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Corrective Measures Supplemental Groundwater Investigation Report

General Motors Corporation
Moraine, Ohio

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1. Introduction

This Corrective Action Supplemental Groundwater Investigation Report presents supplemental data collected 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 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);
- The capture zone corrective measures (hydraulic control with a pump and treat system for the upper aquifer and hydraulic control for the lower aquifer);
- Institutional actions (the site will remain industrial and groundwater use will be restricted to nonpotable purposes); and
- A site-wide groundwater monitoring program.

Based on the results of the site-wide groundwater monitoring program, GM proposed to collect supplemental groundwater data to provide additional information for evaluating the performance of the ongoing corrective measures. This report presents

the results of this supplemental data collection which have been used to refine the corrective measures for the site.

The additional data collection focused on the upper aquifer well GM-16 located downgradient of the GM Moraine Facilities; the southeastern side of the Former Oil House Area; the lower aquifer well GM-41 located south of the Moraine Assembly Paint Building; and the area north and south of Holes Creek. 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. 2005, 2006a, 2006b).

This Corrective Measures Supplemental Groundwater Investigation Report describes these supplemental investigations; presents data from the supplemental investigations and presents the data collected. GM has utilized these data to develop a refined understanding of groundwater chemistry and flow direction across the site. This report includes the boring logs and well construction diagrams, groundwater contour maps, cross sections, tabulated analytical results, and analytical results in a databox figure.

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 building has reverted to GM and GM remains the property owner. Demolition of Building 14 was completed in 2005.

1.2 Supplemental Investigation Objectives

The initial objectives of the supplemental investigation were to:

- Refine the characterization of groundwater chemistry and flow direction in the vicinity of upper aquifer well GM-16, and
- Refine the characterization of groundwater chemistry and flow direction on the southeastern side of the Former Oil House Area.

Based upon initial results, these objectives were expanded to include:

- Refine the characterization of groundwater chemistry and flow direction in the vicinity of lower aquifer well GM-41, and
- Refine the characterization of groundwater chemistry and flow direction north and south of Holes Creek.

1.3 Technical Approach and Investigation Summary

The technical approach to accomplish the supplemental investigation objectives combined rotosonic drilling, field screening for profiling VOC concentrations in

groundwater, groundwater level measurements, well installation, and groundwater sampling. The investigation was organized to address the four specific study areas. Locations of the wells installed in 2006 are shown on Figure 2. The technical approaches and summary of the work completed (Table 1) for each study area are presented below.

1.3.1 GM-16 Study Area

As indicated by the data presented in GM's Site-Wide Groundwater Monitoring Report for 2006 (ARCADIS 2007), an increasing trend in trichloroethene (TCE) and tetrachloroethene (PCE) concentrations has been observed in upper aquifer monitoring well GM-16 over the last several years. This well is screened in the lower portion of the upper aquifer and is located downgradient of the site, north of lower aquifer pumping well DN-13 and west of Landfill L1 (Figure 2). Based on this observed trend, GM sampled two existing wells in this area (WSU-22 and WSU-23) and installed three additional upper aquifer monitoring well pairs to refine the characterization of groundwater chemistry and flow direction between the west edge of RZ-3 and GM-16.

Three upper aquifer well pairs (GM-50/-47, GM-51/-48, and GM-52/-49) were installed in the GM-16 study area. During drilling, the borings were continuously sampled for lithologic characterization and vertical upper aquifer sampling was conducted approximately every 10-15 ft. This groundwater sampling data was used to provide an understanding of the VOC concentration profile, was used to determine whether a permanent well should be installed, and was used to determine screen interval of each monitoring well. As shown on Figure 2, well pair GM-50/-47 is located upgradient of GM-16 along Telhurst Street; well pair GM-51/-48 is west of GM-16 and east of the Great Miami River; and well pair GM-52/-49 is southwest of GM-16 and east of the Great Miami River. The well pair screens were set within the upper aquifer at intermediate and deep depths. Wells GM-47 (well screen 49 to 59 feet below land surface [ft bls]), GM-48 (well screen 63 to 73 ft bls) and GM-49 (well screen 67 to 77 ft bls) were installed in February 2006 and wells GM-50 (well screen 30 to 40 ft bls), GM-51 (well screen 34 to 44 ft bls), and GM-52 (well screen 34 to 44 ft bls) were installed in April 2006. The upper aquifer well pairs GM-50/-47, GM-51/-48, GM-52/-49 were sampled in the spring and fall of 2006 and the samples analyzed for the site-specific VOC parameter list.

In March 2006, the existing wells WSU-22 and WSU-23 were sampled and analyzed for the site-specific VOC parameter list. These wells are located along Hoylake Court and south of the closed South Settling Lagoon. Well WSU-20, also located along

Hoylake Court, was originally selected to be sampled for this supplemental investigation but this well was dry; therefore, WSU-23 was used instead. During the summer of 2006, WSU-22 was damaged. GM is working with local municipalities and applicable parties to schedule the abandonment of wells WSU-20 and WSU-22. In November 2006, WSU-23 was resampled.

As a result of PCE and TCE concentrations present in GM-50/-47 and PCE and TCE concentration trends in GM-16, GM concluded that a western component of the VOC plume has not been treated by the existing RZ-3 West barrier. Using this data obtained from the GM-16 study area, an additional reactive zone barrier (RZ-4) was designed and installed in July 2006 to address VOC concentrations present west of RZ-3 West. The RZ-4 West and East locations are shown on Figure 2 of the Site-Wide Groundwater Monitoring Report for 2006. Well pair GM-63/-64 was installed in August/September 2006, respectively, along Hoylake Court to serve as the performance monitoring wells for RZ-4 West. The well pair screens are set at intermediate and deep depths within the upper aquifer. The GM-63 well screen is 30 to 40 ft bls and GM-64 well screen is 50 to 60 ft bls. These wells were sampled in September and December 2006 and the samples analyzed for the site-specific VOC parameter list and the biogeochemical indicator parameter list.

1.3.2 Area Southeast of the Former Oil House Area

In order to refine the characterization of groundwater chemistry and flow direction in the Former Oil House Area, GM installed an upper aquifer monitoring well southeast of the eastern edge of RZ-1 and the source area (currently monitored with well GM-23). In particular, this sampling was conducted to assess VOC concentrations side gradient to RZ-1. The location of this new well, GM-46, is shown on Figure 2. This well was installed at the first encountered clay till (upper clay till) and the well screen set 20 to 30 ft bls. The upper clay till is a localized and continuous unit beneath the Former Oil House Area. During drilling, the boring was continuously sampled for lithologic characterization and vertical upper aquifer sampling was conducted at one interval within the upper aquifer above the upper clay till. Well GM-46 was installed in February 2006 and groundwater samples, analyzed for the site-specific VOC parameter list, were collected in March and November 2006. Using these data from GM-46, it was determined that RZ-1 is effectively treating groundwater above the upper clay till in the Former Oil House Area.

1.3.3 GM-41 Study Area

As indicated by the data presented in GM's Site-Wide Groundwater Monitoring Report for 2006 (ARCADIS 2007), elevated TCE concentrations have been observed in lower aquifer monitoring well GM-41 when compared to other lower aquifer wells. In order to further refine the characterization of groundwater chemistry and flow direction in the vicinity of well GM-41, the following four areas were evaluated: north of GM-41 in the area where the former return well was suspected to be present (Well A), south of GM-41 in the parking lot along the site boundary (Well B), northwest of GM-41 toward the Former Oil House Area (Well J), and east of GM-41 in the parking lot along the site boundary (Well I).

During drilling, the borings were continuously sampled for lithologic characterization and vertical aquifer sampling in both the upper and lower aquifers was conducted at approximately every 10-15 ft in the upper aquifer and approximately every 10-15 ft in the lower aquifer to a depth of 115 ft to be consistent with the depth of GM-41's well screen. This groundwater sampling data was used to provide an understanding of the VOC concentration profile, to determine whether a permanent well should be installed, and to determine screen interval of the monitoring wells. As discussed in Section 2, based on the profiling data a permanent well was not installed at the location of Well A. Well pair GM-53/-54 was installed at the location of Well B in July 2006. The well pair screens were set within the upper/lower aquifers, respectively. The well screen for GM-53 is 23 to 33 ft bls at the regional clay till and the well screen for GM-54 is 70 to 80 ft bls, beneath the regional clay till in the upper portion of the lower aquifer. Well GM-58 was installed at the location of Well I in September 2006. This well was set beneath the regional clay till, within the upper portion of the lower aquifer, and screened from 72 to 82 ft bls. Well triplet GM-59/-60/-61 was installed at the location of Well J in August 2006. The well triplet screens were set within the shallow upper/deep upper/shallow lower aquifers, respectively. The well screen for GM-59 is 25 to 35 ft bls, the well screen for GM-60 is 42 to 52 ft bls, and the well screen for GM-61 is 70 to 80 ft bls. These wells were sampled in September 2006 and the samples analyzed for the site-specific VOC parameter list. Based on these data, VOC concentrations were detected at a distance southeast of the Former Oil House Area within the upper aquifer (GM-59/-60) and to a lesser extent in the lower aquifer (GM-61). VOC concentrations in the vicinity of GM-41 indicated no impacts in the upper aquifer (profiling data from Well A shallow and Well GM-58 and groundwater data from GM-53) and PCE and TCE detections in the upper portion of the lower aquifer (GM-54 and GM-58).

1.3.4 Holes Creek Study Area

As previously discussed, increasing trends in TCE and PCE concentrations have been observed at deep upper aquifer monitoring well GM-16 over the last several years. Based on this observed trend and the data collected from the GM-16 study area wells GM-47 through GM-52, additional characterization of groundwater chemistry and flow direction and the interaction between groundwater and surface water were completed in the vicinity of Holes Creek. The following areas were evaluated: north of the creek (Wells D and E), south of the creek and paired with deep upper aquifer well GM-26 (Well F), and further north of the creek and east of Dryden Road (Well C) (Figure 2). Due to delay of property access agreements, work at proposed Wells G and H was not completed (east of the Great Miami River and near Holes Creek) during the Corrective Measures Supplemental Groundwater Investigation. If access is granted, these borings/wells will be completed.

During drilling, the borings were continuously sampled for lithologic characterization and vertical upper aquifer sampling was conducted approximately every 10-15 ft. This groundwater sampling data was used to provide an understanding of the VOC concentration profile, was used to determine whether a permanent well should be installed, and was used to determine screen interval of the monitoring well. Well pair GM-55/-56 was installed at the location of Wells D and E in July 2006. The well pair screens were set within the intermediate upper and deep upper aquifer, respectively. The well screen for GM-55 is 25 to 35 ft bls and the well screen for GM-56 is 75 to 85 ft bls. The regional clay till was discontinuous at this location. Well GM-57 was installed at the location of Well F in July 2006. This well was set within the shallow portion of the upper aquifer and the well screen for GM-57 is 25 to 35 ft bls. Well GM-62 was installed at the location of Well C in August 2006. This well was set within the upper aquifer and the well screen for GM-62 is 50 to 60 ft bls. The regional clay till was also discontinuous at this location. These wells were sampled in September 2006 and the samples analyzed for the site-specific VOC parameter list. Based on this data, primarily PCE was detected in the wells in the upper aquifer in this study area.

1.4 Site Evaluation Methodologies

The following sections describe the methodologies used to evaluate soil and collect groundwater samples during the Supplemental Groundwater Investigation. The well construction details for the wells installed in 2006 are presented in Table 2 and the boring/sampling logs are presented in Appendix A.

1.4.1 Soil Evaluation Methodology

During the Supplemental Groundwater Investigation, drilling was conducted using rotosonic drilling techniques. Prosonic Corporation and Boart Longyear were contracted to perform the drilling with oversight provided by ARCADIS. Rotosonic drilling allowed for continuous collection of soil samples throughout the boring. A full-sized rotosonic drill rig was utilized in accessible areas and in areas where access was limited a mini-sonic drill rig was employed. Prior to drilling at each location, drilling equipment (including the core barrel and outer casing) was decontaminated using a high-pressure steam cleaner. In addition, all boring locations were cleared to approximately 5 ft bls with the use of air/wet knife equipment. This equipment utilizes either high pressure air or water and a vacuum to excavate soil, to support clearance of underground utilities.

The mini-sonic drilling rig used 5-ft long sections of 8-inch diameter steel outer casing. Inside the outer casing, a 5-ft long section of 6-inch diameter steel inner casing was advanced to collect soil samples, this casing is referred to as the "core barrel". After the advancement of the core barrel, it was removed and the sample was extruded into a disposable plastic sleeve for observation. Once the core barrel was removed the boring was advanced with the 8-inch diameter outer casing. The full-sized rotosonic drilling rig used the same methodologies except for the length of casing. The full-sized rotosonic rig utilized 10-ft long casing sections.

After the soil samples were collected in disposable plastic sleeves, they were laid out and cut open for observation. Plastic sheeting or a stainless steel tray was placed beneath the work area for soil description and was decontaminated between samples. After the soil was characterized, samples were collected to be field screened with a photo-ionization detector (PID). Soil boring information and PID readings were recorded on a soil boring log (Appendix A).

All soil generated during drilling and decontamination were contained in labeled drums and disposed appropriately by GM. Disposable personal protection equipment (PPE) and sampling equipment were collected and disposed off-site.

1.4.2 Water Sampling through the Use of Temporary Wells

Groundwater samples were collected during drilling through the use of temporary wells to provide expedited analytical data for decision-making purposes and to provide an understanding of the VOC concentration profile. The data should be considered as

screening quality and was used to determine if a permanent well should be installed and which interval would be selected to install the permanent well screen in each boring. Prior to the installation of the temporary well screen, all non-disposable materials including the well screen and riser were decontaminated using a high-pressure steam cleaner.

During drilling activities and approximately every 10-15 ft, a temporary well screen, known as a "K-packer" was used to collect groundwater samples. The K-packer is constructed of 4-inch, 10-slot, stainless steel screen with a drive point at the advanced end. The exposed screen is 5-feet in length. Once the desired sampling interval was reached the K-packer was connected to the end of the 6-inch diameter inner casing and lowered inside the 8-inch diameter outer casing. The 8-inch diameter outer casing was then pulled back 5-ft to expose the well screen. The void between the 6-inch inner casing and the 8-inch outer casing was sealed off at the top of the well screen through the use of several rubber flanges.

After the K-packer well screen was installed, a high-volume submersible pump was lowered in the temporary well. During drilling, it was sometimes necessary to use potable water to advance the boring. If water was used to advance the boring, an equal volume of water was removed prior to groundwater sampling at a rate of 5 to 20 gallons per minute. After the initial water volume was removed, the purge flow-rate was decreased to approximately 1 gallon per minute. Field parameters including pH, specific conductivity, temperature, and turbidity were then collected for a period of time until the parameters stabilized. Stabilization was defined as plus or minus 10-percent of the final three readings. After the parameters had stabilized, groundwater samples were collected from a spigot with disposable tubing. The groundwater samples were collected for analysis of site-specific VOCs, labeled, and immediately placed in an ice-filled cooler. All relevant information was recorded on the daily log, boring log, and associated chain-of-custody. The samples were submitted to Severn Trent Laboratories of North Canton, Ohio (STL North Canton) for expedited analysis.

All water was collected during purging activities and transferred on-site for disposal. Disposable PPE and sampling equipment were collected and disposed off-site.

1.4.3 Monitoring Well Installation and Development

The permanent monitoring wells were constructed with 2-inch diameter polyvinyl chloride (PVC) casing and a 10-ft long PVC screen with 0.01 slot size. If the selected screened interval was not located at the terminus of a given boring, the 8-inch diameter

outer casing was pulled back to the desired interval and the associated annulus was allowed to fill by formation collapse. A number-5 sand pack was installed around and to 2 ft above the well screen. Above the sand pack, a well seal of hydrated bentonite chips was emplaced to a thickness of no less than 2 ft. After the bentonite chips were allowed to set, a cement/bentonite slurry was mixed and installed using the tremie pipe method to surface. The monitoring wells were completed with a lockable stick-up well vault with a 2-ft by 2-ft concrete pad or, where a stick-up was not practical, a flushmount well vault with a 2-ft by 2-ft concrete pad was installed. All monitoring wells were secured with a padlock. Well construction logs are presented in Appendix A.

After a minimum of 24-hours after installation, the newly installed monitoring wells were developed using a submersible pump and disposable tubing. During purging, the submersible pump was surged up-and-down across the screened interval to mobilize and remove any sediment which had accumulated in the well. After this water was removed, field parameters including pH, specific conductivity, temperature, and turbidity were collected. Well development was considered complete once the field parameters had stabilized (plus or minus 10-percent of the final three readings) and the turbidity had decreased to less than 10 NTU's or at least 10 well volumes were removed from the monitoring well. Monitoring well development information was recorded on the well construction logs (Appendix A).

1.4.4 Groundwater Sampling

In accordance with procedures in the Site-Wide Groundwater Monitoring Plan (ARCADIS G&M, Inc. 2002), groundwater samples were collected from the newly installed monitoring wells to characterize groundwater quality. Prior to sampling each well, monitoring equipment was decontaminated and field parameter measuring equipment was calibrated. Groundwater samples were collected using low-flow 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. Samples were submitted to STL North Canton for laboratory analysis of site-specific VOCs. This 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, PCE, toluene, 1,1,1-trichloroethane (1,1,1-TCA), TCE, vinyl chloride, and xylenes. During groundwater sampling, samples were collected for quality assurance/quality control (QA/QC) purposes. All sampling results, including QA/QC samples are presented in Appendix B. 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). Water sampling logs are provided in Appendix A.

2. Supplemental Groundwater Investigation Results

The Supplemental Groundwater Investigation provided data to refine the current site knowledge of geology, groundwater flow, and groundwater chemistry. The refined characterization also provided a basis for addressing each supplemental investigation objective as discussed below.

2.1 Characterization of Geology

Characterization of the on-site and regional geology has been well documented for the Moraine Facilities throughout the RFI process. A summary of this information has been presented in the Delphi Thermal Moraine DOCC (Geraghty & Miller, Inc. 1991), the Moraine Engine and Moraine Assembly Supplemental DOCC (Geraghty & Miller, Inc. 1997a), the Delphi Thermal Moraine RFI (ARCADIS Geraghty & Miller, Inc., 2000a), the Moraine Engine and Moraine Assembly Supplemental RFI (ARCADIS Geraghty & Miller, Inc., 2000b), the WPSA Investigation Summary Report (ARCADIS 2004), and the Former Building 14 Investigation Summary Report (ARCADIS 2005). Boring logs from the RFI and boring logs from the Corrective Measures Supplemental Groundwater Investigation (Appendix A) were used to create updated site cross sections. The location of the lines of cross-sections and the lithologic cross sections are presented on Figure 3. Cross section A-A' extends generally south to north and the remaining cross sections B-B', C-C', and D-D' extend generally west to east. Figure 3 also presents VOC profiling results and VOC groundwater results from wells that were included on the cross section.

Soil samples were logged during rotosonic drilling in 11 borings (GM-46, -47, -48, -49, -54, -56, -57, -58, -61, -62, and proposed well A-S/D) ranging in depths from 32 to 115 ft bls. Five of the logged borings were not advanced into the lower aquifer. GM-46 was terminated in an upper aquifer clay till zone (28-32 ft). GM-57 was terminated in well graded sand (39-45 ft bls). Three borings (GM-47, -48, and -49) were terminated at the top of the regional till layer (60-67 ft; 71-73 ft, and 76-79 ft bls, respectively). The remaining six logged borings were advanced through the anticipated depth of the till layer and terminated in the lower aquifer.

In this Corrective Measures Supplemental Groundwater Investigation, the saturated upper aquifer material ranged in thickness from 8 ft (GM-58) to 47 ft (GM-47) in thickness. The depth of the upper aquifer was indeterminate at GM-56 and GM-62, since the regional clay till layer was not present. The upper aquifer was predominantly well graded sand and gravel mixtures with occasional zones of up to a few feet of

poorly graded sands or gravels. The till layer ranged in observed thickness from 0 ft (GM-56 and GM-62) to 40 ft (GM-58) in thickness and is predominantly a very stiff, dry, silty clay with various amounts of sand and gravel with occasional zones of silty sand or poorly sorted sand up to a couple of feet in thickness. The lower aquifer material was encountered at depths ranging from 55 ft bls (GM-62) to 70 ft bls (GM-58) and was still present at the termination of each deep boring where it was encountered. The lower aquifer material was predominantly well-graded sand with some zones of well graded sand and occasional zones of up to a few feet of silty sand, poorly sorted sand and poorly sorted gravel.

2.2 Characterization of Groundwater Flow

Groundwater level measurements were taken in all accessible wells on September 12 and 13, 2006. Water level measurements are presented in Table 2. The upper aquifer potentiometric surface on September 12-13, 2006 (Figure 4) shows that flow in the upper aquifer is generally from northeast to southwest. Figure 4 includes additional wells installed during the Supplemental Groundwater Investigation and shows 0.5-foot contour intervals. Upper aquifer recovery well TW-2, located south of Landfill L1, was in operation during water-level elevation measurement collection in September 2006. The September 2006 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.

The lower aquifer potentiometric surface on September 12-13, 2006 (Figure 5) shows 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 collection 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, did not show an apparent drawdown from pumping, and could not be used to reflect the DN-13 cone of depression; however, downward vertical gradients are noted in well pairs located near DN-13. Additional information on the hydraulic characteristics of the upper and lower aquifers, including vertical gradients, is presented in the Site-Wide Groundwater Monitoring Report for 2006.

The local relationship between Holes Creek and the upper aquifer is shown graphically on Figure 3 cross section A-A'. This cross section crosses and recrosses Holes Creek between in the vicinity of well pairs GM-57/-26 and GM-55/-56. September 2006

groundwater elevations at these well pairs ranged from 703.19 to 704.41 ft above mean sea level (MSL). The measured surface water elevation near the mouth of Holes Creek (stream gauge SG6) was 708.31 ft MSL and further east (stream gauge SG7) was 717.05 ft MSL. Although, the actual surface water elevation in Holes Creek along the cross section was not measured, this data demonstrates that the surface water elevation in Holes Creek and the hydraulic potential within Holes Creek must be higher than the groundwater elevation and hydraulic potential within the upper aquifer; therefore, Holes Creek is a losing stream in the vicinity of the Site.

The local relationship between the Great Miami River and the upper aquifer is shown graphically on Figure 3 cross section D-D'. September 2006 groundwater elevations at well pair GM-51/-48 ranged from 704.54 to 705.09 ft MSL. The measured surface water elevation in the Great Miami River (stream gauges SG1 and SG5) ranged from 708.10 to 708.33 ft MSL. This demonstrates that, along D-D', the surface water elevation in the Great Miami River and the hydraulic potential within the Great Miami River must be higher than the groundwater elevation and hydraulic potential within the upper aquifer. Therefore, the Great Miami River was a losing stream in this portion of the Site. It should be noted that the gradient between the Great Miami River and the upper aquifer becomes smaller in a northern direction and that the Great Miami River in the northern portion of the Site, in the vicinity of the equalization basins, was expected to be a gaining reach during the September 2006 gauging event.

2.3 Characterization of Groundwater Chemistry

Groundwater at the site was evaluated for the presence of the site-specific list of VOCs in the previously defined study areas. Table 4 presents the VOC profiling results and Table 5 presents the VOC groundwater analytical results from the multiple sampling events completed in 2006 for the upper and lower aquifer wells. The 2006 groundwater analytical data is also presented on Figure 6. The groundwater results are presented in this section for each of the study areas (Table 5). The complete set of groundwater results, including QA/QC samples, is presented in Appendix B.

2.3.1 GM-16 Study Area

As a result of the increasing trend in TCE and PCE concentrations observed in upper aquifer monitoring well GM-16, groundwater quality was assessed upgradient and downgradient of this well. Groundwater results in well pairs GM-50/-47, GM-51/-48, GM-52/-49, and the WSU wells showed concentrations of PCE and TCE consistent with those detected in GM-16. The newly installed well pairs are screened in the

intermediate and deep intervals, while GM-16 is screened in the deep interval of the upper aquifer above the regional clay till. The vertical concentration profiles indicated higher total VOC concentrations are present in the intermediate depth than in the deeper depth of the upper aquifer.

The VOCs detected in the GM-16 study area included PCE, TCE, cis-1,2-DCE, trans-1,2-DCE, 1,1,1-TCA, 1,1-DCA, and toluene (Table 5). Total VOC concentrations for the sampling results from wells in the GM-16 study area in 2006 are presented below:

- Well WSU-23 is located southwest of the closed South Settling Lagoon at the western end of Hoylake Court. Total VOC concentrations ranged from 9.59 ug/L to 11.01 ug/L.

- Well WSU-22 is located south of the closed South Settling Lagoon on Hoylake Court. Total VOCs in this well were 208.3 ug/L. Well pair GM-63/-64 was installed along Hoylake Court to replace WSU-22 and serve as the performance monitoring wells for RZ-4 West. Total VOC concentrations in the intermediate well GM-63 ranged from 254.3 ug/L to 291.2 ug/L and in the deeper well GM-64 ranged from 132.2 ug/L to 168.2 ug/L.

- Well pair GM-50/-47 is located upgradient to GM-16 on Telhurst Street. Total VOC concentrations in the intermediate well GM-50 ranged from 251.6 ug/L to 311.1 ug/L and in the deeper well GM-47 ranged from 122.8 ug/L to 140.99 ug/L.

- Well GM-16 is located north of Main Street and east of Interstate-75. The total VOC concentration was 157 ug/L in 2006.

- Well pair GM-51/-48 is located north of Main Street, west of Interstate-75, and west of GM-16 along the Great Miami River. Total VOC concentrations in the intermediate well GM-51 ranged from 12.62 ug/L to 12.82 ug/L and in the deeper well GM-48 ranged from 4.38 ug/L to 5.37 ug/L.

- Well pair GM-52/-49 is located south of Main Street, west of Interstate-75, and southwest of GM-16 along the Great Miami River. Total VOC concentrations in the intermediate well GM-52 ranged from 119.69 ug/L to 141.51 ug/L and in the deeper well GM-49 ranged from 22.31 ug/L to 22.83 ug/L.

As a result of PCE and TCE concentrations present in GM-50/-47 and PCE and TCE concentration trends in GM-16, GM concluded that a western component of the VOC

plume has not been treated by the existing RZ-3 West barrier. Using these data obtained from the GM-16 study area, an additional reactive zone barrier (RZ-4) was designed and installed in July 2006 to address these VOC concentrations present west of RZ-3 West. VOC concentrations downgradient of 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.

2.3.2 Area Southeast of the Former Oil House Area

As discussed in Section 1.3.2, upper aquifer well GM-46 is located east of and side gradient to RZ-1. The upper clay till is present in this location. Groundwater data from this well has been evaluated to ensure that all impacted groundwater downgradient of the Former Oil House Area, which is the primary source area of VOCs that is being treated by RZ-1. Total VOC concentrations from the 2006 sampling events in GM-46 (Table 5) are much lower than in the Former Oil House Area and 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. Additional discussion regarding current groundwater concentrations downgradient of the primary source area and performance of RZ-1 are presented in the Site-Wide Groundwater Monitoring Report for 2006.

2.3.3 GM-41 Study Area

As a result of the TCE concentrations observed in lower aquifer monitoring well GM-41, groundwater quality in both the upper and lower aquifers was assessed in the vicinity of this well. Groundwater results in proposed Well A and permanent wells GM-53/-54, GM-58, GM-59/-60/-61 showed concentrations of PCE, TCE, cis-1,2-DCE in the upper aquifer (GM-59/-60) and primarily showed concentrations of PCE and TCE in the upper portion of the lower aquifer. The newly installed lower aquifer wells are screened in the upper portion of the lower aquifer, while GM-41 is screened in the intermediate portion of the lower. With the exception of GM-41, the vertical concentration profiles indicated higher total VOC concentrations are present in the intermediate depth than in the deeper depth of the upper aquifer (based on GM-59/-60) and in the shallow portion of the lower aquifer.

- Using profiling data from the upper and lower aquifers at proposed Well A, located north of GM-41, a permanent well was not installed. Total VOC concentrations in

the upper portion of the lower aquifer were less than those observed at GM-41. Profiling data from Well A in the lower aquifer primarily consisted of PCE, TCE, and cis-1,2-DCE, with TCE concentrations increasing with depth (Table 4).

- Well pair GM-53/-54 is located south and slightly east of GM-41 in the Moraine Assembly Paint Building parking lot. VOCs were not detected in GM-53, which is screened above the regional clay till. The total VOC concentration in GM-54 was 183.2 ug/L. GM-54 is screened below the regional clay till in the upper portion of the lower aquifer and primarily contained PCE.

- GM-58 is located east of GM-41 in the Moraine Assembly Paint Building parking lot. Using the profiling data collected from the upper aquifer at this location, a well was not installed. The total VOC concentrations in GM-58 ranged from 6.25 to 85 ug/L (Table 5); however, the higher total VOC concentration (85 ug/L) was consistent with the profiling data (Table 4). GM-58 is screened below the regional clay till in the upper portion of the lower aquifer and primarily contained PCE.

- Well triplet GM-59/-60/-61 is located northwest of GM-41 and between the Former Oil House Area and GM-41 in the Vehicle Distribution Center (formerly Moraine Engine). Total VOC concentrations in the upper aquifer intermediate well GM-59 were 408 ug/L and in the upper aquifer deeper well GM-60 were 1,300 ug/L. The upper clay till that is present beneath the Former Oil House Area is absent at this well triplet location. The total VOC concentration in GM-61 was 61.74 ug/L. GM-61 is screened below the regional clay till in the upper portion of the lower aquifer. These wells primarily contain PCE, TCE, and cis-1,2-DCE.

Based on the data from the GM-41 study area, the upper aquifer beneath the Moraine Assembly Paint Building has not been impacted (profiling data from Well A shallow and Well GM-58 and groundwater data from GM-53). The upper aquifer northwest of GM-41, contains residual concentrations of VOCs as indicated in the monitoring data collected from wells GM-59/-60 and to a lesser extent in the lower aquifer (GM-61). The upper portion (GM-54, GM-58) of the lower aquifer and the intermediate portion (GM-41) of the lower aquifer beneath the Moraine Assembly Paint Building parking lot, contain PCE and TCE. As discussed in Sections 3 and 4, further evaluation is warranted in the GM-41 study area northwest and northeast of GM-41.

2.3.4 Holes Creek Study Area

Groundwater results north and south of Holes Creek were consistent with results observed in the site-wide groundwater monitoring program. Additionally, the presence of PCE was noted in the vertical concentration profiles and in each monitoring well. Concentrations of PCE have been detected in the off-site downgradient well GM-26, which serves as the point of compliance well for the upper aquifer. In the1999 baseline sampling event no VOCs were detected, while in 2006, PCE (0.91J ug/L) was detected in GM-26. Well GM-57, screened at an intermediate depth, is paired with upper aquifer well GM-26. This well pair is located south of Holes Creek. Groundwater sampling results from GM-57 had detected concentrations of PCE (1.9 ug/L), ethylbenzene (0.21J ug/L), and toluene (0.48J ug/L). Groundwater sampling results from well pair GM-55/-56 located north of Holes Creek had detected concentrations of PCE (7.4 ug/L) at the intermediate interval and (0.57J ug/L) at the deeper interval within the upper aquifer. All other VOCs were nondetect in this well pair. Well GM-62, located northeast of well pairs GM-55/-56 and GM-57/-26, had detected concentrations of PCE (15 ug/L) and toluene (0.24J ug/L).

As discussed in the Site-Wide Groundwater Monitoring Report for 2006, temporally decreasing concentrations in the wells downgradient of the Facilities, but closer to the site than the Holes Creek study area, (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) in comparison with the 1999 baseline conditions are 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.

3. Evaluation of Supplemental Groundwater Investigation Results

As proposed in the Site-Wide Groundwater Monitoring Report for 2005 (ARCADIS 2006), and as discussed in Site-Wide Groundwater Monitoring Report for 2006 (ARCADIS 2007), GM implemented a Supplemental Groundwater Investigation Work Plan to collect data to further refine the available information on groundwater flow and quality in the following study areas (BOW Environmental Solutions, Inc. 2005, 2006a, 2006b):

- Upper aquifer in the area of monitoring well GM-16 located downgradient of the GM Moraine Facilities, and
- Southeastern side of the Former Oil House Area.

Because the supplemental wells are located within the monitoring zones defined for the IM/CMS program, sampling results from these wells were evaluated relative to the corresponding RTLs similar to the approach presented in Section 4 of the Site-Wide Groundwater Monitoring Report for 2006. Specifically, the supplemental monitoring wells were compared to the following RTLs:

- Upper Aquifer
  - GM-59 and GM-60: Zone S1 to Zone S2,
  - GM-53: Zone S2 to Zone S3,
  - GM-63 and GM-64: Zone S3,
  - GM-47, GM-48, GM-50 and GM-51: Zone S3 to GM-10, and
  - GM-49, GM-52, GM-55, and GM-62: GM-10.
- Lower Aquifer
  - GM-58: GM-40/41, and
  - GM-56: POC Deep.

Table 6 presents the results of the comparison of supplemental sampling results with the RTLs. The results of this comparison to RTLs are generally consistent with the results of the site wide monitoring comparison presented in Section 4 with a few exceptions:

- GM-59 and GM-60 located in Zone S1 to Zone S2 exhibited TCE and PCE concentrations above the RTLs for this monitoring zone. The site-wide monitoring program wells for this zone did not indicate concentrations above the RTLs for any of the program constituents. Therefore, further evaluation of groundwater concentrations in this monitoring zone are warranted to determine if changes in the monitoring network or RZ systems are warranted.

- GM-63 and GM-64 located in Zone S3 exhibited TCE and PCE concentrations above the RTLs for this zone. The site-wide monitoring program wells for this zone did not indicate concentrations above the RTLs for these two constituents. Since wells GM-63 and GM-64 are located immediately downgradient of the newly installed RZ-4 treatment zone, these wells will be used to monitor the performance of RZ-4 as part of the site-wide monitoring program.

- GM-47 and GM-50 located in Zone S3 to GM-10 exhibited TCE and PCE concentrations above the RTLs for this zone. The site-wide monitoring program wells for this zone also indicated concentrations above the RTLs for these two constituents, but at levels lower than those observed in GM-47 and GM-50. Since these wells provide additional monitoring coverage in this area downgradient of RZ-4 West, wells GM-47 and GM-50 will be added to the site-wide monitoring program to monitor the performance of RZ-4 as part of the site-wide monitoring program.

- GM-49, GM-52 and GM-62 located in Zone GM-10 exhibited TCE and PCE concentrations above the RTLs for this zone. The site-wide monitoring program well for this zone did not indicate concentrations above the RTLs for these two constituents. Well GM-52 will be added to the site-wide monitoring program to provide additional monitoring coverage in this area downgradient of the active corrective measures. At this time wells GM-49 and GM-62 will not be included in the monitoring program because wells GM-52 and GM-10 and WSU-24, respectively, will provide sufficient coverage.

4. Conclusions and 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.

5. References

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Table 1. Summary of the Supplemental Investigation in 2006, General Motors Corporation, Moraine, Ohio.

February 2006

Wells GM-46 through GM-49 were installed.

March 2006

Wells GM-46 through GM-49 and WSU-22 and WSU-23 were sampled[1,2].

April 2006

Wells GM-50 through GM-52 were installed and sampled[1,2].

July 2006

Wells GM-53 through GM-57 were installed. Reactive zone wells RZ-4A through RZ-4O were installed.

August 2006

Wells GM-59 through GM-62 were installed.

September 2006

Wells GM-58 and GM-63 were installed. Groundwater elevations were measured on September 12-13, 2006. Wells GM-47, GM-50, GM-53 through GM-64 were sampled[1,2].

November 2006

Wells GM-46 through GM-52, GM-58, and WSU-23 were sampled[1,2].

December 2006

Wells GM-63 and GM-64 were sampled[1,2].

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.

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Table 2. 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-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
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
Lower Aquifer Wells							
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

TOC - Top of Casing.
ft bls - Feet Below Land Surface.
ft msl - Feet Above Mean Sea Level.

Table 3. 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 3. 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 3. 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 3. 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.

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Table 4. Groundwater Profiling Results for the 2006 Supplemental Investigation, General Motors Corporation, Moraine, Ohio.

	Unit	GM-46	GM-47			GM-48		
		20-25 ft 2/25/2006 Upper Aquifer	25-30 ft 2/23/2006 Upper Aquifer	40-45 ft 2/24/2006 Upper Aquifer	55-60 ft 2/24/2006 Upper Aquifer	27-32 ft 2/22/2006 Upper Aquifer	42-47 ft 2/22/2006 Upper Aquifer	65-70 ft 2/23/2006 Upper Aquifer
Volatile Organic Compound								
1,1,1-Trichloroethane	ug/L	< 1 U	3.1	3.2	2.7	0.48 J	0.87 J	0.94 J
1,1-Dichloroethane	ug/L	8.2	1.6	1.6	1.9	< 1 U	< 1 U	0.92 J
1,1-Dichloroethene	ug/L	0.54 J	< 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	11.8	4.6	5.7	9.8	< 1 U	< 1 U	0.86 J
Ethylbenzene	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Tetrachloroethene	ug/L	2.4	135	143	69	7.2	1.7	< 1 U
Toluene	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	0.41 J	1.3	< 1 U
trans-1,2-Dichloroethene	ug/L	0.83 J	1.4	1.4	2.1	< 1 U	< 1 U	< 1 U
Trichloroethene	ug/L	41.9	110	112	49.8	5.2	9.9	2.7
Vinyl chloride	ug/L	5.6	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Xylene (total)	ug/L	< 2 U	0.73 J	0.69 J	< 2 U	< 2 U	< 2 U	< 2 U

ug/L - Micrograms per liter.
J - Value is estimated.
U - Nondetect.
< - Value is not detected above reporting limit shown.
ft - Feet.

Table 4. Groundwater Profiling Results for the 2006 Supplemental Investigation, General Motors Corporation, Moraine, Ohio.

		GM-49			Well A			
	Unit	24-29 ft 2/24/2006 Upper Aquifer	44-49 ft 2/25/2006 Upper Aquifer	70-75 ft 2/25/2006 Upper Aquifer	30-35 ft 7/11/2006 Upper Aquifer	70-75 ft 7/26/2006 Lower Aquifer	80-85 ft 7/26/2006 Lower Aquifer	95-100 ft 7/26/2006 Lower Aquifer
Volatile Organic Compound								
1,1,1-Trichloroethane	ug/L	2	2.2	2	7.4	< 1 U	0.51 J	< 5.7 U
1,1-Dichloroethane	ug/L	1	1.9	1.8	< 1 U	< 1 U	< 1.7 U	< 5.7 U
1,1-Dichloroethene	ug/L	< 1 U	< 1 U	< 1 U	0.28 J	< 1 U	< 1.7 U	< 5.7 U
Benzene	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1.7 U	< 5.7 U
cis-1,2-Dichloroethene	ug/L	2.4	3	3	< 1 U	0.39 J	1.2 J	7.8
Ethylbenzene	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1.7 U	< 5.7 U
Tetrachloroethene	ug/L	51.5	33.8	3.2	0.22 J	23	9.4	4.4 J
Toluene	ug/L	< 1 U	< 1 U	< 1.2 U	< 1 U	0.2 J	< 1.7 U	< 5.7 U
trans-1,2-Dichloroethene	ug/L	0.68 J	0.59 J	< 1 U	< 1 U	< 1 U	< 1.7 U	< 5.7 U
Trichloroethene	ug/L	50.6	35.1	6.4	< 1 U	11	55	190
Vinyl chloride	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1.7 U	< 5.7 U
Xylene (total)	ug/L	< 2 U	0.6 J	0.65 J	< 2 U	< 2 U	< 3.3 U	< 11 U

ug/L - Micrograms per liter.
J - Value is estimated.
U - Nondetect.
< - Value is not detected above reporting limit shown
ft - Feet.

Table 4. Groundwater Profiling Results for the 2006 Supplemental Investigation, General Motors Corporation, Moraine, Ohio.

	Unit	Well B (Converted to Wells GM-53/GM-54) 25-30 ft 7/25/2006 Upper Aquifer	70-75 ft 7/12/2006 Lower Aquifer	80-85 ft 7/12/2006 Lower Aquifer	95-100 ft 7/12/2006 Lower Aquifer	110-115 ft 7/12/2006 Lower Aquifer
Volatile Organic Compound						
1,1,1-Trichloroethane	ug/L	< 1 U	< 5 U	0.96 J	< 1 U	< 1 U
1,1-Dichloroethane	ug/L	< 1 U	2.1 J	0.27 J	1.1	< 1 U
1,1-Dichloroethene	ug/L	< 1 U	< 5 U	< 1 U	0.35 J	< 1 U
Benzene	ug/L	< 1 U	< 5 U	< 1 U	< 1 U	< 1 U
cis-1,2-Dichloroethene	ug/L	< 1 U	1.9 J	< 1 U	6.2	3.9
Ethylbenzene	ug/L	< 1 U	< 5 U	< 1 U	< 1 U	< 1 U
Tetrachloroethene	ug/L	< 1 U	150	3	1	0.95 J
Toluene	ug/L	< 1 U	< 5 U	< 1 U	< 1 U	< 1 U
trans-1,2-Dichloroethene	ug/L	< 1 U	< 5 U	< 1 U	0.37 J	0.55 J
Trichloroethene	ug/L	< 1 U	5.5	16	0.42 J	0.33 J
Vinyl chloride	ug/L	< 1 U	< 5 U	< 1 U	0.49 J	0.23 J
Xylene (total)	ug/L	< 2 U	< 10 U	< 2 U	< 2 U	< 2 U

ug/L - Micrograms per liter.
J - Value is estimated.
U - Nondetect.
< - Value is not detected above reporting limit shown
ft - Feet.

Table 4. Groundwater Profiling Results for the 2006 Supplemental Investigation, General Motors Corporation, Moraine, Ohio.

	Unit	Well C (Converted to Well GM-62)			Well D (Converted to Wells GM-55/GM-56)		
		30-35 ft 8/29/2006 Upper Aquifer	40-45 ft 8/30/2006 Upper Aquifer	60-65 ft 8/30/2006 Upper Aquifer	25-30 ft 7/12/2006 Upper Aquifer	35-40 ft 7/12/2006 Upper Aquifer	55-60 ft 7/13/2006 Upper Aquifer
Volatile Organic Compound							
1,1,1-Trichloroethane	ug/L	< 1 U	< 1 U	0.22 J	< 1 U	< 1 U	< 1 U
1,1-Dichloroethane	ug/L	< 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
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 U	< 1 U	< 1 U	< 1 U
Ethylbenzene	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Tetrachloroethene	ug/L	7.3	8.4	4.6	8.6	6.9	6.7
Toluene	ug/L	0.35 J	< 1 U	0.22 J	< 1 U	< 1 U	0.17 J
trans-1,2-Dichloroethene	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Trichloroethene	ug/L	< 1 U	< 1 U	2.1	< 1 U	< 1 U	< 1 U
Vinyl chloride	ug/L	< 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

ug/L - Micrograms per liter.
J - Value is estimated.
U - Nondetect.
< - Value is not detected above reporting limit shown
ft - Feet.

Table 4. Groundwater Profiling Results for the 2006 Supplemental Investigation, General Motors Corporation, Moraine, Ohio.

	Unit	Well F (Converted to Well GM-57) 25-30 ft 7/13/2006 Upper Aquifer	Well F (Converted to Well GM-57) 40-45 ft 71/3/2006 Upper Aquifer	Well I (Converted to Well GM-58) 25-30 ft 8/22/2006 Upper Aquifer	Well I (Converted to Well GM-58) 75-80 ft 8/22/2006 Lower Aquifer	Well I (Converted to Well GM-58) 95-100 ft 8/22/2006 Lower Aquifer	Well I (Converted to Well GM-58) 110-115 ft 8/22/2006 Lower Aquifer
Volatile Organic Compound							
1,1,1-Trichloroethane	ug/L	< 1 U	< 1 U	< 1 U	< 3.3 U	< 1 U	< 1 U
1,1-Dichloroethane	ug/L	< 1 U	< 1 U	< 1 U	< 3.3 U	< 1 U	< 1 U
1,1-Dichloroethene	ug/L	< 1 U	< 1 U	< 1 U	< 3.3 U	< 1 U	< 1 U
Benzene	ug/L	< 1 U	< 1 U	< 1 U	< 3.3 U	< 1 U	< 1 U
cis-1,2-Dichloroethene	ug/L	< 1 U	< 1 U	< 1 U	< 3.3 U	2.4	3.5
Ethylbenzene	ug/L	< 1 U	< 1 U	< 1 U	< 3.3 U	< 1 U	< 1 U
Tetrachloroethene	ug/L	1.4	1.6	< 1 U	99	0.69 J	0.26 J
Toluene	ug/L	0.19 J	0.2 J	0.38 J	< 3.3 U	0.27 J	0.34 J
trans-1,2-Dichloroethene	ug/L	< 1 U	< 1 U	< 1 U	< 3.3 U	< 1 U	0.22 J
Trichloroethene	ug/L	< 1 U	< 1 U	< 1 U	1.3 J	0.91 J	< 1 U
Vinyl chloride	ug/L	< 1 U	< 1 U	< 1 U	< 3.3 U	< 1 U	< 1 U
Xylene (total)	ug/L	< 2 U	< 2 U	< 2 U	< 6.7 U	< 2 U	< 2 U

ug/L - Micrograms per liter.
J - Value is estimated.
U - Nondetect.
< - Value is not detected above reporting limit shown
ft - Feet.

Table 4. Groundwater Profiling Results for the 2006 Supplemental Investigation, General Motors Corporation, Moraine, Ohio.

	Unit	Well J (Converted to Wells GM-59/GM-60/GM-61) 30-35 ft 8/23/2006 Upper Aquifer	47-52 ft 8/23/2006 Upper Aquifer	70-75 ft 8/23/2006 Lower Aquifer	90-95 ft 8/24/2006 Lower Aquifer	110-115 ft 8/24/2006 Lower Aquifer
Volatile Organic Compound						
1,1,1-Trichloroethane	ug/L	< 15 U	< 25 U	0.84 J	< 1 U	< 1 U
1,1-Dichloroethane	ug/L	< 15 U	< 25 U	2.6	1.5	0.42 J
1,1-Dichloroethene	ug/L	< 15 U	< 25 U	< 1.7 U	0.69 J	< 1 U
Benzene	ug/L	< 15 U	< 25 U	< 1.7 U	0.24 J	0.22 J
cis-1,2-Dichloroethene	ug/L	5.8 J	95	2.9	37	7
Ethylbenzene	ug/L	< 15 U	< 25 U	< 1.7 U	< 1 U	< 1 U
Tetrachloroethene	ug/L	400	720	41	1.1	1.2
Toluene	ug/L	< 15 U	< 25 U	< 1.7 U	0.17 J	0.35 J
trans-1,2-Dichloroethene	ug/L	< 15 U	< 25 U	< 1.7 U	1.6	0.21 J
Trichloroethene	ug/L	72	380	56	5.8	6.2
Vinyl chloride	ug/L	< 15 U	< 25 U	< 1.7 U	< 1 U	1.7
Xylene (total)	ug/L	< 31 U	< 50 U	< 3.3 U	< 2 U	< 2 U

ug/L - Micrograms per liter.
J - Value is estimated.
U - Nondetect.
< - Value is not detected above reporting limit shown
ft - Feet.

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Table 5. Groundwater Analytical Results for the 2006 Supplemental Investigation, General Motors Corporation, Moraine, Ohio.

		GM-46		GM-47			GM-48	
	Unit	3/2/2006 Upper Aquifer	11/30/2006 Upper Aquifer	3/1/2006 Upper Aquifer	9/19/2006 Upper Aquifer	11/30/2006 Upper Aquifer	3/1/2006 Upper Aquifer	11/30/2006 Upper Aquifer
Volatile Organic Compound								
1,1,1-Trichloroethane	ug/L	< 1 U	< 1 U	2.2	2.2	1.9 J	0.62 J	0.97 J
1,1-Dichloroethane	ug/L	2.7	0.43 J	1.8	1.7 J	1.7 J	0.71 J	0.72 J
1,1-Dichloroethene	ug/L	< 1 U	< 1 U	< 1 U	< 2 U	< 2 U	< 1 U	< 1 U
Benzene	ug/L	< 1 U	< 1 U	< 1 U	< 2 U	< 2 U	< 1 U	< 1 U
cis-1,2-Dichloroethene	ug/L	6.8	5.2	7.2	9.5	8.9	0.7 J	0.83 J
Ethylbenzene	ug/L	< 1 U	< 1 U	< 1 U	< 2 U	< 2 U	< 1 U	< 1 U
Tetrachloroethene	ug/L	< 1 U	0.67 J	78	64	69	< 1 U	0.26 J
Toluene	ug/L	< 1 U	< 1 U	0.29 J	< 2 U	< 2 U	0.25 J	< 1 U
trans-1,2-Dichloroethene	ug/L	0.35 J	< 1 U	1.5	1.4 J	1.4 J	< 1 U	0.19 J
Trichloroethene	ug/L	22	1.5	50	44	51	2.1	2.4
Vinyl chloride	ug/L	1.9	1.5	< 1 U	< 2 U	< 2 U	< 1 U	< 1 U
Xylene (total)	ug/L	< 2 U	< 2 U	< 2 U	< 4 U	< 4 U	< 2 U	< 2 U

ug/L - Micrograms per liter.
J - Value is estimated.
U - Nondetect.
< - Value is not detected above reporting limit shown.

