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Current Conditions Report

Pontiac North Campus
Volume II of IV

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General Motors Corporation
Pontiac, Michigan

January 31, 2001

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Appendix J

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PCB Leak

Transformer # 451 (Compressor bldg.)

Leak Inspection Date	Description of leak
3-2-88	PCB leak (small, < 1 lb) shows oily spots on the wall of transformer
3-3-88	" (Leak on the wall of transformer cleaned with solvent)
3-4-88	"
3-5 & 3-6	" (Security checked)
3-7-88	Leak stopped by contractor.

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PCB Leak from Transformer.

AT Substation – West of Compressor building.

EC 450

Leak Inspection Date	Description of leak	Comments
10-29-85	Leak noticed on this date at South side of transformer from Surrounding of a voltage regulator mechanism. Small leak showing wet patch of 8"x8"	
10-30-85	SAME (floor area cleaned) ABOVE	
-31-'85	"	
11-1-85	"	
11-2-85	"	
11-3-85	"	
11-4-85	"	Leak stopped 11-8-85
11-5-85	"	
11-6-85	"	
11-7-85	"	
11-8-85	"	
11-9-85	"	
11-10-85	"	
11-11-85		
-12-85		
11-13-85	"	
11-14-85	"	
11-15-85	"	
11-16-85	"	
11-17-85	"	

Jimmy N. Deboo

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INVESTIGATION REPORT

GENERAL MOTORS PONTIAC COMPLEX
WEST YARD
Pontiac, Michigan

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GENERAL MOTORS

SUBMITTED BY

PARSONS
ENGINEERING SCIENCE, INC.

290 Elwood Davis Road - Suite 312
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PARSONS

MARCH 1997

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WEST YARD INVESTIGATION REPORT

EXECUTIVE SUMMARY

INVESTIGATION SCOPE

Background

The General Motors Pontiac Complex in Pontiac, Michigan contains an area of approximately 20 acres, referred to as the West Yard, in the southwest corner of the complex, which was used historically for waste management activities related to the automotive manufacturing and support activities and foundry operations at the Complex. When the Complex was reorganized into separate GM business units or Divisions in the 1970s, part of the West Yard came under the control of the foundry (Central Foundry Division) while the rest of the West Yard came under control of the automotive manufacturing and support operations (originally the Pontiac Motor Division, later the Chevrolet-Pontiac-Canada (CPC) Division). The automatic support and operations unit built and operated a RCRA hazardous waste storage pad on the western portion of the West Yard from 1982 through 1988 to support the automotive manufacturing and support services.

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Use of the storage pad was discontinued in 1988, when closure activities were undertaken pursuant to the State of Michigan Hazardous Waste Management Act (formerly known as Act 64, now Part 111 of Act 451). Sampling at the storage pad surface showed that the pad met closure requirements specified in the approved closure plan. Soil and groundwater samples from beneath the pad did not meet closure criteria (background or non-detectable concentrations). Indications were that the compounds in soil and groundwater were residuals from the historical waste management activities conducted in the West Yard area. Therefore, remediating the soil and groundwater which exceeded the closure criteria beneath the pad to meet the closure criteria would not be practical. To resolve the closure issues at the storage pad and evaluate environmental conditions throughout the West Yard, GM agreed to conduct a more general investigation of the West Yard to supplement the existing information.

This report includes results of closure activities at the former hazardous waste storage pad and the investigation of the West Yard.

The impacts of historical disposal activities at the West Yard were evaluated by comparing analytical results with generic industrial land use based soil and groundwater criteria developed by the Michigan Department of Environmental Quality (MDEQ) under Part 201 of Michigan Public Act 451. The soil sample analytical results were compared to four sets of criteria: the Generic Industrial Direct Contact Criteria and Generic Soil Inhalation Criteria for the protection of onsite workers, the Soil/Water Partitioning Generic Groundwater Contact Criteria (SWP GCC) for the protection of groundwater, and the Generic Soil Saturation Screening Concentrations (C_{sat}), which correspond to a theoretical threshold above which free phase contaminant may exist. The groundwater analytical results were compared to Generic Groundwater Contact

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Criteria. As part of this conservative screening process, the analytical results were compared to the screening criteria on a location-by-location basis, not a statistical basis.

