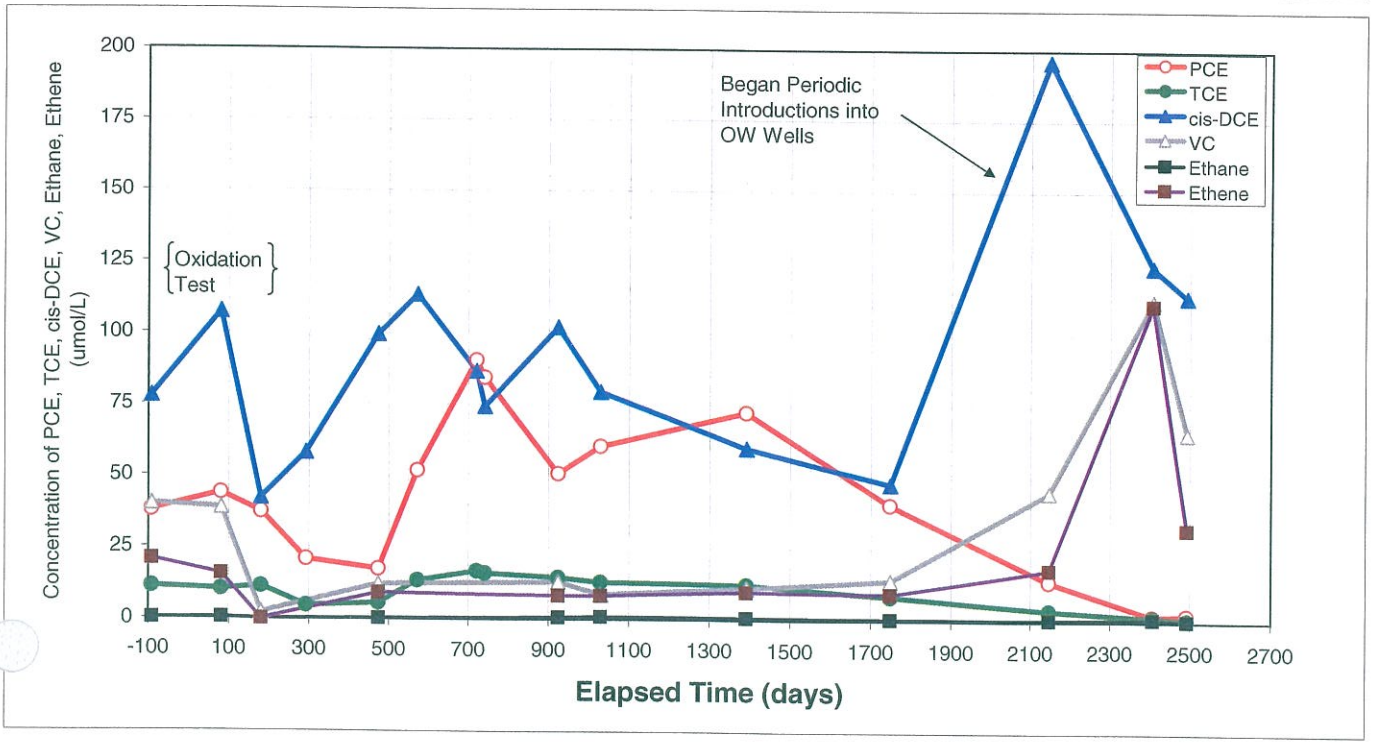
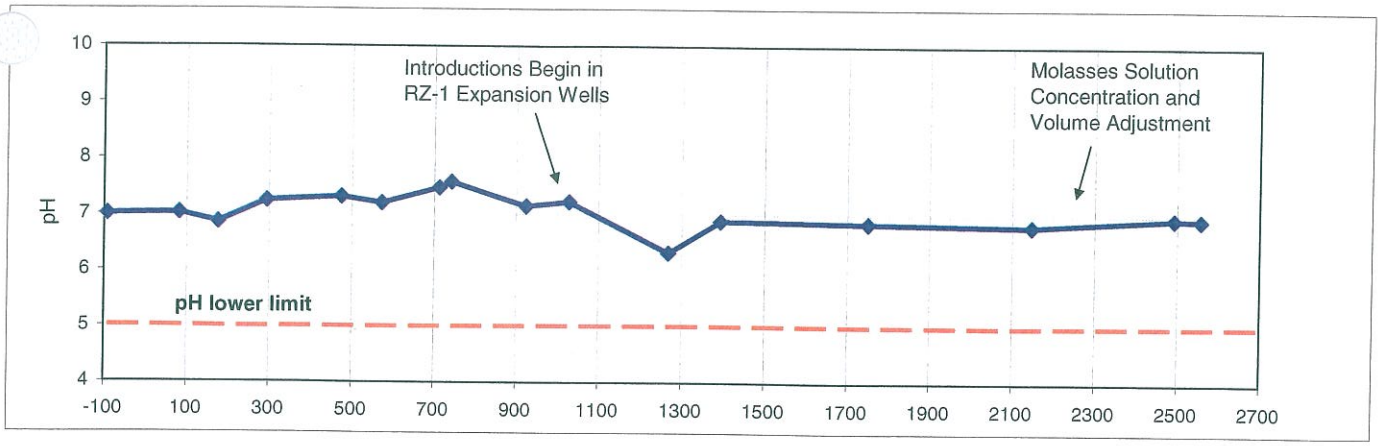
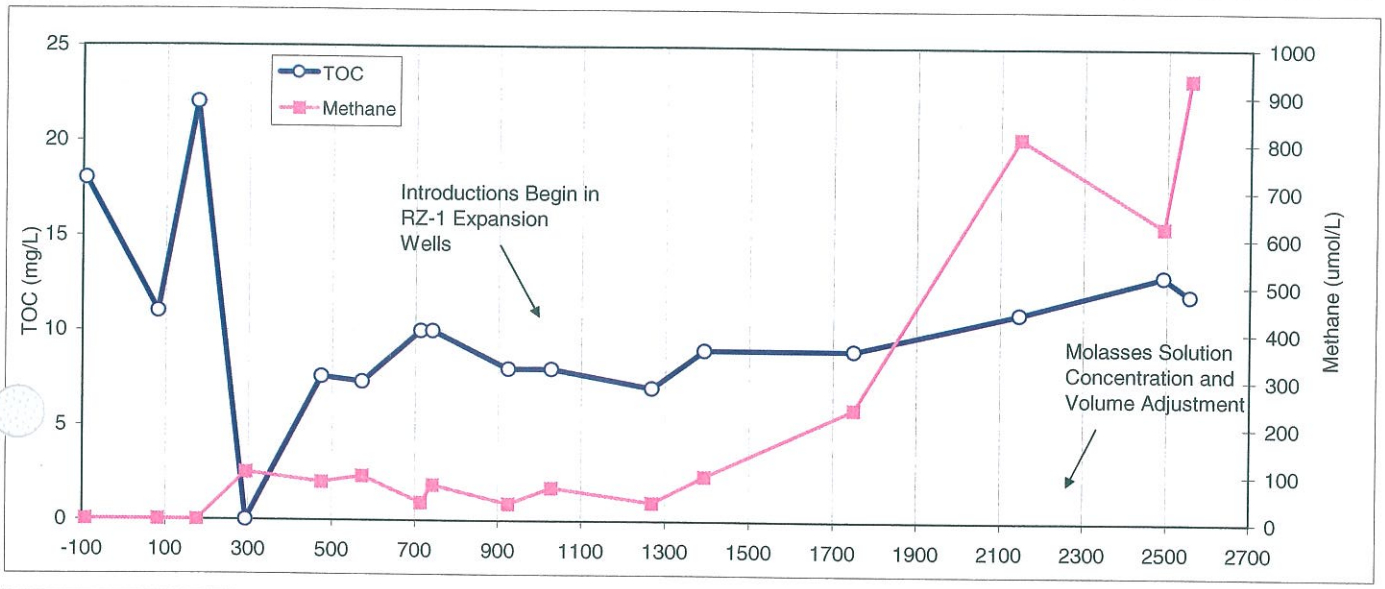


Figure E-2
GM-29 ERD Analysis





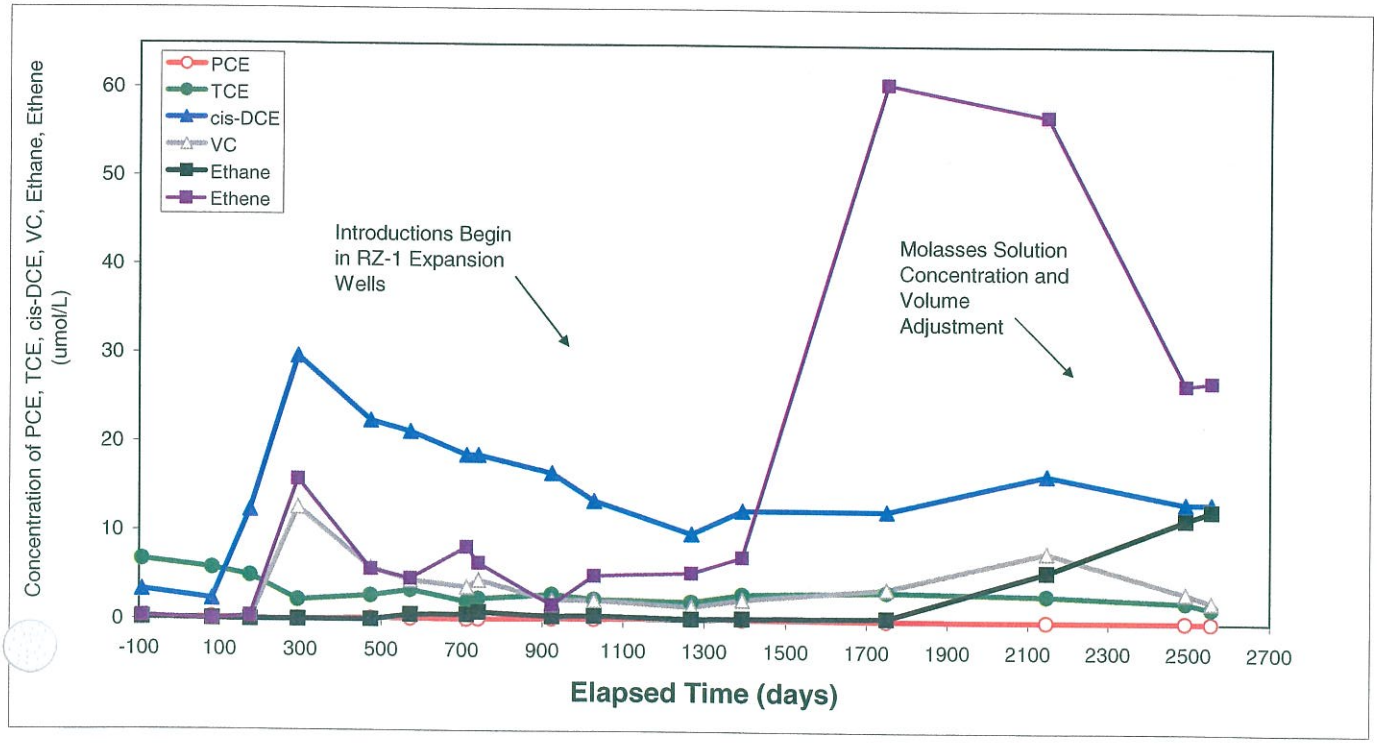
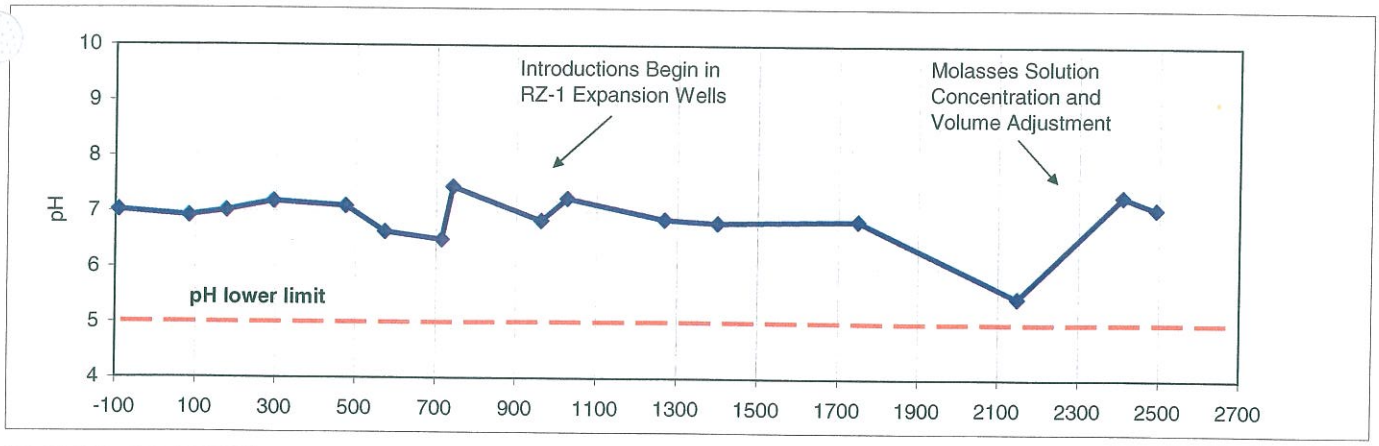
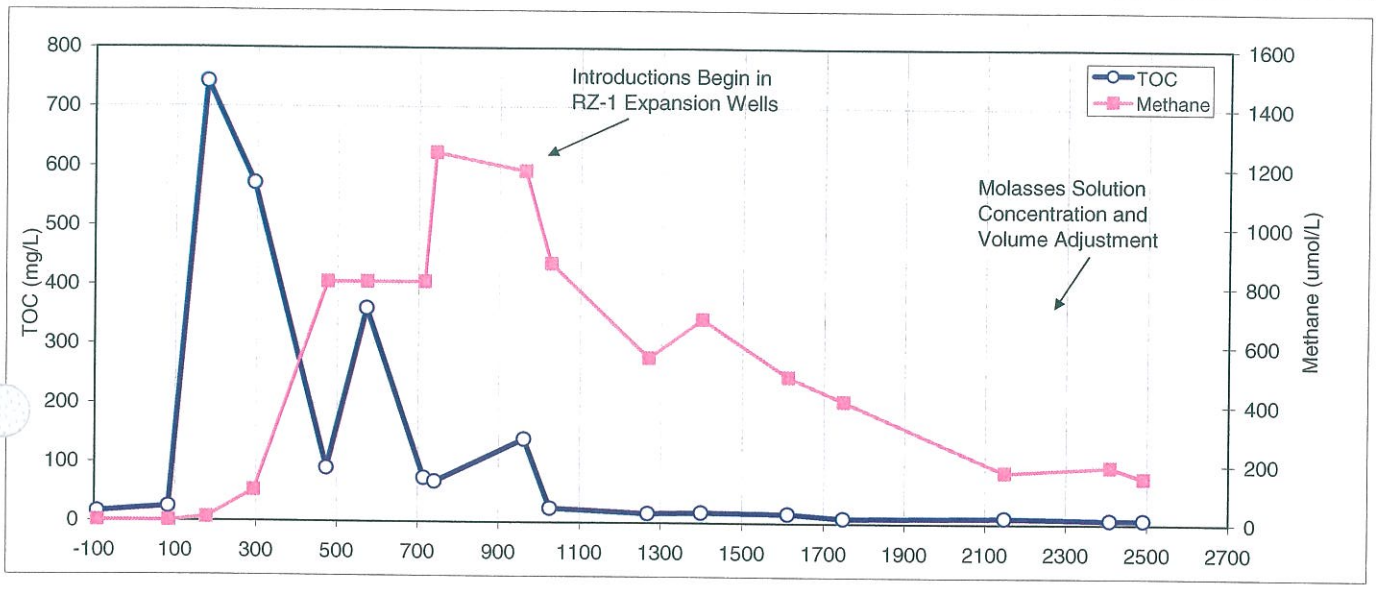