Table 5. Groundwater Analytical Results for the 2006 Supplemental Investigation, General Motors Corporation, Moraine, Ohio.

		GM-49		WSU-22	WSU-23		GM-50	
	Unit	3/1/2006 Upper Aquifer	11/30/2006 Upper Aquifer	3/1/2006 Upper Aquifer	3/1/2006 Upper Aquifer	11/30/2006 Upper Aquifer	4/28/2006 Upper Aquifer	9/19/2006 Upper Aquifer
Volatile Organic Compound								
1,1,1-Trichloroethane	ug/L	2.4	1.8	3.1	2.5	2.1	2.4 J	1.4 J
1,1-Dichloroethane	ug/L	3.4	2.6	1.7	0.97 J	0.73 J	1.9 J	1.5 J
1,1-Dichloroethene	ug/L	< 1 U	< 1 U	< 1.7 U	< 1 U	0.2 J	< 5 U	< 5.6 U
Benzene	ug/L	< 1 U	< 1 U	< 1.7 U	< 1 U	< 1 U	< 5 U	< 5.6 U
cis-1,2-Dichloroethene	ug/L	4.7	3.8	4.3	0.44 J	0.46 J	5.2	13
Ethylbenzene	ug/L	< 1 U	< 1 U	< 1.7 U	< 1 U	< 1 U	< 5 U	< 5.6 U
Tetrachloroethene	ug/L	2.5	3.1	110	< 1 U	< 1 U	180	150
Toluene	ug/L	0.25 J	< 1 U	< 1.7 U	< 1 U	< 1 U	< 5 U	< 5.6 U
trans-1,2-Dichloroethene	ug/L	0.66 J	0.53 J	1.2 J	< 1 U	< 1 U	1.6 J	1.7 J
Trichloroethene	ug/L	8.4	11	88	7.1	6.1	120	84
Vinyl chloride	ug/L	< 1 U	< 1 U	< 1.7 U	< 1 U	< 1 U	< 5 U	< 5.6 U
Xylene (total)	ug/L	< 2 U	< 2 U	< 3.3 U	< 2 U	< 2 U	< 10 U	< 11 U

ug/L - Micrograms per liter.
J - Value is estimated.
U - Nondetect.
< - Value is not detected above reporting limit shown.

Table 5. Groundwater Analytical Results for the 2006 Supplemental Investigation, General Motors Corporation, Moraine, Ohio.

	Unit	GM-50 11/30/2006 Upper Aquifer	GM-51 4/28/2006 Upper Aquifer	GM-51 11/30/2006 Upper Aquifer	GM-52 4/28/2006 Upper Aquifer	GM-52 11/30/2006 Upper Aquifer	GM-53 9/14/2006 Upper Aquifer	GM-55 9/14/2006 Upper Aquifer
Volatile Organic Compound								
1,1,1-Trichloroethane	ug/L	1.6 J	0.9 J	0.76 J	2	1.3 J	< 1 U	< 1 U
1,1-Dichloroethane	ug/L	1.5 J	< 1 U	< 1 U	0.94 J	0.93 J	< 1 U	< 1 U
1,1-Dichloroethene	ug/L	< 5 U	< 1 U	< 1 U	< 2 U	< 2 U	< 1 U	< 1 U
Benzene	ug/L	< 5 U	< 1 U	< 1 U	< 2 U	< 2 U	< 1 U	< 1 U
cis-1,2-Dichloroethene	ug/L	34	0.32 J	0.26 J	1.9 J	2.7	< 1 U	< 1 U
Ethylbenzene	ug/L	< 5 U	< 1 U	< 1 U	< 2 U	< 2 U	< 1 U	< 1 U
Tetrachloroethene	ug/L	140	6.7	6.6	75	67	< 1 U	7.4
Toluene	ug/L	< 5 U	< 1 U	< 1 U	< 2 U	< 2 U	< 1 U	< 1 U
trans-1,2-Dichloroethene	ug/L	1.5 J	< 1 U	< 1 U	0.67 J	0.76 J	< 1 U	< 1 U
Trichloroethene	ug/L	86	4.9	5	61	47	< 1 U	< 1 U
Vinyl chloride	ug/L	< 5 U	< 1 U	< 1 U	< 2 U	< 2 U	< 1 U	< 1 U
Xylene (total)	ug/L	< 10 U	< 2 U	< 2 U	< 4 U	< 4 U	< 2 U	< 2 U

ug/L - Micrograms per liter.
J - Value is estimated.
U - Nondetect.
< - Value is not detected above reporting limit shown.

Table 5. Groundwater Analytical Results for the 2006 Supplemental Investigation, General Motors Corporation, Moraine, Ohio.

	Unit	GM-56 9/14/2006 Upper Aquifer	GM-57 9/14/2006 Upper Aquifer	GM-59 9/15/2006 Upper Aquifer	GM-60 9/15/2006 Upper Aquifer	GM-62 9/14/2006 Upper Aquifer	GM-63 9/14/2006 Upper Aquifer	GM-63 12/1/2006 Upper Aquifer
Volatile Organic Compound								
1,1,1-Trichloroethane	ug/L	0.35 J	< 1 U	< 14 U	< 25 U	< 1 U	2.3 J	2.3 J
1,1-Dichloroethane	ug/L	< 1 U	< 1 U	< 14 U	< 25 U	< 1 U	1.9 J	1.9 J
1,1-Dichloroethene	ug/L	< 1 U	< 1 U	< 14 U	< 25 U	< 1 U	< 5 U	< 4 U
Benzene	ug/L	< 1 U	< 1 U	< 14 U	< 25 U	< 1 U	< 5 U	< 4 U
cis-1,2-Dichloroethene	ug/L	< 1 U	< 1 U	4 J	220	< 1 U	5.6	8.8
Ethylbenzene	ug/L	< 1 U	0.21 J	< 14 U	< 25 U	< 1 U	< 5 U	< 4 U
Tetrachloroethene	ug/L	0.57 J	1.9	310	510	15	160	140
Toluene	ug/L	< 1 U	0.48 J	< 14 U	< 25 U	0.24 J	< 5 U	< 4 U
trans-1,2-Dichloroethene	ug/L	< 1 U	< 1 U	< 14 U	< 25 U	< 1 U	1.4 J	1.3 J
Trichloroethene	ug/L	< 1 U	< 1 U	94	570	< 1 U	120	100
Vinyl chloride	ug/L	< 1 U	< 1 U	< 14 U	< 25 U	< 1 U	< 5 U	< 4 U
Xylene (total)	ug/L	< 2 U	< 2 U	< 29 U	< 50 U	< 2 U	< 10 U	< 8 U

ug/L - Micrograms per liter.
J - Value is estimated.
U - Nondetect.
< - Value is not detected above reporting limit shown.

Table 5. Groundwater Analytical Results for the 2006 Supplemental Investigation, General Motors Corporation, Moraine, Ohio.

		GM-64		GM-54	GM-58		GM-61
	Unit	9/14/2006 Upper Aquifer	12/1/2006 Upper Aquifer	9/14/2006 Lower Aquifer	9/14/2006 Lower Aquifer	11/30/2006 Lower Aquifer	9/15/2006 Lower Aquifer
Volatile Organic Compound							
1,1,1-Trichloroethane	ug/L	1.8 J	2.1 J	< 6.7 U	< 1 U	< 3.3 U	0.5 J
1,1-Dichloroethane	ug/L	1.8 J	2.1 J	< 6.7 U	< 1 U	< 3.3 U	2.2
1,1-Dichloroethene	ug/L	< 2.5 U	< 2.5 U	< 6.7 U	< 1 U	< 3.3 U	< 1.7 U
Benzene	ug/L	< 2.5 U	< 2.5 U	< 6.7 U	< 1 U	< 3.3 U	< 1.7 U
cis-1,2-Dichloroethene	ug/L	16	42	< 6.7 U	0.73 J	< 3.3 U	2.6
Ethylbenzene	ug/L	< 2.5 U	< 2.5 U	< 6.7 U	< 1 U	< 3.3 U	< 1.7 U
Tetrachloroethene	ug/L	77	85	180	4.4	85	20
Toluene	ug/L	< 2.5 U	< 2.5 U	< 6.7 U	0.4 J	< 3.3 U	0.44 J
trans-1,2-Dichloroethene	ug/L	1.6 J	2 J	< 6.7 U	< 1 U	< 3.3 U	< 1.7 U
Trichloroethene	ug/L	34	35	3.2 J	0.72 J	< 3.3 U	36
Vinyl chloride	ug/L	< 2.5 U	< 2.5 U	< 6.7 U	< 1 U	< 3.3 U	< 1.7 U
Xylene (total)	ug/L	< 5 U	< 5 U	< 13 U	< 2 U	< 6.7 U	< 3.3 U

ug/L - Micrograms per liter.
J - Value is estimated.
U - Nondetect.
< - Value is not detected above reporting limit shown.

Table 6: Comparison of Supplemental Monitoring Groundwater Results to RTLs
General Motors Corporation - Moraine, Ohio

Aquifer	Area	Well	Sample Date	Chem Class	Chemical	CASRN	Detected Conc (mg/L)	Qual	Analytical Limit (mg/L)	Value[1] (mg/L)	RTL (mg/L)	Ratio: Value to RTL
SHALLOW	ZONE S1 TO ZONE S2	GM-59	9/15/2006	VOC	1,1-Dichloroethene	75-35-4		U	2.6E-03	1.3E-03	6.5E-02	2E-02
SHALLOW	ZONE S1 TO ZONE S2	GM-59	9/15/2006	VOC	cis-1,2-Dichloroethene	156-59-2	4.0E-03	J	3.0E-03	4.0E-03	6.5E-01	6E-03
SHALLOW	ZONE S1 TO ZONE S2	GM-59	9/15/2006	VOC	Tetrachloroethene	127-18-4	3.1E-01		2.7E-03	3.1E-01	4.6E-02	**7E+00**
SHALLOW	ZONE S1 TO ZONE S2	GM-59	9/15/2006	VOC	Trichloroethene	79-01-6	9.4E-02		4.0E-03	9.4E-02	4.6E-02	**2E+00**
SHALLOW	ZONE S1 TO ZONE S2	GM-59	9/15/2006	VOC	Vinyl Chloride	75-01-4		U	3.0E-03	1.5E-03	1.8E-02	8E-02
SHALLOW	ZONE S1 TO ZONE S2	GM-60	9/15/2006	VOC	1,1-Dichloroethene	75-35-4		U	4.5E-03	2.3E-03	6.5E-02	3E-02
SHALLOW	ZONE S1 TO ZONE S2	GM-60	9/15/2006	VOC	cis-1,2-Dichloroethene	156-59-2	2.2E-01		5.2E-03	2.2E-01	6.5E-01	3E-01
SHALLOW	ZONE S1 TO ZONE S2	GM-60	9/15/2006	VOC	Tetrachloroethene	127-18-4	5.1E-01		4.8E-03	5.1E-01	4.6E-02	**1E+01**
SHALLOW	ZONE S1 TO ZONE S2	GM-60	9/15/2006	VOC	Trichloroethene	79-01-6	5.7E-01		7.0E-03	5.7E-01	4.6E-02	**1E+01**
SHALLOW	ZONE S1 TO ZONE S2	GM-60	9/15/2006	VOC	Vinyl Chloride	75-01-4		U	5.2E-03	2.6E-03	1.8E-02	1E-01
SHALLOW	ZONE S2 TO ZONE S3	GM-53	9/14/2006	VOC	1,1-Dichloroethene	75-35-4		U	1.8E-04	9.0E-05	3.7E-02	2E-03
SHALLOW	ZONE S2 TO ZONE S3	GM-53	9/14/2006	VOC	cis-1,2-Dichloroethene	156-59-2		U	2.1E-04	1.1E-04	3.7E-01	3E-04
SHALLOW	ZONE S2 TO ZONE S3	GM-53	9/14/2006	VOC	Tetrachloroethene	127-18-4		U	1.9E-04	9.5E-05	2.6E-02	4E-03
SHALLOW	ZONE S2 TO ZONE S3	GM-53	9/14/2006	VOC	Trichloroethene	79-01-6		U	2.8E-04	1.4E-04	2.6E-02	5E-03
SHALLOW	ZONE S2 TO ZONE S3	GM-53	9/14/2006	VOC	Vinyl Chloride	75-01-4		U	2.1E-04	1.1E-04	1.1E-02	1E-02
SHALLOW	ZONE S3	GM-63	9/14/2006	VOC	1,1-Dichloroethene	75-35-4		U	9.0E-04	4.5E-04	2.6E-02	2E-02
SHALLOW	ZONE S3	GM-63	9/14/2006	VOC	cis-1,2-Dichloroethene	156-59-2	5.2E-03	J	1.0E-03	5.6E-03	2.6E-01	2E-02
SHALLOW	ZONE S3	GM-63	9/14/2006	VOC	Tetrachloroethene	127-18-4	1.4E-01		9.5E-04	1.6E-01	1.9E-02	**8E+00**
SHALLOW	ZONE S3	GM-63	9/14/2006	VOC	Trichloroethene	79-01-6	1.1E-01		1.4E-03	1.2E-01	1.9E-02	**6E+00**
SHALLOW	ZONE S3	GM-63	9/14/2006	VOC	Vinyl Chloride	75-01-4		U	1.0E-03	5.0E-04	7.0E-03	7E-02
SHALLOW	ZONE S3	GM-64	9/14/2006	VOC	1,1-Dichloroethene	75-35-4		U	4.5E-04	2.3E-04	2.6E-02	9E-03
SHALLOW	ZONE S3	GM-64	9/14/2006	VOC	cis-1,2-Dichloroethene	156-59-2	1.6E-02		5.2E-04	1.6E-02	2.6E-01	6E-02
SHALLOW	ZONE S3	GM-64	9/14/2006	VOC	Tetrachloroethene	127-18-4	7.7E-02		4.8E-04	7.7E-02	1.9E-02	**4E+00**
SHALLOW	ZONE S3	GM-64	9/14/2006	VOC	Trichloroethene	79-01-6	3.4E-02		7.0E-04	3.4E-02	1.9E-02	**2E+00**
SHALLOW	ZONE S3	GM-64	9/14/2006	VOC	Vinyl Chloride	75-01-4		U	5.2E-04	2.6E-04	7.0E-03	4E-02
SHALLOW	ZONE S3 TO GM-10	GM-47	2/23/2006	VOC	1,1-Dichloroethene	75-35-4		U	4.7E-04	2.4E-04	2.1E-02	1E-02
SHALLOW	ZONE S3 TO GM-10	GM-47	2/23/2006	VOC	cis-1,2-Dichloroethene	156-59-2	4.6E-03		5.6E-04	4.6E-03	2.1E-01	2E-02
SHALLOW	ZONE S3 TO GM-10	GM-47	2/23/2006	VOC	Tetrachloroethene	127-18-4	1.4E-01		5.4E-04	1.4E-01	1.5E-02	**9E+00**
SHALLOW	ZONE S3 TO GM-10	GM-47	2/23/2006	VOC	Trichloroethene	79-01-6	1.1E-01		4.8E-04	1.1E-01	1.5E-02	**7E+00**
SHALLOW	ZONE S3 TO GM-10	GM-47	2/23/2006	VOC	Vinyl Chloride	75-01-4		U	3.6E-04	1.8E-04	6.0E-03	3E-02
SHALLOW	ZONE S3 TO GM-10	GM-47	2/24/2006	VOC	1,1-Dichloroethene	75-35-4		U	4.7E-04	2.4E-04	2.1E-02	1E-02
SHALLOW	ZONE S3 TO GM-10	GM-47	2/24/2006	VOC	cis-1,2-Dichloroethene	156-59-2	5.7E-03		5.6E-04	5.7E-03	2.1E-01	3E-02
SHALLOW	ZONE S3 TO GM-10	GM-47	2/24/2006	VOC	cis-1,2-Dichloroethene	156-59-2	9.8E-03		5.6E-04	9.8E-03	2.1E-01	5E-02
SHALLOW	ZONE S3 TO GM-10	GM-47	2/24/2006	VOC	Tetrachloroethene	127-18-4	6.9E-02		5.4E-04	6.9E-02	1.5E-02	**5E+00**
SHALLOW	ZONE S3 TO GM-10	GM-47	2/24/2006	VOC	Tetrachloroethene	127-18-4	1.4E-01		5.4E-03	1.4E-01	1.5E-02	**1E+01**
SHALLOW	ZONE S3 TO GM-10	GM-47	2/24/2006	VOC	Trichloroethene	79-01-6	5.0E-02		4.8E-04	5.0E-02	1.5E-02	**3E+00**
SHALLOW	ZONE S3 TO GM-10	GM-47	2/24/2006	VOC	Trichloroethene	79-01-6	1.1E-01		4.8E-04	1.1E-01	1.5E-02	**7E+00**

Table 6: Comparison of Supplemental Monitoring Groundwater Results to RTLs
General Motors Corporation - Moraine, Ohio

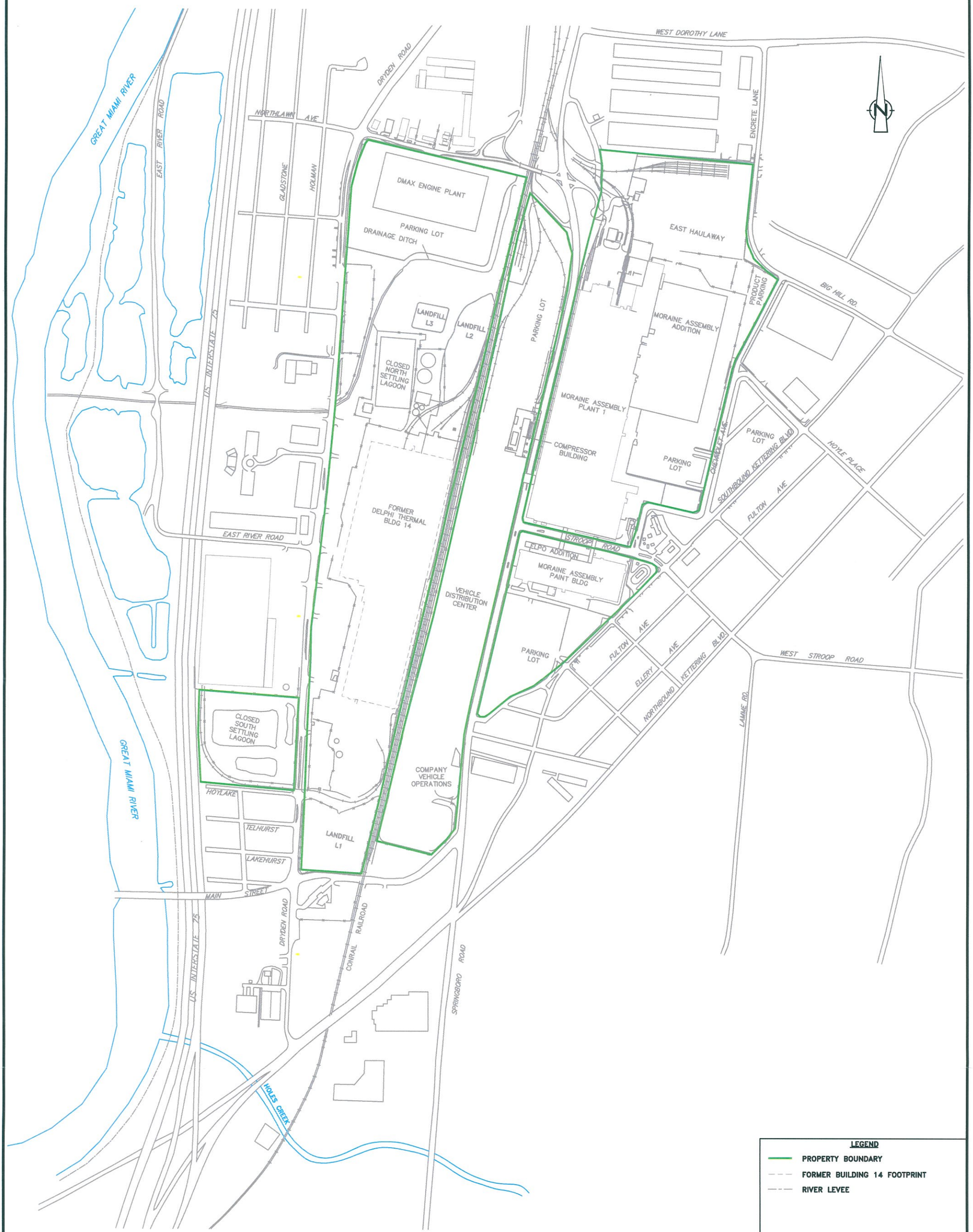
Aquifer	Area	Well	Sample Date	Chem Class	Chemical	CASRN	Detected Conc (mg/L)	Qual	Analytical Limit (mg/L)	Value[1] (mg/L)	RTL (mg/L)	Ratio: Value to RTL
SHALLOW	ZONE S3 TO GM-10	GM-47	2/24/2006	VOC	Vinyl Chloride	75-01-4		U	3.6E-04	1.8E-04	6.0E-03	3E-02
SHALLOW	ZONE S3 TO GM-10	GM-47	3/1/2006	VOC	1,1-Dichloroethene	75-35-4		U	1.8E-04	9.0E-05	2.1E-02	4E-03
SHALLOW	ZONE S3 TO GM-10	GM-47	3/1/2006	VOC	cis-1,2-Dichloroethene	156-59-2	7.2E-03		2.1E-04	7.2E-03	2.1E-01	3E-02
SHALLOW	ZONE S3 TO GM-10	GM-47	3/1/2006	VOC	Tetrachloroethene	127-18-4	7.7E-02		1.9E-04	7.8E-02	1.5E-02	**5E+00**
SHALLOW	ZONE S3 TO GM-10	GM-47	3/1/2006	VOC	Trichloroethene	79-01-6	4.9E-02		2.8E-04	5.0E-02	1.5E-02	**3E+00**
SHALLOW	ZONE S3 TO GM-10	GM-47	3/1/2006	VOC	Vinyl Chloride	75-01-4		U	2.1E-04	1.1E-04	6.0E-03	2E-02
SHALLOW	ZONE S3 TO GM-10	GM-47	9/19/2006	VOC	1,1-Dichloroethene	75-35-4		U	3.6E-04	1.8E-04	2.1E-02	9E-03
SHALLOW	ZONE S3 TO GM-10	GM-47	9/19/2006	VOC	cis-1,2-Dichloroethene	156-59-2	9.5E-03		4.2E-04	9.5E-03	2.1E-01	5E-02
SHALLOW	ZONE S3 TO GM-10	GM-47	9/19/2006	VOC	Tetrachloroethene	127-18-4	6.4E-02		3.8E-04	6.4E-02	1.5E-02	**4E+00**
SHALLOW	ZONE S3 TO GM-10	GM-47	9/19/2006	VOC	Trichloroethene	79-01-6	4.4E-02		5.6E-04	4.4E-02	1.5E-02	**3E+00**
SHALLOW	ZONE S3 TO GM-10	GM-47	9/19/2006	VOC	Vinyl Chloride	75-01-4		U	4.2E-04	2.1E-04	6.0E-03	4E-02
SHALLOW	ZONE S3 TO GM-10	GM-48	2/22/2006	VOC	1,1-Dichloroethene	75-35-4		U	4.7E-04	2.4E-04	2.1E-02	1E-02
SHALLOW	ZONE S3 TO GM-10	GM-48	2/22/2006	VOC	cis-1,2-Dichloroethene	156-59-2		U	5.6E-04	2.8E-04	2.1E-01	1E-03
SHALLOW	ZONE S3 TO GM-10	GM-48	2/22/2006	VOC	Tetrachloroethene	127-18-4	1.7E-03		5.4E-04	1.7E-03	1.5E-02	1E-01
SHALLOW	ZONE S3 TO GM-10	GM-48	2/22/2006	VOC	Tetrachloroethene	127-18-4	7.8E-03		5.4E-04	7.2E-03	1.5E-02	5E-01
SHALLOW	ZONE S3 TO GM-10	GM-48	2/22/2006	VOC	Trichloroethene	79-01-6	5.5E-03		4.8E-04	5.2E-03	1.5E-02	3E-01
SHALLOW	ZONE S3 TO GM-10	GM-48	2/22/2006	VOC	Trichloroethene	79-01-6	9.9E-03		4.8E-04	9.9E-03	1.5E-02	7E-01
SHALLOW	ZONE S3 TO GM-10	GM-48	2/22/2006	VOC	Vinyl Chloride	75-01-4		U	3.6E-04	1.8E-04	6.0E-03	3E-02
SHALLOW	ZONE S3 TO GM-10	GM-48	2/23/2006	VOC	1,1-Dichloroethene	75-35-4		U	4.7E-04	2.4E-04	2.1E-02	1E-02
SHALLOW	ZONE S3 TO GM-10	GM-48	2/23/2006	VOC	cis-1,2-Dichloroethene	156-59-2	8.6E-04	J	5.6E-04	8.6E-04	2.1E-01	4E-03
SHALLOW	ZONE S3 TO GM-10	GM-48	2/23/2006	VOC	Tetrachloroethene	127-18-4		U	5.4E-04	2.7E-04	1.5E-02	2E-02
SHALLOW	ZONE S3 TO GM-10	GM-48	2/23/2006	VOC	Trichloroethene	79-01-6	2.7E-03		4.8E-04	2.7E-03	1.5E-02	2E-01
SHALLOW	ZONE S3 TO GM-10	GM-48	2/23/2006	VOC	Vinyl Chloride	75-01-4		U	3.6E-04	1.8E-04	6.0E-03	3E-02
SHALLOW	ZONE S3 TO GM-10	GM-48	3/1/2006	VOC	1,1-Dichloroethene	75-35-4		U	1.8E-04	9.0E-05	2.1E-02	4E-03
SHALLOW	ZONE S3 TO GM-10	GM-48	3/1/2006	VOC	cis-1,2-Dichloroethene	156-59-2	7.0E-04	J	2.1E-04	7.0E-04	2.1E-01	3E-03
SHALLOW	ZONE S3 TO GM-10	GM-48	3/1/2006	VOC	Tetrachloroethene	127-18-4		U	1.9E-04	9.5E-05	1.5E-02	6E-03
SHALLOW	ZONE S3 TO GM-10	GM-48	3/1/2006	VOC	Trichloroethene	79-01-6	2.1E-03		2.8E-04	2.1E-03	1.5E-02	1E-01
SHALLOW	ZONE S3 TO GM-10	GM-48	3/1/2006	VOC	Vinyl Chloride	75-01-4		U	2.1E-04	1.1E-04	6.0E-03	2E-02
SHALLOW	ZONE S3 TO GM-10	GM-50	4/28/2006	VOC	1,1-Dichloroethene	75-35-4		U	9.0E-04	4.5E-04	2.1E-02	2E-02
SHALLOW	ZONE S3 TO GM-10	GM-50	4/28/2006	VOC	cis-1,2-Dichloroethene	156-59-2	5.3E-03		1.0E-03	5.2E-03	2.1E-01	3E-02
SHALLOW	ZONE S3 TO GM-10	GM-50	4/28/2006	VOC	Tetrachloroethene	127-18-4	1.8E-01		9.5E-04	1.8E-01	1.5E-02	**1E+01**
SHALLOW	ZONE S3 TO GM-10	GM-50	4/28/2006	VOC	Trichloroethene	79-01-6	1.2E-01		1.4E-03	1.2E-01	1.5E-02	**8E+00**
SHALLOW	ZONE S3 TO GM-10	GM-50	4/28/2006	VOC	Vinyl Chloride	75-01-4		U	1.0E-03	5.0E-04	6.0E-03	8E-02
SHALLOW	ZONE S3 TO GM-10	GM-50	9/19/2006	VOC	1,1-Dichloroethene	75-35-4		U	1.1E-03	5.0E-04	2.1E-02	2E-02
SHALLOW	ZONE S3 TO GM-10	GM-50	9/19/2006	VOC	cis-1,2-Dichloroethene	156-59-2	1.3E-02		1.3E-03	1.3E-02	2.1E-01	6E-02

Table 6: Comparison of Supplemental Monitoring Groundwater Results to RTLs
General Motors Corporation - Moraine, Ohio

Aquifer	Area	Well	Sample Date	Chem Class	Chemical	CASRN	Detected Conc (mg/L)	Qual	Analytical Limit (mg/L)	Value[1] (mg/L)	RTL (mg/L)	Ratio: Value to RTL
SHALLOW	ZONE S3 TO GM-10	GM-50	9/19/2006	VOC	Tetrachloroethene	127-18-4	1.5E-01		1.2E-03	1.5E-01	1.5E-02	**1E+01**
SHALLOW	ZONE S3 TO GM-10	GM-50	9/19/2006	VOC	Trichloroethene	79-01-6	8.2E-02		1.7E-03	8.4E-02	1.5E-02	**6E+00**
SHALLOW	ZONE S3 TO GM-10	GM-50	9/19/2006	VOC	Vinyl Chloride	75-01-4		U	1.3E-03	6.0E-04	6.0E-03	1E-01
SHALLOW	ZONE S3 TO GM-10	GM-51	4/28/2006	VOC	1,1-Dichloroethene	75-35-4		U	1.8E-04	9.0E-05	2.1E-02	4E-03
SHALLOW	ZONE S3 TO GM-10	GM-51	4/28/2006	VOC	cis-1,2-Dichloroethene	156-59-2	3.2E-04	J	2.1E-04	3.2E-04	2.1E-01	2E-03
SHALLOW	ZONE S3 TO GM-10	GM-51	4/28/2006	VOC	Tetrachloroethene	127-18-4	6.7E-03		1.9E-04	6.7E-03	1.5E-02	4E-01
SHALLOW	ZONE S3 TO GM-10	GM-51	4/28/2006	VOC	Trichloroethene	79-01-6	4.9E-03		2.8E-04	4.9E-03	1.5E-02	3E-01
SHALLOW	ZONE S3 TO GM-10	GM-51	4/28/2006	VOC	Vinyl Chloride	75-01-4		U	2.1E-04	1.1E-04	6.0E-03	2E-02
SHALLOW	GM-10	GM-49	2/24/2006	VOC	1,1-Dichloroethene	75-35-4		U	4.7E-04	2.4E-04	1.5E-02	2E-02
SHALLOW	GM-10	GM-49	2/24/2006	VOC	cis-1,2-Dichloroethene	156-59-2	2.4E-03		5.6E-04	2.4E-03	1.5E-01	2E-02
SHALLOW	GM-10	GM-49	2/24/2006	VOC	Tetrachloroethene	127-18-4	5.2E-02		5.4E-04	5.2E-02	1.1E-02	**5E+00**
SHALLOW	GM-10	GM-49	2/24/2006	VOC	Trichloroethene	79-01-6	5.1E-02		4.8E-04	5.1E-02	1.1E-02	**5E+00**
SHALLOW	GM-10	GM-49	2/24/2006	VOC	Vinyl Chloride	75-01-4		U	3.6E-04	1.8E-04	4.0E-03	5E-02
SHALLOW	GM-10	GM-49	2/25/2006	VOC	1,1-Dichloroethene	75-35-4		U	4.7E-04	2.4E-04	1.5E-02	2E-02
SHALLOW	GM-10	GM-49	2/25/2006	VOC	cis-1,2-Dichloroethene	156-59-2	3.0E-03		5.6E-04	3.0E-03	1.5E-01	2E-02
SHALLOW	GM-10	GM-49	2/25/2006	VOC	Tetrachloroethene	127-18-4	3.2E-03		5.4E-04	3.2E-03	1.1E-02	3E-01
SHALLOW	GM-10	GM-49	2/25/2006	VOC	Tetrachloroethene	127-18-4	3.4E-02		5.4E-04	3.4E-02	1.1E-02	**3E+00**
SHALLOW	GM-10	GM-49	2/25/2006	VOC	Trichloroethene	79-01-6	6.4E-03		4.8E-04	6.4E-03	1.1E-02	6E-01
SHALLOW	GM-10	GM-49	2/25/2006	VOC	Trichloroethene	79-01-6	3.5E-02		4.8E-04	3.5E-02	1.1E-02	**3E+00**
SHALLOW	GM-10	GM-49	2/25/2006	VOC	Vinyl Chloride	75-01-4		U	3.6E-04	1.8E-04	4.0E-03	5E-02
SHALLOW	GM-10	GM-49	3/1/2006	VOC	1,1-Dichloroethene	75-35-4		U	1.8E-04	9.0E-05	1.5E-02	6E-03
SHALLOW	GM-10	GM-49	3/1/2006	VOC	cis-1,2-Dichloroethene	156-59-2	4.7E-03		2.1E-04	4.7E-03	1.5E-01	3E-02
SHALLOW	GM-10	GM-49	3/1/2006	VOC	Tetrachloroethene	127-18-4	2.5E-03		1.9E-04	2.5E-03	1.1E-02	2E-01
SHALLOW	GM-10	GM-49	3/1/2006	VOC	Trichloroethene	79-01-6	8.4E-03		2.8E-04	8.4E-03	1.1E-02	8E-01
SHALLOW	GM-10	GM-49	3/1/2006	VOC	Vinyl Chloride	75-01-4		U	2.1E-04	1.1E-04	4.0E-03	3E-02
SHALLOW	GM-10	GM-52	4/28/2006	VOC	1,1-Dichloroethene	75-35-4		U	3.6E-04	1.8E-04	1.5E-02	1E-02
SHALLOW	GM-10	GM-52	4/28/2006	VOC	cis-1,2-Dichloroethene	156-59-2	1.9E-03	J	4.2E-04	1.9E-03	1.5E-01	1E-02
SHALLOW	GM-10	GM-52	4/28/2006	VOC	Tetrachloroethene	127-18-4	7.5E-02		3.8E-04	7.5E-02	1.1E-02	**7E+00**
SHALLOW	GM-10	GM-52	4/28/2006	VOC	Trichloroethene	79-01-6	6.1E-02		5.6E-04	6.1E-02	1.1E-02	**6E+00**
SHALLOW	GM-10	GM-52	4/28/2006	VOC	Vinyl Chloride	75-01-4		U	4.2E-04	2.1E-04	4.0E-03	5E-02
SHALLOW	GM-10	GM-55	9/14/2006	VOC	1,1-Dichloroethene	75-35-4		U	1.8E-04	9.0E-05	1.5E-02	6E-03
SHALLOW	GM-10	GM-55	9/14/2006	VOC	cis-1,2-Dichloroethene	156-59-2		U	2.1E-04	1.1E-04	1.5E-01	7E-04
SHALLOW	GM-10	GM-55	9/14/2006	VOC	Tetrachloroethene	127-18-4	7.4E-03		1.9E-04	7.4E-03	1.1E-02	7E-01
SHALLOW	GM-10	GM-55	9/14/2006	VOC	Trichloroethene	79-01-6		U	2.8E-04	1.4E-04	1.1E-02	1E-02
SHALLOW	GM-10	GM-55	9/14/2006	VOC	Vinyl Chloride	75-01-4		U	2.1E-04	1.1E-04	4.0E-03	3E-02
SHALLOW	GM-10	GM-62	9/14/2006	VOC	1,1-Dichloroethene	75-35-4		U	1.8E-04	9.0E-05	1.5E-02	6E-03
SHALLOW	GM-10	GM-62	9/14/2006	VOC	cis-1,2-Dichloroethene	156-59-2		U	2.1E-04	1.1E-04	1.5E-01	7E-04

Table 6: Comparison of Supplemental Monitoring Groundwater Results to RTLs
General Motors Corporation - Moraine, Ohio

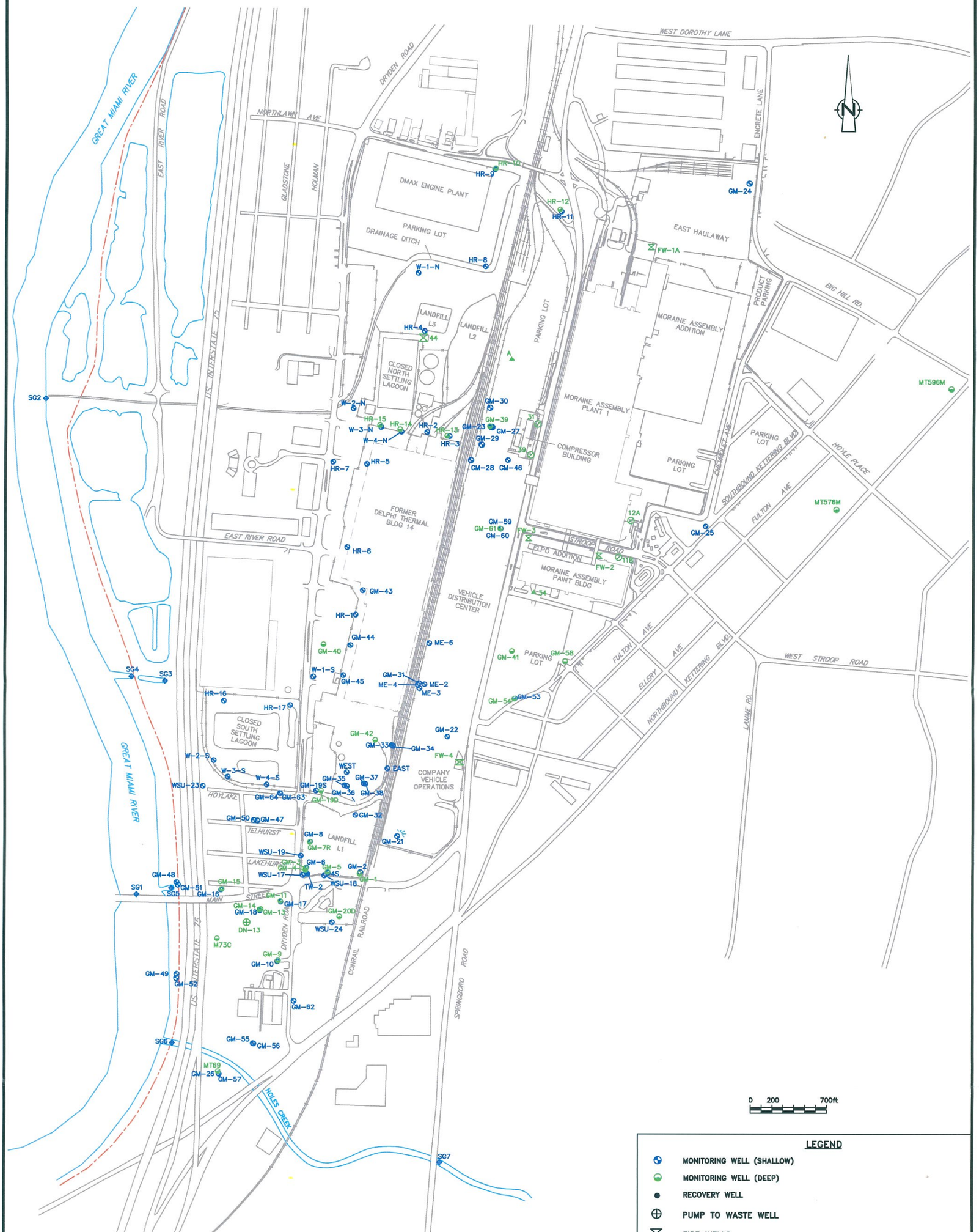
Aquifer	Area	Well	Sample Date	Chem Class	Chemical	CASRN	Detected Conc (mg/L)	Qual	Analytical Limit (mg/L)	Value[1] (mg/L)	RTL (mg/L)	Ratio: Value to RTL
SHALLOW	GM-10	GM-62	9/14/2006	VOC	Tetrachloroethene	127-18-4	1.5E-02		1.9E-04	1.5E-02	1.1E-02	1E+00
SHALLOW	GM-10	GM-62	9/14/2006	VOC	Trichloroethene	79-01-6		U	2.8E-04	1.4E-04	1.1E-02	1E-02
SHALLOW	GM-10	GM-62	9/14/2006	VOC	Vinyl Chloride	75-01-4		U	2.1E-04	1.1E-04	4.0E-03	3E-02
DEEP	GM-40/41	GM-58	9/14/2006	VOC	1,1-Dichloroethene	75-35-4		U	1.8E-04	9.0E-05	3.2E-02	3E-03
DEEP	GM-40/41	GM-58	9/14/2006	VOC	cis-1,2-Dichloroethene	156-59-2	7.3E-04	J	2.1E-04	7.3E-04	3.2E-01	2E-03
DEEP	GM-40/41	GM-58	9/14/2006	VOC	Tetrachloroethene	127-18-4	4.4E-03		1.9E-04	4.4E-03	2.3E-02	2E-01
DEEP	GM-40/41	GM-58	9/14/2006	VOC	Trichloroethene	79-01-6	7.2E-04	J	2.8E-04	7.2E-04	2.3E-02	3E-02
DEEP	GM-40/41	GM-58	9/14/2006	VOC	Vinyl Chloride	75-01-4		U	2.1E-04	1.1E-04	9.0E-03	1E-02
DEEP	POC DEEP	GM-56	9/14/2006	VOC	1,1-Dichloroethene	75-35-4		U	1.8E-04	9.0E-05	7.0E-03	1E-02
DEEP	POC DEEP	GM-56	9/14/2006	VOC	cis-1,2-Dichloroethene	156-59-2		U	2.1E-04	1.1E-04	7.0E-02	2E-03
DEEP	POC DEEP	GM-56	9/14/2006	VOC	Tetrachloroethene	127-18-4	5.7E-04	J	1.9E-04	5.7E-04	5.0E-03	1E-01
DEEP	POC DEEP	GM-56	9/14/2006	VOC	Trichloroethene	79-01-6		U	2.8E-04	1.4E-04	5.0E-03	3E-02
DEEP	POC DEEP	GM-56	9/14/2006	VOC	Vinyl Chloride	75-01-4		U	2.1E-04	1.1E-04	2.0E-03	5E-02



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

SITE LAYOUT
GENERAL MOTORS CORPORATION
MORAINE, OHIO

DATE 2/27/2007	PROJECT MANAGER N. GILLOTTI	DRAWING NAME \C\SUP06\SUPP06-04
DRAWN R. SMITH	LEAD DESIGN PROF. J. REID	CHECKED T. FORTNER
PROJECT NUMBER 0H000294.0009.0003		DRAWING NUMBER 1



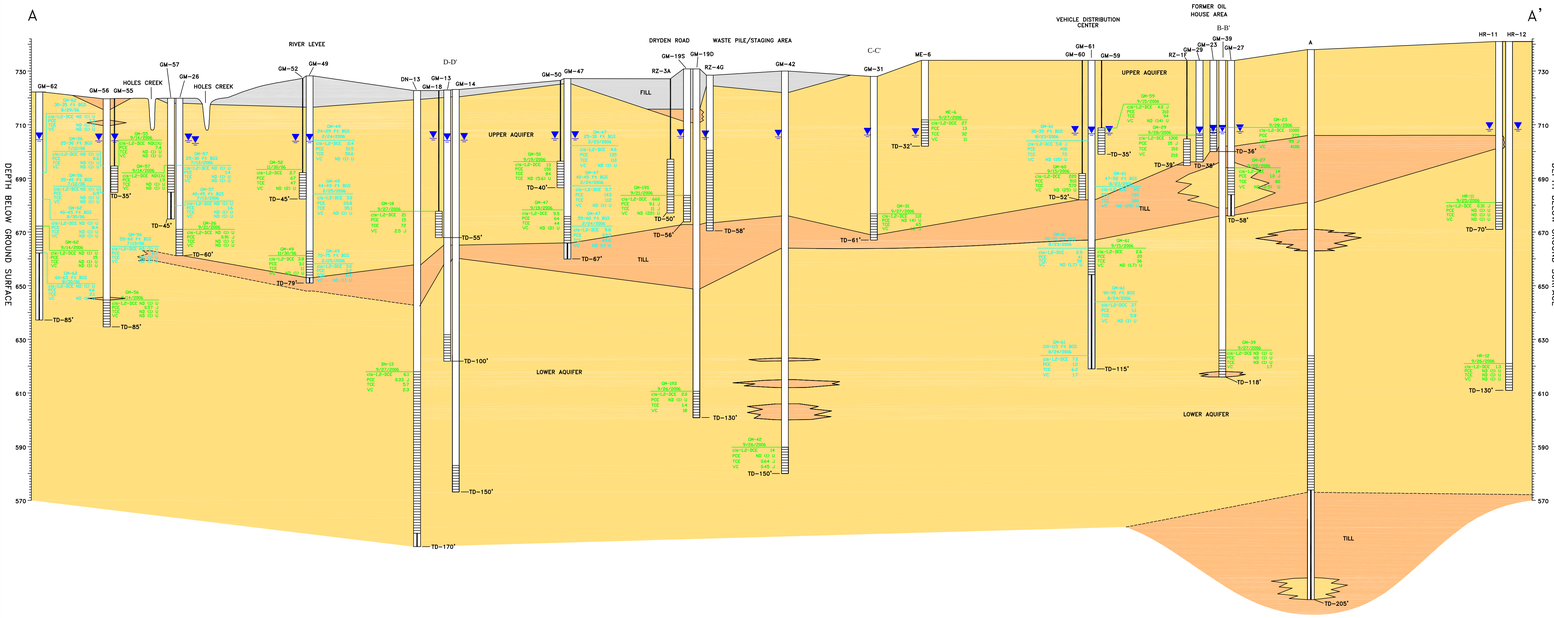
LEGEND

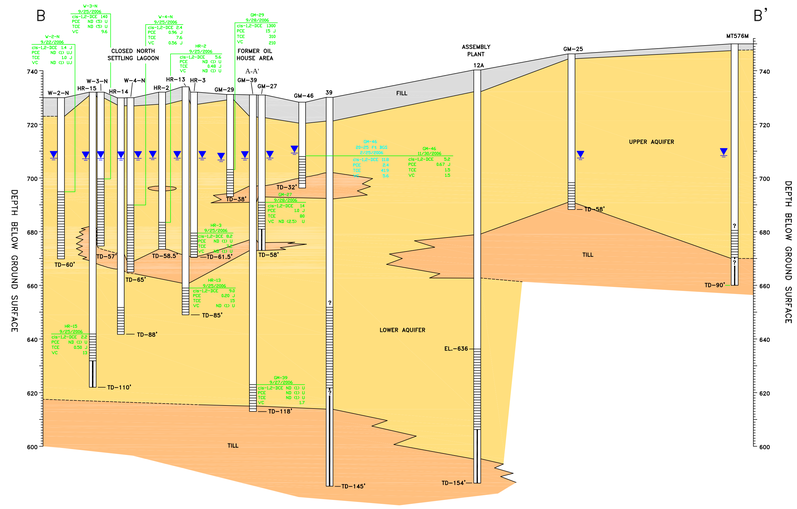
- MONITORING WELL (SHALLOW)
- MONITORING WELL (DEEP)
- RECOVERY WELL
- PUMP TO WASTE WELL
- FIRE WELLS
- INACTIVE PRODUCTION WELLS
- STREAM GAUGE
- FORMER BUILDING 14 FOOTPRINT

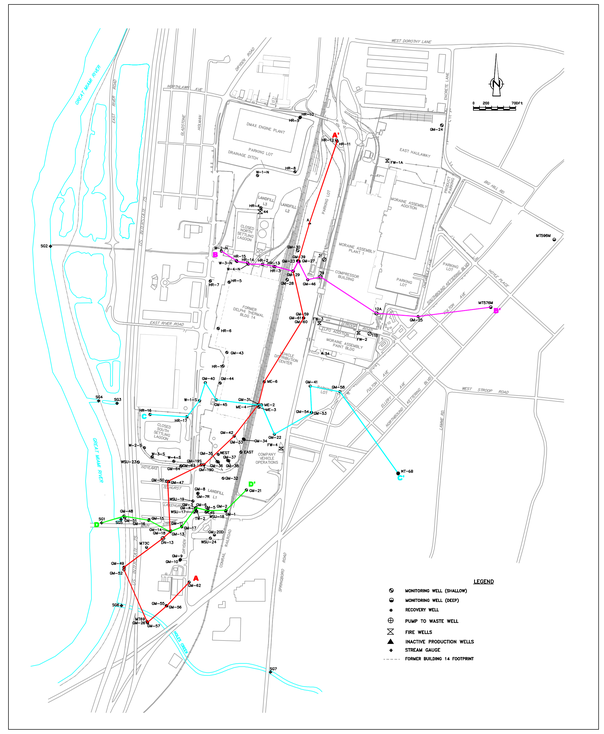
ARCADIS
284 Cramer Creek Court
Dublin, OH 43017
Tel: 614/764-2310 Fax: 614/764-1270

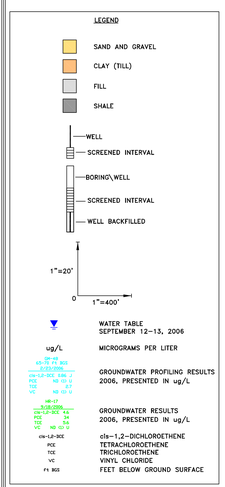
LOCATION OF SUPPLEMENTAL INVESTIGATION WELLS
GENERAL MOTORS CORPORATION
MORAINE, OHIO