CLOSURE ACTIVITIES

Closure activities at the storage pad were conducted in two phases, pursuant to the approved closure plan. The initial closure sampling activities included:

- collection of wipe samples and rinsate samples from the pad surface;
- collection of concrete core samples of pad material;
- installation of 12 soil borings beneath the pad; and
- installation of five monitoring wells beneath the pad and collection of groundwater samples.

All samples were analyzed for a suite of organics and lead, which comprised the hazardous waste constituents of the materials stored on the pad.

The analytical results from the pad itself (wipe samples, rinsate samples, and concrete core samples) indicated that the pad met the closure criteria specified in the closure plan.

One subsurface soil sample from beneath the storage pad exceeded Part 201 Generic Industrial Direct Contact Criteria for lead and one sample exceeded the Part 201 Generic Soil Saturation Screening Concentration for xylenes. No Generic Soil Water Partitioning Criteria or Generic Soil Inhalation Criteria were exceeded.

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Additional closure activities from 1989 through 1991 included the installation of additional wells to sample groundwater and soil vapor in the vicinity and downgradient of the storage pad.

Additional groundwater sampling results confirmed the presence of organic compounds and lead. No groundwater samples collected during closure activities exceeded Part 201 Generic Groundwater Contact Criteria. Non-aqueous-phase liquid (NAPL) was observed in several wells at the pad.

The presence of subsurface soil exceedences and NAPL is not attributed to activities at the storage pad, but is believed to be residues of historical waste management, based on the pad sampling results and the known history of the West Yard.

WEST YARD INVESTIGATION

The West Yard investigation consisted of the following field investigation activities:

- A geologic investigation was conducted to characterize the presence and extent of low permeability zones. Four geotechnical borings were conducted around the West Yard perimeter to provide geological information from ground surface to a depth of 100 feet. Geotechnical samples were collected from low permeability materials to determine vertical hydraulic conductivity.

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Seven subsurface soil samples exceeded the Generic Particulate Soil Inhalation Criteria for manganese.

- Groundwater flow is generally to the southwest, and is predominantly horizontal due to the presence of a very low permeability clay and silt layer which apparently controls flow.
- The very low permeability layer underlies the saturated sand/peat unit to a depth of 100 feet. Vertical hydraulic conductivities measured in this low permeability layer ranged from 1.21E-08 cm/sec to 1.33E-07 cm/sec.
- Limited and sporadic detections of organics in groundwater, all below the Generic Groundwater Contact Criteria except for PCBs in samples from two wells, indicate these constituents do not represent a significant environmental or health threat and, given the time period in which the releases occurred, are not migrating significantly.
- Inorganics in groundwater are present on the site, but not in exceedence of MDEQ Generic Groundwater Contact Criteria.
- Two small areas of NAPL (motor oil with diesel, gas, and fuel oil) were detected in the vicinity of MW-3/MW-13 and MW-6, respectively. NAPL was also recently observed in MW-22. No significant migration was indicated.

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SECTION 1

INTRODUCTION

1.1 PROJECT BACKGROUND

1.1.1 Project Complex

The General Motors Pontiac Complex is located in Pontiac, Michigan (Figure 1.1). The complex is bordered on the north by Walton Boulevard, on the south by Montcalm Street, to the east by Joslyn Street, and to the west by Baldwin Avenue. The overall land use of the Complex is industrial and manufacturing. The Complex is surrounded by commercial, industrial and residential zoned areas.

The Pontiac Complex has performed a wide range of automotive related production processes including car assembly, plating, painting, metal stamping, machining and metal casting operations. The first plant was constructed in 1928 to produce cars for the Oakland Motor Company. By the mid-1930s, the Complex consisted of Plants 8 and 9 along with the Foundry (Plant 6). In 1945, the Plating (Plant 2), Heat Tracing (Plant 1) and Axle Plant (Plant 5) were starting construction along with expansions to the Engine Plant (Plant 9) and the Foundry. The two pressed Metal Plants (Plants 14 and 15) were added in 1951 and 1952. The Car Finishing Plant (Plant 16) was added in 1954. In 1981 the new Engine Plant (Plant 55) was constructed. The Foundry (Plant 6) ceased operation in 1987 and was demolished in 1996, and Plants 8 and 9 are to be demolished in 1997.