Figure E-3
GM-28 ERD Analysis





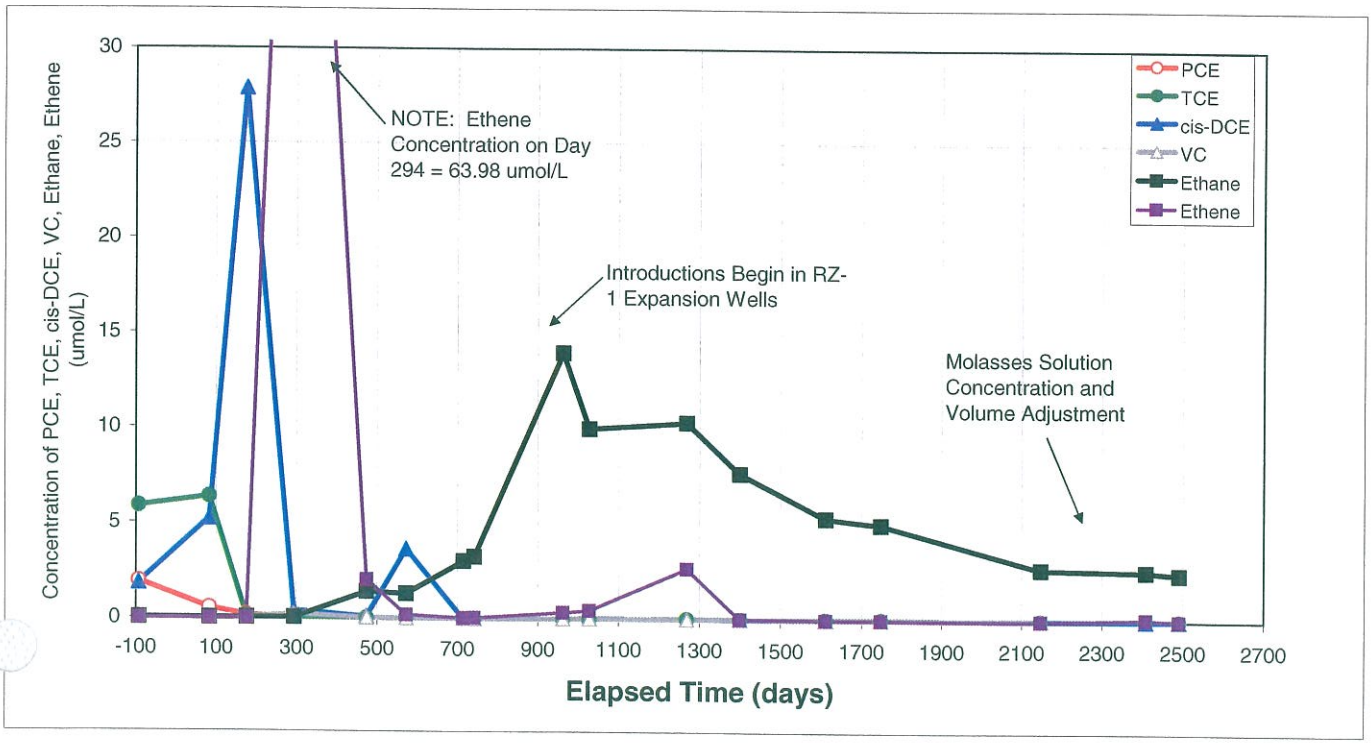
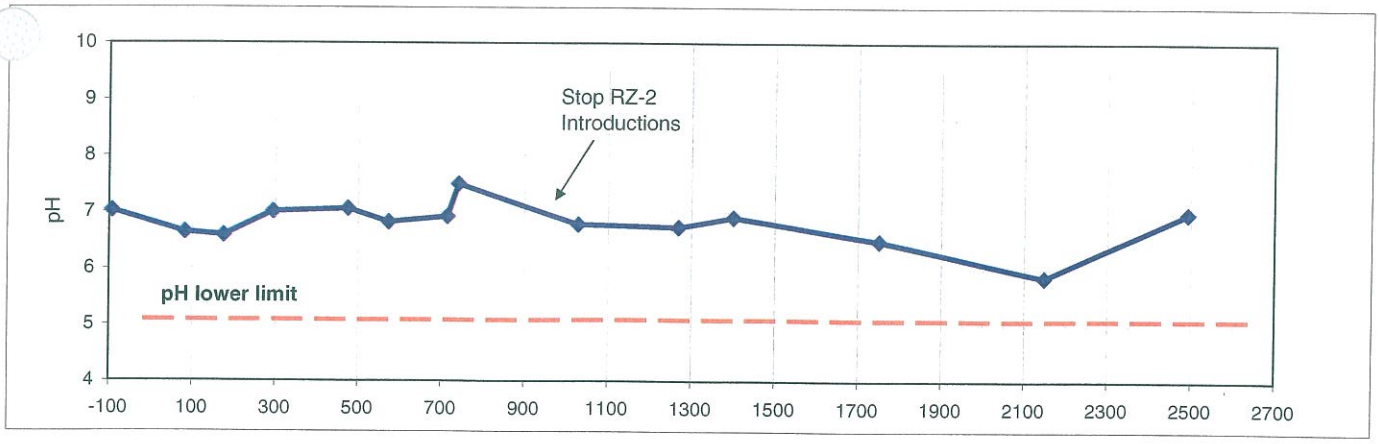
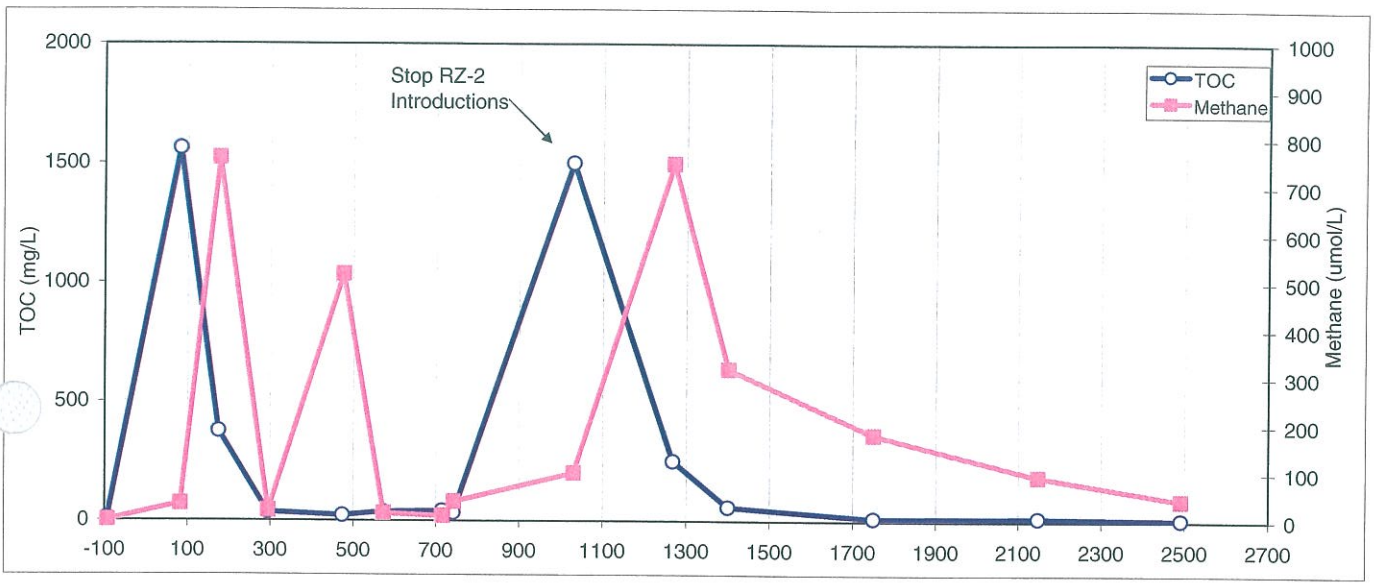


Figure E-4
ME-6 ERD Analysis





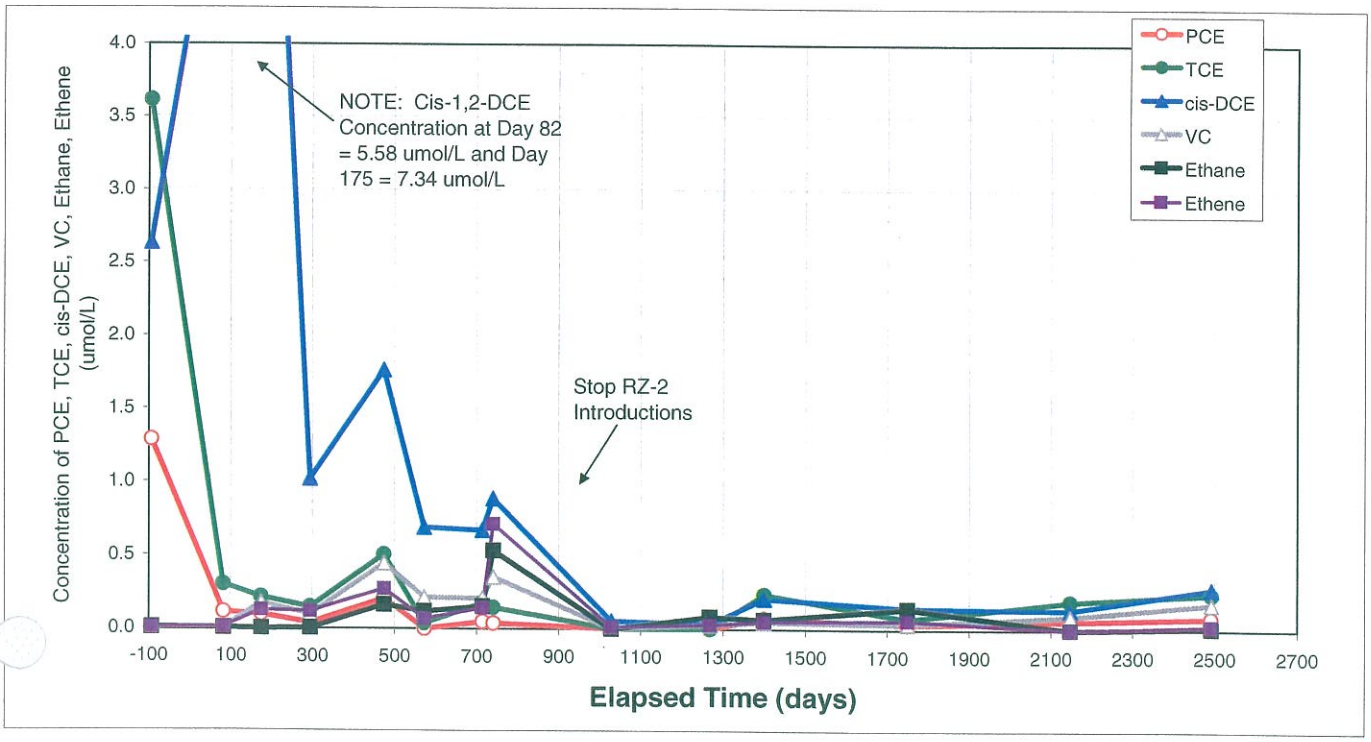
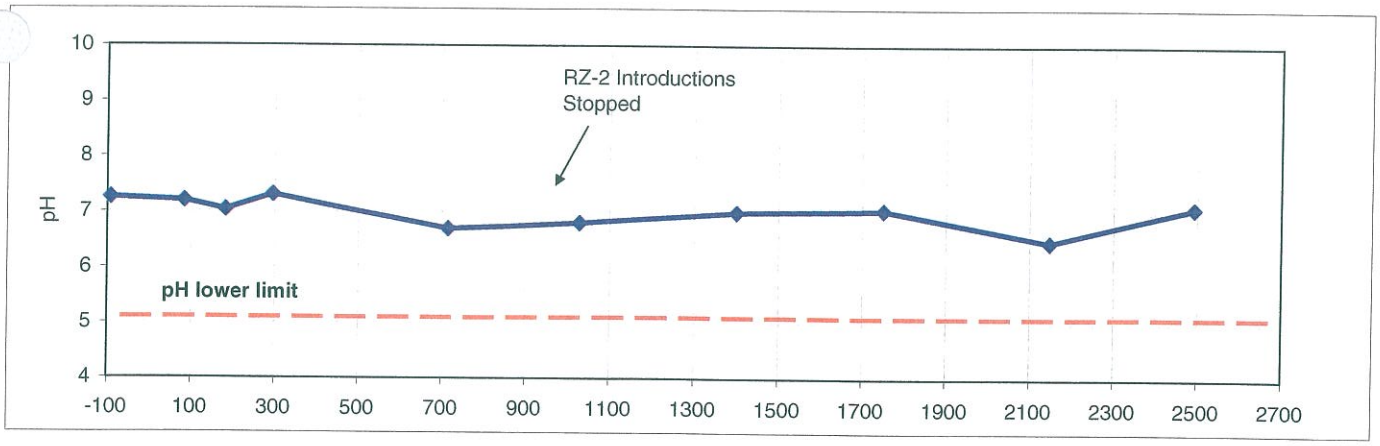