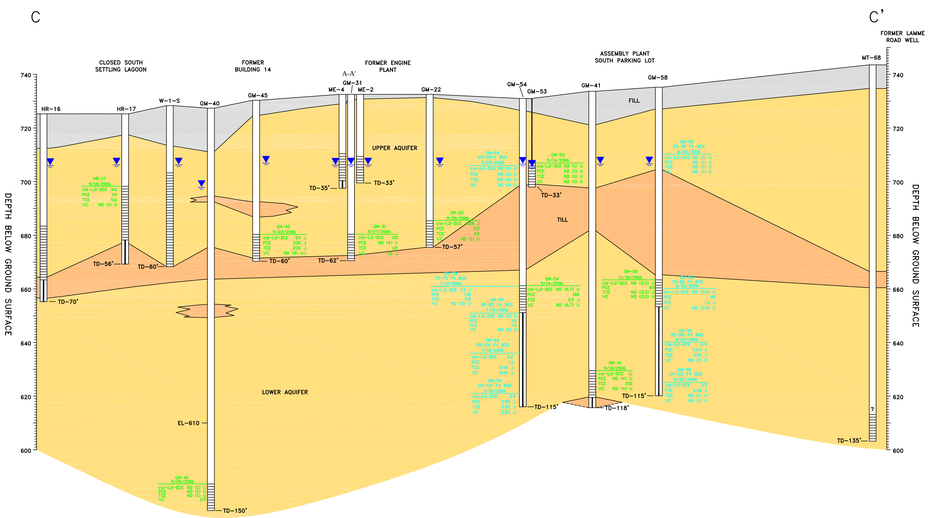
DATE	PROJECT MANAGER	DRAWING NAME
1/23/2007	N. GILLOTTI	CRA\06\SUPP06-01
DRAWN	LEAD DESIGN PROF.	CHECKED
R. SMITH	J. REID	N. GILLOTTI
PROJECT NUMBER		FIGURE NUMBER
0H000294.0009.003		2

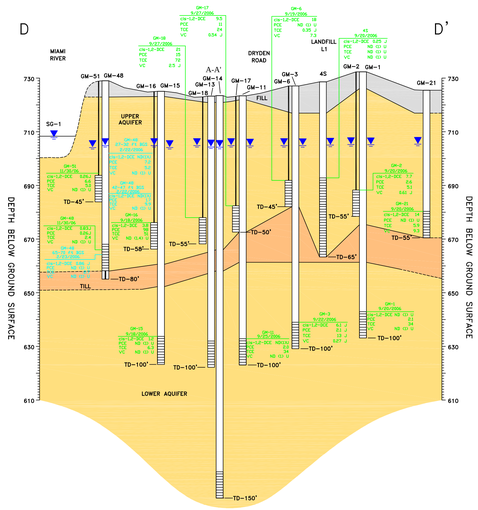






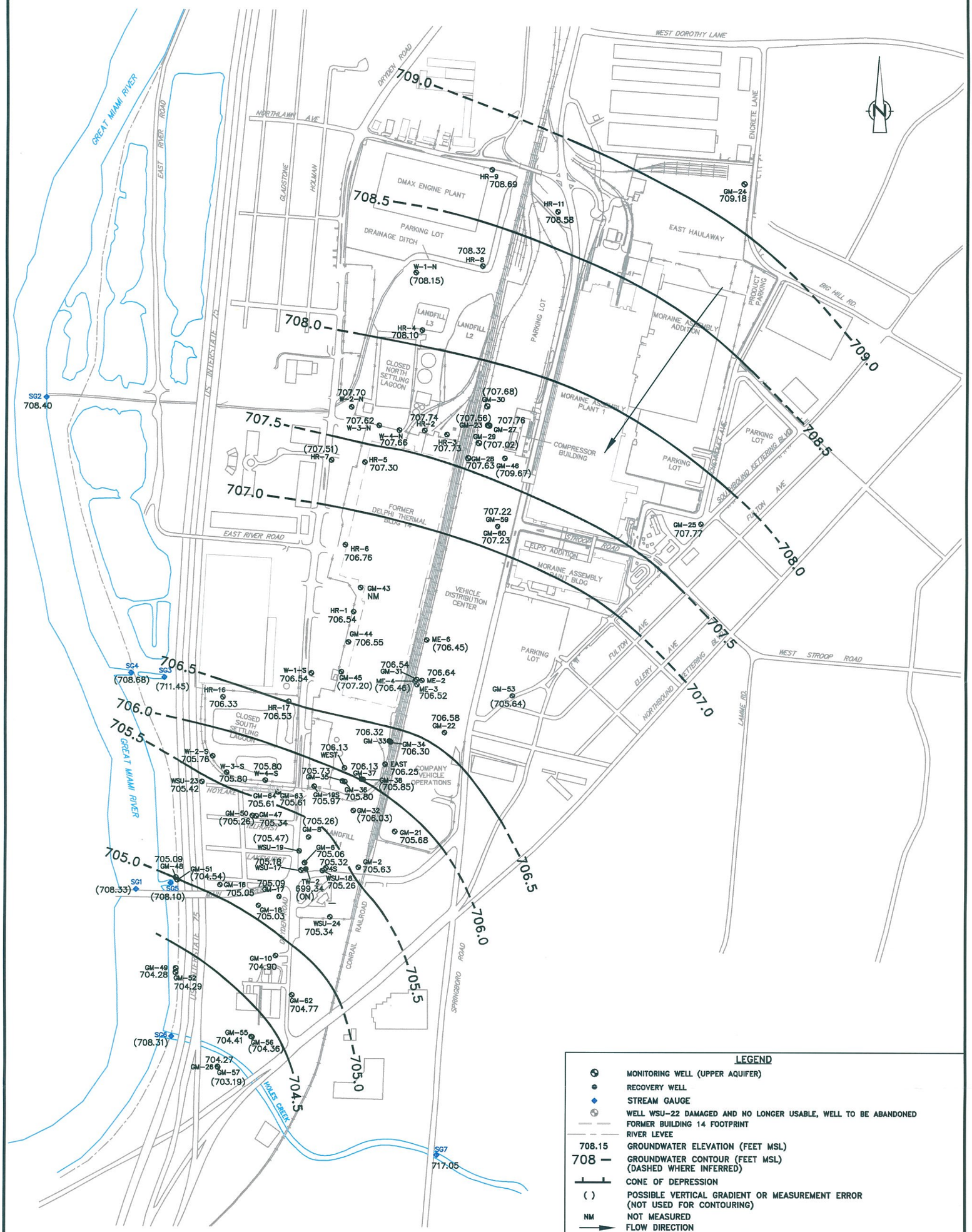






GEOLOGIC CROSS-SECTIONS A-A', B-B', C-C', AND D-D' AND CROSS-SECTION LOCATION MAP
GENERAL MOTORS CORPORATION
MORAINE, OHIO

DRAWN R. SMITH	DATE 1/23/2007	PROJECT MANAGER N. GILLOTTI	DRAWING NAME \SUP\06\29406CS-ALL
		LEAD DESIGN PROF. J. REID	CHECKED T. FORTNER
		PROJECT NUMBER 0H000294.0009	FIGURE NUMBER 3



ARCADIS
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Dublin, OH 43017
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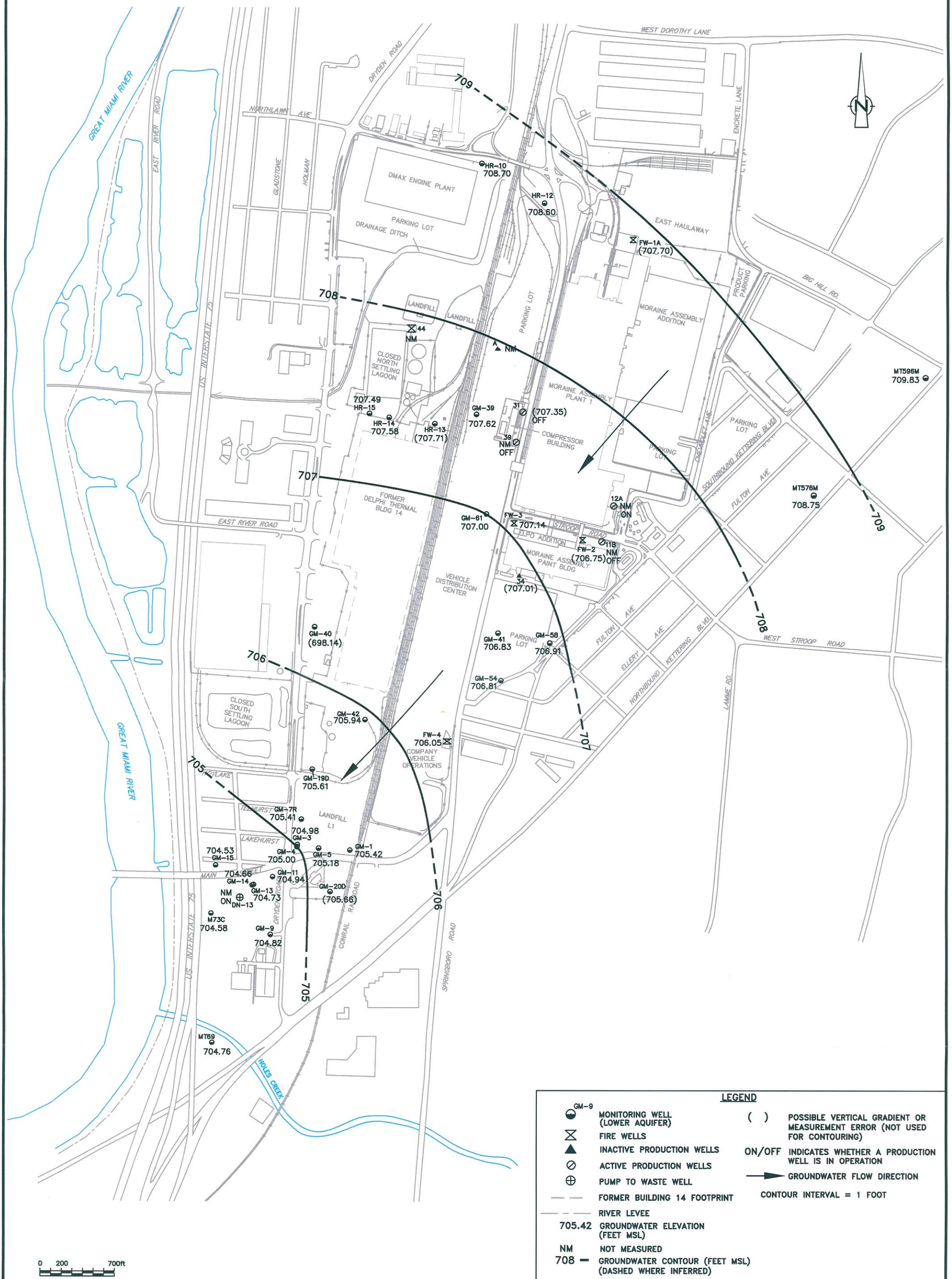
POTENTIOMETRIC SURFACE (UPPER AQUIFER) ON SEPTEMBER 12-13, 2006 GENERAL MOTORS CORPORATION MORAINE, OHIO

DATE 2/27/2007	PROJECT MANAGER N. GILLOTTI		DRAWING NAME CRA\SUP06\SUPP06-05
DRAWN R. SMITH	LEAD DESIGN PROF. J. REID		CHECKED N. GILLOTTI
PROJECT NUMBER 0H000294.0009.003			DRAWING NUMBER 4



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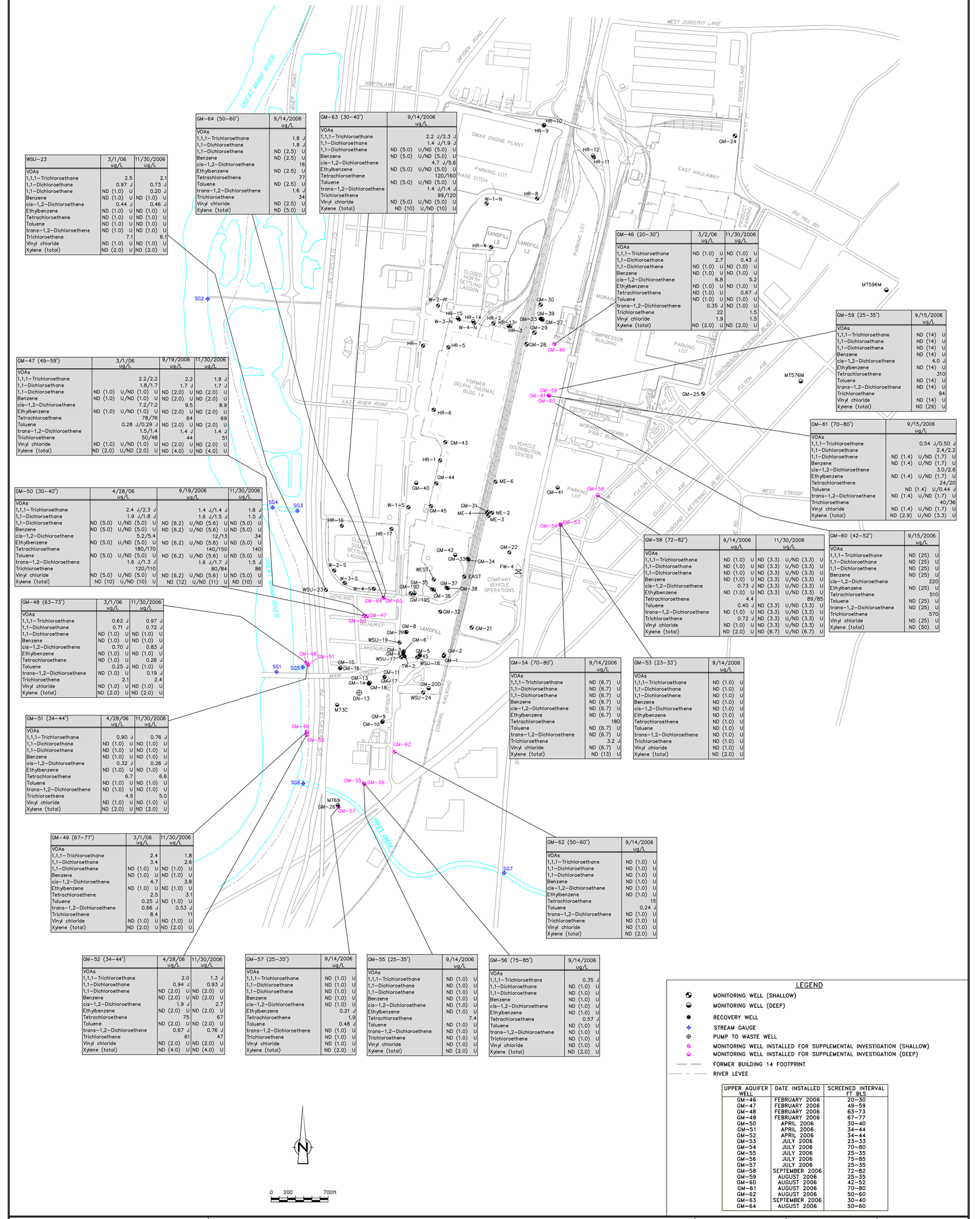
POTENTIOMETRIC SURFACE (LOWER AQUIFER) ON SEPTEMBER 12-13, 2006 GENERAL MOTORS CORPORATION MORAINE, OHIO

DATE	PROJECT MANAGER	DRAWING NAME
2/27/2007	N. GILLOTTI	C\SUP06\SUPP06-06
DRAWN	LEAD DESIGN PROF.	CHECKED
R. SMITH	J. REID	N. GILLOTTI
PROJECT NUMBER		DRAWING NUMBER
0H000294.0009.003		5



WSU-23	3/1/06 ug/L	11/30/2006 ug/L
VOAs		
1,1,1-Trichloroethane	2.5	2.1
1,1-Dichloroethane	0.97 J	0.73 J
1,1-Dichloroethene	ND (1.0) U	0.20 J
Benzene	ND (1.0) U	ND (1.0) U
cis-1,2-Dichloroethene	0.44 J	0.46 J
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 (1.0) U
Trichloroethene	7.1	6.1
Vinyl chloride	ND (1.0) U	ND (1.0) U
Xylene (total)	ND (2.0) U	ND (2.0) U

GM-64 (50-60')	9/14/2006 ug/L
VOAs	
1,1,1-Trichloroethane	1.8 J
1,1-Dichloroethane	1.8 J
1,1-Dichloroethene	ND (2.5) U
Benzene	ND (2.5) U
cis-1,2-Dichloroethene	16
Ethylbenzene	ND (2.5) U
Tetrachloroethene	77
Toluene	ND (2.5) U
trans-1,2-Dichloroethene	1.6 J
Trichloroethene	34
Vinyl chloride	ND (2.5) U
Xylene (total)	ND (5.0) U

GM-63 (30-40')	9/14/2006 ug/L
VOAs	
1,1,1-Trichloroethane	2.2 J/2.3 J
1,1-Dichloroethane	1.4 J/1.9 J
1,1-Dichloroethene	ND (5.0) U/ND (5.0) U
Benzene	ND (5.0) U/ND (5.0) U
cis-1,2-Dichloroethene	4.7 J/5.6
Ethylbenzene	ND (5.0) U/ND (5.0) U
Tetrachloroethene	120/160
Toluene	ND (5.0) U/ND (5.0) U
trans-1,2-Dichloroethene	1.4 J/1.4 J
Trichloroethene	99/120
Vinyl chloride	ND (5.0) U/ND (5.0) U
Xylene (total)	ND (10) U/ND (10) U

GM-46 (20-30')	3/2/06 ug/L	11/30/2006 ug/L
VOAs		
1,1,1-Trichloroethane	ND (1.0) U	ND (1.0) U
1,1-Dichloroethane	2.7	0.43 J
1,1-Dichloroethene	ND (1.0) U	ND (1.0) U
Benzene	ND (1.0) U	ND (1.0) U
cis-1,2-Dichloroethene	6.8	5.2
Ethylbenzene	ND (1.0) U	ND (1.0) U
Tetrachloroethene	ND (1.0) U	0.67 J
Toluene	ND (1.0) U	ND (1.0) U
trans-1,2-Dichloroethene	0.35 J	ND (1.0) U
Trichloroethene	22	1.5
Vinyl chloride	1.9	1.5
Xylene (total)	ND (2.0) U	ND (2.0) U

GM-59 (25-35')	9/15/2006 ug/L
VOAs	
1,1,1-Trichloroethane	ND (14) U
1,1-Dichloroethane	ND (14) U
1,1-Dichloroethene	ND (14) U
Benzene	ND (14) U
cis-1,2-Dichloroethene	4.0 J
Ethylbenzene	ND (14) U
Tetrachloroethene	310
Toluene	ND (14) U
trans-1,2-Dichloroethene	ND (14) U
Trichloroethene	94
Vinyl chloride	ND (14) U
Xylene (total)	ND (29) U

GM-47 (49-59')	3/1/06 ug/L	9/19/2006 ug/L	11/30/2006 ug/L
VOAs			
1,1,1-Trichloroethane	2.2/2.2	2.2	1.9 J
1,1-Dichloroethane	1.8/1.7	1.7 J	1.7 J
1,1-Dichloroethene	ND (1.0) U/ND (1.0) U	ND (2.0) U	ND (2.0) U
Benzene	ND (1.0) U/ND (1.0) U	ND (2.0) U	ND (2.0) U
cis-1,2-Dichloroethene	7.2/7.2	9.5	8.9
Ethylbenzene	ND (1.0) U/ND (1.0) U	ND (2.0) U	ND (2.0) U
Tetrachloroethene	78/76	64	69
Toluene	0.28 J/0.29 J	ND (2.0) U	ND (2.0) U
trans-1,2-Dichloroethene	1.5/1.4	1.4 J	1.4 J
Trichloroethene	50/48	44	51
Vinyl chloride	ND (1.0) U/ND (1.0) U	ND (2.0) U	ND (2.0) U
Xylene (total)	ND (2.0) U/ND (2.0) U	ND (4.0) U	ND (4.0) U

GM-61 (70-80')	9/15/2006 ug/L
VOAs	
1,1,1-Trichloroethane	0.54 J/0.50 J
1,1-Dichloroethane	2.4/2.2
1,1-Dichloroethene	ND (1.4) U/ND (1.7) U
Benzene	ND (1.4) U/ND (1.7) U
cis-1,2-Dichloroethene	3.0/2.6
Ethylbenzene	ND (1.4) U/ND (1.7) U
Tetrachloroethene	24/20
Toluene	ND (1.4) U/0.44 J
trans-1,2-Dichloroethene	ND (1.4) U/ND (1.7) U
Trichloroethene	40/36
Vinyl chloride	ND (1.4) U/ND (1.7) U
Xylene (total)	ND (2.9) U/ND (3.3) U

GM-50 (30-40')	4/28/06 ug/L	9/19/2006 ug/L	11/30/2006 ug/L
VOAs			
1,1,1-Trichloroethane	2.4 J/2.3 J	1.4 J/1.4 J	1.6 J
1,1-Dichloroethane	1.9 J/1.8 J	1.6 J/1.5 J	1.5 J
1,1-Dichloroethene	ND (5.0) U/ND (5.0) U	ND (6.2) U/ND (5.6) U	ND (5.0) U
Benzene	ND (5.0) U/ND (5.0) U	ND (6.2) U/ND (5.6) U	ND (5.0) U
cis-1,2-Dichloroethene	5.2/5.4	12/13	34
Ethylbenzene	ND (5.0) U/ND (5.0) U	ND (6.2) U/ND (5.6) U	ND (5.0) U
Tetrachloroethene	180/170	140/150	140
Toluene	ND (5.0) U/ND (5.0) U	ND (6.2) U/ND (5.6) U	ND (5.0) U
trans-1,2-Dichloroethene	1.6 J/1.3 J	1.6 J/1.7 J	1.5 J
Trichloroethene	120/110	80/84	86
Vinyl chloride	ND (5.0) U/ND (5.0) U	ND (6.2) U/ND (5.6) U	ND (5.0) U
Xylene (total)	ND (10) U/ND (10) U	ND (12) U/ND (11) U	ND (10) U

GM-58 (72-82')	9/14/2006 ug/L	11/30/2006 ug/L
VOAs		
1,1,1-Trichloroethane	ND (1.0) U	ND (3.3) U/ND (3.3) U
1,1-Dichloroethane	ND (1.0) U	ND (3.3) U/ND (3.3) U
1,1-Dichloroethene	ND (1.0) U	ND (3.3) U/ND (3.3) U
Benzene	ND (1.0) U	ND (3.3) U/ND (3.3) U
cis-1,2-Dichloroethene	0.73 J	ND (3.3) U/ND (3.3) U
Ethylbenzene	ND (1.0) U	ND (3.3) U/ND (3.3) U
Tetrachloroethene	4.4	89/85
Toluene	0.40 J	ND (3.3) U/ND (3.3) U
trans-1,2-Dichloroethene	ND (1.0) U	ND (3.3) U/ND (3.3) U
Trichloroethene	0.72 J	ND (3.3) U/ND (3.3) U
Vinyl chloride	ND (1.0) U	ND (3.3) U/ND (3.3) U
Xylene (total)	ND (2.0) U	ND (6.7) U/ND (6.7) U

GM-60 (42-52')	9/15/2006 ug/L
VOAs	
1,1,1-Trichloroethane	ND (25) U
1,1-Dichloroethane	ND (25) U
1,1-Dichloroethene	ND (25) U
Benzene	ND (25) U
cis-1,2-Dichloroethene	220
Ethylbenzene	ND (25) U
Tetrachloroethene	510
Toluene	ND (25) U
trans-1,2-Dichloroethene	ND (25) U
Trichloroethene	570
Vinyl chloride	ND (25) U
Xylene (total)	ND (50) U

GM-48 (63-73')	3/1/06 ug/L	11/30/2006 ug/L
VOAs		
1,1,1-Trichloroethane	0.62 J	0.97 J
1,1-Dichloroethane	0.71 J	0.72 J
1,1-Dichloroethene	ND (1.0) U	ND (1.0) U
Benzene	ND (1.0) U	ND (1.0) U
cis-1,2-Dichloroethene	0.70 J	0.83 J
Ethylbenzene	ND (1.0) U	ND (1.0) U
Tetrachloroethene	ND (1.0) U	0.26 J
Toluene	0.25 J	ND (1.0) U
trans-1,2-Dichloroethene	ND (1.0) U	0.19 J
Trichloroethene	2.1	2.4
Vinyl chloride	ND (1.0) U	ND (1.0) U
Xylene (total)	ND (2.0) U	ND (2.0) U

GM-54 (70-80')	9/14/2006 ug/L
VOAs	
1,1,1-Trichloroethane	ND (6.7) U
1,1-Dichloroethane	ND (6.7) U
1,1-Dichloroethene	ND (6.7) U
Benzene	ND (6.7) U
cis-1,2-Dichloroethene	ND (6.7) U
Ethylbenzene	ND (6.7) U
Tetrachloroethene	180
Toluene	ND (6.7) U
trans-1,2-Dichloroethene	ND (6.7) U
Trichloroethene	3.2 J
Vinyl chloride	ND (6.7) U
Xylene (total)	ND (13) U

GM-53 (23-33')	9/14/2006 ug/L
VOAs	
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 (2.0) U

GM-51 (34-44')	4/28/06 ug/L	11/30/2006 ug/L
VOAs		
1,1,1-Trichloroethane	0.90 J	0.76 J
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	0.32 J	0.26 J
Ethylbenzene	ND (1.0) U	ND (1.0) U
Tetrachloroethene	6.7	6.6
Toluene	ND (1.0) U	ND (1.0) U
trans-1,2-Dichloroethene	ND (1.0) U	ND (1.0) U
Trichloroethene	4.9	5.0
Vinyl chloride	ND (1.0) U	ND (1.0) U
Xylene (total)	ND (2.0) U	ND (2.0) U

GM-49 (67-77')	3/1/06 ug/L	11/30/2006 ug/L
VOAs		
1,1,1-Trichloroethane	2.4	1.8
1,1-Dichloroethane	3.4	2.6
1,1-Dichloroethene	ND (1.0) U	ND (1.0) U
Benzene	ND (1.0) U	ND (1.0) U
cis-1,2-Dichloroethene	4.7	3.8
Ethylbenzene	ND (1.0) U	ND (1.0) U
Tetrachloroethene	2.5	3.1
Toluene	0.25 J	ND (1.0) U
trans-1,2-Dichloroethene	0.66 J	0.53 J
Trichloroethene	8.4	11
Vinyl chloride	ND (1.0) U	ND (1.0) U
Xylene (total)	ND (2.0) U	ND (2.0) U

GM-62 (50-60')	9/14/2006 ug/L
VOAs	
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	15
Toluene	0.24 J
trans-1,2-Dichloroethene	ND (1.0) U
Trichloroethene	ND (1.0) U
Vinyl chloride	ND (1.0) U
Xylene (total)	ND (2.0) U

GM-52 (34-44')	4/28/06 ug/L	11/30/2006 ug/L
VOAs		
1,1,1-Trichloroethane	2.0	1.3 J
1,1-Dichloroethane	0.94 J	0.93 J
1,1-Dichloroethene	ND (2.0) U	ND (2.0) U
Benzene	ND (2.0) U	ND (2.0) U
cis-1,2-Dichloroethene	1.9 J	2.7
Ethylbenzene	ND (2.0) U	ND (2.0) U
Tetrachloroethene	75	67
Toluene	ND (2.0) U	ND (2.0) U
trans-1,2-Dichloroethene	0.67 J	0.76 J
Trichloroethene	61	47
Vinyl chloride	ND (2.0) U	ND (2.0) U
Xylene (total)	ND (4.0) U	ND (4.0) U

GM-57 (25-35')	9/14/2006 ug/L
VOAs	
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	0.21 J
Tetrachloroethene	1.9
Toluene	0.48 J
trans-1,2-Dichloroethene	ND (1.0) U
Trichloroethene	ND (1.0) U
Vinyl chloride	ND (1.0) U
Xylene (total)	ND (2.0) U

GM-55 (25-35')	9/14/2006 ug/L
VOAs	
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	7.4
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 (2.0) U

GM-56 (75-85')	9/14/2006 ug/L
VOAs	
1,1,1-Trichloroethane	0.35 J
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	0.57 J
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 (2.0) U

LEGEND

- MONITORING WELL (SHALLOW)
- MONITORING WELL (DEEP)
- RECOVERY WELL
- STREAM GAUGE
- PUMP TO WASTE WELL
- MONITORING WELL INSTALLED FOR SUPPLEMENTAL INVESTIGATION (SHALLOW)
- MONITORING WELL INSTALLED FOR SUPPLEMENTAL INVESTIGATION (DEEP)
- FORMER BUILDING 14 FOOTPRINT
- RIVER LEVEE

UPPER AQUIFER WELL	DATE INSTALLED	SCREENED INTERVAL FT BLS
GM-46	FEBRUARY 2006	20-30
GM-47	FEBRUARY 2006	49-59
GM-48	FEBRUARY 2006	63-73
GM-49	FEBRUARY 2006	67-77
GM-50	APRIL 2006	30-40
GM-51	APRIL 2006	34-44
GM-52	APRIL 2006	34-44
GM-53	JULY 2006	23-33
GM-54	JULY 2006	70-80
GM-55	JULY 2006	25-35
GM-56	JULY 2006	75-85
GM-57	JULY 2006	25-35
GM-58	SEPTEMBER 2006	72-82
GM-59	AUGUST 2006	25-35
GM-60	AUGUST 2006	42-52
GM-61	AUGUST 2006	70-80
GM-62	AUGUST 2006	50-60
GM-63	SEPTEMBER 2006	30-40
GM-64	AUGUST 2006	50-60

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

SUPPLEMENTAL INVESTIGATION VOC DATABOXES
GENERAL MOTORS CORPORATION
MORAINE, OHIO

DATE	PROJECT MANAGER	DRAWING NAME
1/24/2007	N. GILLOTTI	CRA\06\SUPP06-03
DRAWN	LEAD DESIGN PROF.	CHECKED
R. SMITH	J. REID	N. GILLOTTI
PROJECT NUMBER		DRAWING NUMBER
0H000294.0009.003		6

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Appendix A

Supplemental Investigation Well Logs

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Boring and Well Construction Logs

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Log of Boring: GM-46

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	N/A	N/A					CONCRETE	
2	N/A	24	0.0				ML	SILT Brown, clayey silt, fill, 25% gravel, dry, hard, no plasticity	
4	N/A	24	0.0				ML	SILT Brown, clayey silt, fill, 25% gravel, dry, hard, no plasticity	
6	N/A	24	0.0				ML	SILT Gray, clayey silt with 25% sand and gravel, damp, soft, no plasticity	
8	N/A	24	0.0				SW	SAND & GRAVEL Brown, silty sand with 25% gravel, damp, well graded, cobbles visible	
10	N/A	24	0.0				SW	SAND & GRAVEL Brown, silty sand with 25% gravel, damp, well graded, cobbles visible	
12									

☒ Composite Sample to Lab ■ Grab Sample to Lab ☐ Split-Spoon Not Analyzed

Drilling Co.: Prosonic Corporation
Driller: J. Sigler
Drilling Method: Rotosonic
Drilling Fluid: Water
Geologist: J. Manzo
Total Depth: 32
Surface Elev.: 728.13
North Coor.: 5130.493
Begin Drilling: 2/24/06 @ 1705
End Drilling: 2/25/06 @ 1835
Converted to Well: Y Well I.D.: GM-46
East Coor.: 6256.772
Remarks: TOC elevation 727.79.
Project No.: OH000294.0008.00002
Datum:
Filename: February 2006

ARCADIS

Log of Boring: GM-46

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	SAND & GRAVEL Brown, silty sand with 25% gravel, damp, well graded, cobbles visible	
14	N/A	24	0.0				SW	SAND & GRAVEL Brown, silty sand with 25% gravel, damp, well graded, cobbles visible	
16	N/A	24	0.0				SW	SAND & GRAVEL Brown, silty sand with 25% gravel, damp, well graded, cobbles visible	
18	N/A	24	0.0				GW	SAND & GRAVEL Gray, sand (25%) and gravel (75%), well graded, damp to wet	
20	N/A	24	0.0				GW	SAND & GRAVEL Gray, sand (25%) and gravel (75%), well graded, damp to wet	
22	N/A	24	0.0				ML	SILT Gray, clayey silt, 25% gravel, soft, medium plasticity, wet	▼
24									

☒ Composite Sample to Lab ■ Grab Sample to Lab ▥ Split-Spoon Not Analyzed

Drilling Co.: Prosonic Corporation
Geologist: J. Manzo
Begin Drilling: 2/24/06 @ 1705
Driller: J. Sigler
Total Depth: 32
End Drilling: 2/25/06 @ 1835
Drilling Method: Rotosonic
Surface Elev.: 728.13
Converted to Well: Y Well I.D.: GM-46
Drilling Fluid: Water
North Coor.: 5130.493
East Coor.: 6256.772
Remarks: TOC elevation 727.79.
Project No.: OH000294.0008.00002
Datum:
Filename: February 2006

ARCADIS

Log of Boring: GM-46

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				ML	SILT Gray, clayey silt, 25% gravel, soft, medium plasticity, wet	
								Water sample collected at 25' for analysis of site-specific VOCs.	
26	N/A	24	0.0				ML	SILT Gray, clayey silt, 25% gravel, soft, medium plasticity, wet, saturated at 27'	
28	N/A	24	0.0				CL	CLAY Gray, silty clay, hard, till, 25% gravel	
30	N/A	24	0.0				CL	CLAY Gray, silty clay, hard, till, 25% gravel	
32								End of boring	
34									
36									

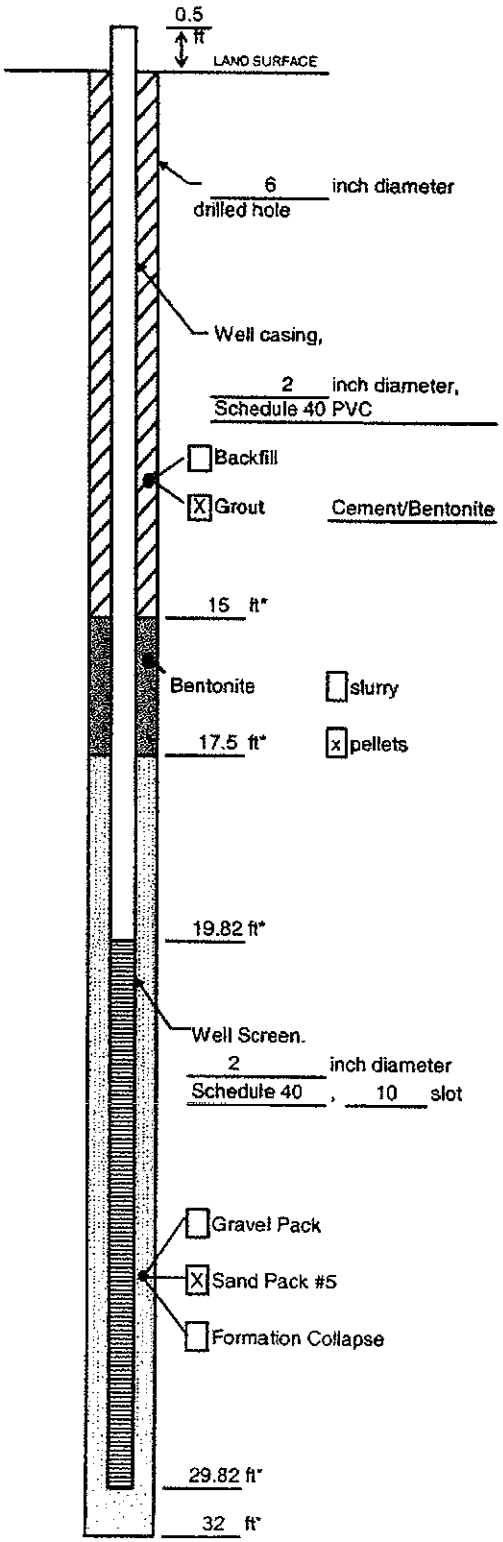
☒ Composite Sample to Lab ■ Grab Sample to Lab ▯ Split-Spoon Not Analyzed

Drilling Co.: Prosonic Corporation
Geologist: J. Manzo
Begin Drilling: 2/24/06 @ 1705
Driller: J. Sigler
Total Depth: 32
End Drilling: 2/25/06 @ 1835
Drilling Method: Rotosonic
Surface Elev.: 728.13
Converted to Well: Y Well I.D.: GM-46
Drilling Fluid: Water
North Coor.: 5130.493
East Coor.: 6256.772
Remarks: TOC elevation 727.79.
Project No.: OH000294.0008.00002
Datum:
Filename: February 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 GM-46

Town/City Moraine

County Montgomery State Ohio

Permit No. NA

Land-Surface (LS) Elevation and Datum:

728.13 feet [X] Surveyed

[ ] Estimated

Installation Date(s) 2/24-2/25/06

Drilling Method Rotosonic

Drilling Contractor Prosonic Corporation

Drilling Fluid Water

Development Technique(s) and Date(s)

Submersible pump 2/25/06

Fluid Loss During Drilling NA gallons

Water Removed During Development 200 gallons

Static Depth to Water 20.27 feet below M.P.

Pumping Depth to Water 20.27 feet below M.P.

Pumping Duration 3.00 hours

Yield 3 gpm Date 2/25/06

Specific Capacity N/A gpm/ft

Well Purpose Monitoring Well

Remarks TOC Elevation = 727.79

Prepared by J. Manzo

ARCADIS

Log of Boring: GM-47

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	12	0.0				GP	GRAVEL Poorly graded	
2	N/A	12	0.0				SW	SAND AND GRAVEL Brown, medium-fine sand with silt and 20% gravel	
4	N/A	12	0.0				SW	SAND AND GRAVEL Brown, medium-fine sand with silt and 20% gravel	
6	N/A	12	0.0				SW	SAND AND GRAVEL Brown, medium-fine sand with silt and 20% gravel	
8	N/A	24	0.0				SW	SAND AND GRAVEL Brown, medium-fine sand with silt and 20% gravel	
10	N/A	24	0.0				SW	SAND AND GRAVEL Brown, medium-fine sand with silt and 20% gravel	
12									

☒ Composite Sample to Lab ■ Grab Sample to Lab ⬚ Split-Spoon Not Analyzed

Drilling Co.: Prosonic Corporation
Driller: J. Sigler
Drilling Method: Rotosonic
Drilling Fluid: Water

Geologist: T. Fortner
Total Depth: 67
Surface Elev.: 727.03
North Coor.: 1312.270

Begin Drilling: 2/23/06 @ 1650
End Drilling: 2/24/06 @ 1126
Converted to Well: Y Well I.D.: GM-47
East Coor.: 4776.411

Remarks: TOC elevation 726.75.

Project No.: OH000294.0008.00002 Datum: Filename: February 2006

ARCADIS

Log of Boring: GM-47

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	SAND AND GRAVEL Brown, medium-fine sand with silt and 20% gravel	
14	N/A	24	0.0				GP	GRAVEL Poorly graded	
							SW	SAND & GRAVEL Brown, medium-fine sand with silt and 10% gravel	
16	N/A	24	0.0				SW	SAND AND GRAVEL Brown, medium-fine sand with silt and 30% gravel	
18	N/A	8	0.0				SW	SAND AND GRAVEL Brown, medium-fine sand with silt and 30% gravel	
20	N/A	8	0.0				SW	SAND AND GRAVEL Brown, medium-fine sand with silt and 30% gravel	
22	N/A	8	0.0				SW	SAND AND GRAVEL Brown, medium-fine sand with silt and 30% gravel	
24									

☒ Composite Sample to Lab ■ Grab Sample to Lab ⬚ Split-Spoon Not Analyzed

Drilling Co.: Prosonic Corporation
Driller: J. Sigler
Drilling Method: Rotosonic
Drilling Fluid: Water

Geologist: T. Fortner
Total Depth: 67
Surface Elev.: 727.03
North Coor.: 1312.270

Begin Drilling: 2/23/06 @ 1650
End Drilling: 2/24/06 @ 1126
Converted to Well: Y Well I.D.: GM-47
East Coor.: 4776.411

Remarks: TOC elevation 726.75.

Project No.: OH000294.0008.00002 Datum: Filename: February 2006

ARCADIS

Log of Boring: GM-47

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	8	0.0				SW	SAND AND GRAVEL Brown, medium-fine sand with silt and 30% gravel	
26	N/A	20	0.0				SW	SAND AND GRAVEL Brown, medium-fine sand with silt and 30% gravel, saturated at 27'	▼
28	N/A	20	0.0				GP	GRAVEL Poorly graded, saturated	
30	N/A	20	0.0				GW	GRAVEL Coarse, brown sand and pebbles with 50% gravel, saturated Water sample collected at 30' for site specific VOCs.	
32	N/A	20	0.0				GW	GRAVEL Coarse, brown sand and pebbles with 50% gravel, saturated	
34	N/A	20	0.0				GW	GRAVEL Pebbles with coarse-medium brown sand (30%), saturated	
36									

☒ Composite Sample to Lab ■ Grab Sample to Lab ▯ Split-Spoon Not Analyzed

Drilling Co.: Prosonic Corporation
Driller: J. Sigler
Drilling Method: Rotosonic
Drilling Fluid: Water

Geologist: T. Fortner
Total Depth: 67
Surface Elev.: 727.03
North Coor.: 1312.270

Begin Drilling: 2/23/06 @ 1650
End Drilling: 2/24/06 @ 1126
Converted to Well: Y Well I.D.: GM-47
East Coor.: 4776.411

Remarks: TOC elevation 726.75.

Project No.: OH000294.0008.00002 Datum: Filename: February 2006

ARCADIS

Log of Boring: GM-47

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	1.3				GW	GRAVEL Pebbles with coarse-medium brown sand (30%), saturated	
38	N/A	24	1.3				SW	SAND & GRAVEL Gravel, fine with medium-coarse brown sand (50%), saturated	
40	N/A	24	1.5				SW	SAND & GRAVEL Gravel, fine with medium-coarse brown sand (50%), saturated	
42	N/A	24	1.4				SW	SAND & GRAVEL Gravel, fine with medium-coarse brown sand (50%), saturated	
44	N/A	24	1.4				SW	SAND & GRAVEL Gravel, fine with medium-coarse brown sand (50%), saturated Water sample collected at 45' for site specific VOCs.	
46	N/A	20	1.4				SW	SAND & GRAVEL Coarse-medium brown sand with 20% gravel, saturated	
48									

☒ Composite Sample to Lab ■ Grab Sample to Lab ⬚ Split-Spoon Not Analyzed

Drilling Co.: Prosonic Corporation
Driller: J. Sigler
Drilling Method: Rotosonic
Drilling Fluid: Water

Geologist: T. Fortner
Total Depth: 67
Surface Elev.: 727.03
North Coor.: 1312.270

Begin Drilling: 2/23/06 @ 1650
End Drilling: 2/24/06 @ 1126
Converted to Well: Y Well I.D.: GM-47
East Coor.: 4776.411

Remarks: TOC elevation 726.75.

Project No.: OH000294.0008.00002 Datum: Filename: February 2006

ARCADIS

Log of Boring: GM-47

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	20	0.0				SW	SAND & GRAVEL Coarse-medium brown sand with 20% gravel, saturated	
50	N/A	20	0.0				SW	SAND & GRAVEL Coarse-medium brown sand with 50% fine gravel, saturated	
52	N/A	20	0.0				SW	SAND & GRAVEL Coarse-medium brown sand with 10% gravel, saturated	
54	N/A	20	0.0				SW	SAND & GRAVEL Coarse-medium brown sand with 20% gravel, saturated	
56	N/A	24	0.0				SW	SAND Coarse-medium brown sand, saturated	
58	N/A	24	0.0				SW	SAND Medium brown sand with silt, well graded, saturated	
60									

☒ Composite Sample to Lab ■ Grab Sample to Lab ⬚ Split-Spoon Not Analyzed

Drilling Co.: Prosonic Corporation
Driller: J. Sigler
Drilling Method: Rotosonic
Drilling Fluid: Water

Geologist: T. Fortner
Total Depth: 67
Surface Elev.: 727.03
North Coor.: 1312.270

Begin Drilling: 2/23/06 @ 1650
End Drilling: 2/24/06 @ 1126
Converted to Well: Y Well I.D.: GM-47
East Coor.: 4776.411

Remarks: TOC elevation 726.75.

Project No.: OH000294.0008.00002 Datum: Filename: February 2006

ARCADIS

Log of Boring: GM-47

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	CLAY Clay (till), dry, stiff-very stiff with 10-20% gravel, no plasticity. Gravel layer above till 4" Water sample collected at 60' for site specific VOCs.	
62	N/A	24	0.0				CL	CLAY Clay (till), dry, stiff-very stiff, with 10% gravel, no plasticity	
64	N/A	24	0.0				CL	CLAY Clay (till), dry, stiff-very stiff, with 10% gravel, no plasticity	
66	N/A	12	0.0				CL	CLAY Clay (till), dry, stiff-very stiff, with 20% gravel, no plasticity	
								End of boring	
68									
70									
72									

☒ Composite Sample to Lab ■ Grab Sample to Lab ⬚ Split-Spoon Not Analyzed

Drilling Co.: Prosonic Corporation
Driller: J. Sigler
Drilling Method: Rotosonic
Drilling Fluid: Water

Geologist: T. Fortner
Total Depth: 67
Surface Elev.: 727.03
North Coor.: 1312.270

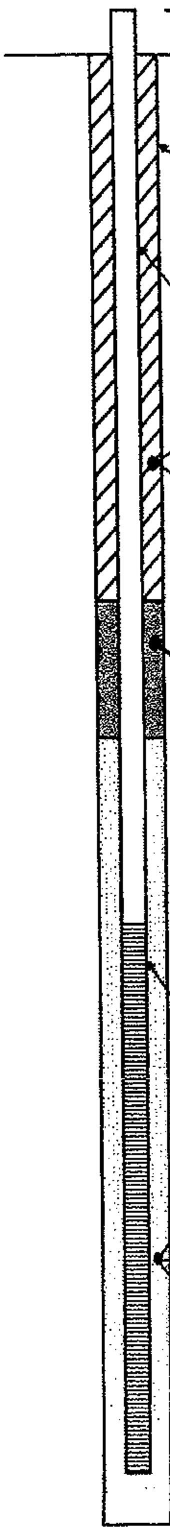
Begin Drilling: 2/23/06 @ 1650
End Drilling: 2/24/06 @ 1126
Converted to Well: Y Well I.D.: GM-47
East Coor.: 4776.411

Remarks: TOC elevation 726.75.

Project No.: OH000294.0008.00002 Datum: Filename: February 2006

ARCADIS

Well Construction Log
(Unconsolidated)



0.5 ft — LAND SURFACE

6 inch diameter drilled hole

Well casing, 2 inch diameter, Schedule 40 PVC

☐ Backfill
☒ Grout — Cement/Bentonite

45 ft*

Bentonite ☐ slurry ☒ pellets

47.5 ft*

49.40 ft*

Well Screen. 2 inch diameter, Schedule 40, 10 slot

☐ Gravel Pack
☒ Sand Pack #5
☐ Formation Collapse

59.4 ft*

59.4 ft*

Measuring Point is Top of Well Casing Unless Otherwise Noted.

* Depth Below Land Surface

Project: General Motors Corporation — Well: GM-47

Town/City: Moraine

County: Montgomery — State: Ohio

Permit No.: NA

Land-Surface (LS) Elevation and Datum:

727.03 feet ☒ Surveyed ☐ Estimated

Installation Date(s): 2/24/2006

Drilling Method: Rotosonic

Drilling Contractor: Prosonic Corporation

Drilling Fluid: Water

Development Technique(s) and Date(s)

Submersible pump 2/25/06

Fluid Loss During Drilling: NA gallons

Water Removed During Development: 600 gallons

Static Depth to Water: 21.91 feet below M.P.

Pumping Depth to Water: 50-59.5 feet below M.P.

Pumping Duration: 4.00 hours

Yield: 3 gpm — Date: 2/25/06

Specific Capacity: N/A gpm/ft

Well Purpose: Monitoring Well

Remarks: TOC Elevation = 726.75

Prepared by: J. Manzo

ARCADIS

Log of Boring: GM-48

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	SILT Brown, clayey silt with 25% sand and gravel, large cobbles present, low plasticity, hard, dry	
2	N/A	24	0.0				ML	SILT Brown, clayey silt with 25% sand and gravel, large cobbles present, low plasticity, hard, dry	
4	N/A	24	0.0				ML	SILT Gray with brown mottling, clayey silt with 25% sand and gravel, large cobbles present, low plasticity, hard, dry	
6	N/A	24	0.0				SM	SILTY SAND Brown silty sand with 25% clay, damp, large cobble present, well graded	
8	N/A	24	0.0				SM	SILTY SAND Brown silty sand with 25% clay, damp, large cobble present, well graded	
10	N/A	24	0.0				GW	GRAVEL Sand (25%) and gravel (75%), well graded, dry, cobbles present	
12									

☒ Composite Sample to Lab ■ Grab Sample to Lab ⬚ Split-Spoon Not Analyzed

Drilling Co.: Prosonic Corporation
Driller: T. Bentz
Drilling Method: Rotosonic
Drilling Fluid: Water

Geologist: J. Manzo
Total Depth: 73
Surface Elev.: 728.98
North Coor.: 610.119

Begin Drilling: 2/22/06 @ 1159
End Drilling: 2/23/06 @ 1143
Converted to Well: Y Well I.D.: GM-48
East Coor.: 4199.632

Remarks: TOC elevation 728.67.