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The onsite Wastewater Treatment Plant (WTP) was built in 1957. The WTP is designed to treat metallic-acidic, paint and powerhouse boiler blowdown wastewater in one operation, and alkali-oily wastewater in another operation. The effluent from this system, as well as sanitary, non-contact cooling waters and a portion of the storm water, is discharged to the City of Pontiac POTW. The Complex also has a storm water retention and treatment system south of Montcalm Street which discharges treated water to the city storm sewer system.

In the 1970s, the Pontiac Complex was reorganized into separate GM business units or Divisions. The southwest area of the Complex, referred to as the West Yard, came under the control of two GM Divisions. The eastern and central portion of the West Yard became part of the property controlled by foundry operations (Central Foundry Division). The western area of the West Yard became part of the property controlled by the automotive manufacturing and support operations (Pontiac Motor Division, later the Chevrolet-Pontiac-Canada (CPC) Division).

A RCRA-regulated hazardous waste storage pad was operated in the West Yard from 1982 through 1988. The pad was operated by the automotive manufacturing division at the Complex (Pontiac Motor Division and CPC). Hazardous and non-hazardous wastes from the automotive manufacturing operations were stored on the pad prior to shipment offsite for reclamation or disposal.

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The Complex has a Michigan Environmental Response Act (Part 201) site that is listed as "GM CPC Pontiac 307" in Oakland County (63-03N-10E-20AA). This is a PCB-contaminated railroad track site (Track 31) which is located just north of the West Yard. The Track 31 site was separately remediated in October of 1996 by GM through excavation and offsite disposal of soils exceeding the Michigan Department of Environmental Quality (MDEQ) industrial land use criteria for PCBs.

1.1.2 West Yard

The West Yard is an area of approximately 20 acres located in the southwest corner of the Complex bounded to the south by Montcalm Street, to the west by the Grand Trunk Western Railroad line, to the east by the area of the former (now demolished) Foundry (Plant 6) and to the north by the soon-to-be demolished Plants 8 and 9 (Figure 1.2). The boundaries of the West Yard for the purpose of this evaluation were established prior to the demolition of the Foundry. Zoning to the south and west of the site is commercial, residential, and light manufacturing.

The area referred to as the West Yard includes property operated by two GM business units or Divisions. Each of these Divisions is covered by a different EPA and MDEQ ID Number. Figure 1.3 shows the property lines and ID numbers. The western area of the West Yard, including the former hazardous waste storage pad, is part of the property controlled by the automotive manufacturing and support operations (formerly the Pontiac Motor Division, later the CPC Division) covered under ID Number MID005356886. The eastern and central area of the West Yard is controlled by the former foundry operations (Central Foundry Division) covered under ID Number MID085470102.

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From the 1940s until the mid-1960s, the West Yard was used for a variety of material management activities. These are described below.

Onsite placement of foundry sand occurred in the West Yard from at least the 1940s until the mid-1960s. Soil boring logs from the areas within the West Yard indicate that foundry sand is present from the surface down to approximately 18 feet below grade. Foundry sand is encountered across the site except for the area west and south of the two access roads that parallel Montcalm Street and the railroad tracks. After onsite placement of foundry sand ceased in the mid-1960s, foundry sand was stored and staged in the West Yard prior to offsite disposal. This continued until 1987, when the Foundry was closed.

Areas of the West Yard were used to dispose of refuse from the Pontiac Complex operations. The outlines of potential refuse disposal areas are shown on Figure 1.2.

The Salvage Building was constructed in the 1940s to separate reusable/salable materials from unusable wastes. General refuse such as wood, cardboard, metal glass, and potentially other wastes were taken to the Salvage Building for separation and sorting. The salvaged materials were loaded onto railroad cars or into trucks for offsite transport. Combustible materials, wood, and cardboard with no salvage value were generally burned in the incinerator at the Salvage Building. Other waste, including wood and cardboard ash, was disposed of onsite in the West Yard.