Figure E-5
GM-31 ERD Analysis



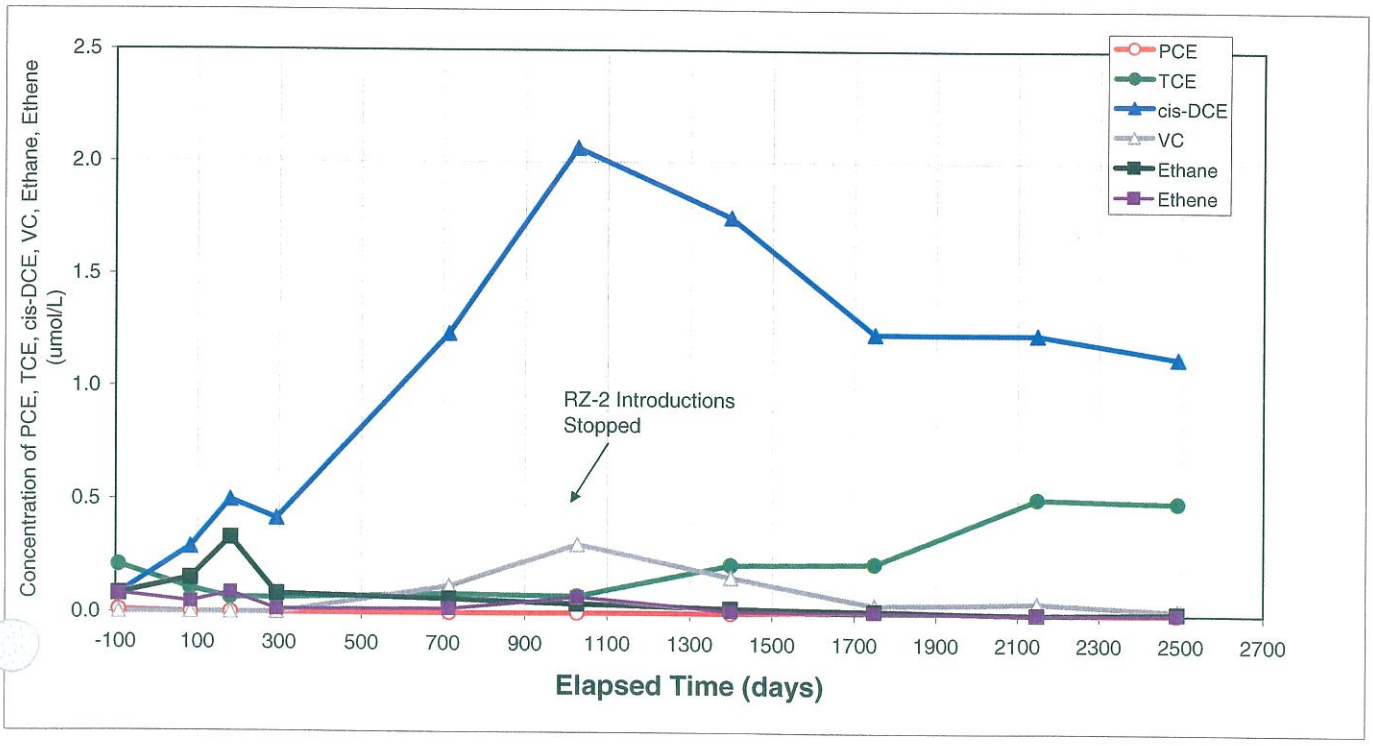
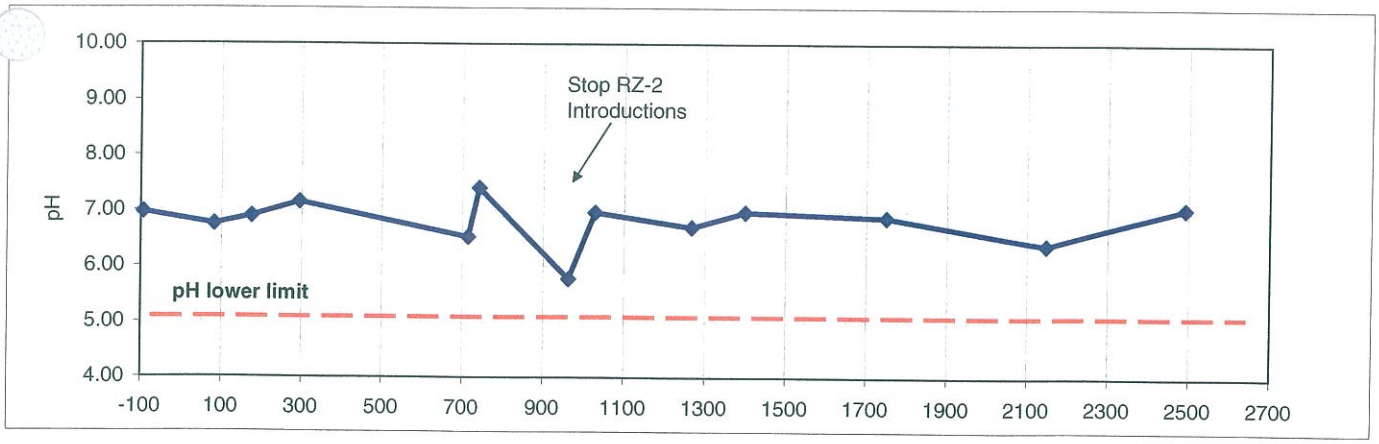
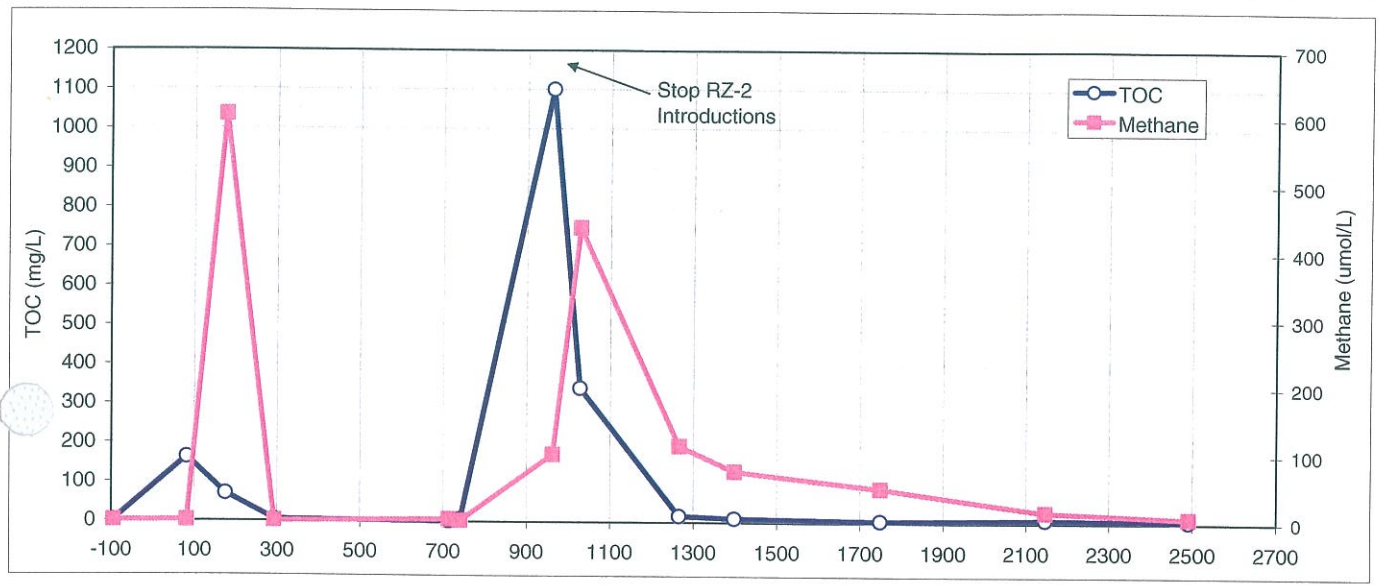


Figure E-6
ME-3 ERD Analysis





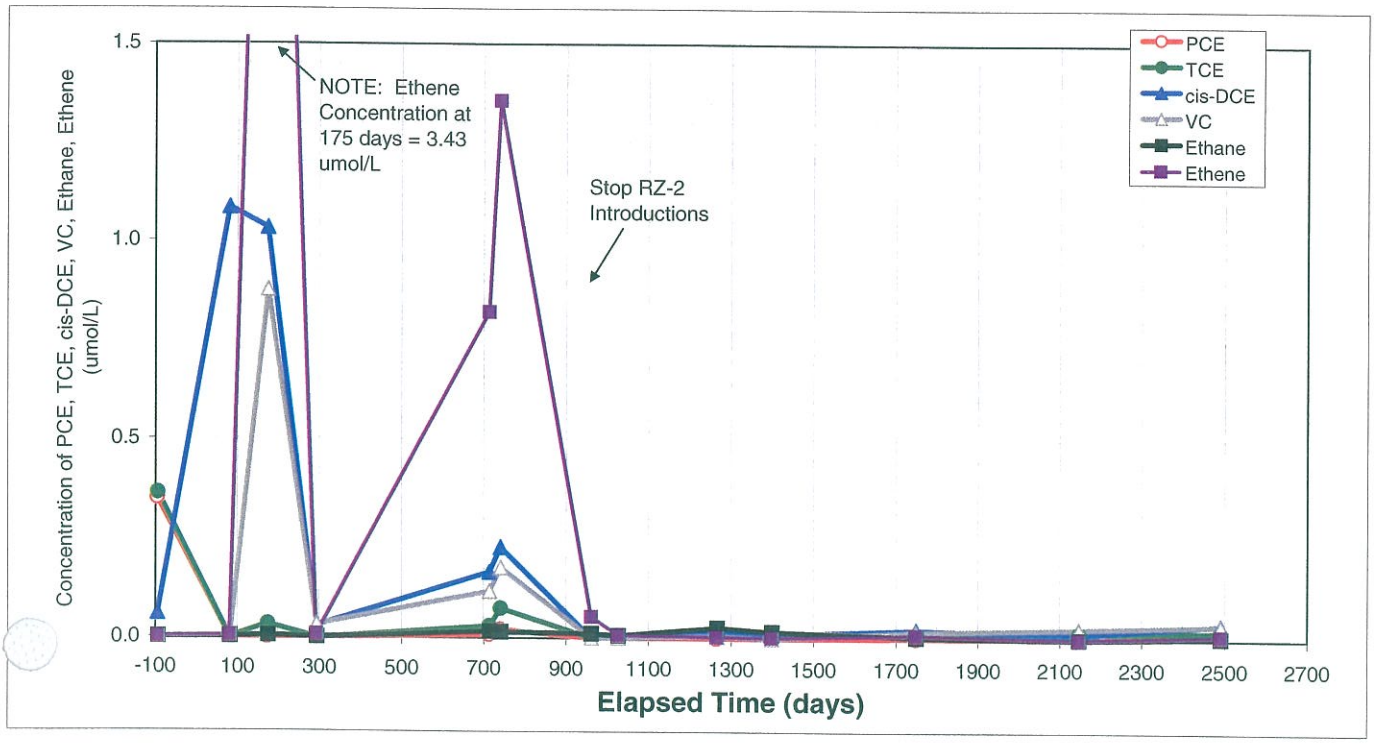
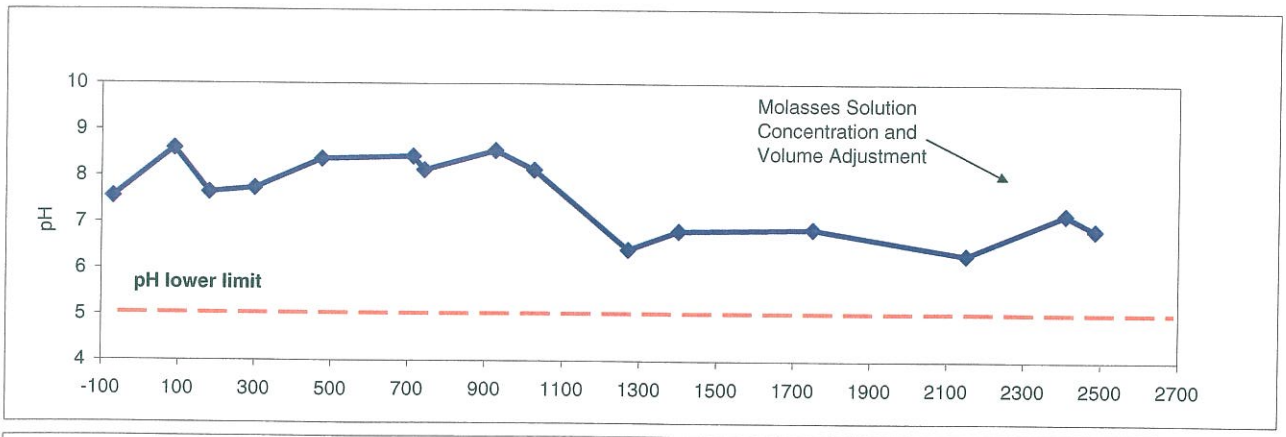
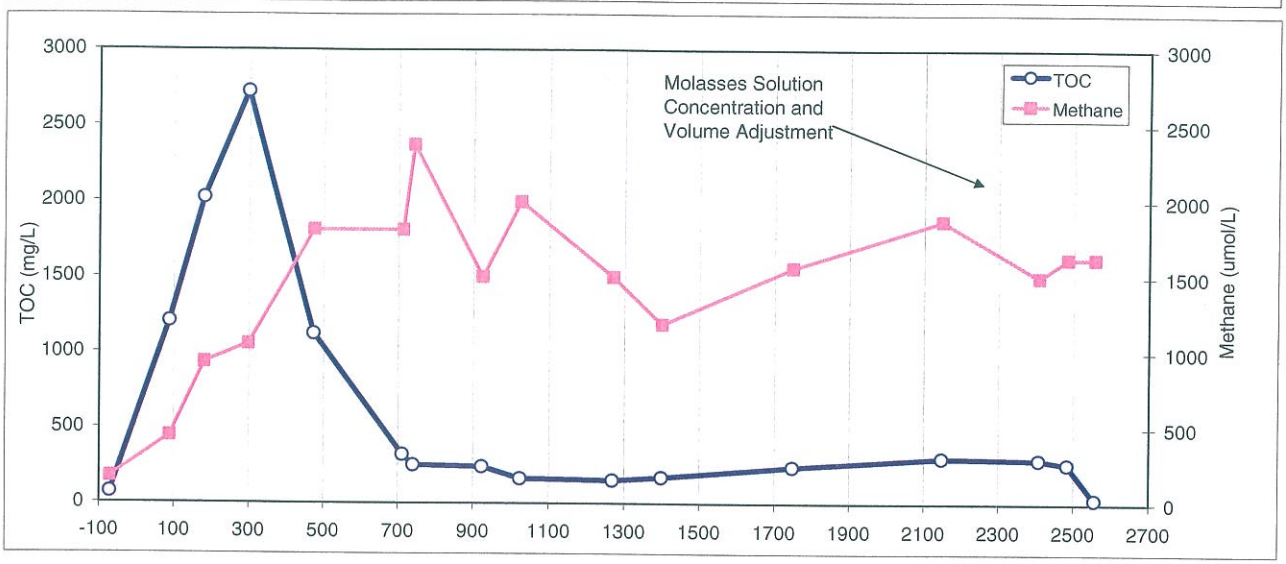