Project No.: OH000294.0008.00002 Datum: Filename: February 2006

ARCADIS

Log of Boring: GM-48

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				GW	GRAVEL Sand (25%) and gravel (75%), well graded, dry, cobbles present	
14	N/A	24	0.0				GW	GRAVEL Sand (25%) and gravel (75%), well graded, dry, cobbles present	
16	N/A	24	0.0				GW	GRAVEL Sand (25%) and gravel (75%), well graded, dry, cobbles present	
18	N/A	24	0.0				GW	GRAVEL Sand (25%) and gravel (75%), well graded, dry, cobbles present	
20	N/A	24	0.0				GW	GRAVEL Sand (25%) and gravel (75%), well graded, dry, cobbles present	
22	N/A	24	0.0				GW	GRAVEL Sand (25%) and gravel (75%), well graded, dry, cobbles present	
24									

☒ Composite Sample to Lab ■ Grab Sample to Lab ⬚ Split-Spoon Not Analyzed

Drilling Co.: Prosonic Corporation
Driller: T. Bentz
Drilling Method: Rotosonic
Drilling Fluid: Water

Geologist: J. Manzo
Total Depth: 73
Surface Elev.: 728.98
North Coor.: 610.119

Begin Drilling: 2/22/06 @ 1159
End Drilling: 2/23/06 @ 1143
Converted to Well: Y Well I.D.: GM-48
East Coor.: 4199.632

Remarks: TOC elevation 728.67.

Project No.: OH000294.0008.00002 Datum: Filename: February 2006

ARCADIS

Log of Boring: GM-48

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				GW	GRAVEL Sand (25%) and gravel (75%), well graded, dry, cobbles present	
26	N/A	24	0.0				GW	GRAVEL Sand (25%) and gravel (75%), well graded, damp, cobbles present	
28	N/A	24	0.0				GW	GRAVEL Sand (25%) and gravel (75%), well graded, damp, cobbles present	
30	N/A	24	0.0				GW	GRAVEL Wet (saturated), sand (25%), and gravel (75%), coarse grained sand, cobbles present	▼
32	N/A	24	0.0				GW	GRAVEL Wet (saturated), sand (25%), and gravel (75%), coarse grained sand, cobbles Water sample collected at 32' for analysis of site specific VOCs.	
34	N/A	24	0.0				GW	GRAVEL Wet (saturated), sand (25%), and gravel (75%), coarse grained sand, cobbles	
36									

☒ Composite Sample to Lab ■ Grab Sample to Lab ▯ Split-Spoon Not Analyzed

Drilling Co.: Prosonic Corporation
Driller: T. Bentz
Drilling Method: Rotosonic
Drilling Fluid: Water

Geologist: J. Manzo
Total Depth: 73
Surface Elev.: 728.98
North Coor.: 610.119

Begin Drilling: 2/22/06 @ 1159
End Drilling: 2/23/06 @ 1143
Converted to Well: Y Well I.D.: GM-48
East Coor.: 4199.632

Remarks: TOC elevation 728.67.

Project No.: OH000294.0008.00002 Datum: Filename: February 2006

ARCADIS

Log of Boring: GM-48

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				GW	GRAVEL Wet (saturated), sand (25%), and gravel (75%), coarse grained sand, cobbles	
38	N/A	24	0.0				GW	GRAVEL Wet (saturated), sand (25%), and gravel (75%), coarse grained sand, cobbles	
40	N/A	24	0.0				GW	GRAVEL Wet (saturated), sand (25%), and gravel (75%), coarse grained sand, cobbles	
42	N/A	24	0.0				GW	GRAVEL Wet (saturated), sand (25%), and gravel (75%), coarse grained sand, cobbles	
44	N/A	0	0.0					No recovery	
46	N/A	0	0.0					No recovery	
								Water sample collected at 47' for analysis of site specific VOCs.	
48									

☒ Composite Sample to Lab ■ Grab Sample to Lab ⬚ Split-Spoon Not Analyzed

Drilling Co.: Prosonic Corporation
Driller: T. Bentz
Drilling Method: Rotosonic
Drilling Fluid: Water
Geologist: J. Manzo
Total Depth: 73
Surface Elev.: 728.98
North Coor.: 610.119
Begin Drilling: 2/22/06 @ 1159
End Drilling: 2/23/06 @ 1143
Converted to Well: Y Well I.D.: GM-48
East Coor.: 4199.632

Remarks: TOC elevation 728.67.

Project No.: OH000294.0008.00002 Datum: Filename: February 2006

ARCADIS

Log of Boring: GM-48

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	SAND & GRAVEL Sand (80%) and gravel (20%), wet-saturated, sand is medium to coarse grained, well graded	
50	N/A	24	0.0				SW	SAND & GRAVEL Sand (80%) and gravel (20%), wet-saturated, sand is medium to coarse grained, well graded	
52	N/A	24	0.0				SW	SAND & GRAVEL Sand (80%) and gravel (20%), wet-saturated, sand is medium to coarse grained, well graded	
54	N/A	24	0.0				SW	SAND & GRAVEL Sand (80%) and gravel (20%), wet-saturated, sand is medium to coarse grained, well graded	
56	N/A	24	0.0				SW	SAND & GRAVEL Sand (80%) and gravel (20%), wet-saturated, sand is medium to coarse grained, well graded	
58	N/A	16	0.0				GW	GRAVEL Sand (25%), gravel (75%), wet-saturated, well graded	
60									

☒ Composite Sample to Lab ■ Grab Sample to Lab ⊡ Split-Spoon Not Analyzed

Drilling Co.: Prosonic Corporation
Driller: T. Bentz
Drilling Method: Rotosonic
Drilling Fluid: Water

Geologist: J. Manzo
Total Depth: 73
Surface Elev.: 728.98
North Coor.: 610.119

Begin Drilling: 2/22/06 @ 1159
End Drilling: 2/23/06 @ 1143
Converted to Well: Y Well I.D.: GM-48
East Coor.: 4199.632

Remarks: TOC elevation 728.67.

Project No.: OH000294.0008.00002 Datum: Filename: February 2006

ARCADIS

Log of Boring: GM-48

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	10	0.0				GW	SAND & GRAVEL Sand (80%) and gravel (20%), wet-saturated, sand is medium to coarse grained, well graded	
62	N/A	10	0.0				SW	SAND Fine to medium grained sand with 10% silt, 10% gravel, wet (saturated), well graded	
64	N/A	16	0.0				SW	SAND Fine to medium grained sand with 10% silt, 10% gravel, wet (saturated), well graded	
66	N/A	16	0.0				SW	SAND Fine to medium grained sand with 10% silt, 10% gravel, wet (saturated), well graded	
68	N/A	24	0.0				SW	SAND Fine to medium grained sand with 10% silt, 10% gravel, wet (saturated), well graded	
70	N/A	24	0.0				SW	SAND Fine to medium grained sand with 10% silt, 10% gravel, wet (saturated), well graded	
72							CL	CLAY Till, dry to damp, gray silty clay with 10% gravel	

☒ Composite Sample to Lab ■ Grab Sample to Lab ▯ Split-Spoon Not Analyzed

Drilling Co.: Prosonic Corporation
Driller: T. Bentz
Drilling Method: Rotosonic
Drilling Fluid: Water

Geologist: J. Manzo
Total Depth: 73
Surface Elev.: 728.98
North Coor.: 610.119

Begin Drilling: 2/22/06 @ 1159
End Drilling: 2/23/06 @ 1143
Converted to Well: Y Well I.D.: GM-48
East Coor.: 4199.632

Remarks: TOC elevation 728.67.

Project No.: OH000294.0008.00002 Datum: Filename: February 2006

ARCADIS

Log of Boring: GM-48

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
72	N/A	12	0.0				CL	Water sample collected at 71' for analysis of site specific VOCs. CLAY Till, dry to damp, gray silty clay with 10% gravel	
								End of boring	
74									
76									
78									
80									
82									
84									

☒ Composite Sample to Lab ■ Grab Sample to Lab ▥ Split-Spoon Not Analyzed

Drilling Co.: Prosonic Corporation
Driller: T. Bentz
Drilling Method: Rotosonic
Drilling Fluid: Water

Geologist: J. Manzo
Total Depth: 73
Surface Elev.: 728.98
North Coor.: 610.119

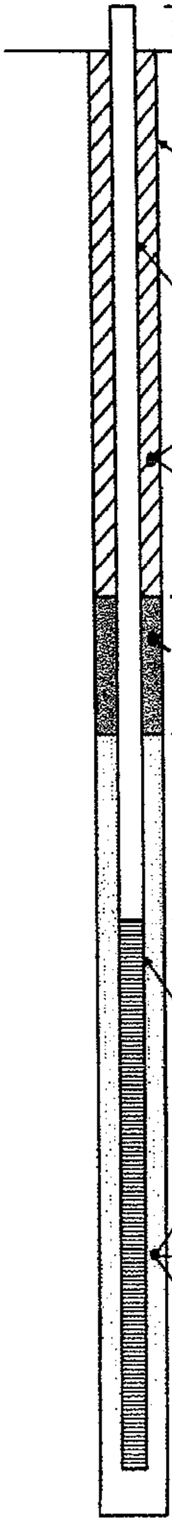
Begin Drilling: 2/22/06 @ 1159
End Drilling: 2/23/06 @ 1143
Converted to Well: Y Well I.D.: GM-48
East Coor.: 4199.632

Remarks: TOC elevation 728.67.

Project No.: OH000294.0008.00002 Datum: Filename: February 2006

ARCADIS

Well Construction Log
(Unconsolidated)



Project: General Motors Corporation Well: GM-48

Town/City: Moraine

County: Montgomery State: Ohio

Permit No.: NA

Land-Surface (LS) Elevation and Datum:

728.98 feet [x] Surveyed [ ] Estimated

Installation Date(s): 2/22-2/23/06

Drilling Method: Rotosonic

Drilling Contractor: Prosonic Corporation

Drilling Fluid: Water

Development Technique(s) and Date(s)

Submersible pump 2/23-2/24/06

Fluid Loss During Drilling: NA gallons

Water Removed During Development: 500 gallons

Static Depth to Water: 24.39 feet below M.P.

Pumping Depth to Water: 24.39 feet below M.P.

Pumping Duration: 6.00 hours

Yield: 2 gpm Date: 2/24/06

Specific Capacity: NM gpm/ft

Well Purpose: Monitoring Well

Remarks: TOC Elevation = 728.67

Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

* Depth Below Land Surface

Prepared by: J. Manzo

ARCADIS

Log of Boring: GM-49

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	SILT Brown, clayey silt with 25% sand and gravel, dry, hard, no plasticity	
2	N/A	24	0.0				ML	SILT Brown, clayey silt with 25% sand and gravel, dry, hard, no plasticity	
4	N/A	16	0.0				CL	CLAY Gray, silty clay with 25% sand and gravel, dry, hard, low plasticity	
6	N/A	16	0.0				CL	CLAY Gray, silty clay with 25% sand and gravel, dry, hard, low plasticity	
8	N/A	24	0.0				CL	CLAY Gray, silty clay with 25% sand and gravel, dry, hard, low plasticity	
10	N/A	24	0.0				CL	CLAY Gray, silty clay with 25% sand and gravel, dry, hard, low plasticity	
12									

☒ Composite Sample to Lab ■ Grab Sample to Lab ▦ Split-Spoon Not Analyzed

Drilling Co.: Prosonic Corporation
Driller: T. Bentz
Drilling Method: Rotosonic
Drilling Fluid: Water

Geologist: J. Manzo/T. Fortner
Total Depth: 79
Surface Elev.: 728.98
North Coor.: -222.235

Begin Drilling: 2/24/06 @ 10:35
End Drilling: 2/25/06 @ 1628
Converted to Well: Y Well I.D.: GM-49
East Coor.: 4383.157

Remarks: TOC elevation 727.88.

Project No.: OH000294.0008.00002 Datum: Filename: February 2006

ARCADIS

Log of Boring: GM-49

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	12	0.0				GW	GRAVEL Sand (25%) and gravel (75%), dry, well graded, cobbles visible	
14	N/A	24	0.0				GW	GRAVEL Sand (25%) and gravel (75%), dry, well graded, cobbles visible	
16	N/A	24	0.0				GW	GRAVEL Sand (25%) and gravel (75%), dry, well graded, cobbles visible	
18	N/A	24	0.0				CL	CLAY Gray, silty clay with 25% gravel, till, hard, dry	
20	N/A	24	0.0				CL	CLAY Gray, silty clay with 25% gravel, till, hard, dry	
22	N/A	16	0.0				SW	SAND Silty sand (75%) and gravel (25%), damp, well graded	
24									

☒ Composite Sample to Lab ■ Grab Sample to Lab ☐ Split-Spoon Not Analyzed

Drilling Co.: Prosonic Corporation
Driller: T. Bentz
Drilling Method: Rotosonic
Drilling Fluid: Water

Geologist: J. Manzo/T. Fortner
Total Depth: 79
Surface Elev.: 728.98
North Coor.: -222.235

Begin Drilling: 2/24/06 @ 10:35
End Drilling: 2/25/06 @ 1628
Converted to Well: Y Well I.D.: GM-49
East Coor.: 4383.157

Remarks: TOC elevation 727.88.

Project No.: OH000294.0008.00002 Datum: Filename: February 2006

ARCADIS

Log of Boring: GM-49

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	22	0.0				SW	SAND Brown, coarse-medium sand, poorly graded, wet with 10% gravel	
62	N/A	12	0.0				GW	GRAVEL Medium to coarse sand (25%) and gravel (75%), wet (saturated), well graded	
64	N/A	12	0.0				GW	GRAVEL Medium to coarse sand (25%) and gravel (75%), wet (saturated), well graded	
66	N/A	12	0.0				GW	GRAVEL Medium to coarse sand (25%) and gravel (75%), wet (saturated), well graded	
68	N/A	12	0.0				GW	GRAVEL Medium to coarse sand (25%) and gravel (75%), wet (saturated), well graded	
70	N/A	12	0.0				GW	GRAVEL Medium to coarse sand (25%) and gravel (75%), wet (saturated), well graded	
72									

☒ Composite Sample to Lab ■ Grab Sample to Lab ⬚ Split-Spoon Not Analyzed

Drilling Co.: Prosonic Corporation
Driller: T. Bentz
Drilling Method: Rotosonic
Drilling Fluid: Water
Geologist: J. Manzo/T. Fortner
Total Depth: 79
Surface Elev.: 728.98
North Coor.: -222.235
Begin Drilling: 2/24/06 @ 10:35
End Drilling: 2/25/06 @ 1628
Converted to Well: Y Well I.D.: GM-49
East Coor.: 4383.157
Remarks: TOC elevation 727.88.
Project No.: OH000294.0008.00002 Datum: Filename: February 2006

ARCADIS

Log of Boring: GM-49

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
72	N/A	24	0.0				GW	GRAVEL Medium to coarse sand (25%) and gravel (75%), wet (saturated), well graded	
74	N/A	24	0.0				SP	SAND Sand (75%) and gravel (25%), poorly graded, wet (saturated) Water sample collected at 75' for analysis of site specific VOCs.	
76	N/A	24	0.0				CL	CLAY Till, gray silty clay, hard, dry, 10% gravel	
78	N/A	12	0.0				CL	CLAY Till, gray silty clay, hard, dry, 10% gravel	
								End of boring	
80									
82									
84									

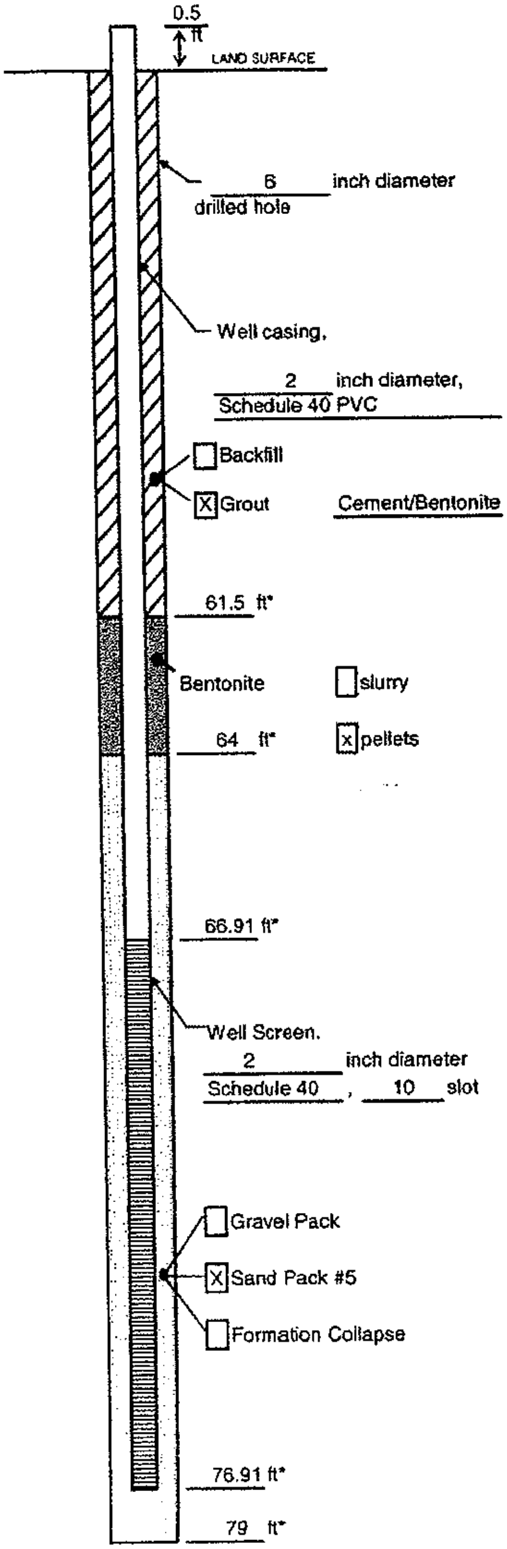
☒ Composite Sample to Lab ■ Grab Sample to Lab ▯ Split-Spoon Not Analyzed

Drilling Co.: Prosonic Corporation
Driller: T. Bentz
Drilling Method: Rotosonic
Drilling Fluid: Water
Geologist: J. Manzo/T. Fortner
Total Depth: 79
Surface Elev.: 728.98
North Coor.: -222.235
Begin Drilling: 2/24/06 @ 10:35
End Drilling: 2/25/06 @ 1628
Converted to Well: Y Well I.D.: GM-49
East Coor.: 4383.157
Remarks: TOC elevation 727.88.
Project No.: OH000294.0008.00002 Datum: Filename: February 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: GM-49

Town/City: Moraine

County: Montgomery State: Ohio

Permit No.: NA

Land-Surface (LS) Elevation and Datum:

728.28 feet [X] Surveyed [ ] Estimated

Installation Date(s): 2/24-2/25/06

Drilling Method: Rotosonic

Drilling Contractor: Prosonic Corporation

Drilling Fluid: Water

Development Technique(s) and Date(s)

Submersible pump 2/25/06

Fluid Loss During Drilling: NA gallons

Water Removed During Development: 500 gallons

Static Depth to Water: 24.10 feet below M.P.

Pumping Depth to Water: 24.10 feet below M.P.

Pumping Duration: 6.00 hours

Yield: 2 gpm Date: 2/25/06

Specific Capacity: 2 gpm/ft

Well Purpose: Monitoring Well

Remarks: TOC Elevation = 727.88

Prepared by: J. Manzo

ARCADIS

Log of Boring: GM-50

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								See GM-47 for lithologic description from 0-40'	
10									
20									
30									
40									
50									
60									

☒ Composite Sample to Lab ■ Grab Sample to Lab ⊡ Split-Spoon Not Analyzed

Drilling Co.: Boart Longyear
Driller: B. Smith
Drilling Method: Rotosonic
Drilling Fluid: Water

Geologist: T. Fortner
Total Depth: 40
Surface Elev.: 727.034
North Coor.: 1311.64197

Begin Drilling: 4/24/06
End Drilling: 4/24/06
Converted to Well: Y Well I.D.: GM-50
East Coor.: 4773.28499

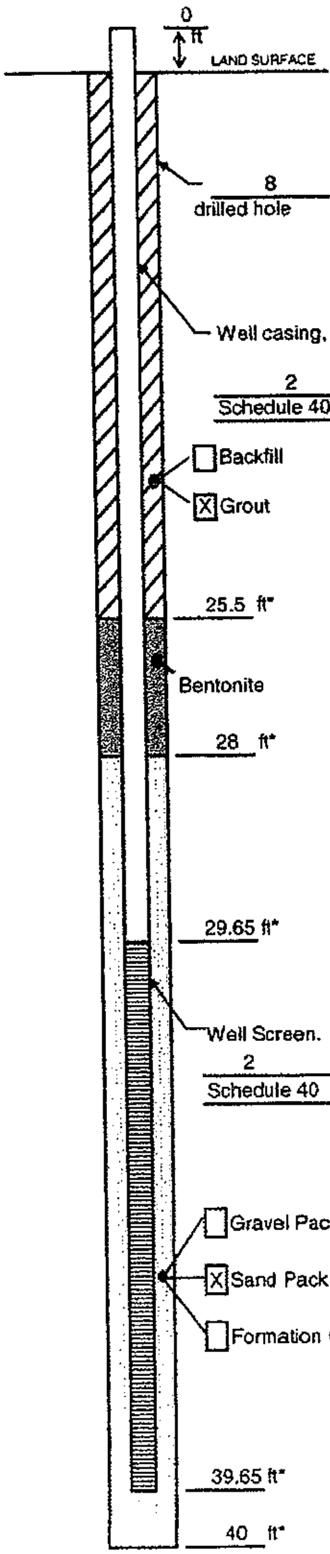
Remarks: Shallow pair to GM-47. TOC elevation 726.555.

Project No.: OH000294.0008.00002 Datum: TOC Elev = 722.109 Filename: July 2006

ARCADIS

Well Construction Log

(Unconsolidated)



8 inch diameter drilled hole

Well casing, 2 inch diameter, Schedule 40 PVC

☐ Backfill

☒ Grout Cement/Bentonite

25.5 ft*

Bentonite ☐ slurry ☐ pellets

28 ft*

29.65 ft*

Well Screen. 2 inch diameter Schedule 40, 10 slot

☐ Gravel Pack

☒ Sand Pack #5

☐ Formation Collapse

39.65 ft*

40 ft*

Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

* Depth Below Land Surface

Project: General Motors Corporation Well: GM-50

Town/City: Moraine

County: Montgomery State: Ohio

Permit No.: NA

Land-Surface (LS) Elevation and Datum:

727.034 feet ☒ Surveyed ☐ Estimated

Installation Date(s): 4/24/2006

Drilling Method: Rotosonic

Drilling Contractor: Boart Longyear

Drilling Fluid: Water

Development Technique(s) and Date(s)

Pumping - surge with pump 4/26/06

Fluid Loss During Drilling NA gallons

Water Removed During Development 200 gallons

Static Depth to Water 20.39 feet below M.P.

Pumping Depth to Water NM feet below M.P.

Pumping Duration 1.50 hours

Yield NM gpm Date 4/26/06

Specific Capacity NM gpm/ft

Well Purpose: Monitoring Well

Remarks: TOC Elevation = 726.555

Prepared by: J. Manzo

ARCADIS

Log of Boring: GM-51

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								See GM-48 for lithologic description from 0-45'	
8									
16									
24									
32									
40									
48									

☒ Composite Sample to Lab ■ Grab Sample to Lab ⬚ Split-Spoon Not Analyzed

Drilling Co.: Boart Longyear
Driller: B. Smith
Drilling Method: Rotosonic
Drilling Fluid: Water

Geologist: T. Fortner
Total Depth: 45
Surface Elev.: 728.825
North Coor.: 614.47441

Begin Drilling: 4/25/06
End Drilling: 4/25/06
Converted to Well: Y Well I.D.: GM-51
East Coor.: 4198.06172

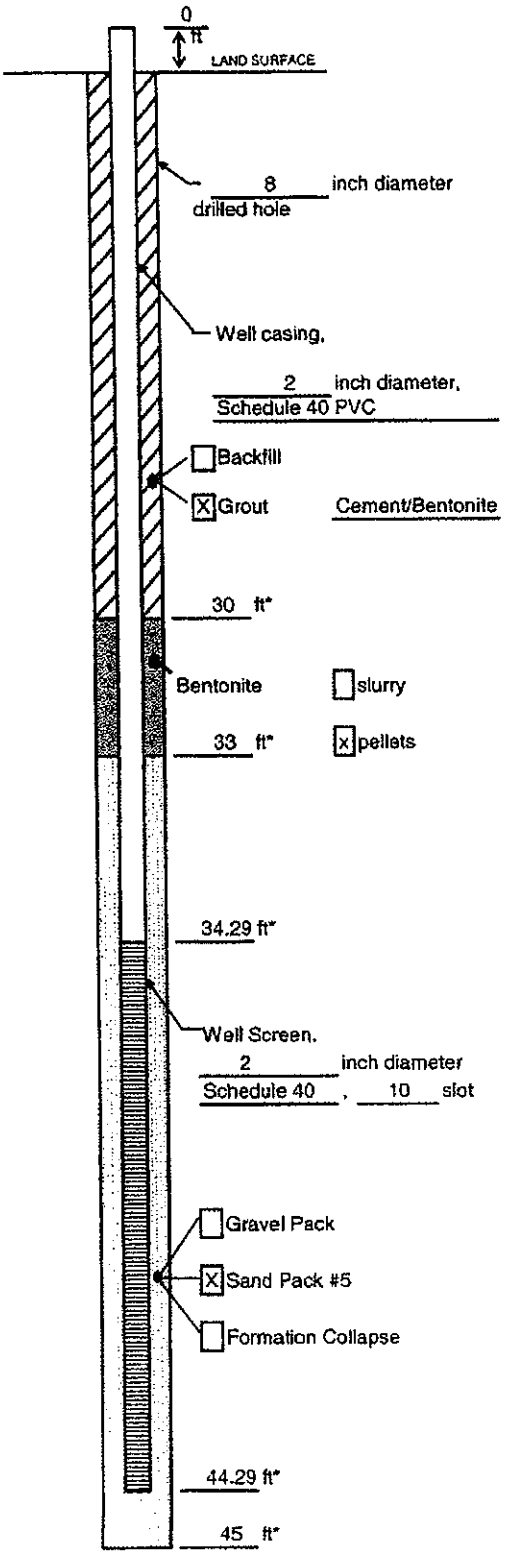
Remarks: Shallow pair to GM-48. TOC elevation 728.303.

Project No.: OH000294.0008.00002 Datum: 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 GM-51

Town/City Moraine

County Montgomery State Ohio

Permit No. NA

Land-Surface (LS) Elevation and Datum:

728.825 feet [x] Surveyed

[ ] Estimated

Installation Date(s) 4/25/2006

Drilling Method Rotosonic

Drilling Contractor Boart Longyear

Drilling Fluid Water

Development Technique(s) and Date(s)

Pumping - surge with pump 4/26/06

Fluid Loss During Drilling NA gallons

Water Removed During Development 200 gallons

Static Depth to Water 22.68 feet below M.P.

Pumping Depth to Water NM feet below M.P.

Pumping Duration 1.50 hours

Yield NM gpm Date 4/25/06

Specific Capacity NM gpm/ft

Well Purpose Monitoring Well

Remarks TOC Elevation = 728.303

Prepared by J. Manzo

ARCADIS

Log of Boring: GM-52

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								See GM-49 for lithologic description from 45'	
10									
20									
30									
40									
50									
60									

☒ Composite Sample to Lab ■ Grab Sample to Lab ☐ Split-Spoon Not Analyzed

Drilling Co.: Boart Longyear
Driller: B. Smith
Drilling Method: Rotosonic
Drilling Fluid: Water

Geologist: T. Fortner
Total Depth: 45
Surface Elev.: 728.155
North Coor.: -226.18252

Begin Drilling: 4/25/06
End Drilling: 4/25/06
Converted to Well: Y Well I.D.: GM-52
East Coor.: 4383.22583

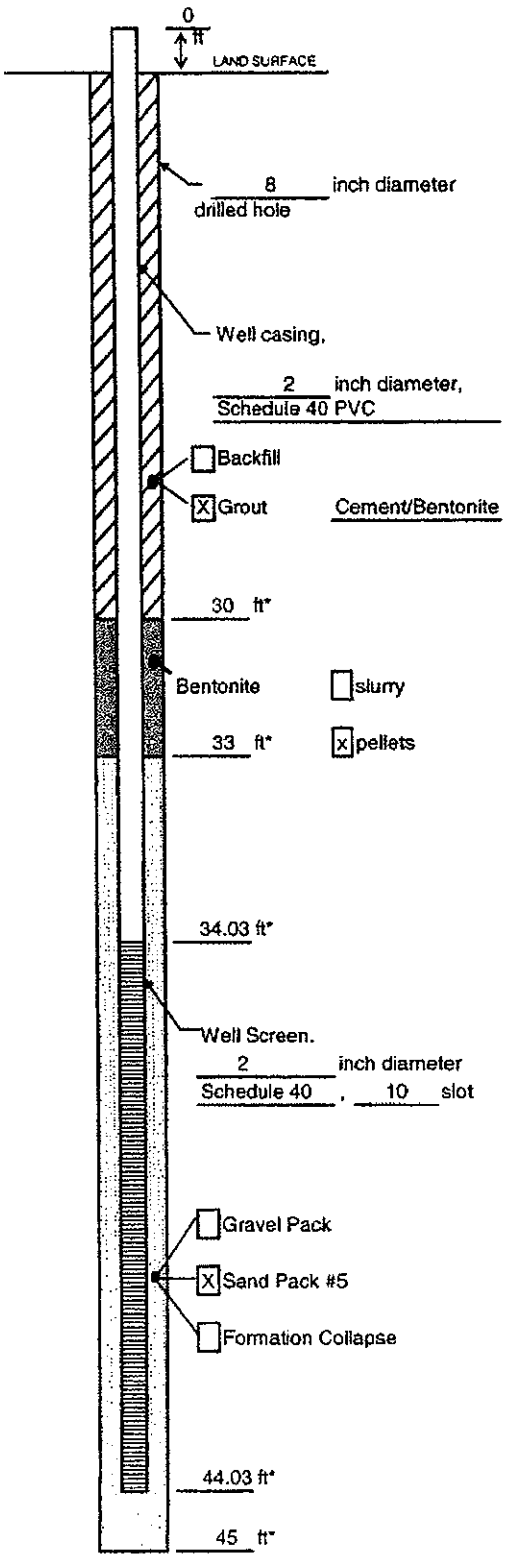
Remarks: Shallow pair to GM-49. TOC elevation 727.615.

Project No.: OH000294.0008.00002 Datum: Filename: July 2006

ARCADIS

Well Construction Log

(Unconsolidated)



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

* Depth Below Land Surface

G:\PUBLIC\GM\MOTORS\Well Logs GA\2006 Well Construction Logs.XLS

Project General Motors Corporation Well GM-52

Town/City Moraine

County Montgomery State Ohio

Permit No. NA

Land-Surface (LS) Elevation and Datum:

728.155 feet [x] Surveyed

[ ] Estimated

Installation Date(s) 4/25/2006

Drilling Method Rotosonic

Drilling Contractor Boart Longyear

Drilling Fluid Water

Development Technique(s) and Date(s)

Pumping - surge with pump 4/25/06

Fluid Loss During Drilling NA gallons

Water Removed During Development 200 gallons

Static Depth to Water 22.34 feet below M.P.

Pumping Depth to Water NM feet below M.P.

Pumping Duration 1.50 hours

Yield NM gpm Date 4/26/06

Specific Capacity NM gpm/ft

Well Purpose Monitoring Well

Remarks TOC Elevation = 727.615

Prepared by J. Manzo

ARCADIS

Log of Boring: GM-53

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								See GM-54 for lithologic description from 0-33'	
10									
20									
30									
40									
50									
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: 33
Surface Elev.: 730.530
North Coor.: 2999.31791

Begin Drilling: 7/25/06
End Drilling: 7/25/06
Converted to Well: Y Well I.D.: GM-53
East Coor.: 6823.94469

Remarks: Shallow pair to GM-54. TOC elevation 730.353.

Project No.: OH000294.0008.00002 Datum: Filename: July 2006

ARCADIS

Well Construction Log

(Unconsolidated)

0 ft

LAND SURFACE

6 inch diameter drilled hole

Well casing, 2 inch diameter, Schedule 40 PVC

☐ Backfill

☒ Grout Cement/Bentonite

19 ft*

Bentonite ☐ slurry ☒ pellets

21 ft*

23 ft*

Well Screen, 2 inch diameter Sch. 40 PVC, 10 slot

☐ Gravel Pack

☒ Sand Pack #5

☐ Formation Collapse

33 ft*

33 ft*

Measuring Point is Top of Well Casing Unless Otherwise Noted.

* Depth Below Land Surface

Project General Motors Corporation Well GM-53

Town/City Moraine

County Montgomery State Ohio

Permit No. NA

Land-Surface (LS) Elevation and Datum:

730.530 feet ☒ Surveyed ☐ Estimated

Installation Date(s) 7/28/2006

Drilling Method Rotosonic

Drilling Contractor Boart Longyear

Drilling Fluid Water

Development Technique(s) and Date(s)

Pumping - surge with pump 7/30/06

Fluid Loss During Drilling ~100 gallons

Water Removed During Development 120 gallons

Static Depth to Water 22.87 feet below M.P.

Pumping Depth to Water NM feet below M.P.

Pumping Duration 0.70 hours

Yield 3 gpm Date 7/30/06

Specific Capacity NM gpm/ft

Well Purpose Monitoring well

Remarks TOC Elevation = 730.353

pH 6.39, 6.49, 6.50, 6.49, 6.50

Conductivity 1.74, 1.66, 1.66, 1.66, 1.66

Turbidity 0, 0, 0, 0, 0 (clear-nonturbid)

Temperature 19.3, 18.8, 17.8, 17.9, 17.8

Time 1040, 1043, 1046, 1049, 1052

Prepared by T. Fortner

ARCADIS

Log of Boring: GM-54

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	N/A					No recovery	
6	N/A	24	3.3				SW	SAND Brown, gravelly sand (medium-coarse), medium gravel (20-30%), well graded	
8	N/A	24	8.3				SW	SAND Brown, gravelly sand (medium-coarse), medium gravel (20-30%), well graded	
10	N/A	24	1.4				SW	SAND Brown, gravelly sand (medium-coarse), medium gravel (20-30%), well graded	
12	N/A	24	0.7				GW	GRAVEL Sandy gravel (medium-coarse gravel) 70%, medium-coarse sand, well graded	

☒ 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: 115
Surface Elev.: 730.513
North Coor.: 2995.14271

Begin Drilling: 7/11/06 @ 1550
End Drilling: 7/12/06 @ 1300
Converted to Well: Y Well I.D.: GM-54
East Coor.: 6817.71652

Remarks: Water samples 70-75' @ 0816; 80-85 @ 0904; 95-100' @ 1025 on 7/12/06

Project No.: OH000294.0008.00002 Datum: TOC Elev = 730.287 Filename: July 2006

ARCADIS

Log of Boring: GM-54

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								GRAVEL Sandy gravel (medium-coarse gravel) 70%, medium-coarse sand, well graded	
	N/A	24	1.6				SW	SAND Brown, gravelly sand (medium-coarse), 40% fine-medium gravel, well graded	
14									
	N/A	24	1.0				GW	GRAVEL Sandy gravel (medium-coarse gravel) 70%, medium-coarse sand, well graded	
16									
	N/A	24	2.7				GW	GRAVEL Sandy gravel (medium-coarse gravel) 70%, medium-coarse sand, well graded	
18									
	N/A	24	1.5				GW	GRAVEL Sandy gravel (medium-coarse gravel) 70%, medium-coarse sand, well graded	
20									
	N/A	24	1.1				GW	GRAVEL Sandy gravel (medium-coarse gravel) 70% medium-coarse sand, well graded, wet	
22									
	N/A	24	1.2				GW	GRAVEL Sandy gravel (medium-coarse gravel) 70% medium-coarse sand, well 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: 115
Surface Elev.: 730.513
North Coor.: 2995.14271

Begin Drilling: 7/11/06 @ 1550
End Drilling: 7/12/06 @ 1300
Converted to Well: Y Well I.D.: GM-54
East Coor.: 6817.71652

Remarks: Water samples 70-75' @ 0816; 80-85 @ 0904; 95-100' @ 1025 on 7/12/06

Project No.: OH000294.0008.00002 Datum: TOC Elev = 730.287 Filename: July 2006

ARCADIS

Log of Boring: GM-54

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								GRAVEL Sandy gravel (medium-coarse gravel) 70% medium-coarse sand, well graded, wet	
	N/A	24	1.5				GP	GRAVEL Brown, sand, fine gravel 5-10%, sand medium grained, poorly graded, wet	
26									
	N/A	24	0.8				GP	GRAVEL Brown, sand, fine gravel 5-10%, sand medium grained, poorly graded, wet	
28									
	N/A	24	0.1				GP	GRAVEL Brown, sand, fine gravel 5-10%, sand medium grained, poorly graded, wet	
30									
	N/A	24	0.4				GW	GRAVEL Sandy gravel, fine-medium ~70%, sand medium-coarse, well graded, wet	
32									
	N/A	24	0.1				CL	CLAY Brown, sandy clay, stiff, little plasticity with ~5% gravel, moist	
34									
	N/A	24	0.5				CL	CLAY Gray, silty clay, stiff, brittle, little to no plasticity with ~5% fine gravel, dry	
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: 115
Surface Elev.: 730.513
North Coor.: 2995.14271

Begin Drilling: 7/11/06 @ 1550
End Drilling: 7/12/06 @ 1300
Converted to Well: Y Well I.D.: GM-54
East Coor.: 6817.71652

Remarks: Water samples 70-75' @ 0816; 80-85 @ 0904; 95-100' @ 1025 on 7/12/06

Project No.: OH000294.0008.00002 Datum: TOC Elev = 730.287 Filename: July 2006

ARCADIS

Log of Boring: GM-54

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								CLAY Gray, silty clay, stiff, brittle, little to no plasticity with ~5% fine gravel, dry	
	N/A	24	0.3				CL	CLAY Gray, silty clay, stiff, brittle, little to no plasticity with ~5% fine gravel, dry	
38									
	N/A	24	0.5				CL	CLAY Gray, silty clay, stiff, brittle, little to no plasticity with ~5% fine gravel, dry	
40									
	N/A	24	0.4				CL	CLAY Gray, silty clay, stiff, brittle, little to no plasticity with ~5% fine gravel, dry	
42									
	N/A	24	0.4				CL	CLAY Gray, silty clay, stiff, brittle, little to no plasticity with ~5% fine gravel, dry	
44									
	N/A	24	0.0				CL	CLAY Gray, silty clay, stiff, brittle, little to no plasticity with ~5% fine gravel, dry	
46									
	N/A	24	0.0				CL	CLAY Gray, silty clay, stiff, brittle, little to no plasticity with ~5% fine gravel	
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: 115
Surface Elev.: 730.513
North Coor.: 2995.14271

Begin Drilling: 7/11/06 @ 1550
End Drilling: 7/12/06 @ 1300
Converted to Well: Y Well I.D.: GM-54
East Coor.: 6817.71652

Remarks: Water samples 70-75' @ 0816; 80-85 @ 0904; 95-100' @ 1025 on 7/12/06

Project No.: OH000294.0008.00002 Datum: TOC Elev = 730.287 Filename: July 2006

ARCADIS

Log of Boring: GM-54

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								CLAY Gray, silty clay, stiff, brittle, little to no plasticity with ~5% fine gravel	
	N/A	24	0.0				CL	CLAY Gray, silty clay, stiff, brittle, little to no plasticity with ~5% fine gravel	
50									
	N/A	24	0.0				CL	CLAY Gray, silty clay, stiff, brittle, little to no plasticity with ~5% fine gravel	
52									
	N/A	24	0.0				CL	CLAY Gray, silty clay with some coarse sand, soft, high plasticity, moist-wet	
54									
	N/A	24	0.0				CL	CLAY Gray, silty clay, stiff, brittle, little to no plasticity with ~5% medium gravel	
56									
	N/A	24	0.0				CL	CLAY Gray, silty clay, stiff, brittle, little to no plasticity with ~5% medium gravel	
58									
	N/A	24	0.0				CL	CLAY Gray, silty clay, stiff, brittle, little to no plasticity with ~5% medium gravel	
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: 115
Surface Elev.: 730.513
North Coor.: 2995.14271

Begin Drilling: 7/11/06 @ 1550
End Drilling: 7/12/06 @ 1300
Converted to Well: Y Well I.D.: GM-54
East Coor.: 6817.71652

Remarks: Water samples 70-75' @ 0816; 80-85 @ 0904; 95-100' @ 1025 on 7/12/06

Project No.: OH000294.0008.00002 Datum: TOC Elev = 730.287 Filename: July 2006

ARCADIS

Log of Boring: GM-54

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								CLAY Gray, silty clay, stiff, brittle, little to no plasticity with ~5% medium gravel	
	N/A	24	0.0				CL	CLAY Gray, silty clay, stiff, brittle, little to no plasticity with ~5% medium gravel	
62									
	N/A	24	0.3				CL	CLAY Gray, silty clay, stiff, brittle, little to no plasticity with ~5% medium gravel	
64							SW	SAND Brown, gravelly sand (medium-coarse), 5% coarse gravel, well graded, wet	
	N/A	24	0.4				SW	SAND Brown, gravelly sand (medium-coarse), 5% coarse gravel, well graded, wet	
66									
	N/A	24	0.1				SW	SAND Brown, gravelly sand (medium-coarse), 5% coarse gravel, well graded, wet	
68									
	N/A	24	0.2				GW	GRAVEL Sandy gravel (medium-coarse) 60%, gravel, 40% medium coarse sand, wet	
70									
	N/A	24	0.0				SM	SILTY SAND Brown, silty sand, fine grained, wet	
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: 115
Surface Elev.: 730.513
North Coor.: 2995.14271

Begin Drilling: 7/11/06 @ 1550
End Drilling: 7/12/06 @ 1300
Converted to Well: Y Well I.D.: GM-54
East Coor.: 6817.71652

Remarks: Water samples 70-75' @ 0816; 80-85 @ 0904; 95-100' @ 1025 on 7/12/06

Project No.: OH000294.0008.00002 Datum: TOC Elev = 730.287 Filename: July 2006

ARCADIS

Log of Boring: GM-54

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
72								SILTY SAND Brown, silty sand, fine grained, wet	
	N/A	24	0.5				SM	SILTY SAND Brown, silty sand, fine grained, wet	
74									
	N/A	24	0.0				SM	SILTY SAND Brown, silty sand, fine grained, wet	
76									
	N/A	24	0.1				SP	SAND Brown, fine-medium sand, poorly graded, wet	
78									
	N/A	24	0.1				SP	SAND Brown, fine-medium sand, poorly graded, wet	
80									
	N/A	24	0.5				SP	SAND Brown, fine-medium sand, poorly graded, wet	
82									
	N/A	24	0.1				SP	SAND Brown, fine-medium sand, poorly graded, wet	
84									

☒ 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: 115
Surface Elev.: 730.513
North Coor.: 2995.14271

Begin Drilling: 7/11/06 @ 1550
End Drilling: 7/12/06 @ 1300
Converted to Well: Y Well I.D.: GM-54
East Coor.: 6817.71652

Remarks: Water samples 70-75' @ 0816; 80-85 @ 0904; 95-100' @ 1025 on 7/12/06

Project No.: OH000294.0008.00002 Datum: TOC Elev = 730.287 Filename: July 2006

ARCADIS

Log of Boring: GM-54

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
84								SAND Brown, fine-medium sand, poorly graded, wet	
	N/A	24	14.7				SP	SAND Brown, fine-medium sand, poorly graded, wet (OVA readings from 85-103' were performed during intense rainfall; humidity levels may have produced instrument drift while screening.)	
86									
	N/A	24	16.8				SW	SAND Gravelly sand, medium-coarse gravel (40%), fine-coarse sand, well graded, wet	
88									
	N/A	24	8.6				SW	SAND Gravelly sand, medium-coarse gravel (40%), fine-coarse sand, well graded, wet	
90									
	N/A	24	4.2				SW	SAND Gravelly sand, medium-coarse gravel (40%), fine-coarse sand, well graded, wet	
92									
	N/A	24	10.7				SW	SAND Gravelly sand, medium-coarse gravel (40%), fine-coarse sand, well graded, wet	
94									
	N/A	24	6.6				SW	SAND Gravelly sand, medium-coarse gravel (40%), fine-coarse sand, well graded, wet	
96									

☒ 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: 115
Surface Elev.: 730.513
North Coor.: 2995.14271

Begin Drilling: 7/11/06 @ 1550
End Drilling: 7/12/06 @ 1300
Converted to Well: Y Well I.D.: GM-54
East Coor.: 6817.71652

Remarks: Water samples 70-75' @ 0816; 80-85 @ 0904; 95-100' @ 1025 on 7/12/06

Project No.: OH000294.0008.00002 Datum: TOC Elev = 730.287 Filename: July 2006

ARCADIS

Log of Boring: GM-54

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
96								SAND Gravelly sand, medium-coarse gravel (40%), fine-coarse sand, well graded, wet	
	N/A	24	18.8				SW	SAND Cobbly sand, cobbles ~20%, medium coarse grained sand, well graded, wet	
98									
	N/A	24	31.1				SW	SAND Gravelly sand, fine-medium gravel (40%), fine-medium sand, some silt, wet	
100									
	N/A	24	39.2				SW	SAND Gravelly sand, fine-medium gravel (40%), fine-medium sand, well graded, some silt, wet	
102									
	N/A	24	0.0				SW	SAND Gravelly sand, fine-medium gravel (40%), fine-medium sand, well graded, some silt, wet	
104									
	N/A	24	0.0				GW	GRAVEL Silt, sand, gravel mixture, sand fine-coarse, well graded, gravel fine-medium (30%)	
106									
	N/A	24	0.0				SW	SAND Brown, sand medium-coarse with ~10% medium gravel, well graded, wet	
108									

☒ 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: 115
Surface Elev.: 730.513
North Coor.: 2995.14271

Begin Drilling: 7/11/06 @ 1550
End Drilling: 7/12/06 @ 1300
Converted to Well: Y Well I.D.: GM-54
East Coor.: 6817.71652

Remarks: Water samples 70-75' @ 0816; 80-85 @ 0904; 95-100' @ 1025 on 7/12/06

Project No.: OH000294.0008.00002 Datum: TOC Elev = 730.287 Filename: July 2006

ARCADIS

Log of Boring: GM-54

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
108								SAND Brown, sand medium-coarse with ~10% medium gravel, well graded, wet	
	N/A	24	0.0				SW	SAND Brown, sand medium-coarse with ~10% medium gravel, well graded, wet	
110									
	N/A	24	0.0				SW	SAND Brown, sand medium-coarse with ~10% medium gravel, well graded, wet	
112									
	N/A	24	0.0				SW	SAND Brown, sand medium-coarse with ~10% medium gravel, well graded, wet	
114									
								End of boring	
116									
118									
120									

☒ 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: 115
Surface Elev.: 730.513
North Coor.: 2995.14271

Begin Drilling: 7/11/06 @ 1550
End Drilling: 7/12/06 @ 1300
Converted to Well: Y Well I.D.: GM-54
East Coor.: 6817.71652

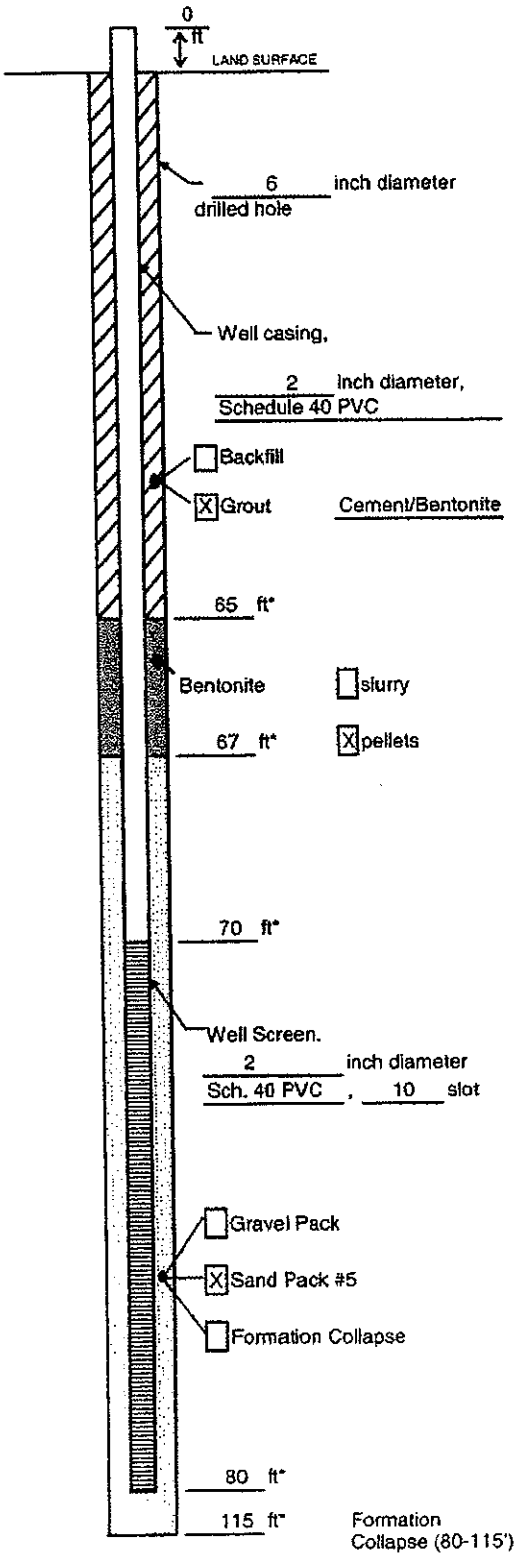
Remarks: Water samples 70-75' @ 0816; 80-85 @ 0904; 95-100' @ 1025 on 7/12/06

Project No.: OH000294.0008.00002 Datum: TOC Elev = 730.287 Filename: July 2006

ARCADIS

Well Construction Log

(Unconsolidated)



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

* Depth Below Land Surface

S:\PUBLIC\GMO FORS\Well Logs\GA\2006 Well Construction Logs.XLS

Project General Motors Corporation Well GM-54

Town/City Moraine

County Montgomery State Ohio

Permit No. NA

Land-Surface (LS) Elevation and Datum:

730.513 feet [x] Surveyed

[ ] Estimated

Installation Date(s) 7/25/2006

Drilling Method Rotosonic

Drilling Contractor Boart Longyear

Drilling Fluid Water

Development Technique(s) and Date(s)

Pumping - surge with pump 7/30/06

Fluid Loss During Drilling ~300 gallons

Water Removed During Development 320 gallons

Static Depth to Water 21.68 feet below M.P.