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An aboveground, bermed settling basin with a plastic liner was constructed approximately 200 feet west of the Compressor Building in 1975. The basin was designed to settle suspended solids from foundry process waters prior to introduction into the public sewer system. The basin is suspected to have ceased operation and closed in either 1986 or 1987, and was filled in with foundry sand.

The onsite railroad tracks along the western side of the West Yard (an area designated the Railroad Marshalling Area) were used to marshall rail cars containing metals feedstock used in the foundry operations. A portion of the feedstock consisted of metal chips from the machining operations at the Pontiac Complex. Prior to 1972, oil dripping from the rail cars was not collected. In 1972, a drainage system was constructed in this area to collect oil dripping from the rail cars. The collected oil was pumped into the WTP for treatment. The drainage system ceased operations in 1995.

1.1.3 RCRA Hazardous Waste Storage Pad

1.1.3.1 Regulatory History

In 1982, a concrete pad was constructed on the south side of the Salvage Building to store RCRA hazardous waste for periods greater than 90 days. Prior to the construction of the concrete storage pad, the site was used to store drums of unknown material and sludge (Figure 1.2). In the mid-1980s, CPC reduced the volume of hazardous waste generated and consequently, the need to store hazardous waste for greater than 90 days was eliminated. In 1986, oversight of hazardous waste operations at the pad moved from the U.S. EPA to Michigan Department of Natural Resources when Michigan's RCRA program was authorized. CPC continued hazardous waste storage activities at the site under generator-only status until 1988. CPC submitted a closure plan for the storage pad to MDEQ in November 1987 that was approved in June 1988 following revisions. Closure activities were initiated on July 1, 1988. (Note: The Michigan Department of Natural Resources Waste Management and Environmental Remediation Division, as well as other Divisions, were reformed into the Department of Environmental Quality (DEQ) in 1995. For the purposes of this report, all permits and activities involving the former affiliation will be referred to by the current designation of DEQ.)

1.3.1.2 Pad Construction

Historically, the area which became the regulated hazardous waste storage pad had been raised by backfilling the area with foundry sands and construction debris. Furthermore, several inches of additional fill material was placed in the area for grading prior to construction of the regulated storage pad. The total depth of the fill material under the storage pad area varies from 2 to 18 feet.

The pad is approximately 300 by 90 feet with a nominal pad thickness of 8 inches of reinforced concrete. The pad is surrounded by a 4-inch thick concrete berm.

1.1.3.3 Operations

The storage pad and associated building were used for storage of hazardous and non-hazardous waste. Activities occurring at the pad consisted of waste storage, drum washing, and empty drum storage. Liquid hazardous wastes were generated in a

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number of areas and were collected in 55-gallon drums. When the drums were nearly full, they were sealed and taken to the drum storage area for temporary storage prior to shipment offsite for treatment and/or disposal. Solid hazardous wastes generated in areas of the facility were collected in tub-like containers. When the tubs were full, they were transferred into a 20-cubic yard roll-off box located at the hazardous waste storage pad for accumulation prior to shipment offsite for reclamation or disposal. Sludge containing lead chips was stockpiled directly on the concrete pad (GTI, 1991).

The liquid wastes stored on the pad consisted of paint, paint thinner, gasoline, and chlorinated solvents. The solid wastes that were stored on the pad were bearing machining wastes and lead chips. The following hazardous wastes were stored at the pad prior to offsite treatment, reclamation, or disposal (GTI, 1991):

- D001 - ignitable hazardous wastes;
- F001 - spent halogenated solvents used in degreasing;
- F005 - spent non-halogenated solvents; and
- D008 - lead.

1.2 PURPOSE

This report is a summary of closure and investigation activities in the West Yard since the start of closure activities at the hazardous waste storage pad in 1988. A chronology of area storage and investigative activities is presented in Table 1.1. Closure activities, conducted according to the MDEQ-approved closure plan, started on July 1, 1988, and included removal of wastes, cleaning of the pad and storage building, and sampling of the pad and the building on the pad to confirm decontamination. These sampling activities indicated that the pad and storage building were appropriately decontaminated.