Figure E-7
GM-32 ERD Analysis





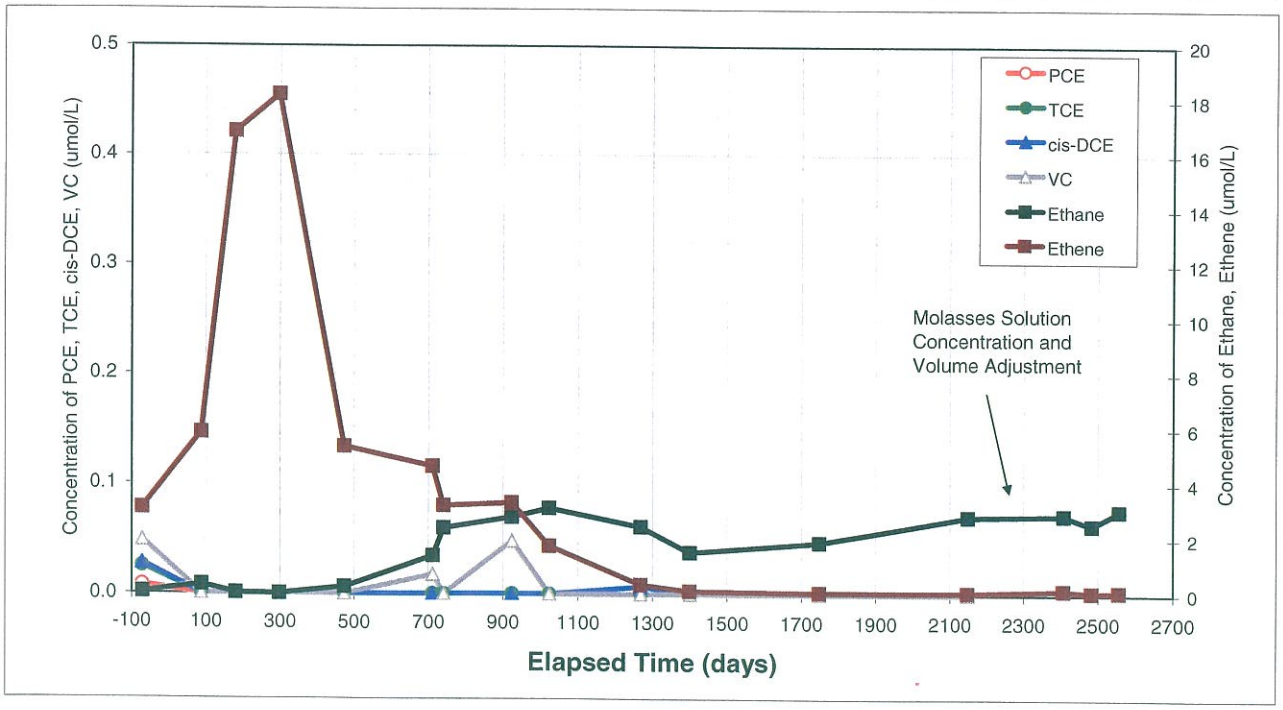
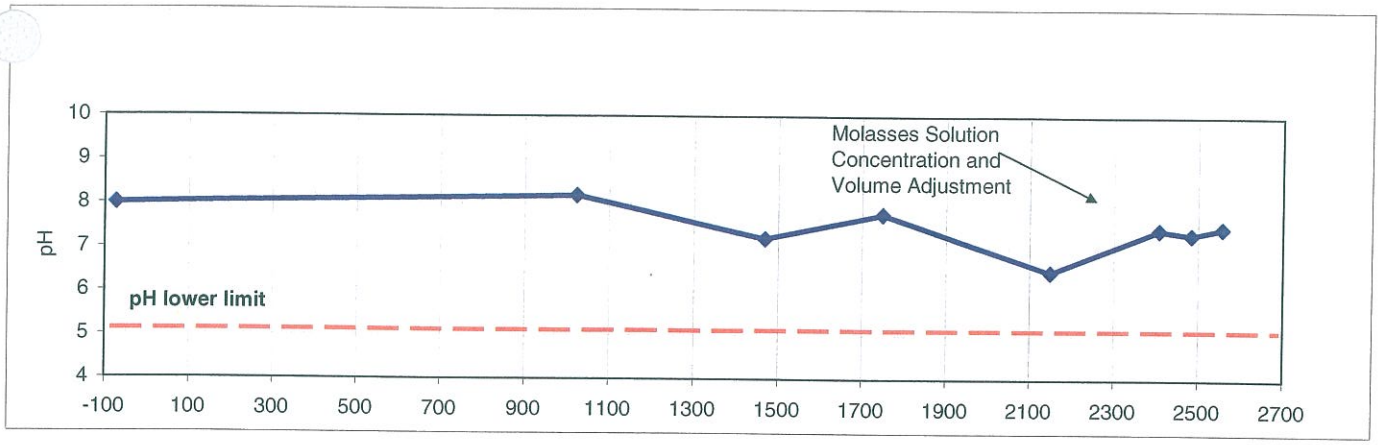
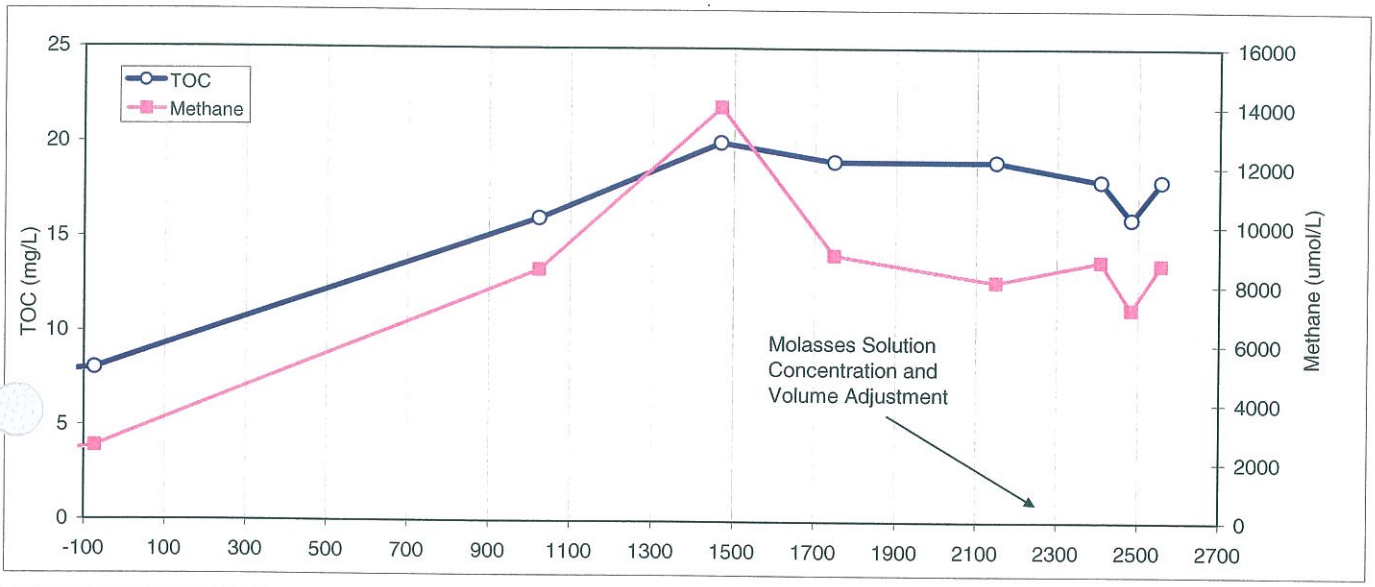


Figure E-8
GM-8 ERD Analysis





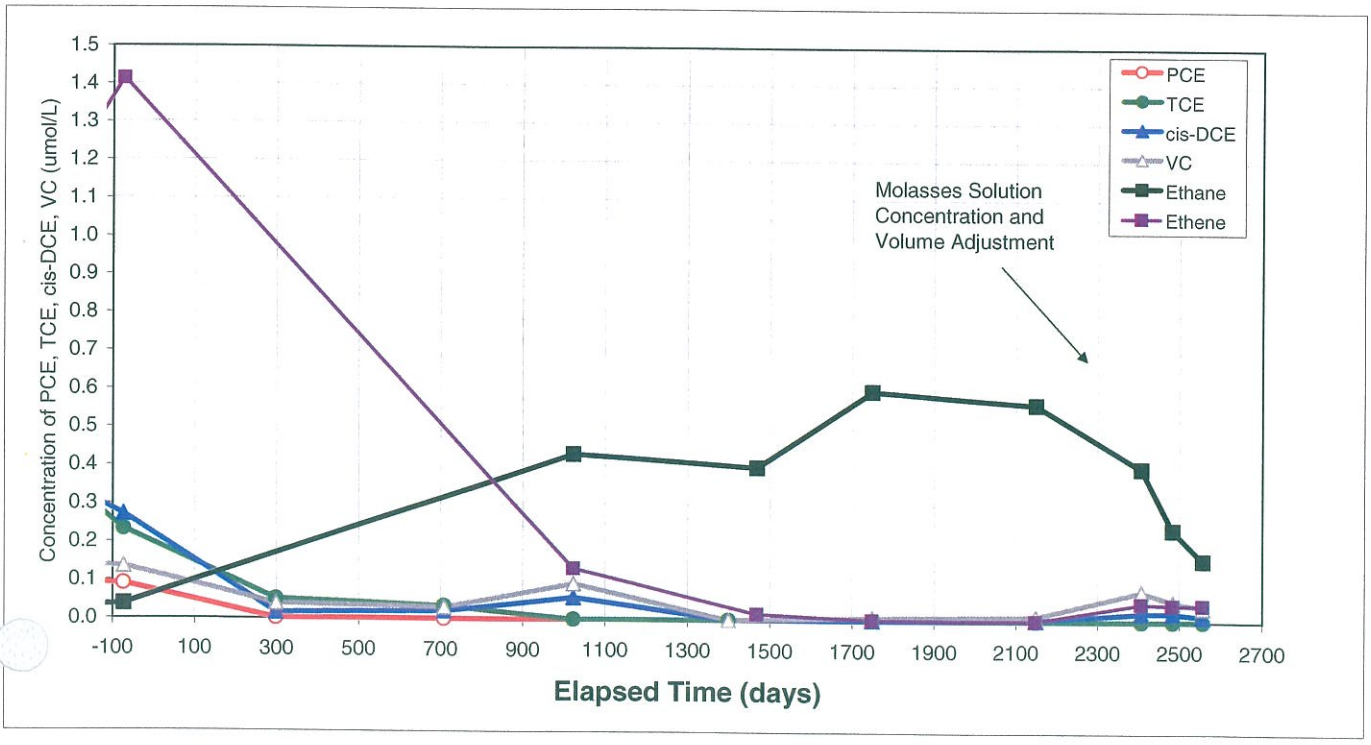
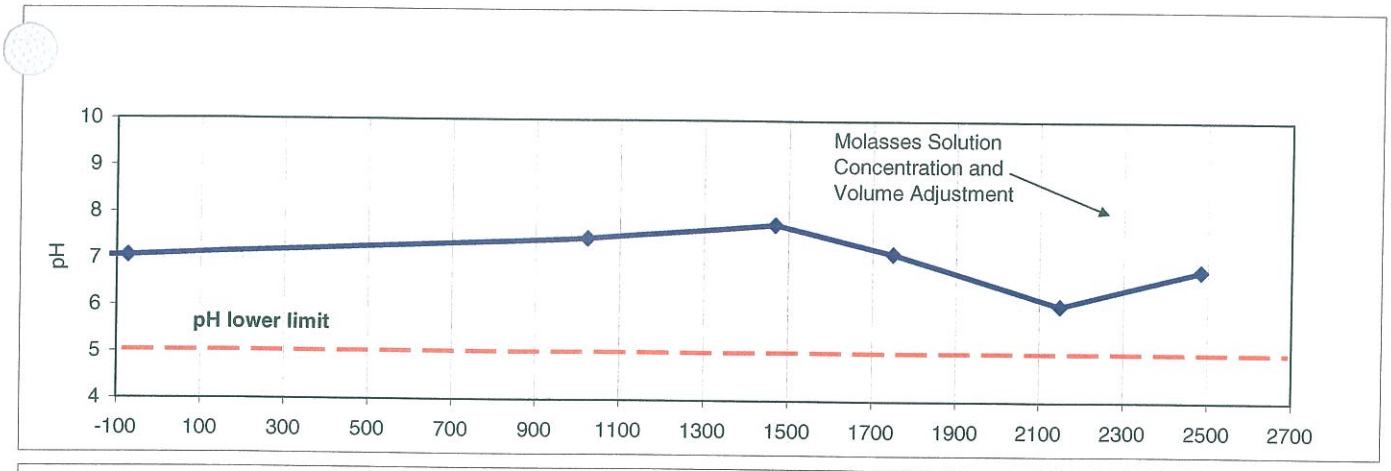
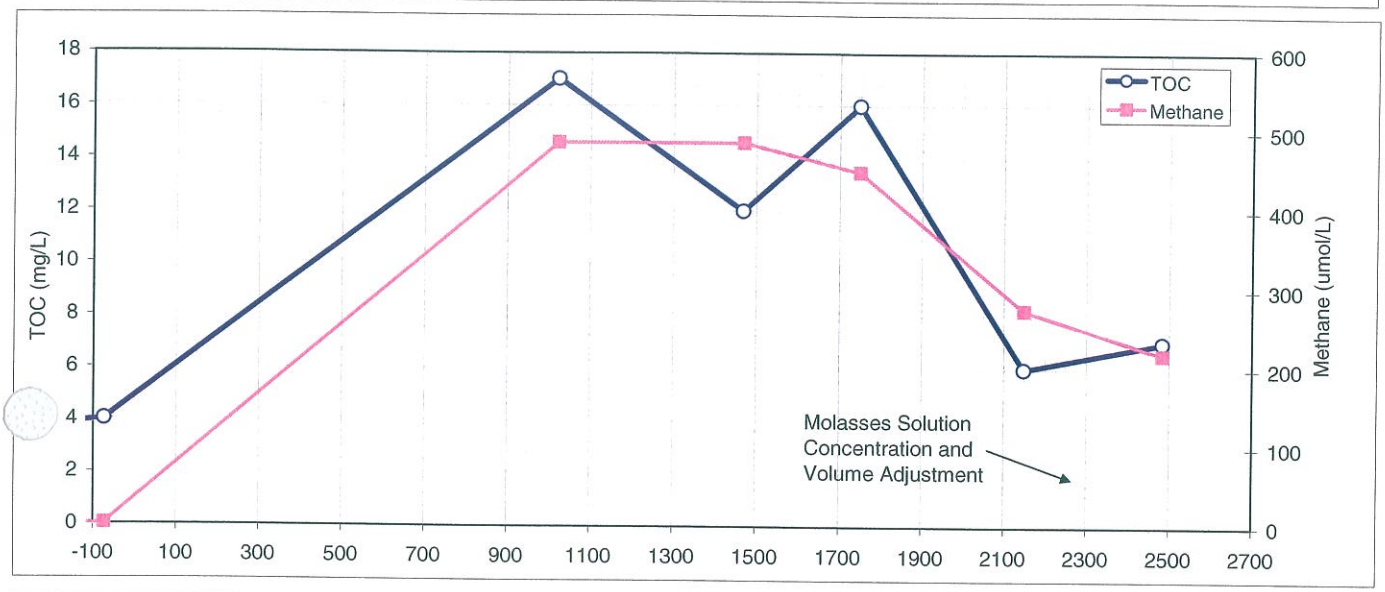