Pumping Depth to Water NM feet below M.P.

Pumping Duration 1.20 hours

Yield 4 gpm Date 7/30/06

Specific Capacity NM gpm/ft

Well Purpose Monitoring well - Well B

Remarks TOC Elevation = 730.287

pH 6.65, 6.44, 6.46, 6.45, 6.45

Conductivity 1.28, 1.27, 1.27, 1.27, 1.27

Turbidity 0, 0, 0, 0, 0 (clear-nonturbid)

Temperature 19.0, 18.8, 18.7, 18.7, 18.6

Time 1110, 1113, 1116, 1119, 1122

Prepared by T. Fortner

ARCADIS

Log of Boring: GM-55

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								See GM-56 for lithologic description from 0-35'	
6									
12									
18									
24									
30									
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: 35
Surface Elev.: 719.900
North Coor.: -645.93943

Begin Drilling: 7/26/06
End Drilling: 7/26/06
Converted to Well: Y Well I.D.: GM-55
East Coor.: 5202.05871

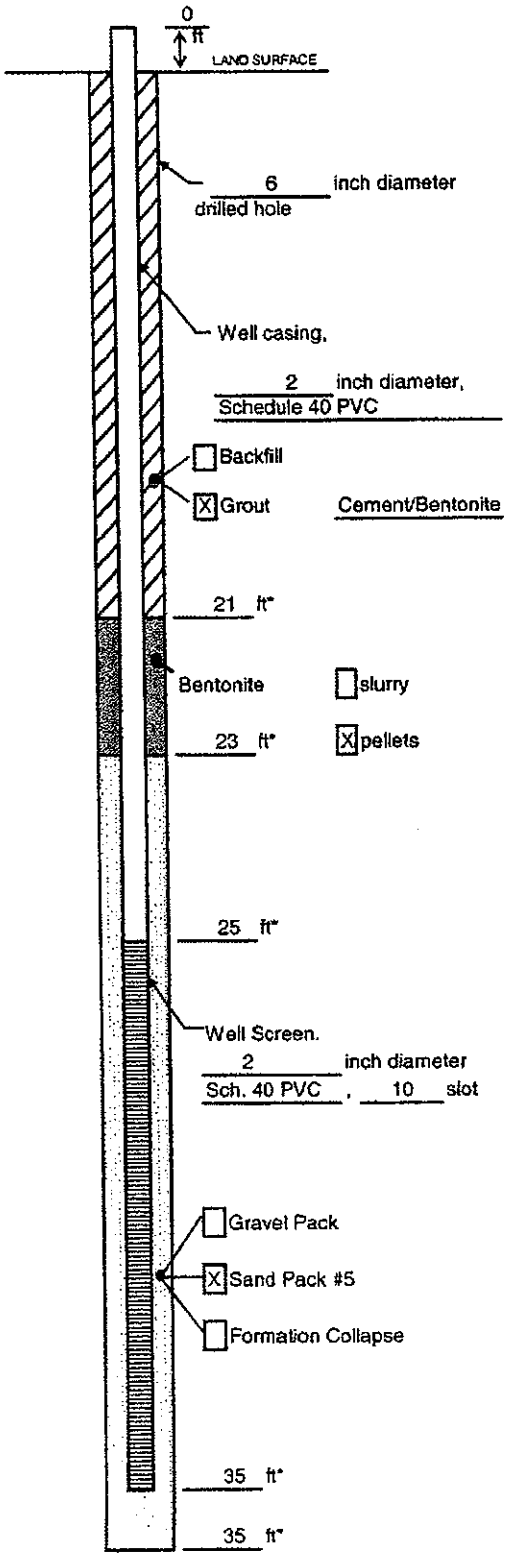
Remarks: Shallow well pair to GM-56. Boring previously "Well-D"

Project No.: OH000294.0008.00002 Datum: TOC Elev. 719.857 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 GM-55

Town/City Moraine

County Montgomery State Ohio

Permit No. NA

Land-Surface (LS) Elevation and Datum:

719.900 feet [X] Surveyed

[ ] Estimated

Installation Date(s) 7/27/2006

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 ~80 gallons

Water Removed During Development 100 gallons

Static Depth to Water 15.1 feet below M.P.

Pumping Depth to Water NM feet below M.P.

Pumping Duration 0.70 hours

Yield 3 gpm Date 7/28/06

Specific Capacity NM gpm/ft

Well Purpose Monitoring well - Well O

Remarks TOC Elevation = 719.857

pH 6.29, 6.30, 6.27, 6.28, 6.29

Conductivity 1.18, 1.10, 1.10, 1.10, 1.10

Turbidity 18.0, 17, 0, 0, 0 (clear-nonturbid)

Temperature 18.6, 18.1, 18.0, 18.1, 18.2

Time 1311, 1314, 1317, 1320, 1323

Prepared by T. Fortner

ARCADIS

Log of Boring: GM-56

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	1.6				CL	CLAY Brown to dark gray, gravelly silty clay, soft, medium plasticity, moist, medium gravel to cobble (~10%)	
4	N/A	24	3.4				GM	SILTY GRAVEL Brown, gravelly silty sand, wet, fine-medium sand, fine gravel	
6	N/A	24	5.3				GM	SILTY GRAVEL Brown, gravelly silty sand, wet, fine-medium sand, fine gravel	
8	N/A	24	5.7				CL	CLAY Brown, silty clay, soft, medium plasticity, moist-dry	
10	N/A	24	1.2				SM	SILT Brown, fine-medium sand with some silt, wet	
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: 85
Surface Elev.: 719.745
North Coor.: -646.38569

Begin Drilling: 7/12/06 @ 1518
End Drilling: 7/13/06 @ 0830
Converted to Well: Y Well I.D.: GM-56
East Coor.: 5209.35261

Remarks: Water samples 25-30' @ 1612; 35-40' @ 1708; 55-66' @ 0907 on 7/13/06

Project No.: OH000294.0008.00002 Datum: TOC Elev. 719.516 Filename: July 2006

ARCADIS

Log of Boring: GM-56

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	4.9				SP	SAND Brown, silty sand with fine gravel (5%), sand fine-medium	
14	N/A	24	4.7				SP	SAND Brown, silty sand with fine gravel (~10%), sand fine-medium	
16	N/A	24	6.7				GW	GRAVEL Brown, sandy gravel with some fines, gravel is fine-medium (70-80%)	
18	N/A	24	2.9				SW	SAND Brown, medium-coarse sand with ~10-20% fine-medium gravel	
20	N/A	24	7.0				GW	GRAVEL Sandy gravel, fine-medium (80%), sand medium-coarse	
22	N/A	24	5.5				GW	GRAVEL Sandy gravel, fine-medium (80%), sand medium-coarse, 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: 85
Surface Elev.: 719.745
North Coor.: -646.38569

Begin Drilling: 7/12/06 @ 1518
End Drilling: 7/13/06 @ 0830
Converted to Well: Y Well I.D.: GM-56
East Coor.: 5209.35261

Remarks: Water samples 25-30' @ 1612; 35-40' @ 1708; 55-66' @ 0907 on 7/13/06.

Project No.: OH000294.0008.00002 Datum: TOC Elev. 719.516 Filename: July 2006

ARCADIS

Log of Boring: GM-56

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	3.4				SP	SAND Gravelly sand, sand medium-coarse, gravel medium-coarse ~20%, wet	
26	N/A	24	7.5				SP	SAND Gravelly sand, sand medium-coarse, gravel medium-coarse ~20%, wet	
28	N/A	24	6.1				SP	SAND Gravelly sand, sand medium-coarse, gravel medium-coarse ~20%, wet	
30	N/A	24	7.2				GW	GRAVEL Sandy gravel, gravel medium-coarse (70%), sand medium-coarse, wet	
32	N/A	24	4.5				GW	GRAVEL Sandy gravel, gravel medium-coarse (70%), sand medium-coarse, wet	
34	N/A	24	1.6				SP	SAND Brown, medium-coarse sand with 10% medium coarse gravel, 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: 85
Surface Elev.: 719.745
North Coor.: -646.38569

Begin Drilling: 7/12/06 @ 1518
End Drilling: 7/13/06 @ 0830
Converted to Well: Y Well I.D.: GM-56
East Coor.: 5209.35261

Remarks: Water samples 25-30' @ 1612; 35-40' @ 1708; 55-66' @ 0907 on 7/13/06.

Project No.: OH000294.0008.00002
Datum: TOC Elev. 719.516
Filename: July 2006

ARCADIS

Log of Boring: GM-56

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	2.2				SP	SAND Brown, medium-coarse sand with 10% medium coarse gravel, wet	
38	N/A	24	3.9				SP	SAND Brown, medium-coarse sand with 10% medium coarse gravel, wet	
40	N/A	24	4.1				SP	SAND Brown, medium-coarse sand with 10% medium coarse gravel, wet	
42	N/A	24	3.6				SP	SAND Brown, medium-coarse sand with 10% medium coarse gravel (5%), wet	
44	N/A	24	3.4				SP	SAND Brown, medium-coarse sand with fine gravel (10%), wet	
46	N/A	24	0.0				SP	SAND Brown, medium-coarse sand with fine 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: 85
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North Coor.: -646.38569

Begin Drilling: 7/12/06 @ 1518
End Drilling: 7/13/06 @ 0830
Converted to Well: Y Well I.D.: GM-56
East Coor.: 5209.35261

Remarks: Water samples 25-30' @ 1612; 35-40' @ 1708; 55-66' @ 0907 on 7/13/06.

Project No.: OH000294.0008.00002 Datum: TOC Elev. 719.516 Filename: July 2006

ARCADIS

Log of Boring: GM-56

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	1.0				SP	SAND Brown, medium-coarse sand with fine gravel (10%), wet	
50	N/A	24	5.2				SP	SAND Brown, medium-coarse sand with fine gravel (10%), wet	
52	N/A	24	3.2				SP	SAND Brown, medium-coarse sand with fine gravel (10%), wet	
54	N/A	24	6.2				SP	SAND Brown, medium-coarse sand with fine gravel (10%), wet	
56	N/A	24	5.7				SW	SAND Brown, fine-medium sand with medium gravel (20%), well graded, wet	
58	N/A	24	4.9				SW	SAND Brown, fine-medium sand with medium gravel (20%), well graded, wet	
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: 85
Surface Elev.: 719.745
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Begin Drilling: 7/12/06 @ 1518
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Converted to Well: Y Well I.D.: GM-56
East Coor.: 5209.35261

Remarks: Water samples 25-30' @ 1612; 35-40' @ 1708; 55-66' @ 0907 on 7/13/06.

Project No.: OH000294.0008.00002 Datum: TOC Elev. 719.516 Filename: July 2006

ARCADIS

Log of Boring: GM-56

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	5.7				SW	SAND Brown, fine-coarse sand with fine gravel (5%), well graded, wet	
62	N/A	24	6.2				SW	SAND Brown, fine-coarse sand with fine gravel (5%), well graded, wet with 6" silty clay layer with gravel	
64	N/A	24	5.4				SW	SAND Brown, fine-coarse sand with fine gravel (5%), well graded, wet	
66	N/A	24	3.7				SW	SAND Brown, fine-coarse sand with fine gravel (5%), well graded, wet	
68	N/A	24	2.2				SW	SAND Brown, fine-coarse sand with fine gravel (5%), well graded, wet	
70	N/A	24	0.5				SW	SAND Brown, fine-coarse sand with fine gravel (5%), well graded, wet	
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: 85
Surface Elev.: 719.745
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Project No.: OH000294.0008.00002 Datum: TOC Elev. 719.516 Filename: July 2006

ARCADIS

Log of Boring: GM-56

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
72	N/A	24	1.0				SW	SAND Brown, fine-coarse sand with fine gravel (5%), well graded, wet with 6" silty clay layer with gravel	
74	N/A	24	0.9				CL	CLAY Brown, silty clay, soft, high plasticity with ~5% fine gravel, moist-wet	
							SP	SAND Brown, medium-coarse sand, poorly graded, fine gravel ~5%	
76	N/A	24	2.7				SP	SAND Brown, medium-coarse sand, poorly graded, fine gravel ~5%	
78	N/A	24	3.2				SP	SAND Brown, medium-coarse sand, poorly graded, fine gravel ~5%	
80	N/A	24	4.2				SP	SAND Brown, medium-coarse sand, poorly graded, fine gravel ~5%	
82	N/A	24	4.7				GP	GRAVEL Sandy gravel, medium-coarse (70%), sand medium-coarse with some silt, wet	
84									

☒ 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: 85
Surface Elev.: 719.745
North Coor.: -646.38569

Begin Drilling: 7/12/06 @ 1518
End Drilling: 7/13/06 @ 0830
Converted to Well: Y Well I.D.: GM-56
East Coor.: 5209.35261

Remarks: Water samples 25-30' @ 1612; 35-40' @ 1708; 55-66' @ 0907 on 7/13/06.

Project No.: OH000294.0008.00002 Datum: TOC Elev. 719.516 Filename: July 2006

ARCADIS

Log of Boring: GM-56

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
84	N/A	12	1.3				SP	SAND Brown, medium-coarse sand, poorly graded, fine gravel ~5%	
								End of boring	
86									
88									
90									
92									
94									
96									

☒ 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: 85
Surface Elev.: 719.745
North Coor.: -646.38569

Begin Drilling: 7/12/06 @ 1518
End Drilling: 7/13/06 @ 0830
Converted to Well: Y Well I.D.: GM-56
East Coor.: 5209.35261

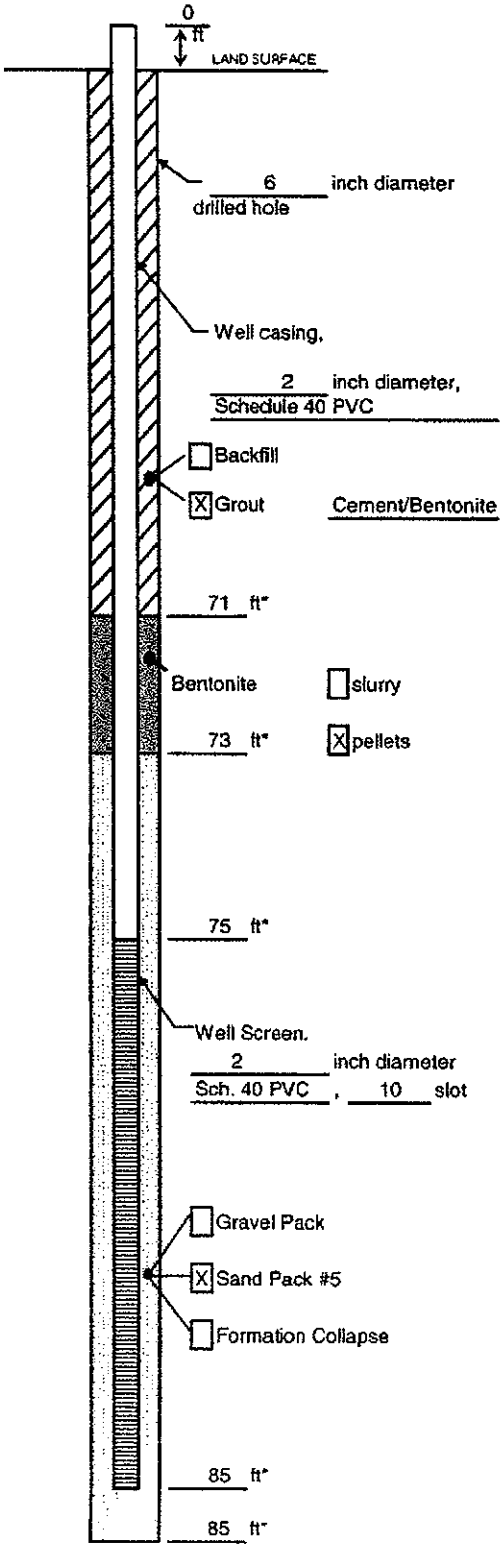
Remarks: Water samples 25-30' @ 1612; 35-40' @ 1708; 55-66' @ 0907 on 7/13/06.

Project No.: OH000294.0008.00002 Datum: TOC Elev. 719.516 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 GM-56

Town/City Moraine

County Montgomery State Ohio

Permit No. NA

Land-Surface (LS) Elevation and Datum:

719.745 feet [x] Surveyed

[ ] Estimated

Installation Date(s) 7/27/2006

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 170 gallons

Static Depth to Water 14.5 feet below M.P.

Pumping Depth to Water NM feet below M.P.

Pumping Duration 0.20 hours

Yield 4 gpm Date 7/30/06

Specific Capacity NM gpm/ft

Well Purpose Monitoring well - Well E

Remarks TOC Elevation = 719.516

pH 6.67, 6.56, 6.35, 6.33, 6.33

Conductivity 1.02, 1.01, 1.01, 1.01, 1.01

Turbidity 19, 14, 6, 1, 0 (clear-nonturbid)

Temperature 19.1, 19.0, 19.2, 19.0, 19.0

Time 1425, 1428, 1431, 1434, 1437

Prepared by T. Fortner

ARCADIS

Log of Boring: GM-57

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	N/A					No recovery	
6	N/A	24	3.5				GW	GRAVEL Sandy gravel, fine-medium (80%), sand medium-coarse, moist, some silt	
8	N/A	24	0.4				GW	GRAVEL Sandy gravel, fine-medium (80%), sand medium-coarse, moist, some silt	
10	N/A	24	0.0				GW	GRAVEL Sandy gravel, fine-medium (80%), sand medium-coarse, moist, some silt	
12	N/A	24	2.8				SW	SAND Brown, medium-coarse sand with fine-medium gravel (30%), moist, moderately graded	

☒ 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: 45
Surface Elev.: 719.406
North Coor.: -993.49389

Begin Drilling: 7/13/06 @ 1022
End Drilling: 7/13/06 @ 1138
Converted to Well: Y Well I.D.: GM-57
East Coor.: 4965.98684

Remarks: Water sample 25-30' @ 1115; 40-45' @ 1233. TOC Elevation 721.740.

Project No.: OH000294.0008.00002 Datum: TOC Elev. 721.740 Filename: July 2006

ARCADIS

Log of Boring: GM-57

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	SAND Brown, medium-coarse sand with fine-medium gravel (30%), moist, moderately graded	
14									
	N/A	24	2.7				SW	SAND Brown, medium-coarse sand with fine-medium gravel (30%), moist, moderately graded	
16									
	N/A	24	3.0				SW	SAND Brown, medium-coarse sand with fine-medium gravel (40%), moist, moderately graded	
18									
	N/A	24	1.5				SW	SAND Brown, medium-coarse sand with fine-medium gravel (40%), moist, moderately graded	
20									
	N/A	24	3.3				SW	SAND Brown, medium-coarse sand with fine-medium gravel (40%), moist, moderately graded	
22									
	N/A	24	4.2				SW	SAND Brown, medium-coarse sand with fine-medium gravel (40%), moist, moderately graded	
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: 45
Surface Elev.: 719.406
North Coor.: -993.49389

Begin Drilling: 7/13/06 @ 1022
End Drilling: 7/13/06 @ 1138
Converted to Well: Y Well I.D.: GM-57
East Coor.: 4965.98684

Remarks: Water sample 25-30' @ 1115; 40-45' @ 1233. TOC Elevation 721.740

Project No.: OH000294.0008.00002 Datum: TOC Elev. 721.740 Filename: July 2006

ARCADIS

Log of Boring: GM-57

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	3.1				GW	GRAVEL Fine-medium gravel, little sand (coarse 5%), wet	
26									
	N/A	24	4.0				GW	GRAVEL Fine-medium gravel, little sand (coarse 5%), wet	
28									
	N/A	24	4.2				SW	SAND Medium-coarse sand with fine-medium gravel (10%), wet	
30									
	N/A	24	2.0				SW	SAND Medium-coarse sand with fine-medium gravel (10%), wet	
32									
	N/A	24	0.7				SW	SAND Medium-coarse sand with fine-medium gravel (10%), wet	
34									
	N/A	24	0.0				GW	GRAVEL Sandy gravel, fine-medium (70%), sand medium-coarse, 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: 45
Surface Elev.: 719.406
North Coor.: -993.49389

Begin Drilling: 7/13/06 @ 1022
End Drilling: 7/13/06 @ 1138
Converted to Well: Y Well I.D.: GM-57
East Coor.: 4965.98684

Remarks: Water sample 25-30' @ 1115; 40-45' @ 1233. TOC Elevation 721.740.

Project No.: OH000294.0008.00002 Datum: TOC Elev. 721.740 Filename: July 2006

ARCADIS

Log of Boring: GM-57

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	0.1				GW	GRAVEL Sandy gravel, fine-medium (70%), sand medium-coarse, wet	
38									
	N/A	24	0.3				SW	SAND Gravelly sand, medium-coarse, some fines and silt, gravel at 20-30% fine	
40									
	N/A	24	0.0				SW	SAND Gravelly sand, medium-coarse, some fines and silt, gravel at 20-30% fine	
42									
	N/A	24	0.5				SW	SAND Gravelly sand, medium-coarse, some fines and silt, gravel at 20-30% fine	
44									
								End of boring	
46									
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: 45
Surface Elev.: 719.406
North Coor.: -993.49389

Begin Drilling: 7/13/06 @ 1022
End Drilling: 7/13/06 @ 1138
Converted to Well: Y Well I.D.: GM-57
East Coor.: 4965.98684

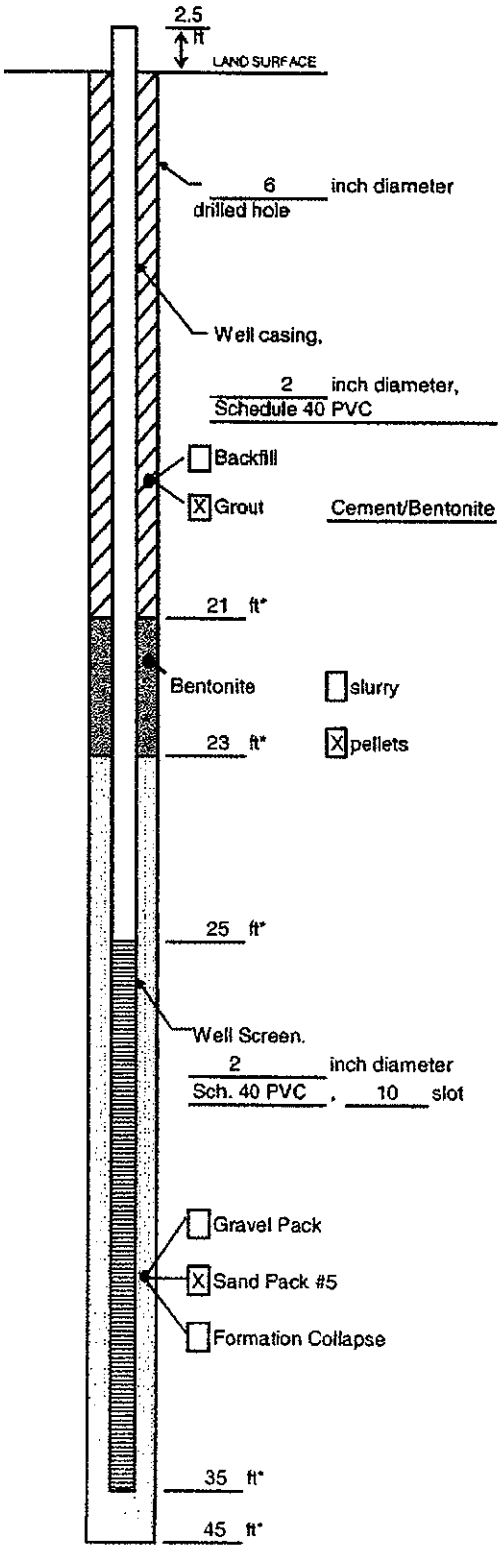
Remarks: Water sample 25-30' @ 1115; 40-45' @ 1233. TOC Elevation 721.740.

Project No.: OH000294.0008.00002 Datum: TOC Elev. 721.740 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 GM-57

Town/City Moraine

County Montgomery State Ohio

Permit No. NA

Land-Surface (LS) Elevation and Datum:

719.406 feet [X] Surveyed

[ ] Estimated

Installation Date(s) 7/27/2006

Drilling Method Rotosonic

Drilling Contractor Boart Longyear

Drilling Fluid Water

Development Technique(s) and Date(s)

Pumping - surge with pump 7/30/06

Fluid Loss During Drilling ~80 gallons

Water Removed During Development 90 gallons

Static Depth to Water 17.16 feet below M.P.

Pumping Depth to Water 17.16 feet below M.P.

Pumping Duration 0.50 hours

Yield 3 gpm Date 7/30/06

Specific Capacity NM gpm/ft

Well Purpose Monitoring well - Well F

Remarks TOC Elevation = 721.740

pH 5.79, 5.81, 5.94, 5.95, 5.96

Conductivity 1.10, 1.18, 1.12, 1.10, 1.12

Turbidity 0, 0, 0, 0, 0 (clear-nonturbid)

Temperature 18.0, 17.6, 16.4, 16.3, 16.2

Time 820, 823, 826, 829, 832

Prepared by T. Fortner

ARCADIS

Log of Boring: GM-58

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	N/A					No recovery	
8	N/A	24	0.0				SW	SAND Brown, gravelly sand, medium-coarse, fine medium gravel (30%), moist	
10	N/A	24	0.0				SW	SAND Brown, gravelly sand, medium-coarse, fine medium gravel (30%), dry	
12	N/A	24	0.0				SW	SAND Brown, gravelly sand, medium-coarse, fine medium gravel (30%), dry	

☒ Composite Sample to Lab ■ Grab Sample to Lab ⬚ Split-Spoon Not Analyzed

Drilling Co.: Boart Longyear
Driller: K. Gobell
Drilling Method: Rotosonic
Drilling Fluid: Water

Geologist: T. Fortner
Total Depth: 115
Surface Elev.: 735.588
North Coor.: 3450.80045

Begin Drilling: 8/21/06 @ 1648
End Drilling: 8/22/06 @ 1630
Converted to Well: Y Well I.D.: GM-58
East Coor.: 7183.08786

Remarks: Water samples 25-30' 8/22/06 @ 0753; 75-80 8/22/06 @ 1330; 95-100' 8/22

Project No.: OH000294.0009
Datum: TOC Elev=735.462
Filename: August 2006

ARCADIS

Log of Boring: GM-58

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							SW	SAND Brown, gravelly sand, medium-coarse, fine medium gravel (30%), dry	
	N/A	24	0.0				SW	SAND Brown, gravelly sand, medium-coarse, fine medium gravel (30%), dry	
14									
	N/A	24	0.0				SW	SAND Brown, gravelly sand, medium-coarse, fine medium gravel (30%), dry	
16									
	N/A	24	0.0				SW	SAND Brown, gravelly sand, medium-coarse, fine medium gravel (30%), dry	
18									
	N/A	24	0.0				SW	SAND Brown, gravelly sand, medium-coarse, fine medium gravel (40%), dry	
20									
	N/A	24	0.0				SW	SAND Brown, gravelly sand, medium-coarse, fine medium gravel (40%), dry	
22									
	N/A	24	0.0				SW	SAND Brown, gravelly sand, medium-coarse, fine medium gravel (40%), wet	▼
24									

☒ Composite Sample to Lab ■ Grab Sample to Lab ⊡ Split-Spoon Not Analyzed

Drilling Co.: Boart Longyear
Driller: K. Gobell
Drilling Method: Rotosonic
Drilling Fluid: Water

Geologist: T. Fortner
Total Depth: 115
Surface Elev.: 735.588
North Coor.: 3450.80045

Begin Drilling: 8/21/06 @ 1648
End Drilling: 8/22/06 @ 1630
Converted to Well: Y Well I.D.: GM-58
East Coor.: 7183.08786

Remarks: Water samples 25-30' 8/22/06 @ 0753; 75-80 8/22/06 @ 1330; 95-100' 8/22

Project No.: OH000294.0009
Datum: TOC Elev=735.462
Filename: August 2006

ARCADIS

Log of Boring: GM-58

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							SW	SAND Brown, gravelly sand, medium-coarse, fine medium gravel (40%), wet	
	N/A	24	0.0				SW	SAND Brown, gravelly sand, medium-coarse, fine medium gravel (40%), wet	
26									
	N/A	24	0.0				GW	GRAVEL Sandy gravel, fine-medium, sand is medium coarse (30%), wet	
28									
	N/A	24	0.0				GW	GRAVEL Sandy gravel, fine-medium, sand is medium coarse (30%), wet	
30							ML	SILT Brown, sandy clay, stiff, moist, medium plasticity	
	N/A	24	0.0				CL	CLAY Gray, silty clay, stiff, dry, low-medium plasticity, ~10% fine gravel	
32									
	N/A	24	0.0				CL	CLAY Gray, silty clay, stiff, dry, low-medium plasticity, ~10% fine gravel	
34									
	N/A	24	1.8				CL	CLAY Gray, silty clay, stiff, low-medium plasticity, dry (gravel is fine-medium 40-50%)	
36									

☒ Composite Sample to Lab ■ Grab Sample to Lab ⬚ Split-Spoon Not Analyzed

Drilling Co.: Boart Longyear
Driller: K. Gobell
Drilling Method: Rotosonic
Drilling Fluid: Water

Geologist: T. Fortner
Total Depth: 115
Surface Elev.: 735.588
North Coor.: 3450.80045

Begin Drilling: 8/21/06 @ 1648
End Drilling: 8/22/06 @ 1630
Converted to Well: Y Well I.D.: GM-58
East Coor.: 7183.08786

Remarks: Water samples 25-30' 8/22/06 @ 0753; 75-80 8/22/06 @ 1330; 95-100' 8/22

Project No.: OH000294.0009
Datum: TOC Elev=735.462
Filename: August 2006

ARCADIS

Log of Boring: GM-58

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							CL	CLAY Gray, silty clay, stiff, low medium plasticity, dry (gravel is fine-medium 40-50%)	
	N/A	24	2.9				CL	CLAY Gray, silty clay, very stiff, low plasticity, dry, fine gravel at 10%	
38									
	N/A	24	10.4				CL	CLAY Gray, silty clay, very stiff, low plasticity, dry, fine gravel at 10%	
40									
	N/A	24	16.1				CL	CLAY Gray, silty clay, very stiff, low plasticity, dry, fine-medium gravel at 10%	
42									
	N/A	24	17.3				CL	CLAY Gray, silty clay, very stiff, low plasticity, dry, fine-medium gravel at 10%	
44									
	N/A	24	15.2				CL	CLAY Gray, sandy clay, fine sand, medium plasticity, moist, soft, with 6 inches fine grained sand stringer, fine gravel (5%)	
46									
	N/A	24	14.6				CL	CLAY Gray, sandy clay, fine sand, medium plasticity, moist, soft, with 6 inches fine grained sand stringer, fine gravel (5%)	
48									

☒ Composite Sample to Lab ■ Grab Sample to Lab ⬚ Split-Spoon Not Analyzed

Drilling Co.: Boart Longyear | Geologist: T. Fortner | Begin Drilling: 8/21/06 @ 1648

Driller: K. Gobell | Total Depth: 115 | End Drilling: 8/22/06 @ 1630

Drilling Method: Rotosonic | Surface Elev.: 735.588 | Converted to Well: Y Well I.D.: GM-58

Drilling Fluid: Water | North Coor.: 3450.80045 | East Coor.: 7183.08786

Remarks: Water samples 25-30' 8/22/06 @ 0753; 75-80 8/22/06 @ 1330; 95-100' 8/22

Project No.: OH000294.0009 | Datum: TOC Elev=735.462 | Filename: August 2006

ARCADIS

Log of Boring: GM-58

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							CL	CLAY Gray, sandy clay, fine-medium sand, medium plasticity, moist, soft, with 6 inches fine grained sand stringer, fine gravel (5%)	
	N/A	24	16.0				CL	CLAY Gray, sandy clay, fine-medium sand, medium plasticity, moist, soft, with 6 inches fine grained sand stringer, fine gravel (5%)	
50							CL	CLAY Gray, silty clay, soft, dry, medium plasticity, fine gravel 5%	
	N/A	24	17.0				CL	CLAY Gray, silty clay, soft, dry, medium plasticity, fine gravel 5%	
52									
	N/A	24	17.1				CL	CLAY Gray, silty clay, soft, dry, medium plasticity, fine gravel 5%	
54							SP	SAND Gray, fine sand	
	N/A	24	16.7				CL	CLAY Gray, sandy clay, sand fine-medium, stiff, dry, little/no plasticity	
56									
	N/A	24	17.2				CL	CLAY Gray, sandy clay, sand fine-medium, stiff, dry, little/no plasticity	
58							CL	CLAY Dark gray, silty clay, dry, little/no plasticity, gravel fine-medium 5%, organic material	
	N/A	24	18.2				CL	CLAY Dark gray, silty clay, dry, little/no plasticity, gravel fine-medium 5%, organic material	
60									

☒ Composite Sample to Lab ■ Grab Sample to Lab ⬚ Split-Spoon Not Analyzed

Drilling Co.: Boart Longyear | Geologist: T. Fortner | Begin Drilling: 8/21/06 @ 1648

Driller: K. Gobell | Total Depth: 115 | End Drilling: 8/22/06 @ 1630

Drilling Method: Rotosonic | Surface Elev.: 735.588 | Converted to Well: Y | Well I.D.: GM-58

Drilling Fluid: Water | North Coor.: 3450.80045 | East Coor.: 7183.08786

Remarks: Water samples 25-30' 8/22/06 @ 0753; 75-80 8/22/06 @ 1330; 95-100' 8/22

Project No.: OH000294.0009 | Datum: TOC Elev=735.462 | Filename: August 2006

ARCADIS

Log of Boring: GM-58

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							CL	CLAY Brown, silty clay, soft, medium plasticity, moist-dry, no gravel	
	N/A	24	22.4				CL	CLAY Brown, silty clay, soft, medium plasticity, moist-dry, no gravel	
62									
	N/A	24	17.5				CL	CLAY Brown, silty clay, soft, medium plasticity, moist-dry, no gravel	
64									
	N/A	24	17.5				CL	CLAY Gray, silty clay, very stiff, dry, low- medium plasticity, fine gravel (5-10%)	
66									
	N/A	24	18.1				CL	CLAY Gray, silty clay, very stiff, dry, low- medium plasticity, fine gravel (5-10%)	
68									
	N/A	24	15.5				CL	CLAY Gray, silty clay, very stiff, dry, low- medium plasticity, fine gravel (5-10%)	
70							SP	SAND Brown, sand, fine-medium, little silt, wet	
	N/A	24	N/A					No recovery	
72									

☒ Composite Sample to Lab ■ Grab Sample to Lab ▨ Split-Spoon Not Analyzed

Drilling Co.: Boart Longyear
Driller: K. Gobell
Drilling Method: Rotosonic
Drilling Fluid: Water

Geologist: T. Fortner
Total Depth: 115
Surface Elev.: 735.588
North Coor.: 3450.80045

Begin Drilling: 8/21/06 @ 1648
End Drilling: 8/22/06 @ 1630
Converted to Well: Y Well I.D.: GM-58
East Coor.: 7183.08786

Remarks: Water samples 25-30' 8/22/06 @ 0753; 75-80 8/22/06 @ 1330; 95-100' 8/22

Project No.: OH000294.0009
Datum: TOC Elev=735.462
Filename: August 2006

ARCADIS

Log of Boring: GM-58

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
72								No recovery	
	N/A	24	N/A					No recovery	
74									
	N/A	24	0.0				GP	GRAVEL Brown, sandy gravel, fine-medium, coarse sand (10-20%), wet	
76									
	N/A	24	0.0				SP	SAND Brown, medium coarse sand, wet	
78									
	N/A	24	0.0				SP	SAND Brown, medium coarse sand, wet	
80									
	N/A	24	0.0				SW	SAND Brown, sandy gravel, fine with medium coarse, sand (30%), wet	
82									
	N/A	24	0.0				SW	SAND Brown, sand, medium-coarse, fine gravel (30%), wet	
84									

☒ Composite Sample to Lab ■ Grab Sample to Lab ⊡ Split-Spoon Not Analyzed

Drilling Co.: Boart Longyear
Geologist: T. Fortner
Begin Drilling: 8/21/06 @ 1648
Driller: K. Gobell
Total Depth: 115
End Drilling: 8/22/06 @ 1630
Drilling Method: Rotosonic
Surface Elev.: 735.588
Converted to Well: Y Well I.D.: GM-58
Drilling Fluid: Water
North Coor.: 3450.80045
East Coor.: 7183.08786
Remarks: Water samples 25-30' 8/22/06 @ 0753; 75-80 8/22/06 @ 1330; 95-100' 8/22
Project No.: OH000294.0009
Datum: TOC Elev=735.462
Filename: August 2006

ARCADIS

Log of Boring: GM-58

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
84							SW	SAND Brown, sand, medium-coarse, fine gravel (30%), wet	
	N/A	24	0.0				SP	SAND Olive gray, sand, fine medium, wet	
86									
	N/A	24	0.0				SP	SAND Olive gray, sand, fine medium, wet	
88									
	N/A	24	0.0				SP	SAND Olive gray, sand, fine medium, wet	
90									
	N/A	24	0.0				SP	SAND Olive gray, sand, fine medium, wet	
92									
	N/A	24	0.0				SP	SAND Olive gray, sand, fine medium, wet	
94									
	N/A	24	0.0				SP	SAND Olive gray, sand, fine medium, wet	
96									

☒ Composite Sample to Lab ■ Grab Sample to Lab ⬚ Split-Spoon Not Analyzed

Drilling Co.: Boart Longyear
Driller: K. Gobell
Drilling Method: Rotosonic
Drilling Fluid: Water

Geologist: T. Fortner
Total Depth: 115
Surface Elev.: 735.588
North Coor.: 3450.80045

Begin Drilling: 8/21/06 @ 1648
End Drilling: 8/22/06 @ 1630
Converted to Well: Y Well I.D.: GM-58
East Coor.: 7183.08786

Remarks: Water samples 25-30' 8/22/06 @ 0753; 75-80 8/22/06 @ 1330; 95-100' 8/22

Project No.: OH000294.0009
Datum: TOC Elev=735.462
Filename: August 2006

ARCADIS

Log of Boring: GM-58

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
96							SP	SAND Olive gray, sand, fine medium, wet	
	N/A	24	0.0				SP	SAND Gray, silty sand, fine-medium, wet	
98									
	N/A	24	0.0				SP	SAND Gray, silty sand, fine-medium, wet	
100									
	N/A	24	0.0				SW	SAND Brown, fine coarse sand, wet, trace fine-medium gravel	
102									
	N/A	24	0.0				SW	SAND Brown, fine coarse sand, wet, trace fine-medium gravel	
104									
	N/A	24	13.1				GW	GRAVEL Gray, sandy gravel, fine-medium, fine coarse sand, wet, 70% gravel	
106									
	N/A	24	13.2				GW	GRAVEL Gray, sandy gravel, fine-medium, fine coarse sand, wet, 70% gravel	
108									

☒ Composite Sample to Lab ■ Grab Sample to Lab ☐ Split-Spoon Not Analyzed

Drilling Co.: Boart Longyear
Driller: K. Gobell
Drilling Method: Rotosonic
Drilling Fluid: Water

Geologist: T. Fortner
Total Depth: 115
Surface Elev.: 735.588
North Coor.: 3450.80045

Begin Drilling: 8/21/06 @ 1648
End Drilling: 8/22/06 @ 1630
Converted to Well: Y Well I.D.: GM-58
East Coor.: 7183.08786

Remarks: Water samples 25-30' 8/22/06 @ 0753; 75-80 8/22/06 @ 1330; 95-100' 8/22

Project No.: OH000294.0009
Datum: TOC Elev=735.462
Filename: August 2006

ARCADIS

Log of Boring: GM-58

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
108							GW	GRAVEL Gray, sandy gravel, fine-medium, fine coarse sand, wet, 70% gravel	
	N/A	24	2.4				GW	GRAVEL Gray, sandy gravel, fine-medium, fine coarse sand, wet, 70% gravel	
110									
	N/A	24	0.7				GW	GRAVEL Gray, sandy gravel, fine-medium, fine coarse sand, wet, 70% gravel	
112									
	N/A	24	2.1				GW	GRAVEL Gray, sandy gravel, fine-medium, fine coarse sand, wet, 70% gravel	
114									
								End of boring	
116									
118									
120									

☒ Composite Sample to Lab ■ Grab Sample to Lab ⬚ Split-Spoon Not Analyzed

Drilling Co.: Boart Longyear
Driller: K. Gobell
Drilling Method: Rotosonic
Drilling Fluid: Water

Geologist: T. Fortner
Total Depth: 115
Surface Elev.: 735.588
North Coor.: 3450.80045

Begin Drilling: 8/21/06 @ 1648
End Drilling: 8/22/06 @ 1630
Converted to Well: Y Well I.D.: GM-58
East Coor.: 7183.08786

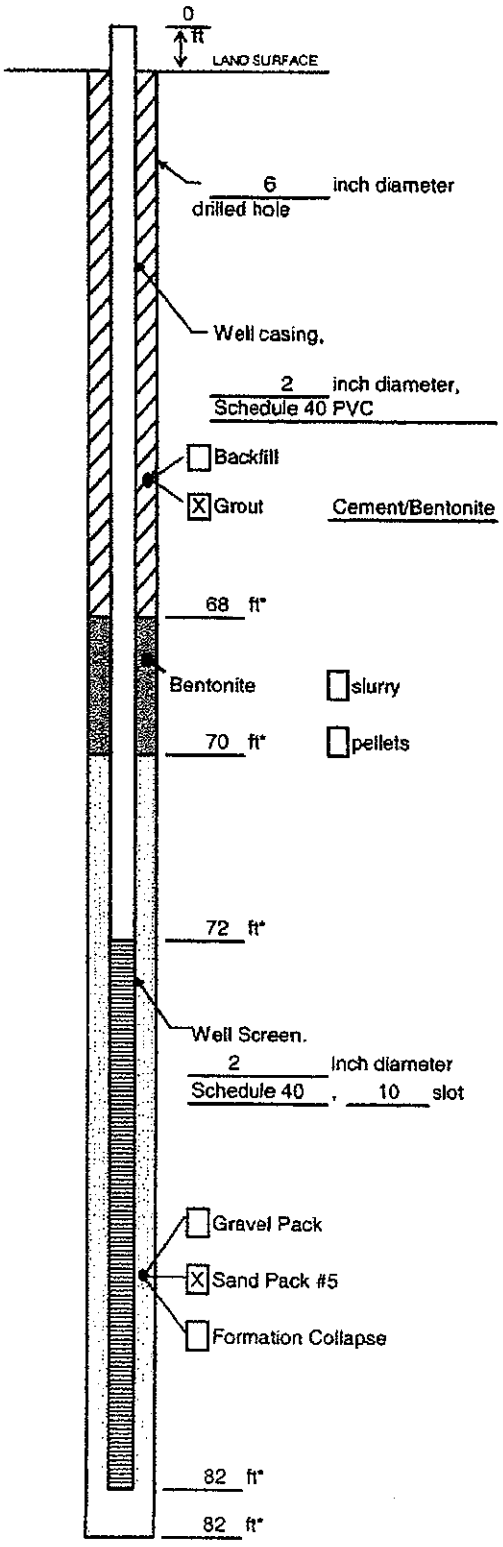
Remarks: Water samples 25-30' 8/22/06 @ 0753; 75-80 8/22/06 @ 1330; 95-100' 8/22

Project No.: OH000294.0009
Datum: TOC Elev=735.462
Filename: August 2006

ARCADIS

Well Construction Log

(Unconsolidated)



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

* Depth Below Land Surface

G:\PUBLIC\GMOTORS\Well Logs\GM2006 Well Construction Logs.XLS

Project General Motors Corporation Well GM-58

Town/City Moraine

County Montgomery State Ohio

Permit No. NA

Land-Surface (LS) Elevation and Datum:

735.588 feet [x] Surveyed

[ ] Estimated

Installation Date(s) 9/1/2006

Drilling Method Rotosonic

Drilling Contractor Boart Longyear

Drilling Fluid Water

Development Technique(s) and Date(s)

Pumping - surge with pump 9/1/06

Fluid Loss During Drilling NM gallons

Water Removed During Development NM gallons

Static Depth to Water 28.32 feet below M.P.

Pumping Depth to Water 79 feet below M.P.

Pumping Duration NM hours

Yield NM gpm Date NA

Specific Capacity NM gpm/ft

Well Purpose Monitoring Well - Well I

Remarks TOC Elevation = 735.462

pH 6.78, 6.81, 6.81, 6.58, 6.59, 6.59

Conductivity 1.20, 1.20, 1.20, 1.21, 1.20, 1.20

Turbidity 232, 137, 72, 36, 28, 18

Temp 17.8, 17.3, 17.5, 17.4, 17.3, 17.4

Time 1600, 1610, 1615, 1620, 1625, 1630

Prepared by J. Manzo/ J. Wallace

ARCADIS

Log of Boring: GM-59

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								See GM-61 for lithologic description from 0-35'	
10									
20									
30									
40									
50									
60									

☒ Composite Sample to Lab ■ Grab Sample to Lab ▥ Split-Spoon Not Analyzed

Drilling Co.: Boart Longyear
Driller: K. Gobell
Drilling Method: Rotosonic
Drilling Fluid: Water
Geologist: A. Jacobs
Total Depth: 35
Surface Elev.: 732.464
North Coor.: 4501.29894
Begin Drilling: 8/30/06
End Drilling: 8/30/06
Converted to Well: Y Well I.D.: GM-59
East Coor.: 6323.48631

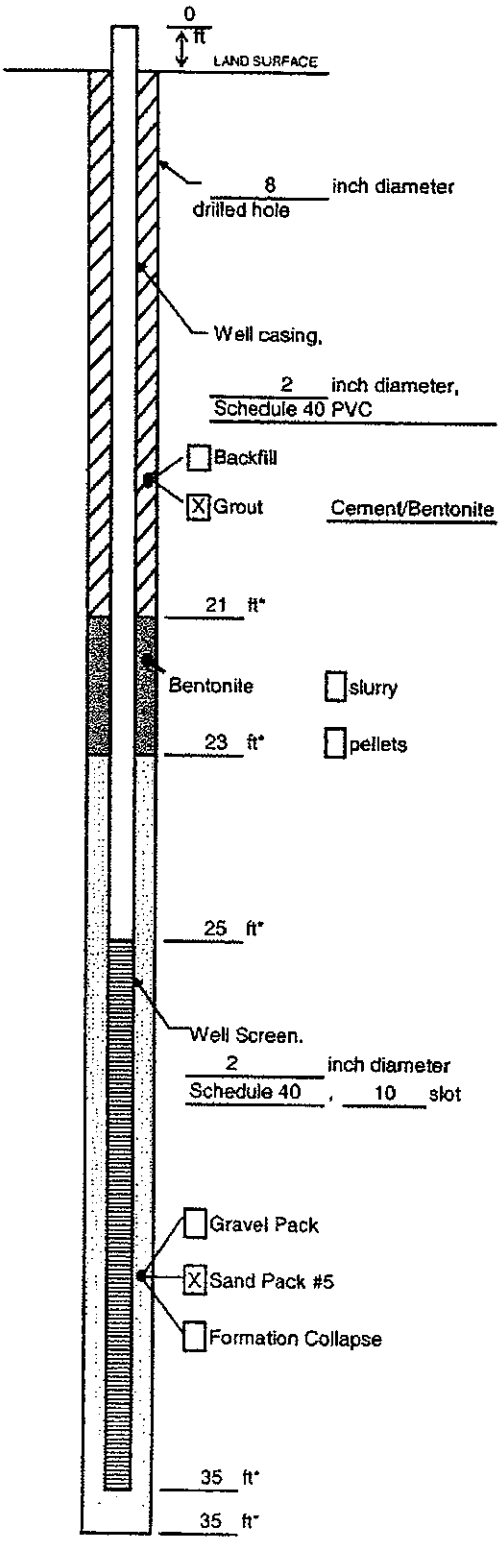
Remarks: Shallow nested pair to GM-60. TOC elevation 732.246.