During July 1988, background soil samples and samples of soil to a depth of 20 feet beneath the pad were collected and analyzed to determine if stored materials had been released to the environment. The analytical data from soil beneath the pad indicated the presence of inorganic and organic constituents at concentrations exceeding levels stipulated in the closure plan (not-detects for organic compounds and background concentration for lead). Monitoring wells were installed in the vicinity of the pad to determine the presence and/or extent of groundwater contamination. The results of this sampling indicated that the closure criteria for both the soil and groundwater beneath the pad were exceeded.

Analysis of previous land uses indicated that the inability to meet the "clean closure" criteria in the May 1988 closure plan was due to the historical residual material. Pursuant to discussion with the MDEQ (MDEQ-WMD), GM agreed to implement an area-wide investigation within the West Yard prior to assessing the need for further closure activities at the pad. In March 1994, MDEQ-WMD approved closure of the pad surface and agreed to GM's approach of performing an initial investigation of the West Yard using procedures consistent with those commonly accepted by MDEQ-WMD.

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This report consolidates and summarizes data from the following reports:

- "Interim Closure Report Former Container Storage Area" (Dames & Moore, 1989); and
- "RCRA Pad Review Hazardous Waste Storage Area" (GTI, 1991).

1.3 ORGANIZATION OF THE REPORT

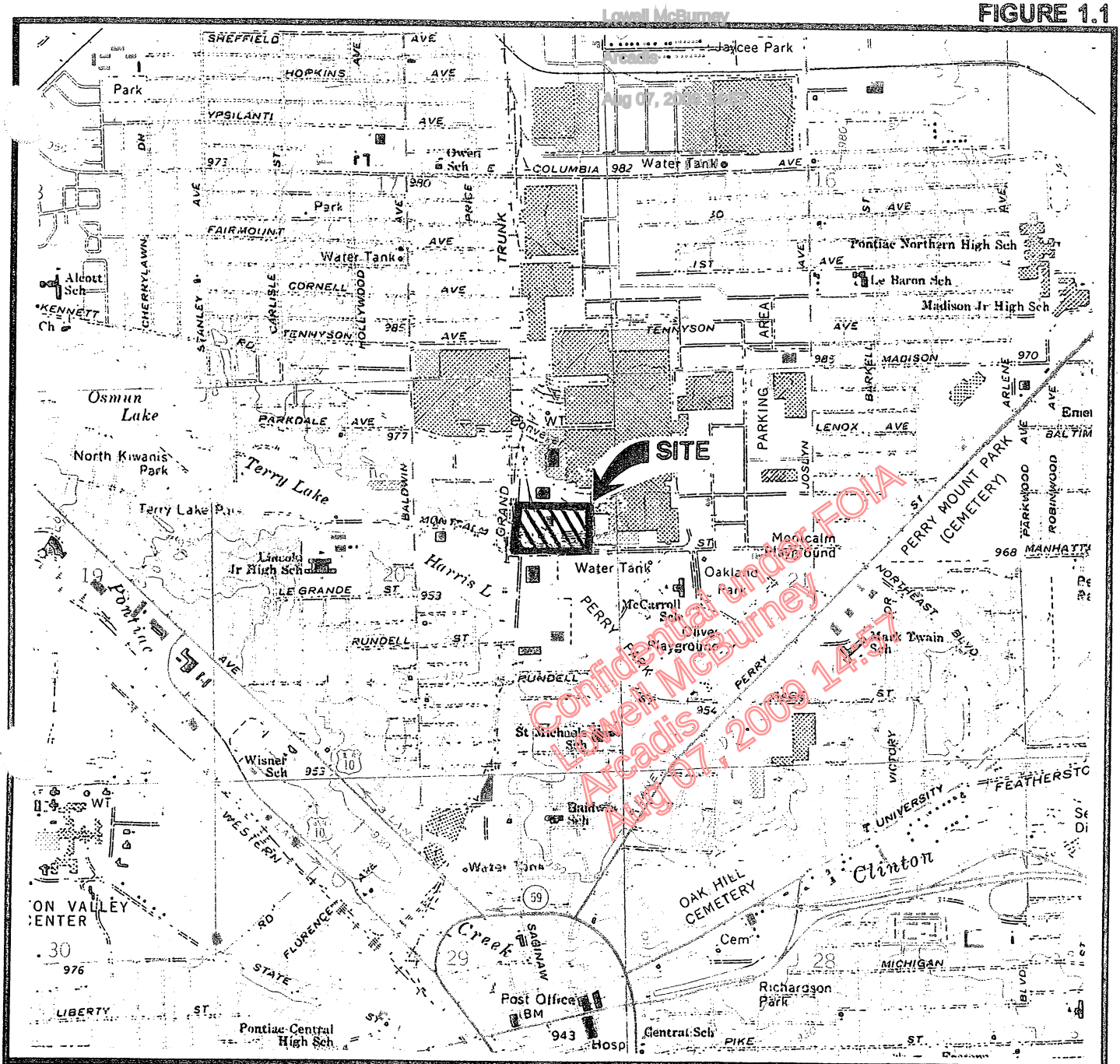
This report is organized in seven sections. Section 1 is this introduction. Section 2 describes the field activities conducted during pad and West Yard investigations. Section 3 is a discussion of physical characteristics of the West Yard, including surface features, geology, and groundwater hydrology and hydrogeology. Section 4 presents the results of analytical testing conducted at the pad and West Yard. Section 5 is a discussion of the migration potential of detected parameters and exposure pathways for soil and groundwater. Section 6 is a summary of the report and conclusions. Section 7 contains references cited in the report. The report contains a number of appendices that contain supplemental and back-up data and documentation.