Figure E-9
GM-6 ERD Analysis





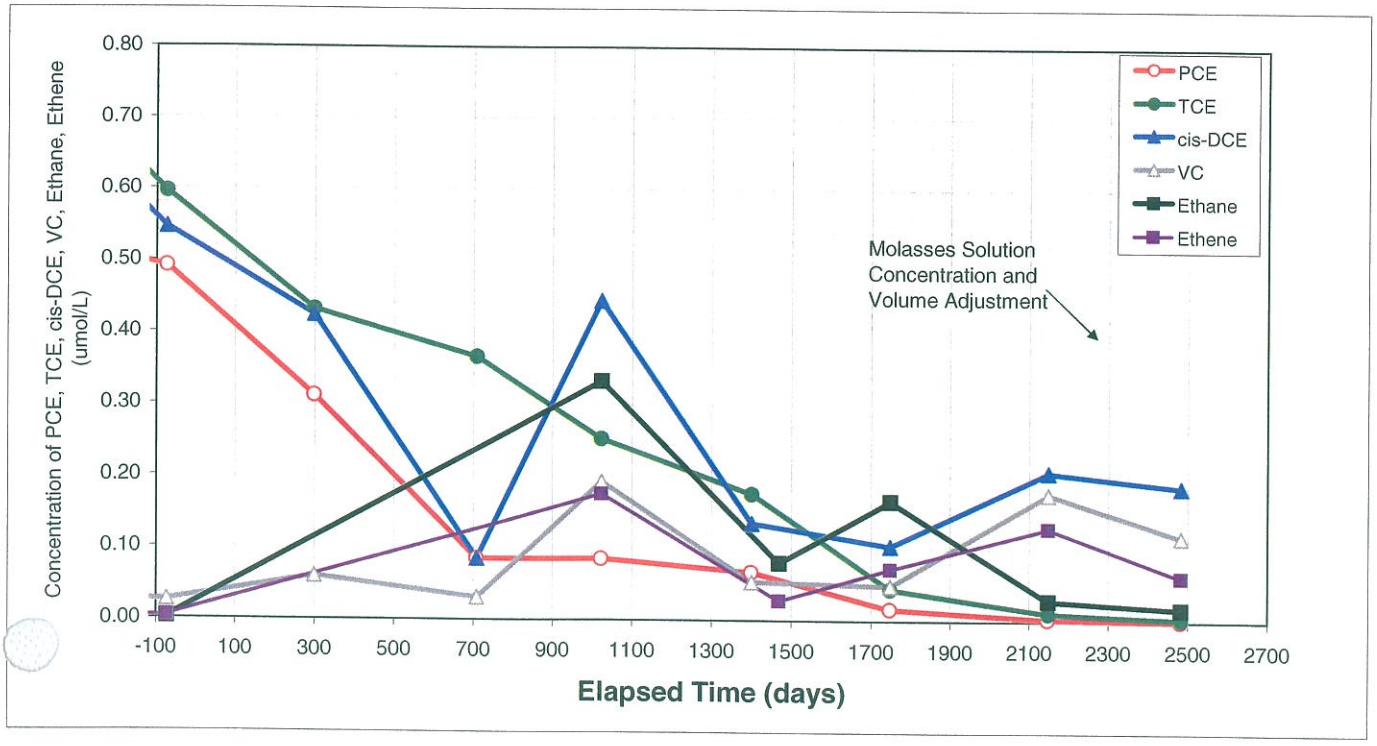
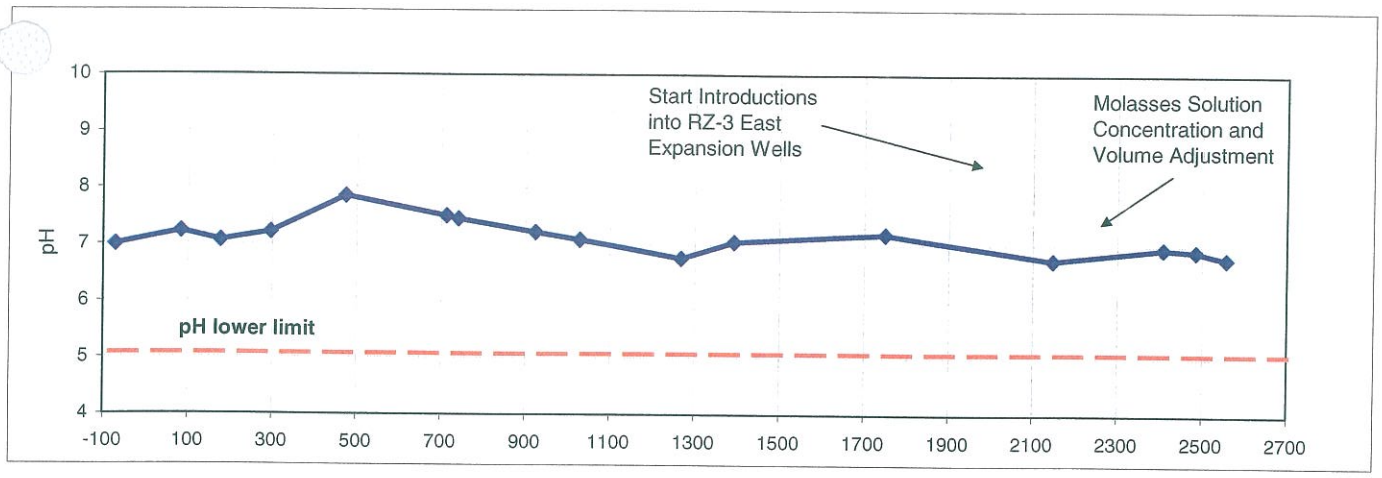
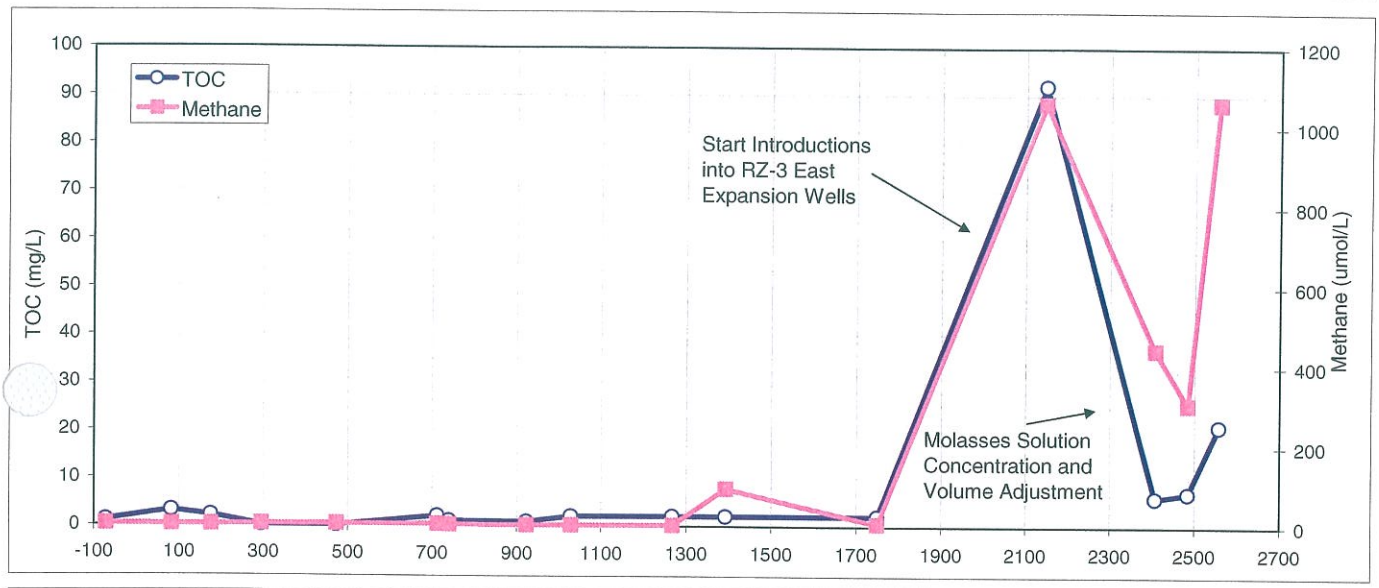