Project No.: OH000294.0008.00002 Datum: 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 GM-59

Town/City Moraine

County Montgomery State Ohio

Permit No. NA

Land-Surface (LS) Elevation and Datum:

732.464 feet [X] Surveyed [ ] Estimated

Installation Date(s) 8/30/2006

Drilling Method Rotosonic

Drilling Contractor Boart Longyear

Drilling Fluid Water

Development Technique(s) and Date(s)

Pumping - surge with pump 9/1/06

Fluid Loss During Drilling ~50 gallons

Water Removed During Development 56.8 gallons

Static Depth to Water 25.8 feet below M.P.

Pumping Depth to Water 24.9 feet below M.P.

Pumping Duration 35.22 hours

Yield 0.62 gpm Date 9/1/06

Specific Capacity NM gpm/ft

Well Purpose Monitoring Well - Well J (Shallow)

Remarks TOC Elevation = 732.246

pH 6.69, 6.67, 6.66, 6.67

Conductivity 1.43, 1.34, 1.33, 1.34

Temperature 18.4, 18.4, 18.5, 18.5

Turbidity 76, 53, 35, 27

Time 10:55, 10:58, 11:01, 11:04

Prepared by A.Jacobs

ARCADIS

Log of Boring: GM-60

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								See GM-61 for lithologic description from 0-52'	
10									
20									
30									
40									
50									
60									

☒ Composite Sample to Lab ■ Grab Sample to Lab ▨ Split-Spoon Not Analyzed

Drilling Co.: Boart Longyear
Driller: K. Gobell
Drilling Method: Rotosonic
Drilling Fluid: Water

Geologist: A. Jacobs
Total Depth: 52
Surface Elev.: 732.464
North Coor.: 4701.07762

Begin Drilling: 8/30/06
End Drilling: 8/30/06
Converted to Well: Y Well I.D.: GM-60
East Coor.: 6323.54823

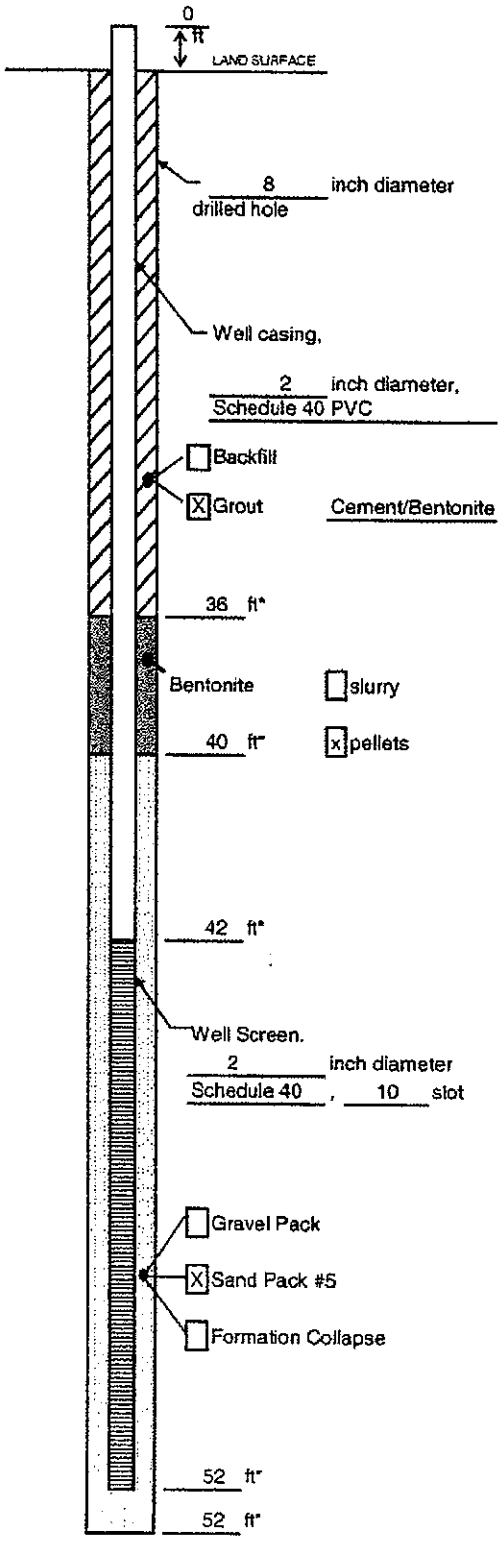
Remarks: Intermediate nested pair to GM-59. TOC elevation 732.237.

Project No.: OH000294.0008.00002 Datum: Filename: July 2006

ARCADIS

Well Construction Log

(Unconsolidated)



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

* Depth Below Land Surface

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Project General Motors Corporation Well GM-60

Town/City Moraine

County Montgomery State Ohio

Permit No. NA

Land-Surface (LS) Elevation and Datum:

732.464 feet [x] Surveyed

[ ] Estimated

Installation Date(s) 8/30/2006

Drilling Method Rotosonic

Drilling Contractor Boart Longyear

Drilling Fluid Water

Development Technique(s) and Date(s)

Pumping - surge with pump 9/1/06

Fluid Loss During Drilling ~50 gallons

Water Removed During Development ~80 gallons

Static Depth to Water 25.8 feet below M.P.

Pumping Depth to Water 24.8 feet below M.P.

Pumping Duration 0.83 hours

Yield 0.62 gpm Date 9/1/06

Specific Capacity NM gpm/ft

Well Purpose Monitoring Well-Well J (Intermediate)

Remarks TOC Elevation = 732.237

Temperature 19.2, 19.1, 19.2, 19.1

Condictivity 1.23, 1.22, 1.22, 1.22

pH 6.66, 6.68, 6.65, 6.67

Turbidity 9, 7, 6, 4

Time 11:48, 11:52, 11:55, 11:58

Prepared by A. Jacobs / J. Wallace

ARCADIS

Log of Boring: GM-61

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					ASPHALT/CONCRETE	
2							SW	SAND Brown, gravelly sand, fine-coarse sand, fine-coarse gravel (40%), wet, no plasticity	
4	N/A	24	0.3				SW	SAND Brown, fine-medium sand, fine gravel (5%), moist-dry, no plasticity	
6							SW	SAND Yellowish brown, gravelly sand, fine-coarse sand, fine-medium gravel (40%), dry	
8	N/A	24	1.4				SW	SAND Yellowish brown, gravelly sand, fine-coarse sand, fine-medium gravel (30%), dry	
10	N/A	24	0.0				SW	SAND Yellowish brown, gravelly sand, fine-coarse sand, fine-medium gravel (30%), dry	
12	N/A	24	0.0				SW	SAND Yellowish brown, gravelly sand, fine-coarse sand, fine-medium gravel (30%), dry	

☒ Composite Sample to Lab ■ Grab Sample to Lab ⬚ Split-Spoon Not Analyzed

Drilling Co.: Boart Longyear
Driller: K. Gobell
Drilling Method: Rotosonic
Drilling Fluid: Water

Geologist: T. Fortner
Total Depth: 115
Surface Elev.: 732.483
North Coor.: 4501.21590

Begin Drilling: 8/23/06 @ 1015
End Drilling: 8/24/06 @ 0940
Converted to Well: Y Well I.D.: GM-61
East Coor.: 6318.06175

Remarks: Water samples 30-35' 8/23/06 @ 1230; 47-52' 8/23/06 @ 1443; 70-75' 8/23

Project No.: OH000294.0009
Datum: TOC Elev. 732.225
Filename: August 2006

ARCADIS

Log of Boring: GM-61

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							SW	SAND Yellowish brown, gravelly sand, fine-coarse sand, fine-medium gravel (30%), dry	
	N/A	24	0.0				SW	SAND Yellowish brown, gravelly sand, fine-coarse sand, fine-medium gravel (30%), dry	
14									
	N/A	24	0.4				SW	SAND Yellow brown, gravelly sand, medium coarse sand, fine-medium gravel (40%)	
16									
	N/A	24	0.0				SW	SAND Yellow brown, gravelly sand, medium coarse sand, fine-medium gravel (40%)	
18									
	N/A	24	0.0				SW	SAND Yellow brown, gravelly sand, medium coarse sand, fine-medium gravel (40%)	
20									
	N/A	24	0.0				SW	SAND Yellow brown, gravelly sand, medium coarse sand, fine-coarse gravel (50%), moist	
22									
	N/A	24	0.0				SW	SAND Light gray, gravelly sand, fine-medium sand, fine-coarse gravel (30%), dry	
24									

☒ Composite Sample to Lab ■ Grab Sample to Lab ⊡ Split-Spoon Not Analyzed

Drilling Co.: Boart Longyear | Geologist: T. Fortner | Begin Drilling: 8/23/06 @ 1015

Driller: K. Gobeil | Total Depth: 115 | End Drilling: 8/24/06 @ 0940

Drilling Method: Rotosonic | Surface Elev.: 732.483 | Converted to Well: Y | Well I.D.: GM-61

Drilling Fluid: Water | North Coor.: 4501.21590 | East Coor.: 6318.06175

Remarks: Water samples 30-35' 8/23/06 @ 1230; 47-52' 8/23/06 @ 1443; 70-75' 8/23

Project No.: OH000294.0009 | Datum: TOC Elev. 732.225 | Filename: August 2006

ARCADIS

Log of Boring: GM-61

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							SW	SAND Light gray, gravelly sand, fine-medium sand, fine-coarse gravel (30%), dry	▼
	N/A	24	0.0				GW	GRAVEL Yellow brown, gravel, fine-coarse, coarse sand at 20%, wet	
26									
	N/A	24	0.0				GW	GRAVEL Yellow brown, gravel, fine-coarse, coarse sand at 20%, wet	
28									
	N/A	24	0.0				GW	GRAVEL Yellow brown, gravel, fine-coarse, coarse sand at 20%, wet	
30									
	N/A	24	6.1				GW	GRAVEL Yellow brown, gravel, fine-coarse, coarse sand at 20%, wet	
32									
	N/A	24	3.2				SW	SAND Yellow brown, gravelly sand, medium-coarse, fine-coarse gravel (10%), wet	
34									
	N/A	24	13.0				GW	GRAVEL Yellow brown, gravel, fine-coarse, fine-coarse sand (10%), wet	
36									

☒ Composite Sample to Lab ■ Grab Sample to Lab ⬚ Split-Spoon Not Analyzed

Drilling Co.: Boart Longyear
Driller: K. Gobell
Drilling Method: Rotosonic
Drilling Fluid: Water

Geologist: T. Fortner
Total Depth: 115
Surface Elev.: 732.483
North Coor.: 4501.21590

Begin Drilling: 8/23/06 @ 1015
End Drilling: 8/24/06 @ 0940
Converted to Well: Y Well I.D.: GM-61
East Coor.: 6318.06175

Remarks: Water samples 30-35' 8/23/06 @ 1230; 47-52' 8/23/06 @ 1443; 70-75' 8/23

Project No.: OH000294.0009
Datum: TOC Elev. 732.225
Filename: August 2006

ARCADIS

Log of Boring: GM-61

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							GW	GRAVEL Yellow brown, gravel, fine-coarse, fine-coarse sand (10%), wet	
	N/A	24	12.8				GW	GRAVEL Yellow brown, gravel, fine-coarse, fine-coarse sand (10%), wet	
38									
	N/A	24	12.5				GW	GRAVEL Yellow brown, gravel, fine-coarse, fine-coarse sand (10%) with silt, wet	
40									
	N/A	24	11.8				GW	GRAVEL Yellow brown, gravel, fine-coarse, fine-coarse sand (10%) with silt, wet	
42									
	N/A	24	5.8				GW	GRAVEL Yellow brown, gravel, fine-coarse, fine-coarse sand (10%) with silt, wet	
44									
	N/A	24	15.1				GW	GRAVEL Yellow brown, gravel, fine-coarse, fine-coarse sand (10%) with silt, wet	
46									
	N/A	24	14.5				GW	GRAVEL Yellow brown, gravel, fine-coarse, fine-coarse sand (10%) with silt, wet	
48									

☒ Composite Sample to Lab ■ Grab Sample to Lab ⬚ Split-Spoon Not Analyzed

Drilling Co.: Boart Longyear
Driller: K. Gobell
Drilling Method: Rotosonic
Drilling Fluid: Water

Geologist: T. Fortner
Total Depth: 115
Surface Elev.: 732.483
North Coor.: 4501.21590

Begin Drilling: 8/23/06 @ 1015
End Drilling: 8/24/06 @ 0940
Converted to Well: Y Well I.D.: GM-61
East Coor.: 6318.06175

Remarks: Water samples 30-35' 8/23/06 @ 1230; 47-52' 8/23/06 @ 1443; 70-75' 8/23

Project No.: OH000294.0009
Datum: TOC Elev. 732.225
Filename: August 2006

ARCADIS

Log of Boring: GM-61

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							GW	GRAVEL Yellow brown, gravel, fine-coarse, fine-coarse sand (10%) with silt, wet	
	N/A	24	13.9				GW	GRAVEL Yellow brown, gravel, fine-coarse, fine-coarse sand (10%) with silt, wet	
50									
	N/A	24	19.7				GW	GRAVEL Yellow brown, gravel, fine-coarse, fine-coarse sand (10%) with silt, wet	
52							CL	CLAY Yellowish orange clay, silty, dry, medium gravel (<5%)	
	N/A	24	15.3				CL	CLAY Yellowish orange clay, silty, dry, medium gravel (<5%)	
54									
	N/A	24	0.0				CL	CLAY Gray, silty clay, very stiff, dry, low plasticity with ~5% fine-medium gravel	
56									
	N/A	24	0.0				CL	CLAY Gray, silty clay, very stiff, dry, low plasticity with ~5% fine-medium gravel	
58									
	N/A	24	0.0				CL	CLAY Gray, silty clay, very stiff, dry, low plasticity with ~5% fine-medium gravel	
60									

☒ Composite Sample to Lab ■ Grab Sample to Lab ☐ Split-Spoon Not Analyzed

Drilling Co.: Boart Longyear | Geologist: T. Fortner | Begin Drilling: 8/23/06 @ 1015

Driller: K. Gobell | Total Depth: 115 | End Drilling: 8/24/06 @ 0940

Drilling Method: Rotosonic | Surface Elev.: 732.483 | Converted to Well: Y | Well I.D.: GM-61

Drilling Fluid: Water | North Coor.: 4501.21590 | East Coor.: 6318.06175

Remarks: Water samples 30-35' 8/23/06 @ 1230; 47-52' 8/23/06 @ 1443; 70-75' 8/23

Project No.: OH000294.0009 | Datum: TOC Elev. 732.225 | Filename: August 2006

ARCADIS

Log of Boring: GM-61

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							CL	CLAY Gray, silty clay, very stiff, dry, low plasticity with ~5% fine-medium gravel	
	N/A	24	0.0				CL	CLAY Gray, silty clay, very stiff, dry, low plasticity with ~5% fine-medium gravel	
62									
	N/A	24	0.0				CL	CLAY Gray, silty clay, very stiff, dry, low plasticity with ~5% fine-medium gravel	
64									
	N/A	24	0.0				CL	CLAY Brown, sandy clay, very stiff, fine sand, low plasticity, dry	
66									
	N/A	24	0.0				SW	SAND Brown, fine-medium sand with ~10% fine gravel, wet	
68									
	N/A	24	0.0				SW	SAND Brown, fine-medium sand with ~10% fine gravel, wet	
70									
	N/A	24	0.0				SP	SAND Brown, fine-medium sand, wet	
72									

☒ Composite Sample to Lab ■ Grab Sample to Lab ☐ Split-Spoon Not Analyzed

Drilling Co.: Boart Longyear
Driller: K. Gobell
Drilling Method: Rotosonic
Drilling Fluid: Water

Geologist: T. Fortner
Total Depth: 115
Surface Elev.: 732.483
North Coor.: 4501.21590

Begin Drilling: 8/23/06 @ 1015
End Drilling: 8/24/06 @ 0940
Converted to Well: Y Well I.D.: GM-61
East Coor.: 6318.06175

Remarks: Water samples 30-35' 8/23/06 @ 1230; 47-52' 8/23/06 @ 1443; 70-75' 8/23

Project No.: OH000294.0009
Datum: TOC Elev. 732.225
Filename: August 2006

ARCADIS

Log of Boring: GM-61

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
72							SP	SAND Brown, fine-medium sand, wet	
	N/A	24	0.0				SP	SAND Brown, fine-medium sand, wet	
74									
	N/A	12	0.0				SW	SAND Fine-coarse grained sand (80%) with gravel (20%), wet (saturated), cobbles present, well graded	
76									
	N/A	12	0.0				SW	SAND Fine-coarse grained sand (80%) with gravel (20%), wet (saturated), cobbles present, well graded	
78									
	N/A	12	0.0				SW	SAND Fine-coarse grained sand (80%) with gravel (20%), wet (saturated), cobbles present, well graded	
80									
	N/A	12	0.0				SW	SAND Fine-coarse grained sand (80%) with gravel (20%), wet (saturated), cobbles present, well graded	
82									
	N/A	12	0.0				SW	SAND Coarse grained sand (75%) and gravel, cobbles present, wet (saturated), well graded	
84									

☒ Composite Sample to Lab ■ Grab Sample to Lab ⬚ Split-Spoon Not Analyzed

Drilling Co.: Boart Longyear | Geologist: T. Fortner | Begin Drilling: 8/23/06 @ 1015

Driller: K. Gobell | Total Depth: 115 | End Drilling: 8/24/06 @ 0940

Drilling Method: Rotosonic | Surface Elev.: 732.483 | Converted to Well: Y | Well I.D.: GM-61

Drilling Fluid: Water | North Coor.: 4501.21590 | East Coor.: 6318.06175

Remarks: Water samples 30-35' 8/23/06 @ 1230; 47-52' 8/23/06 @ 1443; 70-75' 8/23

Project No.: OH000294.0009 | Datum: TOC Elev. 732.225 | Filename: August 2006

ARCADIS

Log of Boring: GM-61

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
84							SW	SAND Coarse grained sand (75%) and gravel, cobbles present, wet (saturated), well graded	
	N/A	12	0.0				SW	SAND Coarse grained sand (75%) and gravel, cobbles present, wet (saturated), well graded	
86									
	N/A	12	0.0				SW	SAND Fine to coarse grained sand (75%) and gravel (25%), cobbles present, wet (saturated), well graded	
88									
	N/A	12	0.0				SW	SAND Fine to coarse grained sand (75%) and gravel (25%), cobbles present, wet (saturated), well graded	
90									
	N/A	12	0.0				SW	SAND Fine to coarse grained sand (75%) and gravel (25%), cobbles present, wet (saturated), well graded	
92									
	N/A	12	0.0				SW	SAND Fine to coarse grained sand (75%) and gravel (25%), cobbles present, wet (saturated), well graded	
94									
	N/A	18	0.0				SW	SAND Coarse grained sand (75%) and gravel (25%), cobbles present, wet (saturated), well graded	
96									

☒ Composite Sample to Lab ■ Grab Sample to Lab ⁞⁞ Split-Spoon Not Analyzed

Drilling Co.: Boart Longyear
Driller: K. Gobell
Drilling Method: Rotosonic
Drilling Fluid: Water
Geologist: T. Fortner
Total Depth: 115
Surface Elev.: 732.483
North Coor.: 4501.21590
Begin Drilling: 8/23/06 @ 1015
End Drilling: 8/24/06 @ 0940
Converted to Well: Y Well I.D.: GM-61
East Coor.: 6318.06175

Remarks: Water samples 30-35' 8/23/06 @ 1230; 47-52' 8/23/06 @ 1443; 70-75' 8/23

Project No.: OH000294.0009
Datum: TOC Elev. 732.225
Filename: August 2006

ARCADIS

Log of Boring: GM-61

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
96							SW	SAND Coarse grained sand (75%) and gravel (25%), cobbles present, wet	
	N/A	18	0.0				SW	SAND Coarse grained sand (75%) and gravel (25%), cobbles present, wet (saturated), well graded	
98									
	N/A	18	0.0				SW	SAND Coarse grained sand (75%) and gravel (25%), cobbles present, wet (saturated), well graded	
100									
	N/A	18	0.0				SW	SAND Coarse grained sand (75%) and gravel (25%), cobbles present, wet (saturated), well graded	
102									
	N/A	18	0.0				SW	SAND Coarse grained sand (75%) and gravel (25%), cobbles present, wet	
104									
	N/A	18	0.0				SW	SAND Coarse grained sand (75%) and gravel (25%), cobbles present, wet	
106									
	N/A	18	0.0				SW	SAND Coarse grained sand (75%) and gravel (25%), cobbles present, wet	
108									

☒ Composite Sample to Lab ■ Grab Sample to Lab ⬚ Split-Spoon Not Analyzed

Drilling Co.: Boart Longyear
Driller: K. Gobell
Drilling Method: Rotosonic
Drilling Fluid: Water

Geologist: T. Fortner
Total Depth: 115
Surface Elev.: 732.483
North Coor.: 4501.21590

Begin Drilling: 8/23/06 @ 1015
End Drilling: 8/24/06 @ 0940
Converted to Well: Y Well I.D.: GM-61
East Coor.: 6318.06175

Remarks: Water samples 30-35' 8/23/06 @ 1230; 47-52' 8/23/06 @ 1443; 70-75' 8/23

Project No.: OH000294.0009
Datum: TOC Elev. 732.225
Filename: August 2006

ARCADIS

Log of Boring: GM-61

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
108							SW	SAND Coarse grained sand (75%) and gravel (25%), cobbles present, wet	
	N/A	18	0.0				SW	SAND Coarse grained sand (75%) and gravel (25%), cobbles present, wet	
110									
	N/A	18	0.0				SW	SAND Coarse grained sand (75%) and gravel (25%), cobbles present, wet	
112									
	N/A	18	0.0				SW	SAND Coarse grained sand (75%) and gravel (25%), cobbles present, wet	
114									
								End of boring	
116									
118									
120									

☒ Composite Sample to Lab ■ Grab Sample to Lab ▯ Split-Spoon Not Analyzed

Drilling Co.: Boart Longyear | Geologist: T. Fortner | Begin Drilling: 8/23/06 @ 1015

Driller: K. Gobell | Total Depth: 115 | End Drilling: 8/24/06 @ 0940

Drilling Method: Rotosonic | Surface Elev.: 732.483 | Converted to Well: Y | Well I.D.: GM-61

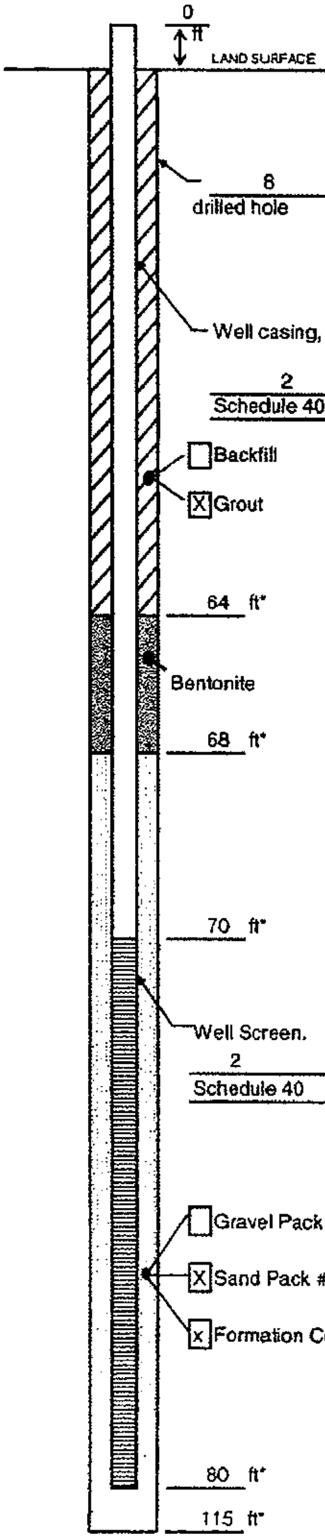
Drilling Fluid: Water | North Coor.: 4501.21590 | East Coor.: 6318.06175

Remarks: Water samples 30-35' 8/23/06 @ 1230; 47-52' 8/23/06 @ 1443; 70-75' 8/23

Project No.: OH000294.0009 | Datum: TOC Elev. 732.225 | Filename: August 2006

ARCADIS

Well Construction Log
(Unconsolidated)



8 inch diameter drilled hole

Well casing,
2 inch diameter,
Schedule 40 PVC

☐ Backfill
☒ Grout Cement/Bentonite

64 ft*

Bentonite ☐ slurry
68 ft* ☒ pellets

70 ft*

Well Screen,
2 inch diameter
Schedule 40, 10 slot

☐ Gravel Pack
☒ Sand Pack #5
☒ Formation Collapse

80 ft*
115 ft*

Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

* Depth Below Land Surface

Project General Motors Corporation Well GM-61

Town/City Moraine

County Montgomery State Ohio

Permit No. NA

Land-Surface (LS) Elevation and Datum:

732.483 feet ☒ Surveyed ☐ Estimated

Installation Date(s) 8/29/2006

Drilling Method Rotosonic

Drilling Contractor Boart Longyear

Drilling Fluid Water

Development Technique(s) and Date(s)

Pumping - surge with pump 9/1/06

Fluid Loss During Drilling 0 gallons

Water Removed During Development 50 gallons

Static Depth to Water 24.87 feet below M.P.

Pumping Depth to Water NM feet below M.P.

Pumping Duration 0.70 hours

Yield NM gpm Date 9/1/06

Specific Capacity NM gpm/ft

Well Purpose Monitoring Well - Well J (Deep)

Remarks TOC Elevation = 732.225

pH 6.75, 6.55, 6.53, 6.51, 6.50, 6.49

Conductivity 1.26, 1.30, 1.30, 1.31, 1.31, 1.31

Temperature 999, 402, 310, 256, 230, 241

Turbidity 18.8, 18.5, 18.4, 18.3, 18.0, 18.0

Time 14:45, 15:00, 15:05, 15:10, 15:15, 15:20

Prepared by A. Jacobs/ T. Fotner/ J. Wallace

ARCADIS

Log of Boring: GM-62

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						No recovery	
2									
4									
6									
8									
10	N/A	24	0.0				SW	SAND Brown, gravelly sand, fine-coarse sand, dry, little to no plasticity, fine-coarse gravel @ 30%	
12	N/A	24	15.3				SW	SAND Brown, gravelly sand, fine-coarse sand, dry, little to no plasticity, fine-coarse gravel @ 30%	

☒ Composite Sample to Lab ■ Grab Sample to Lab ⬚ Split-Spoon Not Analyzed

Drilling Co.: Boart Longyear
Driller: K. Gobell
Drilling Method: Rotosonic
Drilling Fluid: Water

Geologist: A. Jacobs
Total Depth: 85
Surface Elev.: 722.172
North Coor.: -189.49099

Begin Drilling: 8/29/06 @ 1530
End Drilling: 8/30/06 @ 1330
Converted to Well: Y Well I.D.: GM-62
East Coor.: 5442.96098

Remarks: Water samples 30-35' 8/29 @ 1711; 40-45' 8/30 @ 0908; 60-65' @ 1248

Project No.: OH000294.0009
Datum: TOC Elev. 722.109
Filename: August 2006

ARCADIS

Log of Boring: GM-62

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	15.0				SW	SAND Brown, gravelly sand, fine-coarse sand, dry, little to no plasticity, fine-coarse gravel @ 45%	
14									
	N/A	24	14				SW	SAND Brown, gravelly sand, fine-coarse sand, dry, little to no plasticity, fine-coarse gravel @ 45%	
16									
	N/A	24	14.2				SW	SAND Brown, gravelly sand, fine-coarse sand, dry, little to no plasticity, fine-coarse gravel @ 45%	
18									
	N/A	24	16.6				SW	SAND Brown, gravelly sand, fine-coarse sand, dry, little to no plasticity, fine-coarse gravel @ 45%	
20									
	N/A	24	14.8				SP	SAND Brown (red-orange stringers), gravelly sand, fine-medium sand, moist, gravel fine-medium @ 35%	
22									
	N/A	24	12.9				SP	SAND Brown (red-orange stringers), gravelly sand, fine-medium sand, moist, gravel fine-medium @ 35%	
24									

☒ Composite Sample to Lab ■ Grab Sample to Lab ⬚ Split-Spoon Not Analyzed

Drilling Co.: Boart Longyear | Geologist: A. Jacobs | Begin Drilling: 8/29/06 @ 1530

Driller: K. Gobell | Total Depth: 85 | End Drilling: 8/30/06 @ 1330

Drilling Method: Rotosonic | Surface Elev.: 722.172 | Converted to Well: Y Well I.D.: GM-62

Drilling Fluid: Water | North Coor.: -189.49099 | East Coor.: 5442.96098

Remarks: Water samples 30-35' 8/29 @ 1711: 40-45' 8/30 @ 0908; 60-65' @ 1248

Project No.: OH000294.0009 | Datum: TOC Elev. 722.109 | Filename: August 2006

ARCADIS

Log of Boring: GM-62

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	10.3				SP	SAND Brown, fine coarse sand, wet, little to no plasticity	
26									
	N/A	24	16.8				GW	GRAVEL Brown, fine gravel, wet, no plasticity	
28									
	N/A	24	7.0				GW	GRAVEL Brown, sandy gravel, fine-coarse gravel, wet, sand @ 15%	
30									
	N/A	24	3.6				GW	GRAVEL Brown, sandy gravel, fine-medium gravel, wet, sand @ 15%	
32									
	N/A	24	15.8				SW	SAND Brown, gravelly sand, fine-coarse, wet, gravel medium @ 20%	
34									
	N/A	24	0.0				SW	SAND Brown, sandy gravel, fine-medium, wet, fine-coarse sand, no plasticity, sand @ 20%	
36									

☒ Composite Sample to Lab ■ Grab Sample to Lab ▯ Split-Spoon Not Analyzed

Drilling Co.: Boart Longyear | Geologist: A. Jacobs | Begin Drilling: 8/29/06 @ 1530

Driller: K. Gobell | Total Depth: 85 | End Drilling: 8/30/06 @ 1330

Drilling Method: Rotosonic | Surface Elev.: 722.172 | Converted to Well: Y | Well I.D.: GM-62

Drilling Fluid: Water | North Coor.: -189.49099 | East Coor.: 5442.96098

Remarks: Water samples 30-35' 8/29 @ 1711; 40-45' 8/30 @ 0908; 60-65' @ 1248

Project No.: OH000294.0009 | Datum: TOC Elev. 722.109 | Filename: August 2006

ARCADIS

Log of Boring: GM-62

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	SAND Brown, sandy gravel, fine-medium, wet, fine-coarse sand, no plasticity, sand @ 20%	
38									
	N/A	24	0.0				SW	SAND Brown, sandy gravel, fine-medium, wet, fine-coarse sand, no plasticity, sand @ 20%	
40									
	N/A	24	0.0				SW	SAND Brown, gravelly sand, fine coarse, wet, no plasticity, fine-medium gravel @ 10%	
42									
	N/A	24	0.0				SW	SAND Brown, gravelly sand, fine coarse, wet, no plasticity, fine-medium gravel @ 10%	
44									
	N/A	24	0.0				SP	SAND Brown. gravelly sand, fine-medium, wet, no plasticity, fine coarse gravel @ 10%	
46									
	N/A	24	0.0				SM	SAND Brown, gravelly sand, fine-medium. wet, no plasticity, fine coarse gravel @ 10%	
48									

☒ Composite Sample to Lab ■ Grab Sample to Lab ⬚ Split-Spoon Not Analyzed

Drilling Co.: Boart Longyear
Driller: K. Gobell
Drilling Method: Rotosonic
Drilling Fluid: Water

Geologist: A. Jacobs
Total Depth: 85
Surface Elev.: 722.172
North Coor.: -189.49099

Begin Drilling: 8/29/06 @ 1530
End Drilling: 8/30/06 @ 1330
Converted to Well: Y Well I.D.: GM-62
East Coor.: 5442.96098

Remarks: Water samples 30-35' 8/29 @ 1711; 40-45' 8/30 @ 0908; 60-65' @ 1248

Project No.: OH000294.0009
Datum: TOC Elev. 722.109
Filename: August 2006

ARCADIS

Log of Boring: GM-62

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				SM	SAND Brown, gravelly sand with silt, fine-medium, wet, no plasticity, fine coarse gravel @ 10%	
50									
	N/A	24	0.0				SM	SAND Brown, gravelly sand with silt, fine-medium, wet, medium plasticity, fine coarse gravel @ 10%	
52									
	N/A	24	0.0				SM	SAND Brown, gravelly sand with silt, fine-medium, wet, no plasticity, fine coarse gravel @ 10%	
54									
	N/A	24	10.1				GP	GRAVEL Medium-coarse gravel with a few cobbles	
56									
	N/A	24	10.1				GP	GRAVEL Medium-coarse gravel with a few cobbles	
58									
	N/A	24	10.1				GP	GRAVEL Medium-coarse gravel with a few cobbles	
60									

☒ Composite Sample to Lab ■ Grab Sample to Lab ⊡ Split-Spoon Not Analyzed

Drilling Co.: Boart Longyear
Driller: K. Gobell
Drilling Method: Rotosonic
Drilling Fluid: Water

Geologist: A. Jacobs
Total Depth: 85
Surface Elev.: 722.172
North Coor.: -189.49099

Begin Drilling: 8/29/06 @ 1530
End Drilling: 8/30/06 @ 1330
Converted to Well: Y Well I.D.: GM-62
East Coor.: 5442.96098

Remarks: Water samples 30-35' 8/29 @ 1711; 40-45' 8/30 @ 0908; 60-65' @ 1248

Project No.: OH000294.0009 Datum: TOC Elev. 722.109 Filename: August 2006

ARCADIS

Log of Boring: GM-62

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							SW	SAND Brown, fine-coarse sand, wet, no plasticity	
	N/A	24	25				SW	SAND Brown, fine-coarse sand, wet, no plasticity	
62									
	N/A	24	2.1				SW	SAND Brown, fine-coarse sand, wet, no plasticity	
64									
	N/A	24	5.2				GP	GRAVEL Medium-coarse gravel with a few cobbles	
66	N/A	24	5.2				SP	SAND Brown, medium-coarse sand, gravel @ 15%, (coarse), wet, no plasticity	
	N/A	24	1.1				SP	SAND Brown, medium-coarse sand, gravel @ 15%, (coarse), wet, no plasticity	
68									
	N/A	24	5.6				SP	SAND Brown, medium-coarse sand, gravel @ 15%, (coarse), wet, no plasticity	
70									
	N/A	24	3.1				SP	SAND Gray, gravelly sand, coarse, wet, no plasticity, fine-coarse gravel @ 5%	
72									

☒ Composite Sample to Lab ■ Grab Sample to Lab ☐ Split-Spoon Not Analyzed

Drilling Co.: Boart Longyear
Driller: K. Gobell
Drilling Method: Rotosonic
Drilling Fluid: Water

Geologist: A. Jacobs
Total Depth: 85
Surface Elev.: 722.172
North Coor.: -189.49099

Begin Drilling: 8/29/06 @ 1530
End Drilling: 8/30/06 @ 1330
Converted to Well: Y Well I.D.: GM-62
East Coor.: 5442.96098

Remarks: Water samples 30-35' 8/29 @ 1711; 40-45' 8/30 @ 0908; 60-65' @ 1248

Project No.: OH000294.0009
Datum: TOC Elev. 722.109
Filename: August 2006

ARCADIS

Log of Boring: GM-62

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
72									
	N/A	24	2.9				SW	SAND Gray, gravelly sand, fine-coarse, wet, no plasticity, fine-medium gravel @ 10%	
74									
	N/A	24	4.0				GP	GRAVEL Medium coarse gravel	
76							SM	SILTY SAND Gray, silty sand, fine, wet, medium plasticity, silt @ 10%	
	N/A	24	0.7				SM	SILTY SAND Gray, silty sand, fine, wet, medium plasticity, silt @ 10%	
78									
	N/A	24	4.6				SM	SILTY SAND Gray, silty sand, fine, wet, medium plasticity, silt @ 10%	
80							SM	SILTY SAND Gray, silty sand, fine-coarse, wet, medium plasticity, silt @ 10%, gravel (medium-coarse) @ 10%	
	N/A	24	2.4				SM	SILTY SAND Gray, silty sand, fine-coarse, wet, medium plasticity, silt @ 10%, gravel (medium-coarse) @ 10%	
82									
	N/A	24	4.1				SM	SILTY SAND Gray, silty sand, fine-coarse, wet, medium plasticity, silt @ 10%, gravel (medium-coarse) @ 10%	
84									

☒ Composite Sample to Lab ■ Grab Sample to Lab ⬚ Split-Spoon Not Analyzed

Drilling Co.: Boart Longyear
Driller: K. Gobell
Drilling Method: Rotosonic
Drilling Fluid: Water

Geologist: A. Jacobs
Total Depth: 85
Surface Elev.: 722.172
North Coor.: -189.49099

Begin Drilling: 8/29/06 @ 1530
End Drilling: 8/30/06 @ 1330
Converted to Well: Y Well I.D.: GM-62
East Coor.: 5442.96098

Remarks: Water samples 30-35' 8/29 @ 1711; 40-45' 8/30 @ 0908; 60-65' @ 1248

Project No.: OH000294.0009
Datum: TOC Elev. 722.109
Filename: August 2006

ARCADIS

Log of Boring: GM-62

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
84							SM	SILTY SAND Gray, silty sand, fine-coarse, wet, medium plasticity, silt @ 10%, gravel (medium-coarse) @ 10%	
								End of boring	
86									
88									
90									
92									
94									
96									

☒ Composite Sample to Lab ■ Grab Sample to Lab ▯ Split-Spoon Not Analyzed

Drilling Co.: Boart Longyear
Driller: K. Gobell
Drilling Method: Rotosonic
Drilling Fluid: Water

Geologist: A. Jacobs
Total Depth: 85
Surface Elev.: 722.172
North Coor.: -189.49099

Begin Drilling: 8/29/06 @ 1530
End Drilling: 8/30/06 @ 1330
Converted to Well: Y Well I.D.: GM-62
East Coor.: 5442.96098

Remarks: Water samples 30-35' 8/29 @ 1711; 40-45' 8/30 @ 0908; 60-65' @ 1248

Project No.: OH000294.0009 Datum: TOC Elev. 722.109 Filename: August 2006

ARCADIS

Well Construction Log
(Unconsolidated)

0 ft

LAND SURFACE

6 inch diameter drilled hole

Well casing, 2 inch diameter, Schedule 40 PVC

☐ Backfill

☒ Grout Cement/Bentonite

45 ft*

Bentonite ☐ slurry

48 ft* ☒ pellets

50 ft*

Well Screen. 2 inch diameter Schedule 40, 10 slot

☐ Gravel Pack

☒ Sand Pack #5

☒ Formation Collapse

60 ft*

85 ft*

Measuring Point is Top of Well Casing Unless Otherwise Noted.

* Depth Below Land Surface

Project: General Motors Corporation   Well: GM-62

Town/City: Moraine

County: Montgomery   State: Ohio

Permit No.: NA

Land-Surface (LS) Elevation and Datum:

722.172 feet ☒ Surveyed ☐ Estimated

Installation Date(s): 8/31/2006

Drilling Method: Rotosonic

Drilling Contractor: Boart Longyear

Drilling Fluid: Water

Development Technique(s) and Date(s)

Pumping - surge with pump 9/1/06

Fluid Loss During Drilling ~200 gallons

Water Removed During Development 234 gallons

Static Depth to Water 17.4 feet below M.P.

Pumping Depth to Water 17.6 feet below M.P.

Pumping Duration 2.18 hours

Yield 0.61 gpm   Date 9/1/06

Specific Capacity NM gpm/ft

Well Purpose: Monitoring Well - Well C

Remarks: TOC Elevation = 722.109

Conductivity 1.09, 1.11, 1.11, 1.11,

Temperature 17.1, 17.1, 17.0, 17.1

pH 6.72, 6.75, 6.75, 6.78

Turbidity 133, 88, 88, 85

Time 9:30, 9:33, 9:35, 9:38

Prepared by: A. Jacobs

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ARCADIS

Log of Boring: GM-63

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								See RZ-45 for lithologic description from 0-40'	
10									
20									
30									
40									
50									
60									

☒ Composite Sample to Lab ■ Grab Sample to Lab ⬚ Split-Spoon Not Analyzed

Drilling Co.: Boart Longyear
Driller: D. Remmler
Drilling Method: Hollow Stem Auger
Drilling Fluid: Water

Geologist: J. Wallace
Total Depth: 40
Surface Elev.: 726.207
North Coor.: 1625.02787

Begin Drilling: 8/31/06
End Drilling: 8/31/06
Converted to Well: Y Well I.D.: GM-63
East Coor.: 4918.82945

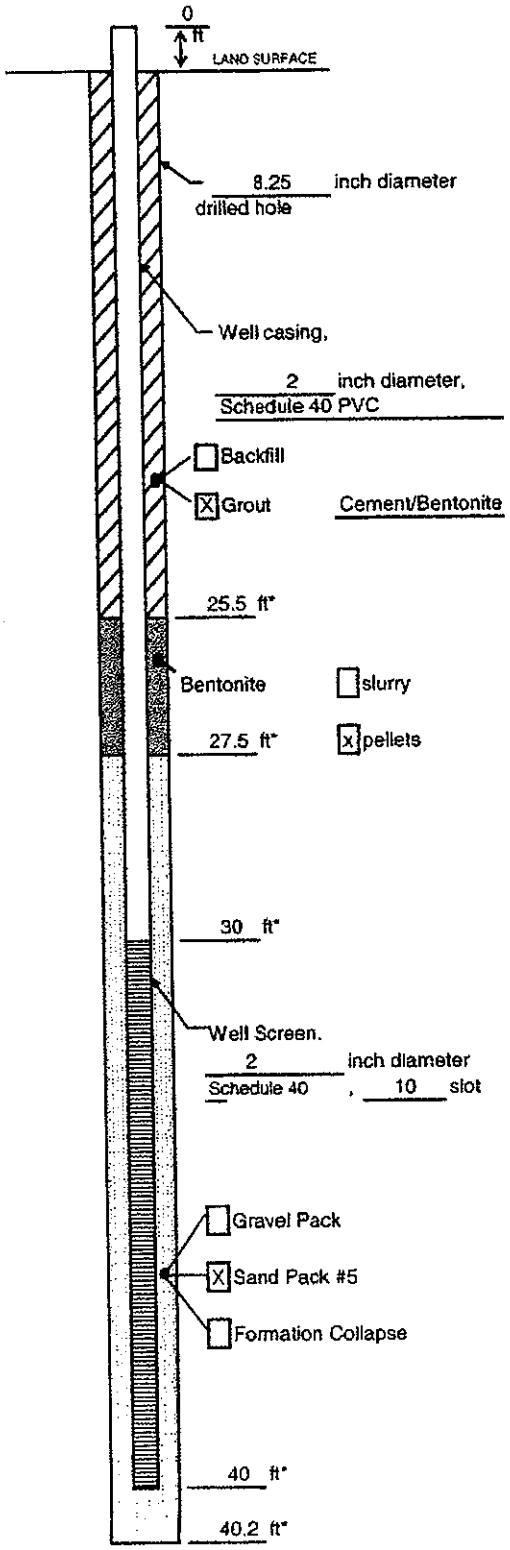
Remarks: Shallow pair to GM-64. TOC elevation 725.791

Project No.: OH000294.0008.00002 Datum: Filename: July 2006

ARCADIS

Well Construction Log

(Unconsolidated)



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

* Depth Below Land Surface

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Project General Motors Corporation Well GM-63

Town/City Moraine

County Montgomery State Ohio

Permit No. NA

Land-Surface (LS) Elevation and Datum:

726.207 feet [X] Surveyed

[ ] Estimated

Installation Date(s) 9/1/2006

Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear

Drilling Fluid Water

Development Technique(s) and Date(s)

Pumping - surge with pump 9/1/06

Fluid Loss During Drilling 15 gallons

Water Removed During Development 50 gallons

Static Depth to Water -20.2 feet below M.P.

Pumping Depth to Water 38 feet below M.P.

Pumping Duration NA hours

Yield -1.6 gpm Date 9/1/06

Specific Capacity NM gpm/ft

Well Purpose Monitoring Well

WSU-22 Replacement (Shallow)

Remarks TOC Elevation = 725.791

pH 6.65, 6.58, 6.58, 6.58, 6.59

Conductivity 1.41, 1.41, 1.42, 1.41, 1.41

Turbidity 588, 286, 157, 92, 59

Temperature 18.8, 18.6, 18.6, 18.5, 18.5

Time 13:40, 13:45, 13:50, 13:55, 14:00

Prepared by J. Wallace

ARCADIS

Log of Boring: GM-64

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								See RZ-4J for lithologic description from 0-60'	
10									
20									
30									
40									
50									
60									

☒ Composite Sample to Lab ■ Grab Sample to Lab ⬚ Split-Spoon Not Analyzed

Drilling Co.: Boart Longyear
Driller: D. Remmler
Drilling Method: Hollow Stem Auger
Drilling Fluid: Water

Geologist: J. Wallace
Total Depth: 60
Surface Elev.: 726.384
North Coor.: 1624.73847

Begin Drilling: 8/31/06
End Drilling: 8/31/06
Converted to Well: Y Well I.D.: GM-64
East Coor.: 4913.72063

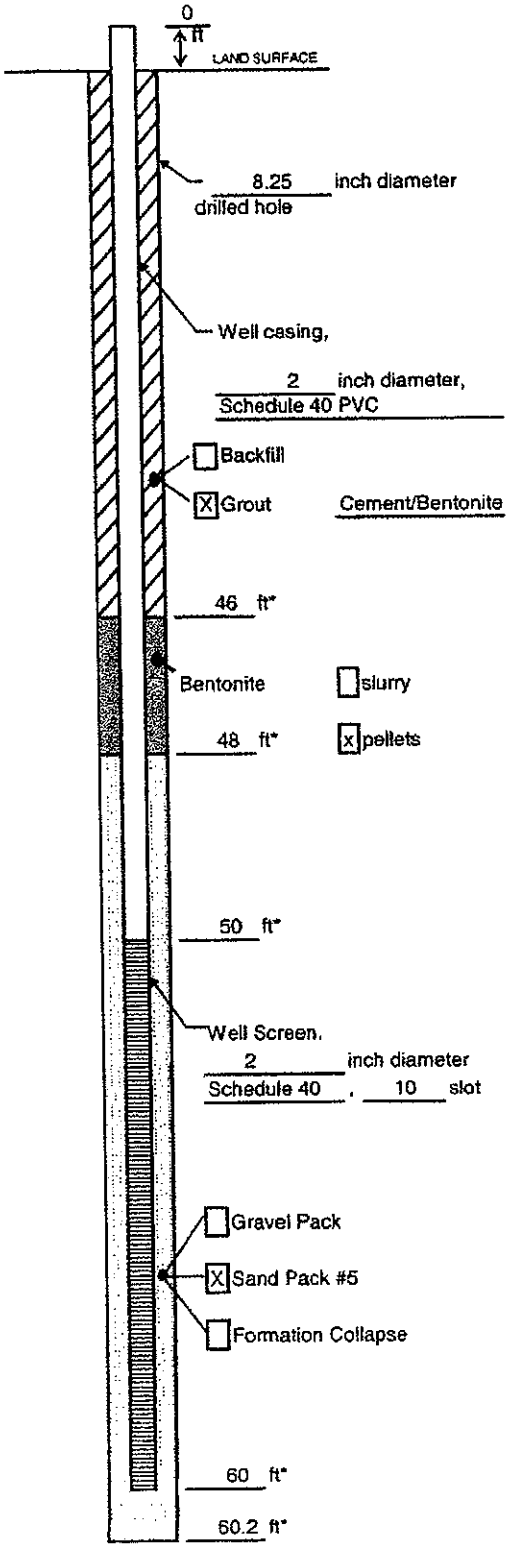
Remarks: Shallow pair to GM-54. TOC elevation 725.951

Project No.: OH000294.0008.00002 Datum: Filename: July 2006

ARCADIS

Well Construction Log

(Unconsolidated)



Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

* Depth Below Land Surface

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Project General Motors Corporation Well GM-64

Town/City Moraine

County Montgomery State Ohio

Permit No. NA

Land-Surface (LS) Elevation and Datum:

726.384 feet [x] Surveyed

[ ] Estimated

Installation Date(s) 8/31/2006

Drilling Method Hollow Stem Auger

Drilling Contractor Boart Longyear

Drilling Fluid None. However, ~25 gallons water added due to heaving sands

Development Technique(s) and Date(s)

Pumping - surge with pump

Fluid Loss During Drilling 25 gallons

Water Removed During Development 55 gallons

Static Depth to Water 20.4 feet below M.P.

Pumping Depth to Water 58 feet below M.P.