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FIGURE 1.1



SOURCE: U.S.G.S. 7.5 MINUTE SERIES TOPOGRAPHIC MAP; PONTIAC NORTH, MICHIGAN 1968 (PHOTOREVISED 1983).



QUADRANGLE LOCATION

N

SCALE

0 2400 4800 FT.

2400 FT.

ENGINEERING-SCIENCE

SITE LOCATION

GENERAL MOTORS CORP.
GM-CPC PONTIAC COMPLEX
PONTIAC, MI.

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TABLE 1.1

WEST YARD INVESTIGATION
GM, PONTIAC, MICHIGAN
CHRONOLOGY OF STORAGE PAD AND WEST YARD INVESTIGATIVE WORK

Date	Task
May-June, 1982	Storage pad constructed.
July 1982	Operations begin at storage pad.
1986	Oversight of hazardous waste operations at pad moved from EPA to MDEQ.
November, 1987	Closure plan for pad submitted to MDEQ.
February, 1988	Revised closure plan submitted to MDEQ.
May, 1988	Revised closure plan submitted to MDEQ.
June, 1988	Closure plan approved by MDEQ, waste removed from pad.
July 1, 1988	Closure activities begin.
July 1 through 25, 1988	Pad and building decontaminated.
July 11 through 20, 1988	Wipe samples collected.
July 19 and 25, 1988	Rinsate samples collected.
July 25 through 29, 1988	Background soil borings installed.
July 25 through 28, 1988	Pad soil borings installed.
July 27 through 28, 1988	Concrete samples collected, groundwater monitoring plan developed.
Nov. 7 through 28, 1988	Monitoring wells installed (MW-1 through MW-5).
Nov. 17 through Dec. 1, 1988	Groundwater sampled (MW-1 through MW-5).
April, 1989	Interim Closure Report (Dames & Moore, 1989).

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- Sampling of onsite surface and subsurface soils occurred for chemical analysis. A total of eight soil borings and five test trenches were conducted in areas of suspected historical refuse management to collect soil samples.
- A groundwater investigation was conducted, consisting of onsite sampling of groundwater and characterization of site hydrogeology. Monitoring well pairs were installed at six locations and a single deep monitoring well was also installed as the upgradient well. The new wells and three existing wells were sampled and samples analyzed for TCL/TAL or the RCRA Appendix IX list. *Insitu* hydraulic conductivity tests were conducted in the new wells and three existing wells.
- A NAPL investigation was conducted in the vicinity of three monitoring wells near the storage pad after NAPL was discovered in the wells. NAPL was collected and analyzed, and 16 Geoprobe™ soil borings were installed to visually inspect for sheen on the core samples.
- A series of Cone Penetrometer Tests were conducted around the site boundary.