Figure E-10
GM-21 ERD Analysis





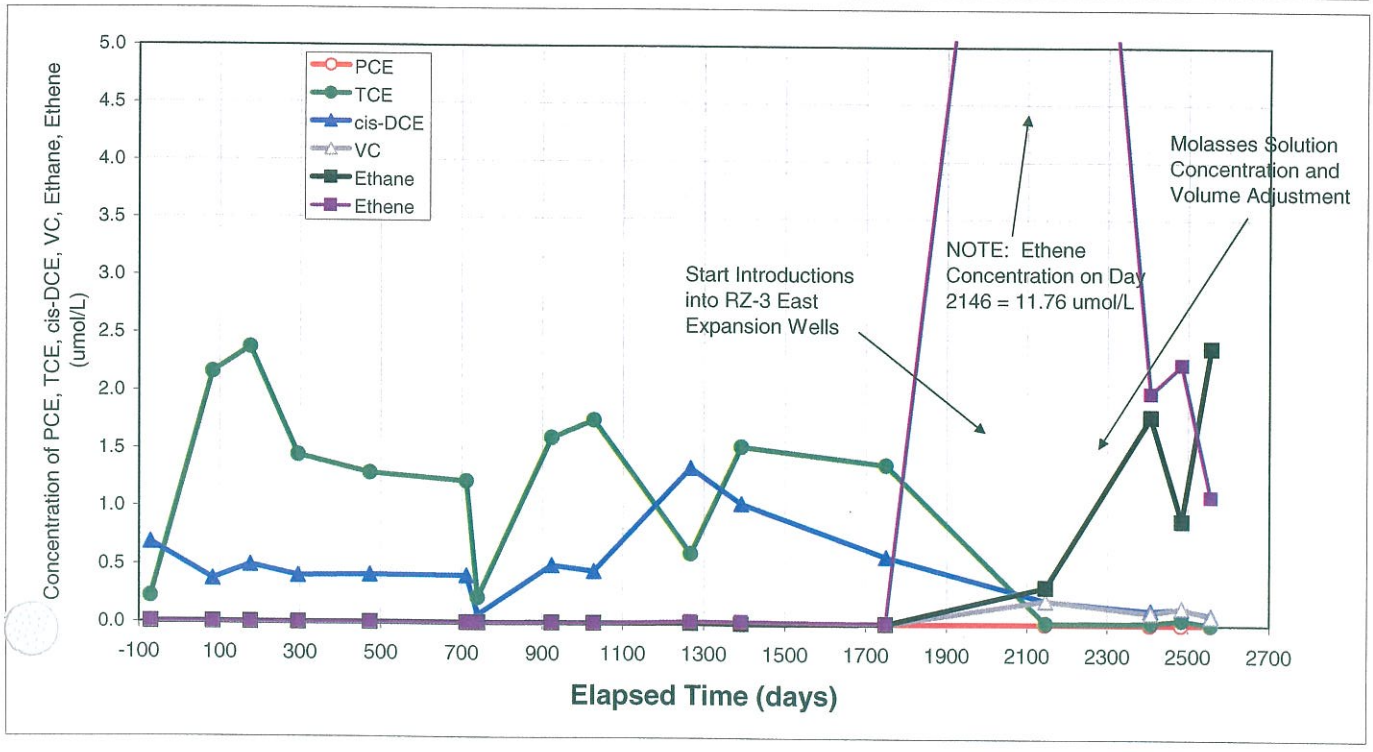
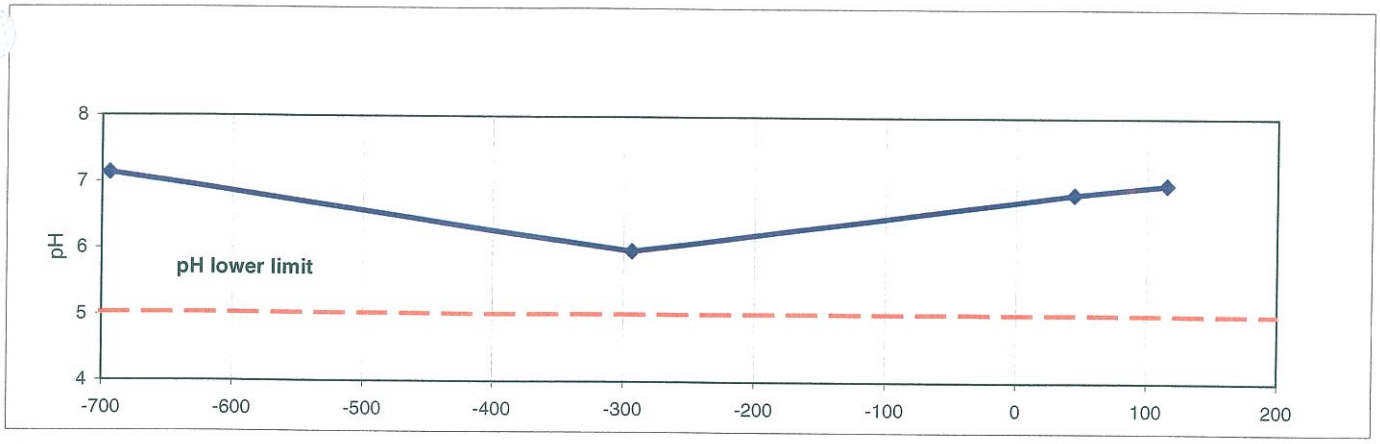
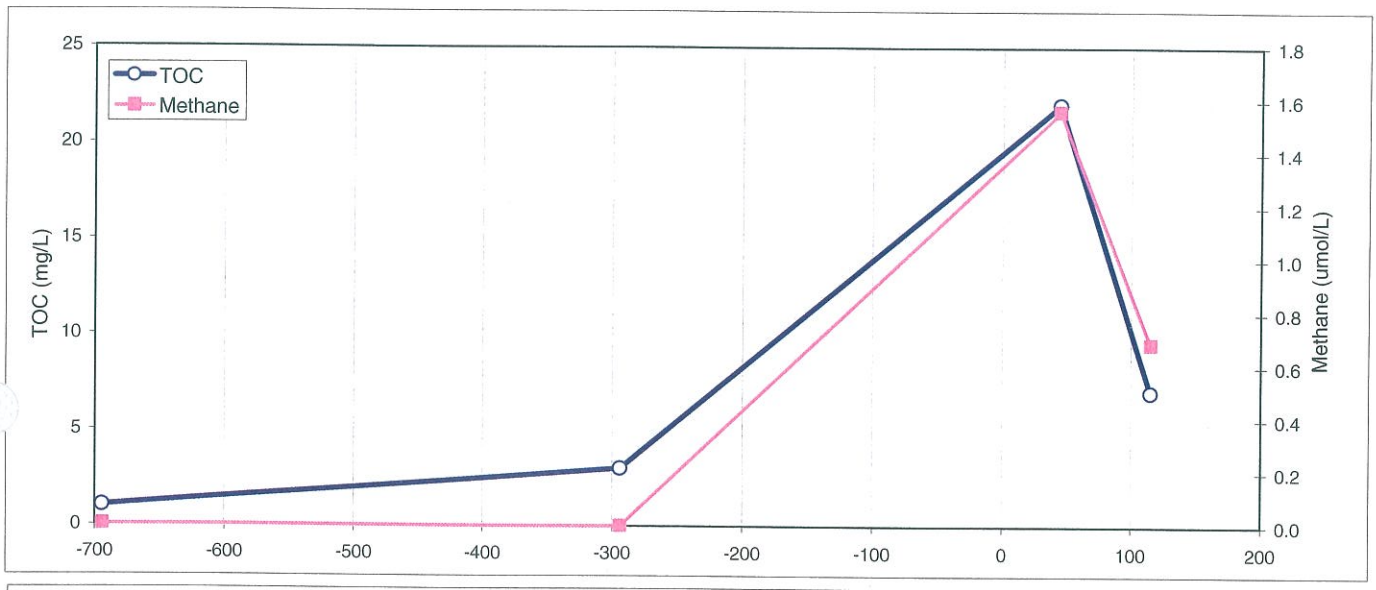
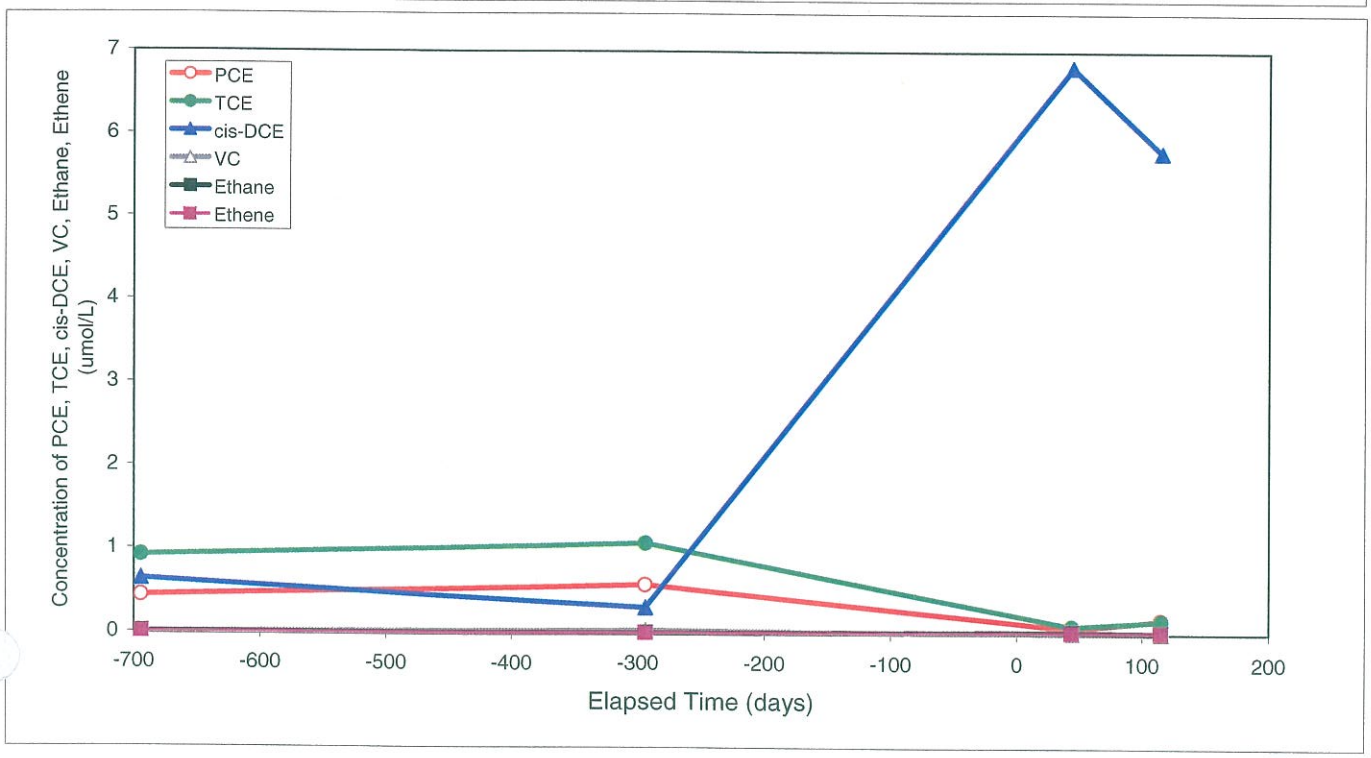


Figure E-11
GM-19S ERD Analysis







ARCADIS

Appendix F

Supporting Documentation for
Corrective Action Completion
Evaluation for 2006

Supporting Calculations

Table F-1: Source Reduction Factors

Potential Receptors Points	Well ID	Model Location (row, column, layer)	Pumping Rates	Potential Source Areas				
				Landfill 1	Landfill 2	Landfill 3	North Settling Lagoon	South Settling Lagoon
Proposed Shallow Well	TW-2	(82,55,1)	150	0.00E+00	2.59E-03	1.21E-02	5.36E-02	0.00E+00
Dryden North Well	DN-13	(89,46,3)	1400	9.67E-02	1.51E-03	5.44E-03	7.86E-03	3.16E-01
Dryden South Well	DS-7	(98,43,3)	0	1.85E-02	3.06E-04	8.74E-04	1.28E-03	2.95E-02
Miami Shores Well Field	MS-14 MS-15	(98,38,3)	0.6	5.73E-03	1.04E-04	3.23E-04	4.59E-04	1.55E-02
	MS-16 MS-17	(98,35,3)	0.6	5.34E-03	9.96E-05	3.32E-04	4.77E-04	2.61E-02
	MS-18 MS-19 MS-20	(100,37,3)	0.6	5.35E-03	9.26E-05	2.73E-04	3.98E-04	1.11E-02
	MS-21	(100,34,3)	0.6	4.68E-03	8.37E-05	2.59E-04	3.74E-04	1.42E-02
	MS-22	(101,33,3)	0.6	4.01E-03	7.08E-05	2.14E-04	3.11E-04	1.06E-02
Moraine Assembly Production Wells	11B	(50,94,3)	325	0.00E+00	1.68E-02	4.04E-04	2.12E-05	0.00E+00
	12A	(46,93,3)	240	0.00E+00	2.84E-06	1.64E-08	5.00E-10	0.00E+00
Moraine Engine Well 28	28	(58,80,3)	0	0.00E+00	2.49E-02	1.20E-03	8.70E-04	0.00E+00
Moraine Engine Plant	31	(37,82,3)	0	0.00E+00	3.74E-08	0.00E+00	0.00E+00	0.00E+00
	39	(40,81,3)	0	0.00E+00	7.88E-06	1.80E-09	0.00E+00	0.00E+00
Harrison Production Wells	44	(29,70,3)	0	0.00E+00	1.62E-04	1.31E-02	0.00E+00	0.00E+00
	42	(54,59,3)	0	0.00E+00	7.71E-04	1.66E-02	5.44E-02	0.00E+00
	45	(74,56,3)	0	0.00E+00	2.20E-02	3.76E-02	3.58E-02	0.00E+00
West Carrollton Well Field	MI-41AP	(111, 21, 3)	317	4.35E-04	0.00E+00	0.00E+00	1.52E-05	2.21E-03
	MI-41CP	(111, 20, 3)	317	5.94E-04	0.00E+00	0.00E+00	1.32E-05	4.47E-03
	MI-41DP	(112, 19, 3)	317	4.67E-04	0.00E+00	7.39E-08	1.47E-05	3.63E-03
Miami River	--	--	0	3.59E-03	6.05E-07	3.18E-04	1.68E-02	0.00E+00

NOTES:

1. Source Reduction Factors reflect updated groundwater model results generated using current site pumping conditions without interim measures pumping (Pumping Scenario 1; updated Feb 2006)
2. Shaded cells indicate those potential receptor wells which are not pumping in Pumping Scenario 1 (i.e., current conditions without interim measures pumping).
3. Dilution factors reported for the Miami River are mass loading factors to the river [$^{lb/day}/_{mg/L}$]

Supporting Calculations
Table F-2: Source Concentrations for In-Place Waste Management Units (Based on 2006 Sampling Data)

SWMU	TCL/TAL Group	Constituent	CASRN	Maximum Downgradient Ground Water Concentration (mg/L)
Landfill L1	VOC	1,1,1-Trichloroethane	71-55-6	**5.5E-04**
Landfill L1	VOC	1,1-Dichloroethane	75-34-3	**1.6E-02**
Landfill L1	VOC	Benzene	71-43-2	**7.0E-04**
Landfill L1	VOC	cis-1,2-Dichloroethene	156-59-2	**1.8E-02**
Landfill L1	VOC	Ethyl Benzene	100-41-4	**5.2E-04**
Landfill L1	VOC	Tetrachloroethene	127-18-4	**7.0E-03**
Landfill L1	VOC	trans-1,2-Dichloroethene	156-60-5	**1.6E-03**
Landfill L1	VOC	Trichloroethene	79-01-6	**3.2E-02**
Landfill L1	VOC	Vinyl Chloride	75-01-4	**7.3E-03**
Landfill L1	INORG	Manganese	7439-96-5	**5.4E-01**
Landfill L2	VOC	1,1-Dichloroethane	75-34-3	**5.2E-03**
Landfill L2	VOC	cis-1,2-Dichloroethene	156-59-2	**5.6E-03**
Landfill L2	VOC	Tetrachloroethene	127-18-4	**9.6E-04**
Landfill L2	VOC	trans-1,2-Dichloroethene	156-60-5	**7.9E-04**
Landfill L2	VOC	Trichloroethene	79-01-6	**7.6E-03**
Landfill L2	VOC	Vinyl Chloride	75-01-4	**5.6E-04**
Landfill L3	VOC	1,1-Dichloroethane	75-34-3	**5.2E-03**
Landfill L3	VOC	cis-1,2-Dichloroethene	156-59-2	**5.6E-03**
Landfill L3	VOC	Tetrachloroethene	127-18-4	**9.6E-04**
Landfill L3	VOC	trans-1,2-Dichloroethene	156-60-5	**7.9E-04**
Landfill L3	VOC	Trichloroethene	79-01-6	**7.6E-03**
Landfill L3	VOC	Vinyl Chloride	75-01-4	**5.6E-04**
North Settling Lagoon	VOC	1,1,1-Trichloroethane	71-55-6	**2.5E-04**
North Settling Lagoon	VOC	1,1-Dichloroethane	75-34-3	**1.3E-03**
North Settling Lagoon	VOC	cis-1,2-Dichloroethene	156-59-2	**1.4E-01**
North Settling Lagoon	VOC	Tetrachloroethene	127-18-4	**9.6E-04**
North Settling Lagoon	VOC	trans-1,2-Dichloroethene	156-60-5	**1.9E-03**
North Settling Lagoon	VOC	Trichloroethene	79-01-6	**1.3E-02**
North Settling Lagoon	VOC	Vinyl Chloride	75-01-4	**9.6E-03**
South Settling Lagoon	VOC	1,1,1-Trichloroethane	71-55-6	**2.5E-03**
South Settling Lagoon	VOC	1,1-Dichloroethane	75-34-3	**1.6E-03**
South Settling Lagoon	VOC	cis-1,2-Dichloroethene	156-59-2	**4.5E-03**
South Settling Lagoon	VOC	Tetrachloroethene	127-18-4	**2.5E-02**
South Settling Lagoon	VOC	trans-1,2-Dichloroethene	156-60-5	**1.2E-03**
South Settling Lagoon	VOC	Trichloroethene	79-01-6	**1.5E-02**
South Settling Lagoon	INORG	Manganese	7439-96-5	**1.7E-01**

Supporting Calculations

Table F-3a: Estimated Contributions to Ground Water Concentrations (mg/L) at Moraine Assembly Receptor Point (Pumping Scenario 1)