Pumping Duration 0.85 hours

Yield NM gpm Date 8/31/06

Specific Capacity NM gpm/ft

Well Purpose Monitoring Well

WSU-22 Replacement (Deep)

Remarks TOC Elevation = 725.951

Time 13:00, 13:05, 13:10, 13:15, 13:20, 13:25

pH 6.78, 6.64, 6.64, 6.67, 6.66, 6.67

Conductivity 1.29, 1.28, 1.28, 1.29, 1.29, 1.29

Turbidity 10+, 10+, 999, 999, 999, 10+

Temperature 19.7, 19.7, 19.6, 19.5, 19.6, 19.6

Pumped 25 gallons prior to taking readings

Prepared by J. Wallace

ARCADIS

Log of Boring: Well-A-S

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	N/A	N/A					No recovery	
2	N/A	24	4.1				CL	CLAY Brown, silty clay with coarse gravel (20%), stiff, dry, little to no plasticity	
4	N/A	24	1.7				SM	SILTY SAND Brown, silty sand with coarse gravel to cobble (10-15%), sand is fine-medium grained	
6	N/A	24	3.9				SM	SILTY SAND Brown, silty sand with coarse gravel to cobble (10-15%), sand is fine-medium grained	
8	N/A	24	4.4				CL	CLAY Brown, silty clay with coarse gravel (10%), stiff, dry, little to no plasticity	
10	N/A	24	2.5				GM	GRAVEL Silty gravel (fine-coarse), gravel 60%	
12									

☒ Composite Sample to Lab ■ Grab Sample to Lab ⬚ Split-Spoon Not Analyzed

Drilling Co.: Boart Longyear | Geologist: T. Fortner | Begin Drilling: 7/11/06 @ 12:45

Driller: M. Osterberg | Total Depth: 41 | End Drilling: 7/11/06 @ 1405

Drilling Method: Rotosonic | Surface Elev.: Not surveyed | Converted to Well: N | Well I.D.: A-S

Drilling Fluid: Water | North Coor.: Not surveyed | East Coor.: Not surveyed

Remarks: Water sample 30-35' @ 1314 on 7/11/06.

Project No.: OH000294.0008.00002 | Datum: | Filename: July 2006

ARCADIS

Log of Boring: Well-A-S

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	1.7				GM	GRAVEL Silty gravel (fine-coarse), gravel 60%	
14	N/A	24	4.3				GP	GRAVEL Brown, medium to coarse sand with 5% fine gravel, sand is moderately graded	
16	N/A	24	6.1				GP	GRAVEL Brown, medium to coarse sand with 5% fine gravel, sand is moderately graded with increasing fine gravel (10%)	
18	N/A	24	5.5				GP	GRAVEL Brown, medium to coarse sand with 5% fine gravel, sand is moderately graded with increasing fine gravel (10%)	
20	N/A	24	5.9				GP	GRAVEL Brown, medium to coarse sand with 5% fine gravel, sand is moderately graded with increasing fine gravel (10%)	
22	N/A	24	3.2				SW	SAND Gravelly sand, fine gravel (70%), poorly graded sand medium-coarse (30%), wet-saturated	▼
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: 41
Surface Elev.: Not surveyed
North Coor.: Not surveyed

Begin Drilling: 7/11/06 @ 12:45
End Drilling: 7/11/06 @ 1405
Converted to Well: N Well I.D.: A-S
East Coor.: Not surveyed

Remarks: Water sample 30-35' @ 1314 on 7/11/06.

Project No.: OH000294.0008.00002 Datum: Filename: July 2006

ARCADIS

Log of Boring: Well-A-S

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	2.5				SW	SAND Gravelly sand, fine-medium gravel (70%), poorly graded sand medium-coarse (30%), wet-saturated	
26	N/A	24	3.3				GW	GRAVEL Coarse gravel with little fines, wet	
28	N/A	24	3.1				SW	SAND Gravelly sand, medium gravel (50%), fine-medium sand (poorly graded), wet	
30	N/A	24	4.3				SW	SAND Gravelly sand, medium gravel (50%), fine-medium sand (poorly graded), wet	
32	N/A	24	2.6				SW	SAND Gravelly sand, medium gravel (50%), fine-medium sand (poorly graded), wet	
34	N/A	24	0.5				SW	SAND Gravelly sand, medium gravel (50%), fine-medium sand (poorly graded), wet	
							CL	CLAY Brown, silty clay with 5% fine gravel, little plasticity, moist	
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: 41
Surface Elev.: Not surveyed
North Coor.: Not surveyed

Begin Drilling: 7/11/06 @ 12:45
End Drilling: 7/11/06 @ 1405
Converted to Well: N Well I.D.: A-S
East Coor.: Not surveyed

Remarks: Water sample 30-35' @ 1314 on 7/11/06.

Project No.: OH000294.0008.00002 Datum: Filename: July 2006

ARCADIS

Log of Boring: Well-A-S

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	0.5				CL	CLAY Gray, silty clay with ~10% gravel (fine), little plasticity, dry, stiff	
38	N/A	24	0.5				CL	CLAY Gray, silty clay with ~10% gravel (fine), little plasticity, dry, stiff	
40	N/A	24	0.5				CL	CLAY Gray, silty clay with ~10% gravel (fine), little plasticity, dry, stiff	
42								End of boring	
44									
46									
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: 41
Surface Elev.: Not surveyed
North Coor.: Not surveyed

Begin Drilling: 7/11/06 @ 12:45
End Drilling: 7/11/06 @ 1405
Converted to Well: N Well I.D.: A-S
East Coor.: Not surveyed

Remarks: Water sample 30-35' @ 1314 on 7/11/06.

Project No.: OH000294.0008.00002 Datum: Filename: July 2006

ARCADIS

Log of Boring: Well A-D

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
38								See log Well A-S for lithologic description to 40'	
40	N/A	24	0.0				CL	CLAY Gray, silty clay, very stiff, no plasticity, brittle with ~10-20% fine medium-gravel, dry	
42	N/A	24	0.0				CL	CLAY Gray, silty clay, very stiff, no plasticity, brittle with ~10-20% fine medium-gravel, dry	
44	N/A	24	0.0				CL	CLAY Gray, silty clay, very stiff, no plasticity, brittle with ~10-20% fine medium-gravel, dry	
46	N/A	24	0.0				CL	CLAY Gray, silty clay, soft, medium plasticity with 5% fine gravel, dry	
48	N/A	24	0.0				SM	SAND Gray, fine sand, moist, poorly graded, some silt	
							CL	CLAY Gray, silty clay, very stiff, no plasticity, brittle with ~5% fine, dry	
50									

☒ 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: 100
Surface Elev.: Not surveyed
North Coor.: Not surveyed

Begin Drilling: 7/25/06 @ 1806
End Drilling: 7/26/06 @ 0915
Converted to Well: N Well I.D.: Well A-D
East Coor.: Not surveyed

Remarks: Water sample 70-75' @ 0807; 80-85' @ 0933; 95-100' @ 1100

Project No.: OH000294.0008.00002 Datum: Filename: July 2006

ARCADIS

Log of Boring: Well A-D

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
50	N/A	24	0.0				CL	CLAY Gray, silty clay, very stiff, no plasticity, brittle with ~5% fine gravel, dry	
52	N/A	24	0.0				CL	CLAY Gray, silty clay, very stiff, no plasticity, brittle with ~5% fine gravel, dry	
54	N/A	24	0.0				CL	CLAY Gray, silty clay, very stiff, no plasticity, brittle with ~5% fine gravel, dry	
56	N/A	24	0.0				CL	CLAY Gray, silty clay, very stiff, no plasticity, brittle with ~5% fine gravel, dry	
58	N/A	24	0.0				CL	CLAY Gray, silty clay, stiff, medium plasticity, dry with ~5-10% gravel	
60	N/A	24	0.0				CL	CLAY Gray, silty clay, stiff, medium plasticity, dry with ~5-10% gravel	
62									

☒ 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: 100
Surface Elev.: Not surveyed
North Coor.: Not surveyed

Begin Drilling: 7/25/06 @ 1806
End Drilling: 7/26/06 @ 0915
Converted to Well: N Well I.D.: Well A-D
East Coor.: Not surveyed

Remarks: Water sample 70-75' @ 0807; 80-85' @ 0933; 95-100' @ 1100

Project No.: OH000294.0008.00002 Datum: Filename: July 2006

ARCADIS

Log of Boring: Well A-D

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
62	N/A	24	0.0				SM	SAND Gray, fine sand, poorly graded, moist, some silt	
							CL	CLAY Gray, sandy clay, very stiff, little plasticity, dry with ~10% gravel	
64	N/A	12	0.0				SP	SAND Brown, fine-medium sand, poorly graded, moist	
	N/A	24	1.7				SW	SAND Brown, medium-coarse sand, fine-medium gravel, well graded, wet	
66									
	N/A	24	0.6				SW	SAND Brown, medium-coarse sand, fine-medium gravel, well graded, wet	
68									
	N/A	24	1.6				SW	SAND Brown, medium-coarse sand with little fines, well graded, ~5-10% gravel, wet	
70									
	N/A	24	0.6				SW	SAND Brown, medium-coarse sand with little fines, well graded, ~5-10% gravel, wet	
72									
	N/A	24	1.4				SW	SAND Brown, medium-coarse sand with little fines, well graded, ~5-10% gravel, wet	
74									

☒ 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: 100
Surface Elev.: Not surveyed
North Coor.: Not surveyed

Begin Drilling: 7/25/06 @ 1806
End Drilling: 7/26/06 @ 0915
Converted to Well: N Well I.D.: Well A-D
East Coor.: Not surveyed

Remarks: Water sample 70-75' @ 0807; 80-85' @ 0933; 95-100' @ 1100

Project No.: OH000294.0008.00002 Datum: Filename: July 2006

ARCADIS

Log of Boring: Well A-D

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
74									
	N/A	24	1.9				SP	SAND Brown, gray, silty fine sand, poorly graded, wet	
76									
	N/A	24	1.3				SP	SAND Brown, gray, silty fine sand, poorly graded, wet	
78									
	N/A	24	1.0				SP	SAND Brown, fine-medium sand, poorly graded, wet	
80									
	N/A	24	1.3				SP	SAND Brown, fine-medium sand, poorly graded, wet	
82									
	N/A	24	1.6				SW	SAND Brown, medium-coarse sand with 20% fine- medium gravel, well graded, wet	
84									
	N/A	24	0.8				SW	SAND Brown, medium-coarse sand with 20% fine- medium gravel, well graded, wet	
86									

☒ 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: 100
Surface Elev.: Not surveyed
North Coor.: Not surveyed

Begin Drilling: 7/25/06 @ 1806
End Drilling: 7/26/06 @ 0915
Converted to Well: N Well I.D.: Well A-D
East Coor.: Not surveyed

Remarks: Water sample 70-75' @ 0807; 80-85' @ 0933; 95-100' @ 1100

Project No.: OH000294.0008.00002 Datum: Filename: July 2006

ARCADIS

Log of Boring: Well A-D

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
86									
	N/A	24	1.3				SW	SAND Brown, medium-coarse sand with 20% fine- medium gravel, well graded, wet	
88									
	N/A	24	1.4				SW	SAND Brown, medium-coarse sand with 20% fine- medium gravel, well graded, wet	
90									
	N/A	24	1.1				SW	SAND Brown, medium-coarse sand with 20% fine- medium gravel, well graded, wet	
92									
	N/A	24	1.7				SW	SAND Brown, medium-coarse sand with 20% fine- medium gravel, well graded, wet	
94									
	N/A	24	0.9				SW	SAND Brown, medium-coarse sand with (30%) fine- medium gravel, well graded, wet	
96									
	N/A	24	2.1				SW	SAND Brown, medium-coarse sand with 30% fine- medium gravel, well graded, wet	
98									

☒ 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: 100
Surface Elev.: Not surveyed
North Coor.: Not surveyed

Begin Drilling: 7/25/06 @ 1806
End Drilling: 7/26/06 @ 0915
Converted to Well: N Well I.D.: Well A-D
East Coor.: Not surveyed

Remarks: Water sample 70-75' @ 0807; 80-85' @ 0933; 95-100' @ 1100

Project No.: OH000294.0008.00002 Datum: Filename: July 2006

ARCADIS

Log of Boring: Well A-D

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
98									
	N/A	12	4.4				SW	SAND Brown, medium-coarse sand with 20% fine- medium gravel, well graded, wet	
100								End of boring	
102									
104									
106									
108									
110									

☒ Composite Sample to Lab ■ Grab Sample to Lab ⬚ Split-Spoon Not Analyzed

Drilling Co.: Boart Longyear
Geologist: T. Fortner
Begin Drilling: 7/25/06 @ 1806
Driller: M. Osterberg
Total Depth: 100
End Drilling: 7/26/06 @ 0915
Drilling Method: Rotosonic
Surface Elev.: Not surveyed
Converted to Well: N Well I.D.: Well A-D
Drilling Fluid: Water
North Coor.: Not surveyed
East Coor.: Not surveyed
Remarks: Water sample 70-75' @ 0807; 80-85' @ 0933; 95-100' @ 1100
Project No.: OH000294.0008.00002
Datum:
Filename: July 2006

ARCADIS

Groundwater Sampling Logs

ARCADIS

Water Sampling Log

Project	GM Supplemental Investigation	Project No.	OH000294.08.02	Page	1 of 1
Site Location	Moraine, Ohio			Date	3/1/06
Site/Well No.	WSU-22	Replicate No.	N/A	Code No.	N/A
Weather	30's; clear	Sampling Time:	Begin 0945	End	1110

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	NM
Land Surface Elevation (ft)	NM
Sounded Well Depth (ft bmp)	~~51.19~~ 52.35
Depth to Water (ft bmp)	21.45
Water-Level Elevation (ft)	N/A
Water Column in Well (ft)	30.90
Casing Diameter/Type	2"/PVC
Gallons in Well	4.94
Gallons Pumped/Bailed Prior to Sampling	4 gal
Sample Pump Intake Setting (ft bmp)	middle of screen
Purge Time	begin 1030 end 1050
Pumping Rate (gpm)	800 mL/min
Evacuation Method	Submersible Pump

Field Parameters

Color	None
Odor	None
Appearance	Non-turbid
pH (s.u.)	7.02, 7.02, 7.02
Conductivity (mS/cm)	N/A
(µmhos/cm)	1480, 1480, 1480
Turbidity (NTU)	N/A
Temperature (°C)	16.3, 16.2, 16.2
Dissolved Oxygen (mg/L)	0.02, 0.00, 0.00
ORP (mV)	53, 42, 32
Sampling Method	Low Flow
Remarks	Sample time @ 1051
	DTW final = 21.45

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

Sampling Personnel: 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: OH000294.0008.00002

Site Location: General Motors Corporation, Moraine, Ohio

Monitoring Well No.: WSU-22

Time Pump Started: 1030

Depth of Sampling: 47.35'

Date: 3/1/06

Parameters

Time

	1032	1035	1038	1041	1044	1047	1050				
Redox Potential (millivolts)	160	109	82	54	53	42	32				
Dissolved Oxygen (mg/L)	0.46	0.42	0.55	0.13	0.02	0.00	0.00				
pH (s.u.)	6.98	7.01	7.01	7.02	7.02	7.02	7.02				
Specific Conductance (uS/cm)	1470	1470	1470	1480	1480	1480	1480				
Temperature (C)	16.5	16.7	16.6	16.5	16.3	16.2	16.2				

Flow Rate: 800 mL/min

Total Depth of Well: 52.35'

Time Sampled: 1051

Depth to Water Before Purging: 21.45'

Total Water Pumped: 4 gal.

Depth to Water After Purging: 21.45'

Comments:

ARCADIS

Water Sampling Log

Project	GM Supplemental Investigation	Project No.	OH000294.08.02	Page	1 of 1
Site Location	Moraine, Ohio			Date	3/1/06
Site/Well No.	WSU-23	Replicate No.	N/A	Code No.	N/A
Weather	30's; clear	Sampling Time:	Begin 1110	End	1150

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	NM
Land Surface Elevation (ft)	NM
Sounded Well Depth (ft bmp)	57.93
Depth to Water (ft bmp)	20.15
Water-Level Elevation (ft)	N/A
Water Column in Well (ft)	37.78
Casing Diameter/Type	2"/PVC
Gallons in Well	6.04
Gallons Pumped/Bailed Prior to Sampling	5 gal.
Sample Pump Intake Setting (ft bmp)	middle of screen
Purge Time	begin 1123 end 1136
Pumping Rate (gpm)	1000mL/min
Evacuation Method	Submersible Pump

Field Parameters

Color	~~None~~ TF Gray
Odor	None
Appearance	Turbid - black specks
pH (s.u.)	7.18, 7.18, 7.17
Conductivity (mS/cm)	N/A
(µmhos/cm)	1380, 1380, 1380
Turbidity (NTU)	N/A
Temperature (°C)	14.8, 14.9, 14.9
Dissolved Oxygen (mg/L)	0.00, 0.00, 0.00
ORP (mV)	185, 162, 146
Sampling Method	Low Flow
Remarks	Sample time @ 1137
	DTW final = 20.13

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

Sampling Personnel: 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: OH000294.0008.00002

Site Location: General Motors Corporation, Moraine, Ohio

Monitoring Well No.: WSU-23

Time Pump Started: 1123

Depth of Sampling: 52.93

Date: 3/1/06

Parameters

Time	1124	1127	1130	1133	1136						
Redox Potential (millivolts)	252	216	185	162	146						
Dissolved Oxygen (mg/L)	2.60	0.00	0.00	0.00	0.00						
pH (s.u.)	7.32 ~~7.52~~	7.19	7.18	7.18	7.17						
Specific Conductance (uS/cm)	1380	1380	1380	1380	1380						
Temperature (C)	14.8	14.9	14.8	14.9	14.9						

Flow Rate: 1000 mL/min

Time Sampled: 1137

Total Water Pumped: 5 gal.

Total Depth of Well: 57.93

Depth to Water Before Purging: 20.15

Depth to Water After Purging: 20.13

Comments:

ARCADIS

Water Sampling Log

Project	GM Supplemental Investigation	Project No.	OH000294.08.02	Page	1 of 1
Site Location	Moraine, Ohio			Date	3/1/06
Site/Well No.	GM-48	Replicate No.	N/A	Code No.	N/A
Weather	40's; cloudy	Sampling Time:	Begin 1353	End	1435

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	NM
Land Surface Elevation (ft)	NM
Sounded Well Depth (ft bmp)	73.17
Depth to Water (ft bmp)	24.39
Water-Level Elevation (ft)	N/A
Water Column in Well (ft)	48.78
Casing Diameter/Type	2"/PVC
Gallons in Well	7.8
Gallons Pumped/Bailed Prior to Sampling	5 gal.
Sample Pump Intake Setting (ft bmp)	middle of screen
Purge Time	begin 1403 end 1419
Pumping Rate (gpm)	800 mL/min
Evacuation Method	Submersible Pump

Field Parameters

Color	None
Odor	None
Appearance	Non-turbid
pH (s.u.)	7.32, 7.32, 7.32
Conductivity (mS/cm)	N/A
(µmhos/cm)	1190, 1190, 1190
Turbidity (NTU)	N/A
Temperature (°C)	15.5, 15.5, 15.4
Dissolved Oxygen (mg/L)	0.00, 0.00, 0.00
ORP (mV)	-407, -438, -494
Sampling Method	Low Flow
Remarks	Sample time @ 1420
	DTW final = ~~24.38~~ TF 24.45

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

Sampling Personnel 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: OH000294.0008.00002

Site Location: General Motors Corporation, Moraine, Ohio

Monitoring Well No.: GM-48

Time Pump Started: 1403

Depth of Sampling: 68.17'

Date: 3/1/06

Parameters

Time	1404	1407	1410	1413	1416	1419					
Redox Potential (millivolts)	-308	-353	-384	-407	-438	-494					
Dissolved Oxygen (mg/L)	0.07	0.00	0.00	0.00	0.00	0.00					
pH (s.u.)	7.42	7.34	7.32	7.32	7.32	7.32					
Specific Conductance (uS/cm)	1150	1190	1190	1190	1190	1190					
Temperature (C)	15.3	15.3	15.5	15.5	15.5	15.4					

Flow Rate: 800 mL/min

Total Depth of Well: 73.17'

Time Sampled: 1420

Depth to Water Before Purging: 24.39'

Total Water Pumped: 5 gal.

Depth to Water After Purging: 24.45'

Comments

ARCADIS

Water Sampling Log

Project	GM Supplemental Investigation	Project No.	OH000294.08.02	Page	1 of 1
Site Location	Moraine, Ohio			Date	3/1/06
Site/Well No.	GM-49	Replicate No.	N/A	Code No.	N/A
Weather	40's; cloudy	Sampling Time:	Begin 1450	End	1528

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	NM
Land Surface Elevation (ft)	NM
Sounded Well Depth (ft bmp)	76.91
Depth to Water (ft bmp)	24.10
Water-Level Elevation (ft)	N/A
Water Column in Well (ft)	52.81
Casing Diameter/Type	2"/PVC
Gallons in Well	8.45
Gallons Pumped/Bailed Prior to Sampling	5.5 gal.
Sample Pump Intake Setting (ft bmp)	middle of screen
Purge Time	begin 1457 end 1514
Pumping Rate (gpm)	800 mL/min
Evacuation Method	Submersible Pump

Field Parameters

Color	None
Odor	None
Appearance	Non-turbid
pH (s.u.)	7.25, 7.25, 7.24
Conductivity (mS/cm)	N/A
(µmhos/cm)	1220, 1220, 1220
Turbidity (NTU)	N/A
Temperature (°C)	16.4, 16.3, 16.4
Dissolved Oxygen (mg/L)	0.00, 0.00, 0.00
ORP (mV)	-521, -539, -532
Sampling Method	Low Flow
Remarks	Sample time @ 1515
	DTW final = 24.14

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

Sampling Personnel: 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: OH000294.0008.00002

Site Location: General Motors Corporation, Moraine, Ohio

Monitoring Well No.: GM-49

Time Pump Started: 1452

Depth of Sampling: 9 TF 71.91'

Date: 3/1/06

Parameters

Time	1453	1456	1459	1502	1505	1508	1511	1514			
Redox Potential (millivolts)	-397	-434	-491	-527	-541	-521	-539	-532			
Dissolved Oxygen (mg/L)	4.97	1.48	0.45	0.20	0.08	0.00	0.00	0.00			
pH (s.u.)	7.76	7.38	7.27	7.25	7.25	7.25	7.25	7.24			
Specific Conductance (uS/cm)	946	~~12 TF~~ ~~1090~~ 1900 TF	1200 ~~1020~~ TF	1210 ~~1027~~ TF	1220	1220	1220	1220			
Temperature (C)	16.0	16.3	16.5	16.7	16.5	16.4	16.3	16.4			

Flow Rate: 800 mL/min

Time Sampled: 1515

Total Water Pumped: 5.5 gal.

Total Depth of Well: 76.91'

Depth to Water Before Purging: 24.10'

Depth to Water After Purging: 24.14'

Comments

ARCADIS

Water Sampling Log

Project	GM Supplemental Investigation	Project No.	OH000294.08.02	Page	1 of 1
Site Location	Moraine, Ohio			Date	3/1/06
Site/Well No.	GM-47	Replicate No.	DUP1	Code No.	N/A
Weather	40's; cloudy	Sampling Time:	Begin 1641	End	1740

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	NM
Land Surface Elevation (ft)	NM
Sounded Well Depth (ft bmp)	60.93
Depth to Water (ft bmp)	21.95
Water-Level Elevation (ft)	N/A
Water Column in Well (ft)	38.98
Casing Diameter/Type	2"/PVC
Gallons in Well	6.24
Gallons Pumped/Bailed Prior to Sampling	5 gal.
Sample Pump Intake Setting (ft bmp)	middle of screen
Purge Time	begin 1713 end 1729
Pumping Rate (gpm)	900 ml/min
Evacuation Method	Submersible Pump

Field Parameters

Color	None
Odor	None
Appearance	Non-turbid
pH (s.u.)	7.19, 7.18, 7.18
Conductivity (mS/cm)	N/A
(µmhos/cm)	1390, 1390, 1390
Turbidity (NTU)	N/A
Temperature (°C)	17.0, 17.0, 17.0
Dissolved Oxygen (mg/L)	10.00, 0.00, 0.00
ORP (mV)	-534, -535, -537
Sampling Method	Low Flow
Remarks	Sample time @ 1730
	DTW final = 21.91

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

Sampling Personnel: 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: OH000294.0008.00002

Site Location: General Motors Corporation, Moraine, Ohio

Monitoring Well No.: GM-47

Time Pump Started: 1712

Depth of Sampling: 55.93

Date: 3/1/06

Parameters

Time

	1713	1716	1719	1722	1725	1728					
Redox Potential (millivolts)	-393	-492	-527	-534	-535	-537					
Dissolved Oxygen (mg/L)	3.55	0.00	0.00	0.00	0.00	0.00					
pH (s.u.)	7.81	7.25	7.21	7.19	7.18	7.18					
Specific Conductance (uS/cm)	843	1330	1370	1390	1390	1390					
Temperature (C)	16.6	16.9	17.0	17.0	17.0	17.0					

Flow Rate: 900 mL/min

Total Depth of Well: 60.93

Time Sampled: 1730

Depth to Water Before Purging: 21.95

Total Water Pumped: 5 gal.

Depth to Water After Purging: 21.97

Comments

ARCADIS

Water Sampling Log

Project	GM Supplemental Investigation	Project No.	OH000294.08.02	Page	1 of 1
Site Location	Moraine, Ohio			Date	3/2/06
Site/Well No.	GM-46	Replicate No.	MS/MSD	Code No.	N/A
Weather	50's; cloudy/windy	Sampling Time:	Begin 0910	End	1024

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	NM
Land Surface Elevation (ft)	NM
Sounded Well Depth (ft bmp)	29.82
Depth to Water (ft bmp)	20.27
Water-Level Elevation (ft)	N/A
Water Column in Well (ft)	9.55
Casing Diameter/Type	2"/PVC
Gallons in Well	1.53
Gallons Pumped/Bailed Prior to Sampling	5 gal.
Sample Pump Intake Setting (ft bmp)	middle of screen
Purge Time	begin 0950 end 1005
Pumping Rate (gpm)	1000 mL/min
Evacuation Method	Submersible Pump

Field Parameters

Color	None
Odor	None
Appearance	Non-turbid
pH (s.u.)	6.74, 6.74, 6.75
Conductivity (mS/cm)	N/A
(µmhos/cm)	1500, 1500, 1500
Turbidity (NTU)	N/A
Temperature (°C)	15.9, 16.0, 16.1
Dissolved Oxygen (mg/L)	0.00, 0.00, 0.00
ORP (mV)	-144, -187, -201
Sampling Method	Low Flow
Remarks	Sample time @ 1006
	DTW final = 20.30'
	EBI @ 0930

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

Sampling Personnel: 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: OH000294.0008.00002

Site Location: General Motors Corporation, Moraine, Ohio

Monitoring Well No.: GM-46

Time Pump Started: 0949

Depth of Sampling: 24.82'

Date: 3/2/06

Parameters

Time

	0950	0953	0956	0959	1002	1005					
Redox Potential (millivolts)	-99	-95	-118	-144	-187	-201					
Dissolved Oxygen (mg/L)	2.72	0.00	0.00	0.00	0.00	0.00					
pH (s.u.)	7.14	6.80	6.75	6.74	6.74	6.75					
Specific Conductance (uS/cm)	1420	1440	1490	1500	1500	1500					
Temperature (C)	15.2	15.3	15.7	15.9	16.0	16.1					

Flow Rate: 1000mL/min

Total Depth of Well: 29.82'

Time Sampled: 1006

Depth to Water Before Purging: 20.27'

Total Water Pumped: 5 gal.

Depth to Water After Purging: 20.30'

Comments:

ARCADIS

Water Sampling Log

Project	GM	Project No.	OH000294.08.T2	Page	1 of 1
Site Location	Moraine, Ohio			Date	4/28/2006
Site/Well No.	GM-50	Replicate No.	DUP1 MS/MSD	Code No.	N/A
Weather	40's; clear	Sampling Time:	Begin 0850	End	1000

Evacuation Data

Measuring Point	N/A
MP Elevation (ft)	NM
Land Surface Elevation (ft)	NM
Sounded Well Depth (ft bmp)	39.65
Depth to Water (ft bmp)	20.49
Water-Level Elevation (ft)	N/A
Water Column in Well (ft)	19.16
Casing Diameter/Type	2" PVC
Gallons in Well	3.0
Gallons Pumped/Bailed Prior to Sampling	8 gal. pump
Sample Pump Intake Setting (ft bmp)	middle of screen
Purge Time	begin 0909 end 0931
Pumping Rate (gpm)	600mL/min
Evacuation Method	Submersible pump

Field Parameters

Color	None
Odor	None
Appearance	Non-turbid
pH (s.u.)	7.04, 7.04, 7.04
Conductivity (mS/cm)	N/A
(µmhos/cm)	2130, 2070, 2050
Turbidity (NTU)	NM
Temperature (°C)	17.19, 17.18, 17.10
Dissolved Oxygen (mg/L)	0.13, 0.13, 0.13
Salinity (%)	NM
Sampling Method	Low Flow
Remarks	Sampled @ 0932
	DTW Final = 20.51
	FB1 @ 0952

Constituents Sampled	Container Description	Number	Preservative
Site Spec. VOCs	40 ml VOA	3 (6)	HCl

Sampling Personnel: 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

LOW FLOW SAMPLING
GROUNDWATER FIELD PARAMETER LOG

Project Number: OH000294.08.T2

Site Location: GM Moraine, OH

Monitoring Well No.: GM-50

Time Pump Started: 0909

Depth of Sampling: Middle of screen

Date: 4/28/06

Parameters

Time

	0910	0913	0916	0919	0922	0925	0928	0931			
Redox Potential (millivolts)	153	111	70	51	48	53	54	57			
Dissolved Oxygen (mg/L)	0.60	0.38	0.27	0.15	0.14	0.13	0.13	0.13			
pH (s.u.)	7.05	7.06	7.04	7.06	7.04	7.04	7.04	7.04			
Specific Conductance (uS/cm)	1800	1830	1800	1840	2080	2130	2070	2050			
Temperature (C)	16.92	17.09	17.20	17.10	17.23	17.19	17.18	17.10			

Flow Rate: 600 ml/min

Time Sampled: 0932

Total Water Pumped: 8 gal.

Comments:

ARCADIS

Water Sampling Log

Project	GM	Project No.	OH000294.08.T2	Page	1 of 1
Site Location	Moraine, Ohio			Date	4/28/2006
Site/Well No.	GM-S1	Replicate No.	N/A	Code No.	N/A
Weather	50's; clear	Sampling Time: Begin	1053	End	1136

Evacuation Data

Measuring Point	N/A
MP Elevation (ft)	NM
Land Surface Elevation (ft)	NM
Sounded Well Depth (ft bmp)	44.29
Depth to Water (ft bmp)	22.83
Water-Level Elevation (ft)	N/A
Water Column in Well (ft)	21.46
Casing Diameter/Type	2" PVC
Gallons in Well	3.43
Gallons Pumped/Bailed Prior to Sampling	5 gal. pumped
Sample Pump Intake Setting (ft bmp)	middle of screen
Purge Time	begin 1109 end 1124
Pumping Rate (gpm)	600 mL/min
Evacuation Method	Submersible pump

Field Parameters

Color	None
Odor	None
Appearance	Non-turbid
pH (s.u.)	7.13, 7.13, 7.13
Conductivity (mS/cm)	N/A
(µmhos/cm)	1640, 1630, 1630
Turbidity (NTU)	NM
Temperature (°C)	15.47, 15.49, 15.50
Dissolved Oxygen (mg/L)	0.69, 0.70, 0.69
Salinity (%)	NM
Sampling Method	Low Flow
Remarks	Sampled @ 1125
	DTW Final = 22.85

Constituents Sampled	Container Description	Number	Preservative
Site Spec. VOCs	40 ml VOA	3	HCl

Sampling Personnel: 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	Miligrams per liter	NM	Not Measured	VOC	Volatile Organic Compounds

LOW FLOW SAMPLING
GROUNDWATER FIELD PARAMETER LOG

Project Number: 0400294.08.02

Site Location: GM Moraine, OH

Monitoring Well No.: GM-51

Depth of Sampling: middle of Screen

Time Pump Started: 1108

Date: ~~1108~~ 4/28/06

Parameters

Time

	1109	1112	1115	1118	1121	1124					
Redox Potential (millivolts)	73	29	30	33	34	34					
Dissolved Oxygen (mg/L)	1.54	0.87	0.71	0.69	0.70	0.69					
pH (s.u.)	7.19	7.12	7.12	7.13	7.13	7.13					
Specific Conductance (uS/cm)	1640	1640	1640	1640	1630	1630					
Temperature (C)	15.35	15.39	15.44	15.47	15.49	1550					

Flow Rate: 600 mL/min

Time Sampled: 1125

Total Water Pumped: 5 gallons

Comments:

ARCADIS

Water Sampling Log

Project	GM	Project No.	OH000294.08.T2	Page	1 of 1
Site Location	Moraine, Ohio			Date	4/28/2006
Site/Well No.	GM-52	Replicate No.	N/A	Code No.	N/A
Weather	50's; clear	Sampling Time:	Begin 1137	End	1230

Evacuation Data

Measuring Point	N/A
MP Elevation (ft)	NM
Land Surface Elevation (ft)	NM
Sounded Well Depth (ft bmp)	44.03
Depth to Water (ft bmp)	22.52
Water-Level Elevation (ft)	N/A
Water Column in Well (ft)	21.51
Casing Diameter/Type	2" PVC
Gallons in Well	3.44
Gallons Pumped/Bailed Prior to Sampling	4 gal. pumped
Sample Pump Intake Setting (ft bmp)	middle of screen
Purge Time	begin 1152 end 1208
Pumping Rate (gpm)	600 mL/min
Evacuation Method	Submersible pump

Field Parameters

Color	None
Odor	None
Appearance	Non-turbid
pH (s.u.)	7.06, 7.06, 7.06
Conductivity (mS/cm)	N/A
(µmhos/cm)	1670, 1670, 1670
Turbidity (NTU)	NM
Temperature (°C)	16.89, 16.88, 16.87
Dissolved Oxygen (mg/L)	0.23, 0.18, 0.17
Salinity (%)	NM
Sampling Method	Low flow
Remarks	Sampled @ 1209
	DTW Final = 22.59

Constituents Sampled	Container Description	Number	Preservative
Site Spec. VOCs	40 ml VOA	3	HCl

Sampling Personnel: 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	Miligrams per liter	NM	Not Measured	VOC	Volatile Organic Compounds

LOW FLOW SAMPLING
GROUNDWATER FIELD PARAMETER LOG

Project Number: OH000294.08-02

Site Location: GM Moraine, OH

Monitoring Well No.: GM-52

Depth of Sampling: Middle of screen

Time Pump Started: 1152

Date: 4/28/06

Parameters / Time

	1153	1156	1159	1202	1205	1208					
Redox Potential (millivolts)	150	71	55	42	41	41					
Dissolved Oxygen (mg/L)	3.61	0.46	0.29	0.23	0.18	0.17					
pH (s.u.)	7.15	7.04	7.05	7.06	7.06	7.06					
Specific Conductance (uS/cm)	1650	1660	1670	1670	1670	1670					
Temperature (C)	16.77	16.75	16.96	16.89	16.88	16.87					

Flow Rate: 600 mL/min

Time Sampled: 1209

Total Water Pumped: 4 gallons

Comments:

ARCADIS

Water Sampling Log

Project	GM Supplemental Investigation	Project No.	OH000294.09.02	Page	1 of 1
Site Location	Moraine, Ohio			Date	9/14/06
Site/Well No.	GM-63	Replicate No.	Dup 1	Code No.	N/A
Weather	Cloudy; 60's	Sampling Time: Begin	0750	End	934

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	NM
Land Surface Elevation (ft)	NM
Sounded Well Depth (ft bmp)	~~59.87~~ 39.36
Depth to Water (ft bmp)	20.10
Water-Level Elevation (ft)	N/A
Water Column in Well (ft)	19.26
Casing Diameter/Type	2"/PVC
Gallons in Well	3.08
Gallons Pumped/Bailed Prior to Sampling	8 gal
Sample Pump Intake Setting (ft bmp)	middle of screen
Purge Time	begin 820 end 839
Pumping Rate (gpm)	1000
Evacuation Method	Submersible Pump

Field Parameters

Color	clear
Odor	none
Appearance	non turbid
pH (s.u.)	7.00, 7.00, 6.99
Conductivity (mS/cm)	N/A
(µmhos/cm)	1640, 1640, 1640
Turbidity (NTU)	N/A
Temperature (°C)	17.5, 17.5, 17.4
Dissolved Oxygen (mg/L)	0.39, 0.39, 0.37
ORP (mV)	79, 78, 77
Sampling Method	Low Flow
Remarks	Sample time @ 0840
	DTW final = 20.11
	EB1 @ 0900

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-63

Time Pump Started: 08:20

Depth of Sampling: Mid screen

Date: 9/14/06

Parameters / Time

	8:21	8:24	8:27	830	833	8:36	8:39				
Redox Potential (millivolts)	77	77	79	79	79	78	77				
Dissolved Oxygen (mg/L)	0.61	0.48	0.44	0.40	0.39	0.39	0.37				
pH (s.u.)	7.00	6.99	7.00	7.00	7.00	7.00	6.99				
Specific Conductance (uS/cm)	~~1.64~~ 1640	1640	1640	1650	1640	1640	1640				
Temperature (C)	17.5	17.6	17.7	17.5	17.5	17.5	17.4				

Flow Rate: 1000 /min

Time Sampled: 8:40

Total Water Pumped: 8 gal

Total Depth of Well: 39.36

Depth to Water Before Purging: 20.10

Depth to Water After Purging: 20.11

Comments:

ARCADIS

Water Sampling Log

Project	GM Supplemental Investigation	Project No.	OH000294.09.02	Page	1 of 1
Site Location	Moraine, Ohio			Date	9/14/06
Site/Well No.	GM-64	Replicate No.	MS/MSD	Code No.	N/A
Weather	Clear, 60's	Sampling Time:	Begin 0937	End	10:23

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	NM
Land Surface Elevation (ft)	NM
Sounded Well Depth (ft bmp)	59.87
Depth to Water (ft bmp)	20.29
Water-Level Elevation (ft)	N/A
Water Column in Well (ft)	39.58
Casing Diameter/Type	2"/PVC
Gallons in Well	6.33
Gallons Pumped/Bailed Prior to Sampling	5 gal.
Sample Pump Intake Setting (ft bmp)	middle of screen
Purge Time	begin [illegible] end 0958
Pumping Rate (gpm)	600 mL/min
Evacuation Method	Submersible Pump

Field Parameters

Color	lt. brown
Odor	none
Appearance	slight & turbid
pH (s.u.)	7.18, 7.15, 7.13
Conductivity (mS/cm)	N/A
(µmhos/cm)	1470, 1480, 1480
Turbidity (NTU)	N/A
Temperature (°C)	17.8, 17.8, 17.8
Dissolved Oxygen (mg/L)	0.24, 0.22, 0.20
ORP (mV)	-56, -60, -62
Sampling Method	Low Flow
Remarks	Sample time @ 0958
	DTW final = 20.00

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

Unit — TOC

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-64

Time Pump Started: 9:44

Depth of Sampling: ~~20.20~~ Mid Screen

Date: 9/14/06

Parameters

Time

	945	948	951	954	957						
Redox Potential (millivolts)	7	-47	-56	-60	-62						
Dissolved Oxygen (mg/L)	0.78	0.31	0.24	0.22	0.20						
pH (s.u.)	7.17	7.24	7.18	7.15	7.13						
Specific Conductance (uS/cm)	1470	1460	1470	1480	1480						
Temperature (C)	17.9	17.9	17.8	17.8	17.8						

Flow Rate: 600 ml/min

Total Depth of Well: 59.87

Time Sampled: 0958

Depth to Water Before Purging: 20.29

Total Water Pumped: ~5 gal

Depth to Water After Purging: 20.32

Comments:

ARCADIS

Water Sampling Log

Project	GM Supplemental Investigation	Project No.	OH000294.09.02	Page	1 of 1
Site Location	Moraine, Ohio			Date	9/14/06
Site/Well No.	GM-58	Replicate No.	N/A	Code No.	N/A
Weather	Cloudy; 70's	Sampling Time: Begin	1035	End	1115

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	NM
Land Surface Elevation (ft)	NM
Sounded Well Depth (ft bmp)	83.00
Depth to Water (ft bmp)	28.32
Water-Level Elevation (ft)	N/A
Water Column in Well (ft)	54.68
Casing Diameter/Type	2"/PVC
Gallons in Well	8.75
Gallons Pumped/Bailed Prior to Sampling	~~8~~ 4 gal.
Sample Pump Intake Setting (ft bmp)	middle of screen
Purge Time	begin 1041 end 1058
Pumping Rate (gpm)	600 mL/min
Evacuation Method	Submersible Pump

Field Parameters

Color	Clear
Odor	None
Appearance	Non-turbid
pH (s.u.)	8.39, 8.36, 8.30
Conductivity (mS/cm)	N/A
(µmhos/cm)	~~588, 586~~ 589, 597, 606
Turbidity (NTU)	N/A
Temperature (°C)	17.6, 17.5, 17.4
Dissolved Oxygen (mg/L)	0.19, 0.19, 0.17
ORP (mV)	-135, -176, -202
Sampling Method	Low Flow
Remarks	Sample time @ 1059
	DTW final = 28.35

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

11:14

Project Number: OH000294.0009.00002

Site Location: General Motors Corporation, Moraine, Ohio

Monitoring Well No.: GM-58

Time Pump Started: 10:41

Depth of Sampling: Mid-Screen

Date: 9/14/06

Parameters

Time

	1043	1046	1049	1052	1055	1058					
Redox Potential (millivolts)	15	-49	-93	-135	-176	-202					
Dissolved Oxygen (mg/L)	0.65	0.32	0.25	0.19	0.19	0.17					
pH (s.u.)	8.23	8.35	8.37	8.39	8.36	8.30					
Specific Conductance (uS/cm)	~~5880~~	~~5868~~	~~5888~~	589●	597	606					
Temperature (C)	17.8	17.7	17.8	17.6	17.5	17.4					

Flow Rate: 600 ml/min

Total Depth of Well: 83'

Time Sampled: 1059

Depth to Water Before Purging: 28.32

Total Water Pumped: Mgal

Depth to Water After Purging: 28.35

Comments:

ARCADIS

Water Sampling Log

Project	GM Supplemental Investigation	Project No.	OH000294.09.02	Page	1 of 1
Site Location	Moraine, Ohio			Date	9/14/06
Site/Well No.	GM-55	Replicate No.	N/A	Code No.	N/A
Weather	Clear, 70's	Sampling Time: Begin	1320	End	1400

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	NM
Land Surface Elevation (ft)	NM
Sounded Well Depth (ft bmp)	35.02
Depth to Water (ft bmp)	15.34
Water-Level Elevation (ft)	N/A
Water Column in Well (ft)	19.68
Casing Diameter/Type	2"/PVC
Gallons in Well	3.14
Gallons Pumped/Bailed Prior to Sampling	3.5 gal.
Sample Pump Intake Setting (ft bmp)	middle of screen
Purge Time	begin 1330 end 1534
Pumping Rate (gpm)	800 ml/min
Evacuation Method	Submersible Pump

Field Parameters

Color	light tan
Odor	None
Appearance	Slightly turbid
pH (s.u.)	7.19, 7.18, 7.18
Conductivity (mS/cm)	
(µmhos/cm)	1160, 1160, 1170
Turbidity (NTU)	N/A
Temperature (°C)	16.0, 15.9, 15.8
Dissolved Oxygen (mg/L)	5.32, 5.32, 5.34
ORP (mV)	93, 93, 93
Sampling Method	Low Flow
Remarks	Sample time @ 1346
	DTW final = 15.35

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-55

Time Pump Started: 1330

Depth of Sampling: Mid Screen

Date: 9/14/06

Parameters

Time

	1331	1333	1336	1339	1342	1345					
Redox Potential (millivolts)	95	94	93	93	93	93					
Dissolved Oxygen (mg/L)	5.82	5.53	5.36	5.32	5.32	5.34					
pH (s.u.)	7.36	7.25	7.20	7.19	7.18	7.18					
Specific Conductance (uS/cm)	1150	1150	1160	1160	1160	1170					
Temperature (C)	16.1	16.0	16.0	16.0	15.9	15.80					

Flow Rate: 800 ml/min

Time Sampled: 13.46

Total Water Pumped: 3.5 gal

Total Depth of Well: 35.02

Depth to Water Before Purging: 15.34

Depth to Water After Purging: 15.35

Comments:

ARCADIS

Water Sampling Log

Project	GM Supplemental Investigation	Project No.	OH000294.09.02	Page	1 of 1
Site Location	Moraine, Ohio			Date	9/14/06
Site/Well No.	GM-56	Replicate No.	N/A	Code No.	N/A
Weather	Clear; 70's	Sampling Time: Begin	1400	End	1444

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	NM
Land Surface Elevation (ft)	NM
Sounded Well Depth (ft bmp)	82.20
Depth to Water (ft bmp)	15.04
Water-Level Elevation (ft)	N/A
Water Column in Well (ft)	67.16
Casing Diameter/Type	2"/PVC
Gallons in Well	10.75
Gallons Pumped/Bailed Prior to Sampling	4 gal
Sample Pump Intake Setting (ft bmp)	middle of screen
Purge Time	begin 1406 end 1428
Pumping Rate (gpm)	600 mL/min
Evacuation Method	Submersible Pump

Field Parameters

Color	lt. Brown
Odor	none
Appearance	Slightly turbid
pH (s.u.)	6.96, 6.96, 6.96
Conductivity (mS/cm)	—
(µmhos/cm)	1200, 1200, 1200
Turbidity (NTU)	N/A
Temperature (°C)	15.5, 15.5, 15.5
Dissolved Oxygen (mg/L)	2.09, 2.09, 2.10
ORP (mV)	128, 125, 120
Sampling Method	Low Flow
Remarks	Sample time @ 1428
	DTW final = 15.08

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-56

Time Pump Started: 1406

Depth of Sampling: Mid screen

Date: 9/14/06

Parameters / Time

	1409	1412	1415	1418	1421	1424	1427				
Redox Potential (millivolts)	163	145	138	132	128	125	120				
Dissolved Oxygen (mg/L)	2.07	1.79	1.96	2.05	2.09	2.09	2.10				
pH (s.u.)	6.47	6.92	6.95	6.96	6.96	6.96	6.96				
Specific Conductance (uS/cm)	998	1190	1190	1200	1200	1200	1200				
Temperature (C)	15.8	15.6	15.5	15.7	15.6	15.5	15.5				

Flow Rate: 600 ml/min

Time Sampled: 1428

Total Water Pumped: 4 gal

Total Depth of Well: ~~85.33~~

Depth to Water Before Purging: 15.04

Depth to Water After Purging: 15.08

Comments:

ARCADIS

Water Sampling Log

Project	GM Supplemental Investigation	Project No.	OH000294.09.02	Page	1 of 1
Site Location	Moraine, Ohio			Date	9/14/06
Site/Well No.	GM-57	Replicate No.	N/A	Code No.	N/A
Weather	Clear; 70's	Sampling Time: Begin	1500	End	1530

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	NM
Land Surface Elevation (ft)	NM
Sounded Well Depth (ft bmp)	35.00
Depth to Water (ft bmp)	17.79
Water-Level Elevation (ft)	N/A
Water Column in Well (ft)	17.21
Casing Diameter/Type	2"/PVC
Gallons in Well	2.75
Gallons Pumped/Bailed Prior to Sampling	4
Sample Pump Intake Setting (ft bmp)	middle of screen
Purge Time	begin 1505 end 1518
Pumping Rate (gpm)	600 mL/min
Evacuation Method	Submersible Pump

Field Parameters

Color	V. lt. brown
Odor	none
Appearance	Slightly turbid
pH (s.u.)	7.03, 7.03, 7.03
Conductivity (mS/cm)	—
(µmhos/cm)	1190, 1190, 1190
Turbidity (NTU)	N/A
Temperature (°C)	18.7, 18.5, 18.5
Dissolved Oxygen (mg/L)	4.25, 4.11, 4.09
ORP (mV)	121, 121, 121
Sampling Method	Low Flow
Remarks	Sample time @ 1519
	DTW final = 17.81

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-57

Time Pump Started: 1505

Depth of Sampling: Mid screen

Date: 9-14-06

Parameters

Time

	1506	1509	1512	1515	1518						
Redox Potential (millivolts)	123	121	121	121	121						
Dissolved Oxygen (mg/L)	4.97	4.49	4.25	4.11	4.09						
pH (s.u.)	7.26	7.05	7.03	7.03	7.03						
Specific Conductance (uS/cm)	1210	1190	1190	1190	1190						
Temperature (C)	18.7	18.7	18.7	18.5	18.5						

Flow Rate: 600 ml/min

Time Sampled: 1519

Total Water Pumped: 4 gal

Total Depth of Well: 35'

Depth to Water Before Purging: 17.79

Depth to Water After Purging: 17.81

Comments:

ARCADIS

Water Sampling Log

Project	GM Supplemental Investigation	Project No.	OH000294.09.02	Page	1 of 1
Site Location	Moraine, Ohio			Date	9-14-06
Site/Well No.	GM-53	Replicate No.	N/A	Code No.	N/A
Weather	Clear & 70's	Sampling Time:	Begin 1550	End	1635