Physical Characteristics

The West Yard is underlain by a variable thickness of fill (foundry sand), used to level the original topographic surface. The materials beneath the fill consist of sand with lenses of silt or peat and marl. Underlying this is low permeability clay and silt. Groundwater in the West Yard generally flows to the southwest. The top of the low permeability clay and silt layer appears to control flow direction in the sand and fill zones.

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Soil

No exceedences of MDEQ Generic Industrial Direct Contact Criteria were present in surface soils. Four exceedences of two inorganic direct contact criteria and one exceedence of PCB direct contact criteria occurred in subsurface soils, mainly at depths greater than 16 feet below ground surface. One Generic Soil Saturation Screening Concentration for butyl benzyl phthalate was exceeded in one subsurface soil sample. No Generic Soil/Water Partitioning Criteria were exceeded in soils. Nine of 17 surface soil sample locations and seven of 26 subsurface soil sample locations had concentrations of manganese that exceeded the Generic Particulate Soil Inhalation Criteria.

Groundwater

Several organic compounds were detected in West Yard groundwater samples. Samples from two wells exceeded Generic Groundwater Contact Criteria for PCBs. The exceedences of PCBs are limited and sporadic.

Inorganics were detected area-wide in West Yard groundwater, but no exceedences of Generic Groundwater Contact Criteria occurred.

Migration Analysis

The direct contact soil exposure pathway does not appear to be of significant concern due to the lack of surface soil direct contact criteria exceedences, and limited

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subsurface soil direct contact criteria exceedences, primarily at depths unlikely to be disturbed by future site activities.

The inhalation pathway for site workers at the West Yard may potentially be complete for site soils. Exceedences of the particulate soil inhalation criteria occurred for manganese, but these may not indicate an unacceptable risk because site workers do not spend much time in the West Yard, and the exceedences of the generic criteria were marginal (the average detected concentration was less than two times the generic criteria). Also, soil sample locations were biased toward areas of suspected historical waste management activities.

Migration of organic compounds in groundwater appears to be limited based on the limited number and sporadic pattern of Generic Groundwater Contact Criteria exceedences (the PCB criteria only were exceeded in two wells). Groundwater on and in the vicinity of the site is not used as a drinking water source, and the community receives drinking water supplied by the City of Pontiac.

Groundwater movement appears to be predominantly lateral, in a southwesterly direction in the West Yard. *Insitu* "slug tests" from eight monitoring wells measured hydraulic conductivity ranging from a high of 5.3E-02 cm/sec to a low of 1.0E-05 cm/sec. The wells were all screened in the sand layer overlying the low permeability zone. Downward mobility of groundwater through the clay and silt zone is extremely slow based on vertical hydraulic conductivities measured by triaxial tests that ranged from 1.21E-08 to 1.33E-07 cm/sec.

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CONCLUSIONS

The following conclusions were reached as a result of closure activities:

- The surface of the former hazardous waste storage pad was successfully cleaned and met closure requirements.
- Soils and groundwater underlying the storage pad contain residuals of historical waste management activities at the West Yard.
- Soils samples showed only two exceedences of Part 201 soil screening criteria, one of direct contact criteria for lead and one of C_{sat} for xylenes.
- No groundwater samples exceeded Generic Groundwater Contact Criteria.

The following conclusions were reached as a result of the West Yard investigation:

- There were no exceedences of Generic Industrial Direct Contact Criteria, Soil/Water Partitioning GCC Criteria, or C_{sat} concentrations in West Yard surface soil samples. Nine surface soil samples exceeded Generic Particulate Soil Inhalation Criteria for manganese.
- In West Yard subsurface soil samples, five samples exceeded Generic Industrial Direct Contact Criteria for three compounds (one for PCBs, one for antimony, and three for lead), one sample exceeded one C_{sat} concentration (for butyl benzyl phthalate), and no samples exceeded the Soil/Water Partitioning GCC Criteria. The exceedences mostly occurred at depths greater than 16 feet.

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TABLE 1.1 (CONT.)