TCL/TAL Group	Constituent	CASRN	Landfill L1	Landfill L2	Landfill L3	N Settling Lagoon	S Settling Lagoon	Total	Criteria	Flag
VOC	1,1,1-Trichloroethane	71-55-6				3.05E-09		0.	0.2	
VOC	1,1-Dichloroethane	75-34-3		5.03E-05	1.21E-06	1.59E-08		0.0001	3.65	
VOC	1,1-Dichloroethene	75-35-4							0.007	
VOC	1,2-Dichloroethene (total)	540-59-0							0.07	
VOC	2-Butanone	78-93-3							21.9	
VOC	Acetone	67-64-1							3.65	
VOC	Benzene	71-43-2							0.005	
VOC	Carbon Disulfide	75-15-0							3.65	
VOC	Chlorobenzene	108-90-7							0.1	
VOC	Chloroethane	75-00-3							0.01	
VOC	Chloroform	67-66-3							0.1	
VOC	cis-1,2-Dichloroethene	156-59-2		5.41E-05	1.30E-06	1.71E-06		0.0001	0.07	
VOC	Ethyl Benzene	100-41-4							0.7	
VOC	Styrene	100-42-5							0.1	
VOC	Tetrachloroethene	127-18-4		9.28E-06	2.23E-07	1.17E-08		0.	0.005	
VOC	Toluene	108-88-3							1.	
VOC	trans-1,2-Dichloroethene	156-60-5		7.64E-06	1.84E-07	2.32E-08		0.	0.1	
VOC	Trichloroethene	79-01-6		7.35E-05	1.77E-06	1.59E-07		0.0001	0.005	
VOC	Trichlorofluoromethane	75-69-4							10.95	
VOC	Vinyl Chloride	75-01-4		5.41E-06	1.30E-07	1.17E-07		0.	0.002	
VOC	Xylenes (total)	1330-20-7							10.	
SVOC	1,2-Dichlorobenzene	95-50-1							0.6	
SVOC	2-Methylnaphthalene	91-57-6							0.73	
SVOC	Benzo(a)anthracene	56-55-3							0.01	
SVOC	Benzo(a)pyrene	50-32-8							0.0002	
SVOC	Benzo(b)fluoranthene	205-99-2							0.01	
SVOC	bis(2-Ethylhexyl)phthalate	117-81-7							0.006	
SVOC	Butylbenzylphthalate	85-68-7							7.3	
SVOC	Chrysene	218-01-9							0.0117	
SVOC	Di-n-butylphthalate	84-74-2							3.65	
SVOC	Fluoranthene	206-44-0							1.46	
SVOC	Fluorene	86-73-7							1.46	
SVOC	Naphthalene	91-20-3							0.73	
SVOC	Phenanthrene	85-01-8							1.095	
SVOC	Pyrene	129-00-0							1.095	
P/PCB	Aroclor-1242	53469-21-9							0.0005	
P/PCB	Aroclor-1254	11097-69-1							0.0005	
P/PCB	Aroclor-1260	11096-82-5							0.0005	
INORG	Antimony	7440-36-0							0.006	
INORG	Arsenic	7440-38-2							0.05	
INORG	Barium	7440-39-3							2.	
INORG	Beryllium	7440-41-7							0.004	
INORG	Cadmium	7440-43-9							0.005	
INORG	Chromium (total)	7440-47-3							0.1	
INORG	Cobalt	7440-48-4							2.19	
INORG	Copper	7440-50-8							1.3	
INORG	Cyanide (total)	57-12-5							0.2	
INORG	Lead	7439-92-1							0.015	
INORG	Manganese	7439-96-5							5.11	
INORG	Mercury	7439-97-6							0.002	
INORG	Nickel	7440-02-0							0.1	
INORG	Selenium	7782-49-2							0.05	
INORG	Silver	7440-22-4							0.1825	
INORG	Thallium	7440-28-0							0.002	
INORG	Vanadium	7440-62-2							0.2555	
INORG	Zinc	7440-66-6							10.95	

Supporting Calculations

Table F-3b: Estimated Contributions to Ground Water Concentrations (mg/L) at Moraine Engine Receptor Point (Pumping Scenario 1)

TCL/TAL Group	Constituent	CASRN	Landfill L1	Landfill L2	Landfill L3	N Settling Lagoon	S Settling Lagoon	Total	Criteria	Flag
VOC	1,1,1-Trichloroethane	71-55-6							0.2	
VOC	1,1-Dichloroethane	75-34-3		2.06E-08	4.68E-12			0.	3.65	
VOC	1,1-Dichloroethene	75-35-4							0.007	
VOC	1,2-Dichloroethene (total)	540-59-0							0.07	
VOC	2-Butanone	78-93-3							21.9	
VOC	Acetone	67-64-1							3.65	
VOC	Benzene	71-43-2							0.005	
VOC	Carbon Disulfide	75-15-0							3.65	
VOC	Chlorobenzene	108-90-7							0.1	
VOC	Chloroethane	75-00-3							0.01	
VOC	Chloroform	67-66-3							0.1	
VOC	cis-1,2-Dichloroethene	156-59-2		2.22E-08	5.04E-12			0.	0.07	
VOC	Ethyl Benzene	100-41-4							0.7	
VOC	Styrene	100-42-5							0.1	
VOC	Tetrachloroethene	127-18-4		3.80E-09	8.64E-13			0.	0.005	
VOC	Toluene	108-88-3							1.	
VOC	trans-1,2-Dichloroethene	156-60-5		3.13E-09	7.11E-13			0.	0.1	
VOC	Trichloroethene	79-01-6		3.01E-08	6.84E-12			0.	0.005	
VOC	Trichlorofluoromethane	75-69-4							10.95	
VOC	Vinyl Chloride	75-01-4		2.22E-09	5.04E-13			0.	0.002	
VOC	Xylenes (total)	1330-20-7							10.	
SVOC	1,2-Dichlorobenzene	95-50-1							0.6	
SVOC	2-Methylnaphthalene	91-57-6							0.73	
SVOC	Benzo(a)anthracene	56-55-3							0.01	
SVOC	Benzo(a)pyrene	50-32-8							0.0002	
SVOC	Benzo(b)fluoranthene	205-99-2							0.01	
SVOC	bis(2-Ethylhexyl)phthalate	117-81-7							0.006	
SVOC	Butylbenzylphthalate	85-68-7							7.3	
SVOC	Chrysene	218-01-9							0.0117	
SVOC	Di-n-butylphthalate	84-74-2							3.65	
SVOC	Fluoranthene	206-44-0							1.46	
SVOC	Fluorene	86-73-7							1.46	
SVOC	Naphthalene	91-20-3							0.73	
SVOC	Phenanthrene	85-01-8							1.095	
SVOC	Pyrene	129-00-0							1.095	
P/PCB	Aroclor-1242	53469-21-9							0.0005	
P/PCB	Aroclor-1254	11097-69-1							0.0005	
P/PCB	Aroclor-1260	11096-82-5							0.0005	
INORG	Antimony	7440-36-0							0.006	
INORG	Arsenic	7440-38-2							0.05	
INORG	Barium	7440-39-3							2.	
INORG	Beryllium	7440-41-7							0.004	
INORG	Cadmium	7440-43-9							0.005	
INORG	Chromium (total)	7440-47-3							0.1	
INORG	Cobalt	7440-48-4							2.19	
INORG	Copper	7440-50-8							1.3	
INORG	Cyanide (total)	57-12-5							0.2	
INORG	Lead	7439-92-1							0.015	
INORG	Manganese	7439-96-5							5.11	
INORG	Mercury	7439-97-6							0.002	
INORG	Nickel	7440-02-0							0.1	
INORG	Selenium	7782-49-2							0.05	
INORG	Silver	7440-22-4							0.1825	
INORG	Thallium	7440-28-0							0.002	
INORG	Vanadium	7440-62-2							0.2555	
INORG	Zinc	7440-66-6							10.95	

Supporting Calculations

Table F-3c: Estimated Contributions to Ground Water Concentrations (mg/L) at West Carrollton Receptor Point (Pumping Scenario 1)

TCL/TAL Group	Constituent	CASRN	Landfill L1	Landfill L2	Landfill L3	N Settling Lagoon	S Settling Lagoon	Total	Criteria	Flag
VOC	1,1,1-Trichloroethane	71-55-6	2.74E-07			3.59E-09	8.59E-06	0.	0.2	
VOC	1,1-Dichloroethane	75-34-3	7.98E-06		1.28E-10	1.87E-08	5.50E-06	0.	3.65	
VOC	1,1-Dichloroethene	75-35-4							0.007	
VOC	1,2-Dichloroethene (total)	540-59-0							0.07	
VOC	2-Butanone	78-93-3							21.9	
VOC	Acetone	67-64-1							3.65	
VOC	Benzene	71-43-2	3.49E-07					0.	0.005	
VOC	Carbon Disulfide	75-15-0							3.65	
VOC	Chlorobenzene	108-90-7							0.1	
VOC	Chloroethane	75-00-3							0.01	
VOC	Chloroform	67-66-3							0.1	
VOC	cis-1,2-Dichloroethene	156-59-2	8.98E-06		1.38E-10	2.01E-06	1.55E-05	0.	0.07	
VOC	Ethyl Benzene	100-41-4	2.59E-07					0.	0.7	
VOC	Styrene	100-42-5							0.1	
VOC	Tetrachloroethene	127-18-4	3.49E-06		2.36E-11	1.38E-08	8.59E-05	0.0001	0.005	
VOC	Toluene	108-88-3							1.	
VOC	trans-1,2-Dichloroethene	156-60-5	7.98E-07		1.95E-11	2.73E-08	4.12E-06	0.	0.1	
VOC	Trichloroethene	79-01-6	1.60E-05		1.87E-10	1.87E-07	5.16E-05	0.0001	0.005	
VOC	Trichlorofluoromethane	75-69-4							10.95	
VOC	Vinyl Chloride	75-01-4	3.64E-06		1.38E-11	1.38E-07		0.	0.002	
VOC	Xylenes (total)	1330-20-7							10.	
SVOC	1,2-Dichlorobenzene	95-50-1							0.6	
SVOC	2-Methylnaphthalene	91-57-6							0.73	
SVOC	Benzo(a)anthracene	56-55-3							0.01	
SVOC	Benzo(a)pyrene	50-32-8							0.0002	
SVOC	Benzo(b)fluoranthene	205-99-2							0.01	
SVOC	bis(2-Ethylhexyl)phthalate	117-81-7							0.006	
SVOC	Butylbenzylphthalate	85-68-7							7.3	
SVOC	Chrysene	218-01-9							0.0117	
SVOC	Di-n-butylphthalate	84-74-2							3.65	
SVOC	Fluoranthene	206-44-0							1.46	
SVOC	Fluorene	86-73-7							1.46	
SVOC	Naphthalene	91-20-3							0.73	
SVOC	Phenanthrene	85-01-8							1.095	
SVOC	Pyrene	129-00-0							1.095	
P/PCB	Aroclor-1242	53469-21-9							0.0005	
P/PCB	Aroclor-1254	11097-69-1							0.0005	
P/PCB	Aroclor-1260	11096-82-5							0.0005	
INORG	Antimony	7440-36-0							0.006	
INORG	Arsenic	7440-38-2							0.05	
INORG	Barium	7440-39-3							2.	
INORG	Beryllium	7440-41-7							0.004	
INORG	Cadmium	7440-43-9							0.005	
INORG	Chromium (total)	7440-47-3							0.1	
INORG	Cobalt	7440-48-4							2.19	
INORG	Copper	7440-50-8							1.3	
INORG	Cyanide (total)	57-12-5							0.2	
INORG	Lead	7439-92-1							0.015	
INORG	Manganese	7439-96-5	2.69E-04				5.84E-04	0.0009	5.11	
INORG	Mercury	7439-97-6							0.002	
INORG	Nickel	7440-02-0							0.1	
INORG	Selenium	7782-49-2							0.05	
INORG	Silver	7440-22-4							0.1825	
INORG	Thallium	7440-28-0							0.002	
INORG	Vanadium	7440-62-2							0.2555	
INORG	Zinc	7440-66-6							10.95	

Supporting Calculations

Table F-3d: Estimated Contributions to Ground Water Concentrations (mg/L) at Great Miami River Receptor Point (Pumping Scenario 1)

TCL/TAL Group	Constituent	CASRN	Landfill L1	Landfill L2	Landfill L3	N Settling Lagoon	S Settling Lagoon	Total	Criteria	Flag
VOC	1,1,1-Trichloroethane	71-55-6	1.49E-10			3.17E-10		0.	0.2	
VOC	1,1-Dichloroethane	75-34-3	4.34E-09	2.38E-13	1.25E-10	1.65E-09		0.	3.65	
VOC	1,1-Dichloroethene	75-35-4							0.007	
VOC	1,2-Dichloroethene (total)	540-59-0							0.07	
VOC	2-Butanone	78-93-3							21.9	
VOC	Acetone	67-64-1							3.65	
VOC	Benzene	71-43-2	1.90E-10					0.	0.005	
VOC	Carbon Disulfide	75-15-0							3.65	
VOC	Chlorobenzene	108-90-7							0.1	
VOC	Chloroethane	75-00-3							0.01	
VOC	Chloroform	67-66-3							0.1	
VOC	cis-1,2-Dichloroethene	156-59-2	4.88E-09	2.56E-13	1.35E-10	1.78E-07		0.	0.07	
VOC	Ethyl Benzene	100-41-4	1.41E-10					0.	0.7	
VOC	Styrene	100-42-5							0.1	
VOC	Tetrachloroethene	127-18-4	1.90E-09	4.39E-14	2.31E-11	1.22E-09		0.	0.005	
VOC	Toluene	108-88-3							1.	
VOC	trans-1,2-Dichloroethene	156-60-5	4.34E-10	3.61E-14	1.90E-11	2.41E-09		0.	0.1	
VOC	Trichloroethene	79-01-6	8.68E-09	3.47E-13	1.83E-10	1.65E-08		0.	0.005	
VOC	Trichlorofluoromethane	75-69-4							10.95	
VOC	Vinyl Chloride	75-01-4	1.98E-09	2.56E-14	1.35E-11	1.22E-08		0.	0.002	
VOC	Xylenes (total)	1330-20-7							10.	
SVOC	1,2-Dichlorobenzene	95-50-1							0.6	
SVOC	2-Methylnaphthalene	91-57-6							0.73	
SVOC	Benzo(a)anthracene	56-55-3							0.01	
SVOC	Benzo(a)pyrene	50-32-8							0.0002	
SVOC	Benzo(b)fluoranthene	205-99-2							0.01	
SVOC	bis(2-Ethylhexyl)phthalate	117-81-7							0.006	
SVOC	Butylbenzylphthalate	85-68-7							7.3	
SVOC	Chrysene	218-01-9							0.0117	
SVOC	Di-n-butylphthalate	84-74-2							3.65	
SVOC	Fluoranthene	206-44-0							1.46	
SVOC	Fluorene	86-73-7							1.46	
SVOC	Naphthalene	91-20-3							0.73	
SVOC	Phenanthrene	85-01-8							1.095	
SVOC	Pyrene	129-00-0							1.095	
P/PCB	Aroclor-1242	53469-21-9							0.0005	
P/PCB	Aroclor-1254	11097-69-1							0.0005	
P/PCB	Aroclor-1260	11096-82-5							0.0005	
INORG	Antimony	7440-36-0							0.006	
INORG	Arsenic	7440-38-2							0.05	
INORG	Barium	7440-39-3							2.	
INORG	Beryllium	7440-41-7							0.004	
INORG	Cadmium	7440-43-9							0.005	
INORG	Chromium (total)	7440-47-3							0.1	
INORG	Cobalt	7440-48-4							2.19	
INORG	Copper	7440-50-8							1.3	
INORG	Cyanide (total)	57-12-5							0.2	
INORG	Lead	7439-92-1							0.015	
INORG	Manganese	7439-96-5	1.46E-07					0.	5.11	
INORG	Mercury	7439-97-6							0.002	
INORG	Nickel	7440-02-0							0.1	
INORG	Selenium	7782-49-2							0.05	
INORG	Silver	7440-22-4							0.1825	
INORG	Thallium	7440-28-0							0.002	
INORG	Vanadium	7440-62-2							0.2555	
INORG	Zinc	7440-66-6							10.95	