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	NM
Land Surface Elevation (ft)	NM
Sounded Well Depth (ft bmp)	32.85
Depth to Water (ft bmp)	~~23.40~~ TF 23.47
Water-Level Elevation (ft)	N/A
Water Column in Well (ft)	~~9.45~~ TF 9.38
Casing Diameter/Type	2"/PVC
Gallons in Well	~~1.51~~ TF 1.50
Gallons Pumped/Bailed Prior to Sampling	3.5
Sample Pump Intake Setting (ft bmp)	middle of screen
Purge Time	begin 1607 end 1623
Pumping Rate (gpm)	1600 ml/min
Evacuation Method	Submersible Pump

Field Parameters

Color	Clear
Odor	None
Appearance	Non-turbid
pH (s.u.)	7.06, 7.05, 7.05
Conductivity (mS/cm)	— N/A
(µmhos/cm)	1880, 1890, 1890
Turbidity (NTU)	N/A
Temperature (°C)	18.7, 18.7, 18.7
Dissolved Oxygen (mg/L)	7.63, 7.59, ~~7.40~~ F 7.54
ORP (mV)	132, 133, 135
Sampling Method	Low Flow
Remarks	Sample time @ 1624
	DTW final = 23.47

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-53

Time Pump Started: 1607

Depth of Sampling: Mid Screen

Date: 9-14-06

Parameters / Time

	1608	1611	1614	1617	1620	1623					
Redox Potential (millivolts)	128	128	130	132	133	135					
Dissolved Oxygen (mg/L)	7.97	7.75	7.65	7.63	7.59	7.54					
pH (s.u.)	7.36	7.09	7.00	7.06	7.05	7.05					
Specific Conductance (uS/cm)	1860	1880	1880	1880	1890	1890					
Temperature (C)	19.3	19.0	18.9	18.7	18.7	18.7					

Flow Rate: 600 ml/min

Total Depth of Well: 32.85

Time Sampled: 1624

Depth to Water Before Purging: 23.487

Total Water Pumped: 3.5 gal

Depth to Water After Purging: 23.47

Comments:

ARCADIS

Water Sampling Log

Project	GM Supplemental Investigation	Project No.	OH000294.09.02	Page	1 of 1
Site Location	Moraine, Ohio			Date	9-14-06
Site/Well No.	GM-54	Replicate No.	N/A	Code No.	N/A
Weather	Clear 70's	Sampling Time: Begin	1635	End	1720

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	NM
Land Surface Elevation (ft)	NM
Sounded Well Depth (ft bmp)	80.59
Depth to Water (ft bmp)	23.40
Water-Level Elevation (ft)	N/A
Water Column in Well (ft)	57.19
Casing Diameter/Type	2"/PVC
Gallons in Well	9.15
Gallons Pumped/Bailed Prior to Sampling	6 gal.
Sample Pump Intake Setting (ft bmp)	middle of screen
Purge Time	begin 1637 end 1702
Pumping Rate (gpm)	600 mL/min
Evacuation Method	Submersible Pump

Field Parameters

Color	Clear
Odor	None
Appearance	Non-turbid
pH (s.u.)	6.88, 6.88, 6.88
Conductivity (mS/cm)	N/A
(µmhos/cm)	1390, 1390, 1390
Turbidity (NTU)	N/A
Temperature (°C)	17.2, 17.3, 17.2
Dissolved Oxygen (mg/L)	3.97, 3.95, 3.95
ORP (mV)	55, 59, 63
Sampling Method	Low Flow
Remarks	Sample time @ 1703
	DTW final = 23.41

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-54

Time Pump Started: 1637

Depth of Sampling: Mid screen

Date: 9-14-06

Parameters / Time

	1638	1641	1644	1647	1650	1653	1656	1659	1702		
Redox Potential (millivolts)	-116	-88	-57	3	33	45	55	59	63		
Dissolved Oxygen (mg/L)	.72	0.47	2.85	3.71	3.88	3.93	3.97	3.95	3.95		
pH (s.u.)	7.56	7.09	6.96	6.88	6.88	6.87	6.88	6.88	6.88		
Specific Conductance (uS/cm)	894	1140	1300	1360	1380	1380	1390	1390	1390		
Temperature (C)	17.8	17.5	17.2	17.2	17.1	17.2	17.2	17.3	17.2		

Flow Rate: 600ml/min

Time Sampled: 1703

Total Water Pumped: 6 gal

Total Depth of Well: 80.59

Depth to Water Before Purging: 23.40

Depth to Water After Purging: 23.41

Comments:

ARCADIS

Water Sampling Log

Project	GM Supplemental Investigation	Project No.	OH000294.09.02	Page	1 of 1
Site Location	Moraine, Ohio			Date	~~9/14/06~~ 9/15/06
Site/Well No.	GM-59	Replicate No.	N/A	Code No.	N/A
Weather	Cloudy 60's	Sampling Time: Begin	0800	End	0850

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	NM
Land Surface Elevation (ft)	NM
Sounded Well Depth (ft bmp)	34.81
Depth to Water (ft bmp)	24.82
Water-Level Elevation (ft)	N/A
Water Column in Well (ft)	9.99
Casing Diameter/Type	2"/PVC
Gallons in Well	1.60
Gallons Pumped/Bailed Prior to Sampling	3.5 gal.
Sample Pump Intake Setting (ft bmp)	middle of screen
Purge Time	begin 0821 end 0838
Pumping Rate (gpm)	600 mL/min
Evacuation Method	Submersible Pump

Field Parameters

Color	None
Odor	None
Appearance	Non-turbid
pH (s.u.)	6.86, 6.86, 6.87
Conductivity (mS/cm)	N/A
(µmhos/cm)	1410, 1410, 1410
Turbidity (NTU)	N/A
Temperature (°C)	18.0, 17.9, 18.0
Dissolved Oxygen (mg/L)	1.59, 1.59, 1.55
ORP (mV)	129, ~~248~~ 126, 122
Sampling Method	Low Flow
Remarks	Sample time @ 0839
	DTW final = 24.83

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-59

Time Pump Started: 8:21

Depth of Sampling: Mid Screen

Date: 9-15-06

Parameters	Time										
	8:23	8:26	8:29	8:32	8:35	8:38					
Redox Potential (millivolts)	151	141	134	129	126	122					
Dissolved Oxygen (mg/L)	1.88	1.56	1.55	~~1.57~~ 1.57	1.59	1.55					
pH (s.u.)	6.67	6.81	6.85	6.86	6.86	6.87					
Specific Conductance (uS/cm)	~~1413~~ 1432	1420	1420	1410	1410	1410					
Temperature (C)	17.5	17.7	17.9	18.0	17.9	18.0					

Flow Rate: 600 ml/min

Total Depth of Well: 34.81

Time Sampled: 8:39

Depth to Water Before Purging: 24.82

Total Water Pumped: 3.5 gal

Depth to Water After Purging: 24.83

Comments:

ARCADIS

Water Sampling Log

Project	GM Supplemental Investigation	Project No.	OH000294.09.02	Page	1 of 1
Site Location	Moraine, Ohio			Date	9/15/06
Site/Well No.	GM-60	Replicate No.	N/A	Code No.	N/A
Weather	Cloudy, 60's	Sampling Time:	Begin 0851	End	0925

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	NM
Land Surface Elevation (ft)	NM
Sounded Well Depth (ft bmp)	51.52
Depth to Water (ft bmp)	24.80
Water-Level Elevation (ft)	N/A
Water Column in Well (ft)	26.72
Casing Diameter/Type	2"/PVC
Gallons in Well	4.28
Gallons Pumped/Bailed Prior to Sampling	3.5 gal.
Sample Pump Intake Setting (ft bmp)	middle of screen
Purge Time	begin 0900 end 0920
Pumping Rate (gpm)	500 mL/min
Evacuation Method	Submersible Pump

Field Parameters

Color	None
Odor	None
Appearance	Non-turbid
pH (s.u.)	6.84, 6.84, 6.84
Conductivity (mS/cm)	N/A
(µmhos/cm)	1390, 1400, 1400
Turbidity (NTU)	N/A
Temperature (°C)	17.7, 17.8, 17.8
Dissolved Oxygen (mg/L)	6.84, 6.84, 6.84
ORP (mV)	~~1390 TF 44 TF~~ -74, -90, -106
Sampling Method	Low Flow
Remarks	Sample time @ 0921
	DTW final = 24.80
	~~RBZ @ TF~~

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-60

Time Pump Started: 8 900

Depth of Sampling: mid screen

Date: 9-15-06

Parameters

Time

	9:02	9:05	9:08	9:11	9:14	9:17	9:20				
Redox Potential (millivolts)	8	-26	-47	-63	-74	-90	-100				
Dissolved Oxygen (mg/L)	2.95	.78	.51	.43	0.39	0.38	0.33				
pH (s.u.)	7.19	6.85	6.84	6.84	6.84	6.84	6.84				
Specific Conductance (uS/cm)	1300	1390	1380	1390	1390	1400	1400				
Temperature (C)	17.7	17.6	17.7	17.7	17.7	17.8	17.8				

Flow Rate: 500 ml/min

Time Sampled: 9:21

Total Water Pumped: 3.5 gal

Total Depth of Well: 51.52

Depth to Water Before Purging: 24.80

Depth to Water After Purging: 24.80

Comments:

ARCADIS

Water Sampling Log

Project	GM Supplemental Investigation	Project No.	OH000294.09.02	Page	1 of 1
Site Location	Moraine, Ohio			Date	9/15/06
Site/Well No.	GM-61	Replicate No.	Dup2 / EB2	Code No.	N/A
Weather	Cloudy 60's	Sampling Time: Begin	0925	End	10:30

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	NM
Land Surface Elevation (ft)	NM
Sounded Well Depth (ft bmp)	80.10
Depth to Water (ft bmp)	24.84
Water-Level Elevation (ft)	N/A
Water Column in Well (ft)	55.26
Casing Diameter/Type	2"/PVC
Gallons in Well	8.84
Gallons Pumped/Bailed Prior to Sampling	5 gal.
Sample Pump Intake Setting (ft bmp)	middle of screen
Purge Time	begin 0931 end 0958
Pumping Rate (gpm)	500 mL/min
Evacuation Method	Submersible Pump

Field Parameters

Color	lt. grey
Odor	none
Appearance	slightly turbid
pH (s.u.)	6.72, 6.72, 6.71
Conductivity (mS/cm)	N/A
(µmhos/cm)	1410, 1420, 1420
Turbidity (NTU)	N/A
Temperature (°C)	17.2, 17.2, 17.2
Dissolved Oxygen (mg/L)	0.44, 0.25, 0.32
ORP (mV)	-144, -140, -135
Sampling Method	Low Flow
Remarks	Sample time @ 0959
	DTW final = 24.85
	EB2 @ 1000

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-61

Time Pump Started: 9:31

Depth of Sampling: midscreen

Date: 9-15-06

Parameters / Time

	9:34	9:37	9:40	9:43	9:46	9:49	9:52	9:55	9:58		
Redox Potential (millivolts)	-131	-149	-176	-172	-159	-152	-144	-140	-135		
Dissolved Oxygen (mg/L)	0.43	0.27	0.23	0.46	0.93	0.82	0.44	.35	0.32		
pH (s.u.)	6.91	6.90	6.90	6.84	6.76	6.73	6.72	6.72	6.71		
Specific Conductance (uS/cm)	1280	1260	1250	1300	1380	1400	1410	1420	1420		
Temperature (C)	17.4	17.4	17.4	17.3	17.2	17.2	17.2	17.2	17.2		

Flow Rate: 500 ml/min

Time Sampled: 9:59

Total Water Pumped: 5.0 gal

Total Depth of Well: 80.10

Depth to Water Before Purging: 24.84

Depth to Water After Purging: 24.85

Comments: DUP 2 & Rinsate Blank

ARCADIS

Water Sampling Log

Project	GM Supplemental Investigation	Project No.	OH000294.09.02	Page	1 of 1
Site Location	Moraine, Ohio			Date	9-14-06
Site/Well No.	GM-62	Replicate No.	N/A	Code No.	N/A
Weather	Clear, 60's	Sampling Time:	Begin 1220	End	1310

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	NM
Land Surface Elevation (ft)	NM
Sounded Well Depth (ft bmp)	56.66
Depth to Water (ft bmp)	17.24
Water-Level Elevation (ft)	N/A
Water Column in Well (ft)	39.42
Casing Diameter/Type	2"/PVC
Gallons in Well	6.30
Gallons Pumped/Bailed Prior to Sampling	4 gal
Sample Pump Intake Setting (ft bmp)	middle of screen
Purge Time	begin 1230 end 1255
Pumping Rate (gpm)	600 ml/min
Evacuation Method	Submersible Pump

Field Parameters

Color	Clear
Odor	None
Appearance	Non-turbid
pH (s.u.)	7.27, 7.26, 7.26
Conductivity (mS/cm)	N/A
(µmhos/cm)	~~1330~~, 1330, 1330
Turbidity (NTU)	N/A
Temperature (°C)	16.0, 16.0, 16.0
Dissolved Oxygen (mg/L)	2.31, 2.38, 2.44
ORP (mV)	-19, -15, -10
Sampling Method	Low Flow
Remarks	Sample time @ 12:55
	DTW final = 17.20

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-62

Time Pump Started: 1236

Depth of Sampling: mid-screen

Date: 9-14-06

Parameters	Time										
	1237	1239	1242	1245	1248	1251	1253				
Redox Potential (millivolts)	-15	-20	-25	-24	-19	-15	-10				
Dissolved Oxygen (mg/L)	2.67	2.47	2.23	2.21	2.31	2.38	2.44				
pH (s.u.)	7.59	7.34	7.30	7.28	7.27	7.26	7.26				
Specific Conductance (uS/cm)	~~1330~~ 1330	1320	1320	1320	1330	1330	1330				
Temperature (C)	16.3	16.3	16.2	16.1	16.0	16.0	16.0				

Flow Rate: 400ml/min

Time Sampled: 1255

Total Water Pumped: 4 gal

Total Depth of Well: 56.66

Depth to Water Before Purging: 17.24

Depth to Water After Purging: 17.20

Comments:

ARCADIS

Water Sampling Log

Project	GM Supplemental/Performance	Project No.	OH000294.09	Page	1 of 1
Site Location	Moraine, Ohio			Date	11-30-06
Site/Well No.	GM-52	Replicate No.	N/A	Code No.	N/A
Weather	Cloudy, 50s	Sampling Time:	Begin 0930	End	1000

Evacuation Data		Field Parameters	
Measuring Point	Top of Casing	Color	Light brown
MP Elevation (ft)	727.62	Odor	No
Land Surface Elevation (ft)	728.16	Appearance	Slightly turbid
Sounded Well Depth (ft bmp)	44.03	pH (s.u.)	6.99, 7.01, 7.02
Depth to Water (ft bmp)	23.21	Conductivity (mS/cm)	1.30, 1.30, 1.30
Water-Level Elevation (ft)	704.95	(μmhos/cm)	N/A
Water Column in Well (ft)	20.82	Turbidity (NTU)	NM
Casing Diameter/Type	2"/PVC	Temperature (°C)	17.1, 17.1, 17.2
Gallons in Well	3.33	Dissolved Oxygen (mg/L)	0.31, 0.33, 0.33
Gallons Pumped/Bailed Prior to Sampling	2 gal.	ORP (mV)	147, 136, 127
Sample Pump Intake Setting (ft bmp)	middle of screen	Sampling Method	Low Flow
Purge Time	begin 0940 end 0955	Remarks	Sample time @ 0957
Pumping Rate (gpm)	0.1 ~~ml/min~~ gpm		DTW final = 23.22
Evacuation Method	Submersible Pump		

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

Sampling Personnel ~~Fortner/Jacobs~~ C. Catlett

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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ARCADIS

LOW FLOW SAMPLING
GROUNDWATER FIELD PARAMETER LOG

Project Number: OH000294.0009.00002

Site Location: General Motors Corporation, Moraine, Ohio

Monitoring Well No.: GM-52

Time Pump Started: 0940

Depth of Sampling: middle of screen

Date: 11-30-06

Parameters

Time

	0943	0946	0949	0952	0955						
Redox Potential (millivolts)	172	158	147	136	127						
Dissolved Oxygen (mg/L)	0.49	0.33	0.31	0.33	0.33						
pH (s.u.)	6.80	6.94	6.99	7.01	7.02						
Specific Conductance (umhos/cm)	1.30	1.30	1.30	1.30	1.30						
Temperature (C)	17.0	17.0	17.1	17.1	17.2						

Flow Rate: 0.1 gpm

Time Sampled: 0957

Total Water Pumped: 2 gal

Total Depth of Well: 44.03

Depth to Water Before Purging: 23.21

Depth to Water After Purging: 23.22

Comments

ARCADIS

Water Sampling Log

Project	GM Supplemental/Performance	Project No.	OH000294.09	Page	1 of 1
Site Location	Moraine, Ohio			Date	11-30-06
Site/Well No.	GM-49	Replicate No.	N/A	Code No.	N/A
Weather	Cloudy, 50s	Sampling Time:	Begin 0930	End	~~1000~~ 1010

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	727.88
Land Surface Elevation (ft)	728.28
Sounded Well Depth (ft bmp)	76.91
Depth to Water (ft bmp)	23.48
Water-Level Elevation (ft)	704.80
Water Column in Well (ft)	53.43
Casing Diameter/Type	2"/PVC
Gallons in Well	8.55
Gallons Pumped/Bailed Prior to Sampling	2
Sample Pump Intake Setting (ft bmp)	middle of screen
Purge Time	begin 0942 end ~~0955~~ 1003
Pumping Rate (gpm)	0.1
Evacuation Method	Submersible Pump

Field Parameters

Color	None
Odor	No
Appearance	Clear
pH (s.u.)	7.27, 7.17, 7.16
Conductivity (mS/cm)	1.11, 1.23, 1.23
(µmhos/cm)	N/A
Turbidity (NTU)	NM
Temperature (°C)	16.8, 16.8, 16.9
Dissolved Oxygen (mg/L)	0.14, 0.10, 0.12
ORP (mV)	-162, -156, -159
Sampling Method	Low Flow
Remarks	Sample time @ ~~1000~~ 1004
	DTW final = 23.48

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

Sampling Personnel: Fortner/~~Jacobs~~ Catlett

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-49

Depth of Sampling: middle of screen

Time Pump Started: 0942

Date: 11-30-06

Parameters

Time	0945	0948	0951	0954	0957	1000	1003				
Redox Potential (millivolts)	-39	-71	-107	-139	-162	-156	-159				
Dissolved Oxygen (mg/L)	1.02	0.49	0.33	0.29	0.14	0.10	0.12				
pH (s.u.)	9.08	9.12	9.07	8.96	7.27	7.17	7.16				
Specific Conductance (~~umhos~~ S/cm)	0.93	0.90	0.90	0.90	1.11	1.23	1.23				
Temperature (C)	16.5	16.7	16.7	16.8	16.8	16.8	16.9				

Flow Rate: 0.1 gpm

Time Sampled: 1000 1004

Total Water Pumped: 2 gal

Comments: Turb ≤ 10 NTU ∴ ≤ 20% variance

Total Depth of Well: 76.91

Depth to Water Before Purging: 23.48

Depth to Water After Purging: 23.48

ARCADIS

Water Sampling Log

Project	GM Supplemental/Performance	Project No.	OH000294.09	Page	1 of 1
Site Location	Moraine, Ohio			Date	11/30/06
Site/Well No.	GM-51	Replicate No.	N/A	Code No.	N/A
Weather	Rain; 60's	Sampling Time:	Begin 1025	End	1100

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	728.30
Land Surface Elevation (ft)	728.83
Sounded Well Depth (ft bmp)	44.29
Depth to Water (ft bmp)	23.55
Water-Level Elevation (ft)	705.28
Water Column in Well (ft)	20.74
Casing Diameter/Type	2"/PVC
Gallons in Well	3.32
Gallons Pumped/Bailed Prior to Sampling	2 gallons
Sample Pump Intake Setting (ft bmp)	middle of screen
Purge Time	begin 1032 end 1045
Pumping Rate (gpm)	200 mL/min
Evacuation Method	Submersible Pump

Field Parameters

Color	none
Odor	None
Appearance	Non-turbid
pH (s.u.)	7.16, 7.15, 7.15
Conductivity (mS/cm)	1.14, 1.14, 1.14
(µmhos/cm)	N/A
Turbidity (NTU)	NM
Temperature (°C)	16.7, 16.7, 16.6
Dissolved Oxygen (mg/L)	1.30, 1.10, 1.01
ORP (mV)	84, 82, 81
Sampling Method	Low Flow
Remarks	Sample time @ 1046
	DTW final = 23.55

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-51

Time Pump Started: 1032

Depth of Sampling: middle of screen

Date: 11/30/06

Parameters

Time

	1033	1036	1039	1042	1045						
Redox Potential (millivolts)	76	75	84	82	81						
Dissolved Oxygen (mg/L)	2.53	1.64	1.30	1.10	1.01						
pH (s.u.)	7.24	7.17	7.16	7.15	7.15						
Specific Conductance (umhos/cm)	1.17	1.15	1.14	1.14	1.14						
Temperature (C)	16.6	16.6	16.7	16.7	16.6						

Flow Rate: 200 mL/min

Time Sampled: 1046

Total Water Pumped: 2 ~~3~~ 2 gal.

Comments: Turb. ≤ 10 NTU

Total Depth of Well: 44.29

Depth to Water Before Purging: 23.55

Depth to Water After Purging: 23.55

ARCADIS

Water Sampling Log

Project	GM Supplemental/Performance	Project No.	OH000294.09	Page	1 of 1
Site Location	Moraine, Ohio			Date	11-30-06
Site/Well No.	GM-48	Replicate No.	N/A	Code No.	N/A
Weather	Cloudy, 50s	Sampling Time:	Begin 1020	End	1100

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	728.67
Land Surface Elevation (ft)	728.98
Sounded Well Depth (ft bmp)	73.17
Depth to Water (ft bmp)	23.75
Water-Level Elevation (ft)	705.23
Water Column in Well (ft)	49.42
Casing Diameter/Type	2"/PVC
Gallons in Well	7.90
Gallons Pumped/Bailed Prior to Sampling	2
Sample Pump Intake Setting (ft bmp)	middle of screen
Purge Time	begin 1032 end 1048
Pumping Rate (gpm)	0.1
Evacuation Method	Submersible Pump

Field Parameters

Color	None
Odor	None
Appearance	Non-turbid
pH (s.u.)	7.21, 7.21, 7.22
Conductivity (mS/cm)	1.24, 1.24, 1.24
(µmhos/cm)	N/A
Turbidity (NTU)	NM
Temperature (°C)	16.5, 16.5, 16.5
Dissolved Oxygen (mg/L)	0.33, 0.32, 0.31
ORP (mV)	113, 107, 102
Sampling Method	Low Flow
Remarks	Sample time @ 1050
	DTW final = 23.75

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

Sampling Personnel: Fortner/~~Jacobs~~ Cathett

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-48

Depth of Sampling: middle of screen

Time Pump Started: 1032

Date: 11.30.06

Parameters / Time

	1035	1038	1042	1045	1048						
Redox Potential (millivolts)	154	120	113	107	106						
Dissolved Oxygen (mg/L)	0.75	0.28	0.33	0.32	0.31						
pH (s.u.)	7.27	7.22	7.21	7.21	7.22						
Specific Conductance (umhos/cm)	1.24	1.24	1.24	1.24	1.24						
Temperature (C)	16.3	16.4	16.5	16.5	16.5						

Flow Rate: 0.1 gpm

Time Sampled: 1050

Total Water Pumped: 2 gal

Total Depth of Well: 73.17

Depth to Water Before Purging: 23.75

Depth to Water After Purging: 23.75

Comments:

ARCADIS

Water Sampling Log

Project	GM Supplemental/Performance	Project No.	OH000294.09	Page	1 of 1
Site Location	Moraine, Ohio			Date	11/30/06
Site/Well No.	GM-47	Replicate No.	N/A	Code No.	N/A
Weather	Rain; 60's	Sampling Time:	Begin 1300	End	1350

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	726.75
Land Surface Elevation (ft)	727.03
Sounded Well Depth (ft bmp)	59.4
Depth to Water (ft bmp)	21.33
Water-Level Elevation (ft)	705.42
Water Column in Well (ft)	38.07
Casing Diameter/Type	2"/PVC
Gallons in Well	6.09
Gallons Pumped/Bailed Prior to Sampling	~2.5 gallons
Sample Pump Intake Setting (ft bmp)	middle of screen
Purge Time	begin 1306 end 1319
Pumping Rate (gpm)	200 ml/min
Evacuation Method	Submersible Pump

Field Parameters

Color	None
Odor	None
Appearance	Non-turbid
pH (s.u.)	7.07, 7.07, 7.07
Conductivity (mS/cm)	1.41, 1.41, 1.42
(µmhos/cm)	N/A
Turbidity (NTU)	NM
Temperature (°C)	17.22, 17.23, 17.21
Dissolved Oxygen (mg/L)	0.31, 0.23, 0.21
ORP (mV)	169, 168, 165
Sampling Method	Low Flow
Remarks	Sample time @ 1320
	DTW final = 21.34

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	Micrombos 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-47

Depth of Sampling: middle of screen

Time Pump Started: 1306

Date: 11/30/06

Parameters / Time

	1307	1310	1313	1316	1319						
Redox Potential (millivolts)	181	177	169	168	165						
Dissolved Oxygen (mg/L)	0.48	0.36	0.31	0.23	0.21						
pH (s.u.)	7.15	7.10	7.07	7.07	7.07						
Specific Conductance (~~umhos~~/cm)	1.40	1.41	1.41	1.41	1.42						
Temperature (C)	17.19	17.19	17.22	17.23	17.21						

Flow Rate: ~200 mL/min

Time Sampled: 1320

Total Water Pumped: ~2.5 gallons

Total Depth of Well: 59.4

Depth to Water Before Purging: 21.33

Depth to Water After Purging: 21.34

Comments:

ARCADIS

Water Sampling Log

Project	GM Supplemental/Performance	Project No.	OH000294.09	Page	1 of 1
Site Location	Moraine, Ohio			Date	11/30/06
Site/Well No.	GM-50	Replicate No.	N/A	Code No.	N/A
Weather	Rain, 60's	Sampling Time:	Begin 1300	End	1330

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	726.55
Land Surface Elevation (ft)	727.03
Sounded Well Depth (ft bmp)	39.65
Depth to Water (ft bmp)	21.24
Water-Level Elevation (ft)	705.79
Water Column in Well (ft)	18.41
Casing Diameter/Type	2"/PVC
Gallons in Well	2.95
Gallons Pumped/Bailed Prior to Sampling	2.5 gallons
Sample Pump Intake Setting (ft bmp)	middle of screen
Purge Time	begin 1306 end 1319
Pumping Rate (gpm)	200 mL/min
Evacuation Method	Submersible Pump

Field Parameters

Color	None
Odor	None
Appearance	Non-turbid
pH (s.u.)	7.01, 7.01, 7.01
Conductivity (mS/cm)	1.70, 1.68, 1.65
(µmhos/cm)	N/A
Turbidity (NTU)	NM
Temperature (°C)	17.22, 17.20, 17.19
Dissolved Oxygen (mg/L)	0.06, 0.04, 0.04
ORP (mV)	99, 98, 94
Sampling Method	Low Flow
Remarks	Sample time @ 1321
	DTW final = 21.24

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-50

Time Pump Started: 1306

Depth of Sampling: middle of screen

Date: 11/30/06

Parameters

Time

	1307	1310	1313	1316	1319						
Redox Potential (millivolts)	118	110	99	98	94						
Dissolved Oxygen (mg/L)	0.02	0.11	0.06	0.04	0.04						
pH (s.u.)	7.01	7.02	7.01	7.01	7.01						
Specific Conductance (~~umhos~~/cm)	1.50	1.88	1.70	1.68	1.65						
Temperature (C)	16.90	17.00	17.22	17.20	17.19						

Flow Rate: ~200 mL/min

Total Depth of Well: 39.65

Time Sampled: 1321

Depth to Water Before Purging: 21.24

Total Water Pumped: ~2.5 gallons

Depth to Water After Purging: 21.24

Comments

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Water Sampling Log

Project	GM Supplemental/Performance	Project No.	OH000294.09	Page	1 of 1
Site Location	Moraine, Ohio			Date	11/30/06
Site/Well No.	WSU-23	Replicate No.	N/A	Code No.	N/A
Weather	Rain; 60's	Sampling Time:	Begin 1347	End	1430

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	724.90
Land Surface Elevation (ft)	724.65
Sounded Well Depth (ft bmp)	57.55
Depth to Water (ft bmp)	19.50
Water-Level Elevation (ft)	705.15
Water Column in Well (ft)	38.05
Casing Diameter/Type	2"/PVC
Gallons in Well	6.01
Gallons Pumped/Bailed Prior to Sampling	2 gal. pumped
Sample Pump Intake Setting (ft bmp)	middle of screen
Purge Time	begin 1357 end 1416
Pumping Rate (gpm)	0.1 gpm
Evacuation Method	Submersible Pump

Field Parameters

Color	Gray
Odor	None
Appearance	Slightly turbid
pH (s.u.)	7.15, 7.15, 7.15
Conductivity (mS/cm)	1.61, 1.48, 1.39
(µmhos/cm)	N/A
Turbidity (NTU)	NM
Temperature (°C)	15.4, 15.4, 15.4
Dissolved Oxygen (mg/L)	0.00, 0.00, 0.00
ORP (mV)	39, 23, 20
Sampling Method	Low Flow
Remarks	Sample time @ 1417
	DTW final = 19.50

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.: WSU-23

Time Pump Started: 1357

Depth of Sampling: middle of screen

Date: 11/30/06

Parameters / Time

	1358	1401	1404	1407	1410	1413	1416				
Redox Potential (millivolts)	135	126	85	63	39	23	20				
Dissolved Oxygen (mg/L)	1.15	0.45	0.12	0.07	0.00	0.00	0.00				
pH (s.u.)	7.15	7.15	7.15	7.15	7.15	7.15	7.15				
Specific Conductance (~~umhos~~/cm)	3.11	2.32	1.94	1.79	1.61	1.48	1.39				
Temperature (C)	15.4	15.4	15.4	15.5	15.4	15.4	15.4				

Flow Rate: 0.1

Time Sampled: 1417

Total Water Pumped: 2 gal

Total Depth of Well: 57.55

Depth to Water Before Purging: 19.50

Depth to Water After Purging: 19.50

Comments:

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Water Sampling Log

Project	GM Supplemental/Performance	Project No.	OH000294.09	Page	1 of 1
Site Location	Moraine, Ohio			Date	11/30/06
Site/Well No.	GM-58	Replicate No.	DUP1 / MS/MSD	Code No.	N/A
Weather	Rain; 60's	Sampling Time:	Begin 1500	End	1540

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	735.46
Land Surface Elevation (ft)	735.59
Sounded Well Depth (ft bmp)	82.00
Depth to Water (ft bmp)	28.29
Water-Level Elevation (ft)	707.30
Water Column in Well (ft)	53.71
Casing Diameter/Type	2"/ PVC
Gallons in Well	8.59
Gallons Pumped/Bailed Prior to Sampling	3
Sample Pump Intake Setting (ft bmp)	middle of screen
Purge Time	begin 1510 end 1525
Pumping Rate (gpm)	0.2
Evacuation Method	Submersible pump

Field Parameters

Color	None
Odor	None
Appearance	Non-turbid
pH (s.u.)	7.05, 7.05, 7.05
Conductivity (mS/cm)	1.35, 1.35, 1.35
(µmhos/cm)	N/A
Turbidity (NTU)	NM
Temperature (°C)	16.0, 16.0, 16.0
Dissolved Oxygen (mg/L)	3.64, 3.52, 3.46
ORP (mV)	78, 74, 73
Sampling Method	Low Flow
Remarks	Sample time @ 1526
	DTW final = 28.29
	EBI @ 1545

Constituents Sampled	Container Description	Number	Preservative
Site-Specific VOCs (8260)	40 ml glass vial	9	Cool, HCl (MS/MSD)

Sampling Personnel: Fortner/Jacobs Catlett

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-58

Time Pump Started: 1510

Depth of Sampling: middle of screen

Date: 11-30-06

Parameters

Time

	1513	1516	1519	1522	1525						
Redox Potential (millivolts)	38	70	78	74	73						
Dissolved Oxygen (mg/L)	4.14	3.89	3.64	3.52	3.46						
pH (s.u.)	7.05	7.05	7.05	7.05	7.05						
Specific Conductance (umhos/cm)	1.42	1.36	1.35	1.35	1.35						
Temperature (C)	15.9	16.0	16.0	16.0	16.0						

Flow Rate: 0.2 gpm

Time Sampled: 1526

Total Water Pumped: 3 gal

Total Depth of Well: 82.00

Depth to Water Before Purging: 28.29

Depth to Water After Purging: 28.29

Comments:

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Water Sampling Log

Project	GM Supplemental/Performance	Project No.	OH000294.09	Page	1 of 1
Site Location	Moraine, Ohio			Date	11/30/06
Site/Well No.	GM-46	Replicate No.	N/A	Code No.	N/A
Weather	Rain; 60's	Sampling Time:	Begin 1600	End	1640

Evacuation Data

Measuring Point	Top of Casing
MP Elevation (ft)	727.79
Land Surface Elevation (ft)	728.13
Sounded Well Depth (ft bmp)	29.82
Depth to Water (ft bmp)	23.03
Water-Level Elevation (ft)	704.76
Water Column in Well (ft)	6.79
Casing Diameter/Type	2"/PVC
Gallons in Well	1.086
Gallons Pumped/Bailed Prior to Sampling	2 gallons pumped
Sample Pump Intake Setting (ft bmp)	middle of screen
Purge Time	begin 1624 end 1636
Pumping Rate (gpm)	200 mL/min
Evacuation Method	Submersible Pump

Field Parameters

Color	tan
Odor	none
Appearance	Slightly turbid
pH (s.u.)	6.77, 6.63, 6.64, 6.64
Conductivity (mS/cm)	0.928, 0.999, 1.01
(µmhos/cm)	N/A
Turbidity (NTU)	NM
Temperature (°C)	16.5, 16.6, 16.7
Dissolved Oxygen (mg/L)	1.41, 0.50, 0.00
ORP (mV)	-32, -37, -40
Sampling Method	Low Flow
Remarks	Sample time @ 1657
	DTW final = 23.04

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-46

Depth of Sampling: middle of screen

Time Pump Started: 1624

Date: 11/30/06

Parameters / Time

	1624	1627	1630	1633	1636						
Redox Potential (millivolts)	1	-3	-32	-37	-40						
Dissolved Oxygen (mg/L)	4.19	3.32	1.41	0.50	0.00						
pH (s.u.)	6.77	6.70	663	6.64	6.64						
Specific Conductance (~~umhos~~ S/cm)	1.15	0.90	0.928	0.999	1.01						
Temperature (C)	16.0	16.3	16.5	16.6	16.7						

Flow Rate: 200 ml/min

Time Sampled: 1637

Total Water Pumped: 2 gallons

Total Depth of Well: 29.82

Depth to Water Before Purging: 23.03

Depth to Water After Purging: 23.04

Comments:

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Appendix B

Supplemental Investigation
Analytical Results

Table B-1. Groundwater Analytical Results for 2006 Supplemental Investigation Including QA/QC, General Motors Corporation, Moraine, Ohio.

		GM-46		GM-47			
	Unit	3/2/2006 Upper Aquifer	11/30/2006 Upper Aquifer	3/1/2006 Upper Aquifer	3/1/2006 Duplicate	9/19/2006 Upper Aquifer	11/30/2006 Upper Aquifer
Volatile Organic Compound							
1,1,1-Trichloroethane	ug/L	< 1 U	< 1 U	2.2	2.2	2.2	1.9 J
1,1-Dichloroethane	ug/L	2.7	0.43 J	1.8	1.7	1.7 J	1.7 J
1,1-Dichloroethene	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 2 U	< 2 U
Benzene	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 2 U	< 2 U
cis-1,2-Dichloroethene	ug/L	6.8	5.2	7.2	7.2	9.5	8.9
Ethylbenzene	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 2 U	< 2 U
Tetrachloroethene	ug/L	< 1 U	0.67 J	78	76	64	69
Toluene	ug/L	< 1 U	< 1 U	0.29 J	0.28 J	< 2 U	< 2 U
trans-1,2-Dichloroethene	ug/L	0.35 J	< 1 U	1.5	1.4	1.4 J	1.4 J
Trichloroethene	ug/L	22	1.5	50	48	44	51
Vinyl chloride	ug/L	1.9	1.5	< 1 U	< 1 U	< 2 U	< 2 U
Xylene (total)	ug/L	< 2 U	< 2 U	< 2 U	< 2 U	< 4 U	< 4 U

ug/L - Micrograms per liter.
J - Value is estimated.
U - Nondetect.
< - Value is not detected above reporting limit shown.

Table B-1. Groundwater Analytical Results for 2006 Supplemental Investigation Including QA/QC, General Motors Corporation, Moraine, Ohio.

		GM-48		GM-49		WSU-22	WSU-23	
	Unit	3/1/2006 Upper Aquifer	11/30/2006 Upper Aquifer	3/1/2006 Upper Aquifer	11/30/2006 Upper Aquifer	3/1/2006 Upper Aquifer	3/1/2006 Upper Aquifer	11/30/2006 Upper Aquifer
Volatile Organic Compound								
1,1,1-Trichloroethane	ug/L	0.62 J	0.97 J	2.4	1.8	3.1	2.5	2.1
1,1-Dichloroethane	ug/L	0.71 J	0.72 J	3.4	2.6	1.7	0.97 J	0.73 J
1,1-Dichloroethene	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1.7 U	< 1 U	0.2 J
Benzene	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1.7 U	< 1 U	< 1 U
cis-1,2-Dichloroethene	ug/L	0.7 J	0.83 J	4.7	3.8	4.3	0.44 J	0.46 J
Ethylbenzene	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1.7 U	< 1 U	< 1 U
Tetrachloroethene	ug/L	< 1 U	0.26 J	2.5	3.1	110	< 1 U	< 1 U
Toluene	ug/L	0.25 J	< 1 U	0.25 J	< 1 U	< 1.7 U	< 1 U	< 1 U
trans-1,2-Dichloroethene	ug/L	< 1 U	0.19 J	0.66 J	0.53 J	1.2 J	< 1 U	< 1 U
Trichloroethene	ug/L	2.1	2.4	8.4	11	88	7.1	6.1
Vinyl chloride	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1.7 U	< 1 U	< 1 U
Xylene (total)	ug/L	< 2 U	< 2 U	< 2 U	< 2 U	< 3.3 U	< 2 U	< 2 U

ug/L - Micrograms per liter.
J - Value is estimated.
U - Nondetect.
< - Value is not detected above reporting limit shown.

Table B-1. Groundwater Analytical Results for 2006 Supplemental Investigation Including QA/QC, General Motors Corporation, Moraine, Ohio.

		GM-50					GM-51	
	Unit	4/28/2006 Upper Aquifer	4/28/2006 Duplicate	9/19/2006 Upper Aquifer	9/19/2006 Duplicate	11/30/2006 Upper Aquifer	4/28/2006 Upper Aquifer	11/30/2006 Upper Aquifer
Volatile Organic Compound								
1,1,1-Trichloroethane	ug/L	2.4 J	2.3 J	1.4 J	1.4 J	1.6 J	0.9 J	0.76 J
1,1-Dichloroethane	ug/L	1.9 J	1.8 J	1.5 J	1.6 J	1.5 J	< 1 U	< 1 U
1,1-Dichloroethene	ug/L	< 5 U	< 5 U	< 5.6 U	< 6.2 U	< 5 U	< 1 U	< 1 U
Benzene	ug/L	< 5 U	< 5 U	< 5.6 U	< 6.2 U	< 5 U	< 1 U	< 1 U
cis-1,2-Dichloroethene	ug/L	5.2	5.4	13	12	34	0.32 J	0.26 J
Ethylbenzene	ug/L	< 5 U	< 5 U	< 5.6 U	< 6.2 U	< 5 U	< 1 U	< 1 U
Tetrachloroethene	ug/L	180	170	150	140	140	6.7	6.6
Toluene	ug/L	< 5 U	< 5 U	< 5.6 U	< 6.2 U	< 5 U	< 1 U	< 1 U
trans-1,2-Dichloroethene	ug/L	1.6 J	1.3 J	1.7 J	1.6 J	1.5 J	< 1 U	< 1 U
Trichloroethene	ug/L	120	110	84	80	86	4.9	5
Vinyl chloride	ug/L	< 5 U	< 5 U	< 5.6 U	< 6.2 U	< 5 U	< 1 U	< 1 U
Xylene (total)	ug/L	< 10 U	< 10 U	< 11 U	< 12 U	< 10 U	< 2 U	< 2 U

ug/L - Micrograms per liter.
J - Value is estimated.
U - Nondetect.
< - Value is not detected above reporting limit shown.

Table B-1. Groundwater Analytical Results for 2006 Supplemental Investigation Including QA/QC, General Motors Corporation, Moraine, Ohio.

	Unit	GM-52 4/28/2006 Upper Aquifer	GM-52 11/30/2006 Upper Aquifer	GM-53 9/14/2006 Upper Aquifer	GM-55 9/14/2006 Upper Aquifer	GM-56 9/14/2006 Upper Aquifer	GM-57 9/14/2006 Upper Aquifer	GM-59 9/15/2006 Upper Aquifer
Volatile Organic Compound								
1,1,1-Trichloroethane	ug/L	2	1.3 J	< 1 U	< 1 U	0.35 J	< 1 U	< 14 U
1,1-Dichloroethane	ug/L	0.94 J	0.93 J	< 1 U	< 1 U	< 1 U	< 1 U	< 14 U
1,1-Dichloroethene	ug/L	< 2 U	< 2 U	< 1 U	< 1 U	< 1 U	< 1 U	< 14 U
Benzene	ug/L	< 2 U	< 2 U	< 1 U	< 1 U	< 1 U	< 1 U	< 14 U
cis-1,2-Dichloroethene	ug/L	1.9 J	2.7	< 1 U	< 1 U	< 1 U	< 1 U	4 J
Ethylbenzene	ug/L	< 2 U	< 2 U	< 1 U	< 1 U	< 1 U	0.21 J	< 14 U
Tetrachloroethene	ug/L	75	67	< 1 U	7.4	0.57 J	1.9	310
Toluene	ug/L	< 2 U	< 2 U	< 1 U	< 1 U	< 1 U	0.48 J	< 14 U
trans-1,2-Dichloroethene	ug/L	0.67 J	0.76 J	< 1 U	< 1 U	< 1 U	< 1 U	< 14 U
Trichloroethene	ug/L	61	47	< 1 U	< 1 U	< 1 U	< 1 U	94
Vinyl chloride	ug/L	< 2 U	< 2 U	< 1 U	< 1 U	< 1 U	< 1 U	< 14 U
Xylene (total)	ug/L	< 4 U	< 4 U	< 2 U	< 2 U	< 2 U	< 2 U	< 29 U

ug/L - Micrograms per liter.
J - Value is estimated.
U - Nondetect.
< - Value is not detected above reporting limit shown.

Table B-1. Groundwater Analytical Results for 2006 Supplemental Investigation Including QA/QC, General Motors Corporation, Moraine, Ohio.

	Unit	GM-60 9/15/2006 Upper Aquifer	GM-62 9/14/2006 Upper Aquifer	GM-63 9/14/2006 Upper Aquifer	GM-63 9/14/2006 Duplicate	GM-63 12/1/2006 Upper Aquifer	GM-63 12/1/2006 Duplicate
Volatile Organic Compound							
1,1,1-Trichloroethane	ug/L	< 25 U	< 1 U	2.3 J	2.2 J	2.3 J	2.3 J
1,1-Dichloroethane	ug/L	< 25 U	< 1 U	1.9 J	1.4 J	1.9 J	1.7 J
1,1-Dichloroethene	ug/L	< 25 U	< 1 U	< 5 U	< 5 U	< 4 U	< 3.3 U
Benzene	ug/L	< 25 U	< 1 U	< 5 U	< 5 U	< 4 U	< 3.3 U
cis-1,2-Dichloroethene	ug/L	220	< 1 U	5.6	4.7 J	8.8	7.4
Ethylbenzene	ug/L	< 25 U	< 1 U	< 5 U	< 5 U	< 4 U	< 3.3 U
Tetrachloroethene	ug/L	510	15	160	120	140	130
Toluene	ug/L	< 25 U	0.24 J	< 5 U	< 5 U	< 4 U	< 3.3 U
trans-1,2-Dichloroethene	ug/L	< 25 U	< 1 U	1.4 J	1.4 J	1.3 J	1.4 J
Trichloroethene	ug/L	570	< 1 U	120	99	100	88
Vinyl chloride	ug/L	< 25 U	< 1 U	< 5 U	< 5 U	< 4 U	< 3.3 U
Xylene (total)	ug/L	< 50 U	< 2 U	< 10 U	< 10 U	< 8 U	< 6.7 U

ug/L - Micrograms per liter.
J - Value is estimated.
U - Nondetect.
< - Value is not detected above reporting limit shown.

Table B-1. Groundwater Analytical Results for 2006 Supplemental Investigation Including QA/QC, General Motors Corporation, Moraine, Ohio.

		GM-64		GM-54	GM-58		
	Unit	9/14/2006 Upper Aquifer	12/1/2006 Upper Aquifer	9/14/2006 Lower Aquifer	9/14/2006 Lower Aquifer	11/30/2006 Lower Aquifer	11/30/2006 Duplicate
Volatile Organic Compound							
1,1,1-Trichloroethane	ug/L	1.8 J	2.1 J	< 6.7 U	< 1 U	< 3.3 U	< 3.3 U
1,1-Dichloroethane	ug/L	1.8 J	2.1 J	< 6.7 U	< 1 U	< 3.3 U	< 3.3 U
1,1-Dichloroethene	ug/L	< 2.5 U	< 2.5 U	< 6.7 U	< 1 U	< 3.3 U	< 3.3 U
Benzene	ug/L	< 2.5 U	< 2.5 U	< 6.7 U	< 1 U	< 3.3 U	< 3.3 U
cis-1,2-Dichloroethene	ug/L	16	42	< 6.7 U	0.73 J	< 3.3 U	< 3.3 U
Ethylbenzene	ug/L	< 2.5 U	< 2.5 U	< 6.7 U	< 1 U	< 3.3 U	< 3.3 U
Tetrachloroethene	ug/L	77	85	180	4.4	85	89
Toluene	ug/L	< 2.5 U	< 2.5 U	< 6.7 U	0.4 J	< 3.3 U	< 3.3 U
trans-1,2-Dichloroethene	ug/L	1.6 J	2 J	< 6.7 U	< 1 U	< 3.3 U	< 3.3 U
Trichloroethene	ug/L	34	35	3.2 J	0.72 J	< 3.3 U	< 3.3 U
Vinyl chloride	ug/L	< 2.5 U	< 2.5 U	< 6.7 U	< 1 U	< 3.3 U	< 3.3 U
Xylene (total)	ug/L	< 5 U	< 5 U	< 13 U	< 2 U	< 6.7 U	< 6.7 U

ug/L - Micrograms per liter.
J - Value is estimated.
U - Nondetect.
< - Value is not detected above reporting limit shown.

Table B-1. Groundwater Analytical Results for 2006 Supplemental Investigation Including QA/QC, General Motors Corporation, Moraine, Ohio.

		GM-61		Equipment Blank						
	Unit	9/15/2006 Lower Aquifer	9/15/2006 Duplicate	3/2/2006 QA/QC	4/28/2006 QA/QC	9/14/2006 QA/QC	9/15/2006 QA/QC	9/19/2006 QA/QC	11/30/2006 QA/QC	12/1/2006 QA/QC
Volatile Organic Compound										
1,1,1-Trichloroethane	ug/L	0.5 J	0.54 J	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
1,1-Dichloroethane	ug/L	2.2	2.4	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
1,1-Dichloroethene	ug/L	< 1.7 U	< 1.4 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Benzene	ug/L	< 1.7 U	< 1.4 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
cis-1,2-Dichloroethene	ug/L	2.6	3	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Ethylbenzene	ug/L	< 1.7 U	< 1.4 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Tetrachloroethene	ug/L	20	24	0.26 J	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Toluene	ug/L	0.44 J	< 1.4 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
trans-1,2-Dichloroethene	ug/L	< 1.7 U	< 1.4 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Trichloroethene	ug/L	36	40	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Vinyl chloride	ug/L	< 1.7 U	< 1.4 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Xylene (total)	ug/L	< 3.3 U	< 2.9 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U

ug/L - Micrograms per liter.
J - Value is estimated.
U - Nondetect.
< - Value is not detected above reporting limit shown.

Table B-1. Groundwater Analytical Results for 2006 Supplemental Investigation Including QA/QC, General Motors Corporation, Moraine, Ohio.

		Trip Blank					
	Unit	3/1/2006 QA/QC	4/28/2006 QA/QC	9/14/2006 QA/QC	9/19/2006 QA/QC	11/30/2006 QA/QC	12/1/2006 QA/QC
Volatile Organic Compound							
1,1,1-Trichloroethane	ug/L	< 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
1,1-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 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
Tetrachloroethene	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
Toluene	ug/L	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	0.2 J
trans-1,2-Dichloroethene	ug/L	< 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
Vinyl chloride	ug/L	< 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

ug/L - Micrograms per liter.
J - Value is estimated.
U - Nondetect.
< - Value is not detected above reporting limit shown.