TABLE F-4: Preliminary Remediation Target Levels (Updated February 2006)

Remediation Target Levels (mg/L) - Upper Aquifer

			Constituent of Concern					
Point of Compliance	*GM-26*		*PCE*	*TCE*	*1,1-DCE*	*cis-1,2-DCE*	*Vinyl Chloride*	monitoring wells
Allowable POC Concentration (mg/L):			*0.005*	*0.005*	*0.007*	*0.070*	*0.002*	
Estimated Remediation Target Level at AOI 7 (mg/L):			*0.098*	*0.098*	*0.137*	*1.373*	*0.039*	GM-23, GM-29 and GM-30
Distance from AOI 7 (monitoring zone)	Source Reduction Factor[1]	Normalized Remediation Target	Remediation Target (mg/L)	Remediation Target (mg/L)	Remediation Target (mg/L)	Remediation Target (mg/L)	Remediation Target (mg/L)	
140 ft (Zone S1)	0.9	18	0.088	0.088	0.124	1.235	0.035	GM-28
1190 ft (Zone S1 to Zone S2)	0.47	9	0.046	0.046	0.065	0.645	0.018	GM-28, ME-6
2240 ft (Zone S2)	0.4	8	0.039	0.039	0.055	0.549	0.016	ME-6, ME-3, GM-31
2940 ft (Zone S2 to Zone S3)	0.27	5	0.026	0.026	0.037	0.371	0.011	ME-6, ME-3, GM-31, GM-22, GM-19S, and EAST
3640 ft (Zone S3)	0.19	4	0.019	0.019	0.026	0.261	0.007	GM-32, GM-21
4430 ft (Zone S3 to GM-10)	0.15	3	0.015	0.015	0.021	0.206	0.006	GM-32, GM-21, GM-8, GM-6, 4S, GM-2, GM-16, GM-17, GM-18, WSU-24, and GM-10
5215 ft (GM-10)	0.11	2	0.011	0.011	0.015	0.151	0.004	GM-10
6370 ft (POC)	0.051	1	0.005	0.005	0.007	0.070	0.002	GM-26

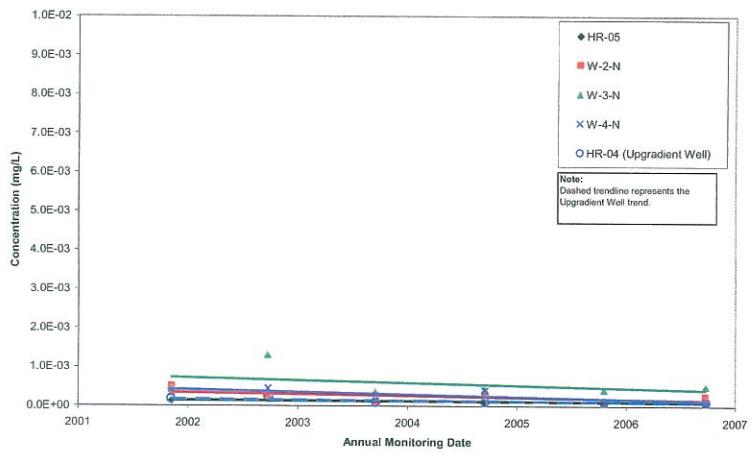
Remediation Target Level (mg/L) - Lower Aquifer

			Constituent of Concern					
Point of Compliance	*GM-11, GM-15 and GM-20D*		*PCE*	*TCE*	*1,1-DCE*	*cis-1,2-DCE*	*Vinyl Chloride*	monitoring wells
Allowable POC Concentration (mg/L):			*0.005*	*0.005*	*0.007*	*0.070*	*0.002*	
Estimated Remediation Target Level at AOI 7 (mg/L):			*0.128*	*0.128*	*0.179*	*1.795*	*0.051*	GM-23, GM-29 and GM-30
Distance from AOI 7 (monitoring zone)	Source Reduction Factor[1]	Normalized Remediation Target	Remediation Target (mg/L)	Remediation Target (mg/L)	Remediation Target (mg/L)	Remediation Target (mg/L)	Remediation Target (mg/L)	
2000 ft (Well GM-41)	0.18	4.6	0.023	0.023	0.032	0.323	0.009	GM-41
2900 ft (Well GM-42)	0.06	1.5	0.008	0.008	0.011	0.108	0.003	GM-42 (replaces Well 32)
3600 ft (Well GM-19D)	0.046	1.2	0.006	0.006	0.008	0.083	0.002	GM-19D
4250 ft (Zone D2)	0.042	1.1	0.005	0.005	0.008	0.075	0.002	GM-1 and GM-3
4900 ft (POC)	0.039	1.0	0.005	0.005	0.007	0.070	0.002	GM-11, GM-15 and GM-20D

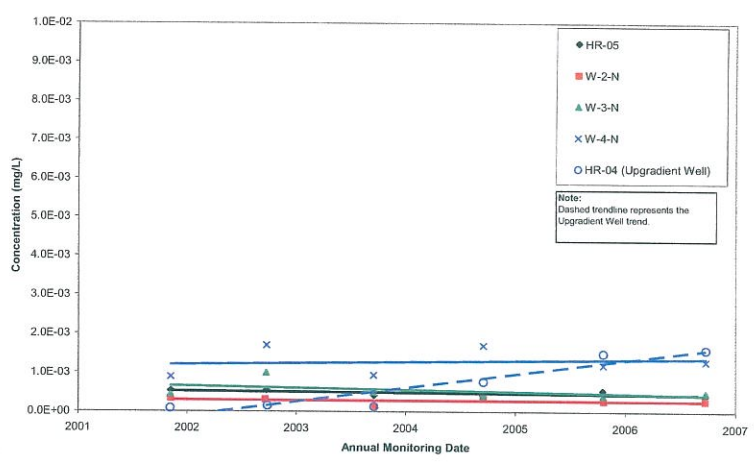
Note
1. Source Reduction Factors reflect updated groundwater model results generated using current site pumping conditions without interim measures pumping (Pumping Scenario 1: updated Feb 2006)

Figure F-1:
North Settling Lagoon

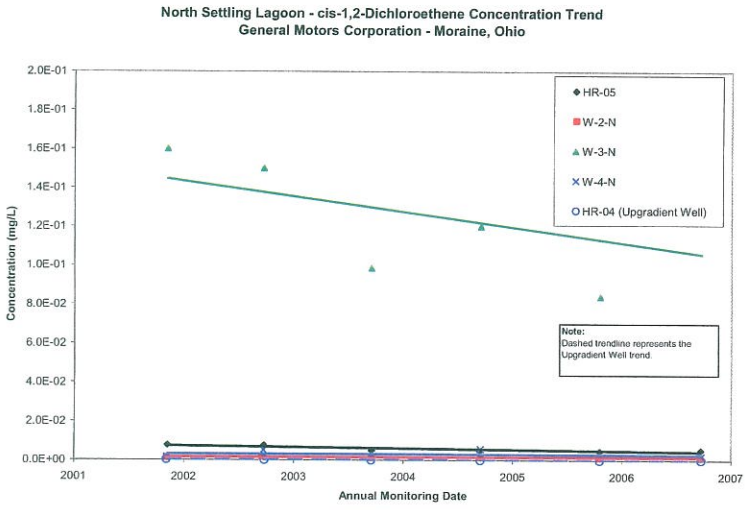
North Settling Lagoon - 1,1,1-Trichloroethane Concentration Trend
General Motors Corporation - Moraine, Ohio



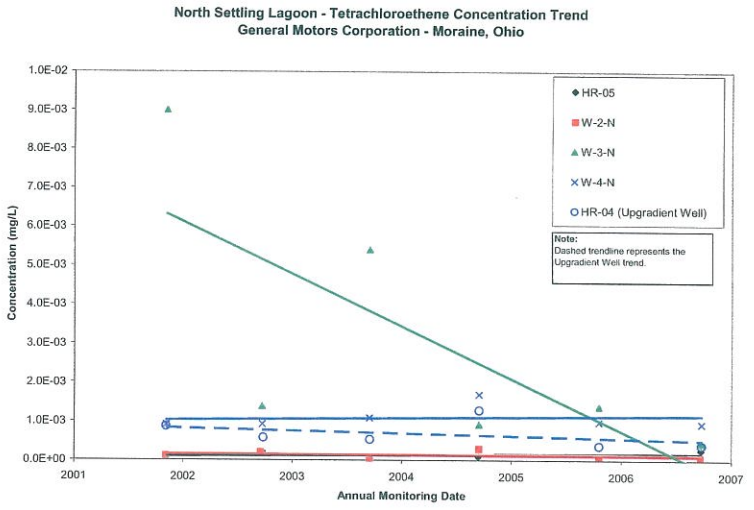
North Settling Lagoon - 1,1-Dichloroethane Concentration Trend
General Motors Corporation - Moraine, Ohio



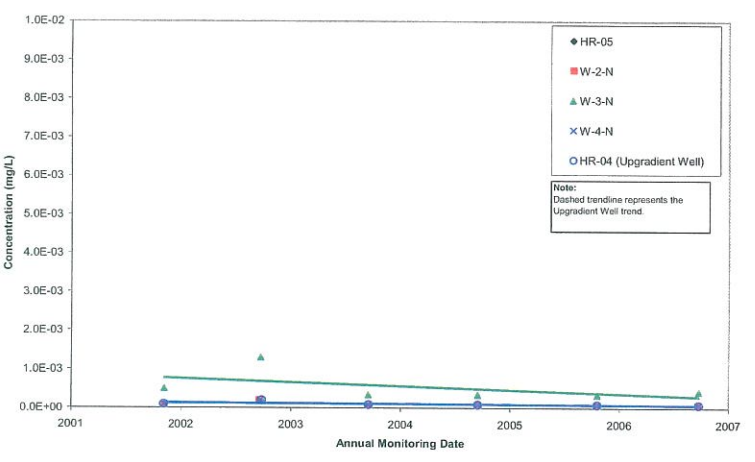
North Settling Lagoon - cis-1,2-Dichloroethene Concentration Trend
General Motors Corporation - Moraine, Ohio



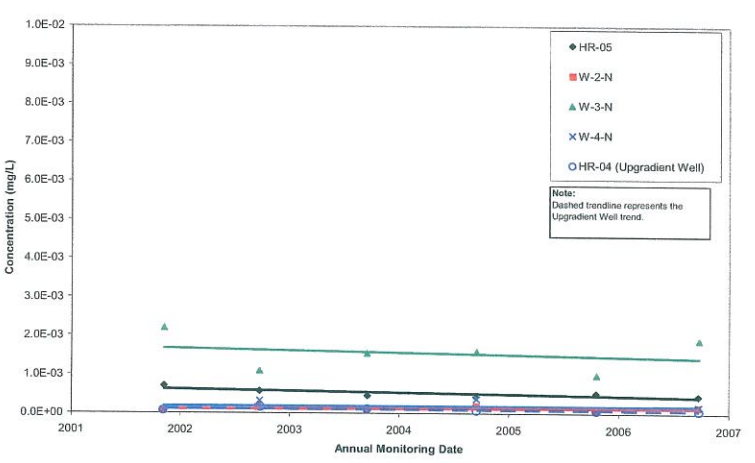
North Settling Lagoon - Tetrachloroethene Concentration Trend
General Motors Corporation - Moraine, Ohio



North Settling Lagoon - Toluene Concentration Trend
General Motors Corporation - Moraine, Ohio

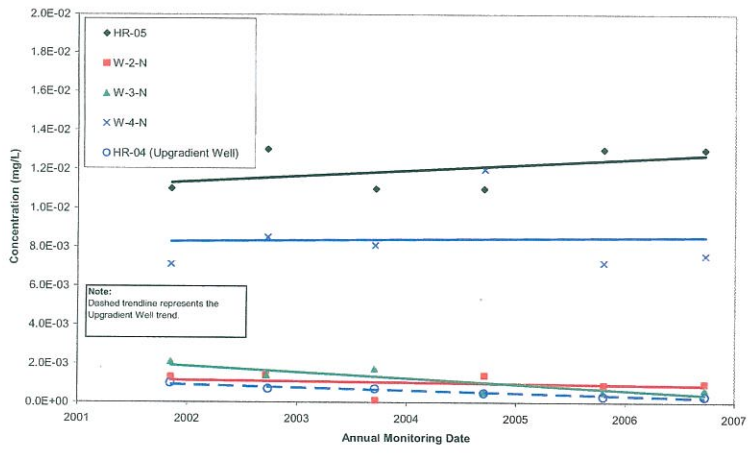


North Settling Lagoon - trans-1,2-Dichloroethene Concentration Trend
General Motors Corporation - Moraine, Ohio



North Settling Lagoon - Trichloroethene Concentration Trend
General Motors Corporation - Moraine, Ohio

North Settling Lagoon - Vinyl Chloride Concentration Trend
General Motors Corporation - Moraine, Ohio



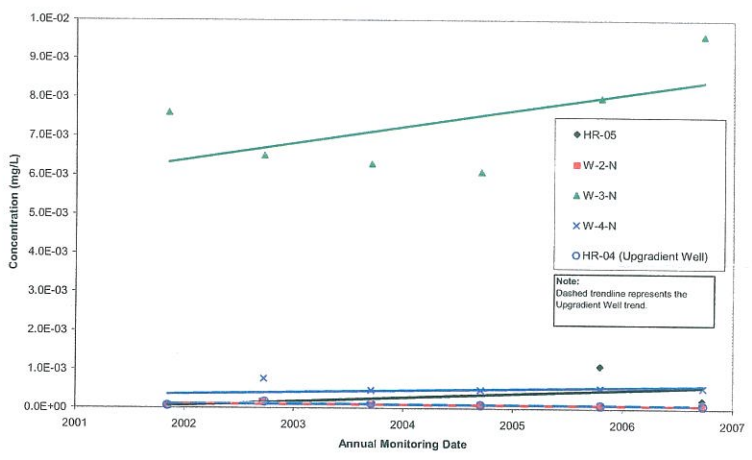


Figure F-2:
South Settling Lagoon