WEST YARD AND STORAGE PAD INVESTIGATION
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CHRONOLOGY OF INVESTIGATIVE WORK

Date	Task
June 13, 1989	Well installation and sampling (MW-6 through MW-8).
March 12 through 19, 1990	Groundwater sampled (MW-1 through MW-8).
March 14, 1990	Vapor extraction wells installed (SV-1 and SV-2).
April 30 through May 2, 1990	Monitoring wells installed (MW-9 through MW-12).
May 1, 1990	NAPL Recovery Well installed (RW-1).
October 3, 1990	Groundwater sampled (MW-1 through MW-12).
August 14, 1991	Groundwater sampled (all wells except MW-8 and MW-11).
August 23, 1991	Monitoring wells installed (MW-13 and MW-14).
August 23 through 25, 1991	Groundwater sampled (all wells except MW-11).
August 27, 1991	NAPL Recovery well replaced (RW-1A).
October, 1991	RCRA Pad Review Report (GTI, 1991).
Nov. 28 through Dec. 8, 1995	Geotechnical Borings GT1 through GT4 drilling and soil sampling.
Dec. 12 through Dec. 20, 1995	Monitoring wells MW/DW-16 through 20, DW-21, and MW/DW-22 installed.
Dec. 12 through Dec. 15, 1995	Soil borings SB1 through SB5 installed.
Dec. 18 through 19, 1995	Soil borings WD1 through WD3 installed.

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TABLE 1.1 (CONT.)

WEST YARD AND STORAGE PAD INVESTIGATION
GM, PONTIAC, MICHIGAN
CHRONOLOGY OF INVESTIGATIVE WORK

Date	Task
Jan. 16 and 17, 1996	Sampled new and existing monitoring wells for groundwater sample Round 1.
Jan. 22 and 23, 1996	Test trenches TT1 through TT5 installed.
Jan. 23 and 24, 1996	Monitoring wells with non-aqueous-phase liquids (NAPL) (MW-3, MW-6, and MW-13) sampled.
Feb. 13 and 14, 1996	Sampled monitoring wells for groundwater sample Round 2.
Feb. 14 through 16, 1996	NAPL delineation in storage pad area.
March 6, 1996	Site survey of all Parsons ES investigative activities.
Sept. 23, 1996	Monitoring well MW-23 installed.
Sept. 24 and 25, 1996	Boundary monitoring wells sampled for dioxins.
Nov. 20 through 22, 1996	Cone penetrometer testing conducted.

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WEST YARD BOUNDARY

#8

POWER STATION

FORMER SALVAGE BUILDING

HAZARDOUS WASTE STORAGE PAD

FORMER INCINERATOR

FOUNDRY SAND FILL AREA

HISTORICAL REFUSE MANAGEMENT AREA

HISTORICAL REFUSE MANAGEMENT AREA

HISTORICAL REFUSE MANAGEMENT AREA

FORMER CENTRAL FOUNDRY DIVISION PLANT 6

TELEPHONE POLE

MW-9

MW-14

MW-10

MW-6

MW-2

HISTORIC CONTAINER STORAGE AREAS

MW-1

10'x10' BLOCK BLDG.

FILLED IN SETTLING BASIN AREA

MW-11

MW-5

MW-4

MW-7

MW-3

MW-13

FORMER COMPRESSOR BUILDING

MW-12

HISTORICAL REFUSE MANAGEMENT AREA

HISTORICAL REFUSE MANAGEMENT AREA

HISTORICAL REFUSE MANAGEMENT AREA

HISTORICAL REFUSE MANAGEMENT AREA

WEST YARD BOUNDARY

MW-8

#7

#5

#6

GATE

RAILROAD MARSHALLING AREA

FOUNDRY SAND FILL AREA

FORMER CRANE BAY

FOUNDRY SAND FILL AREA

#3

#4

#2

#1

PUMP HOUSE

WEST YARD BOUNDARY

MONTCALM STREET

ELECTRICAL CABLE TO BE INSTALLED

LEGEND

MW-6 PREVIOUSLY EXISTING WELLS

#7 1964 BORING

HISTORIC WASTE MANAGEMENT AREA

100' 50' 0 100'

Approximate Scale in Feet

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XREF: 27125X01.DWG VIEW: SITE100XP
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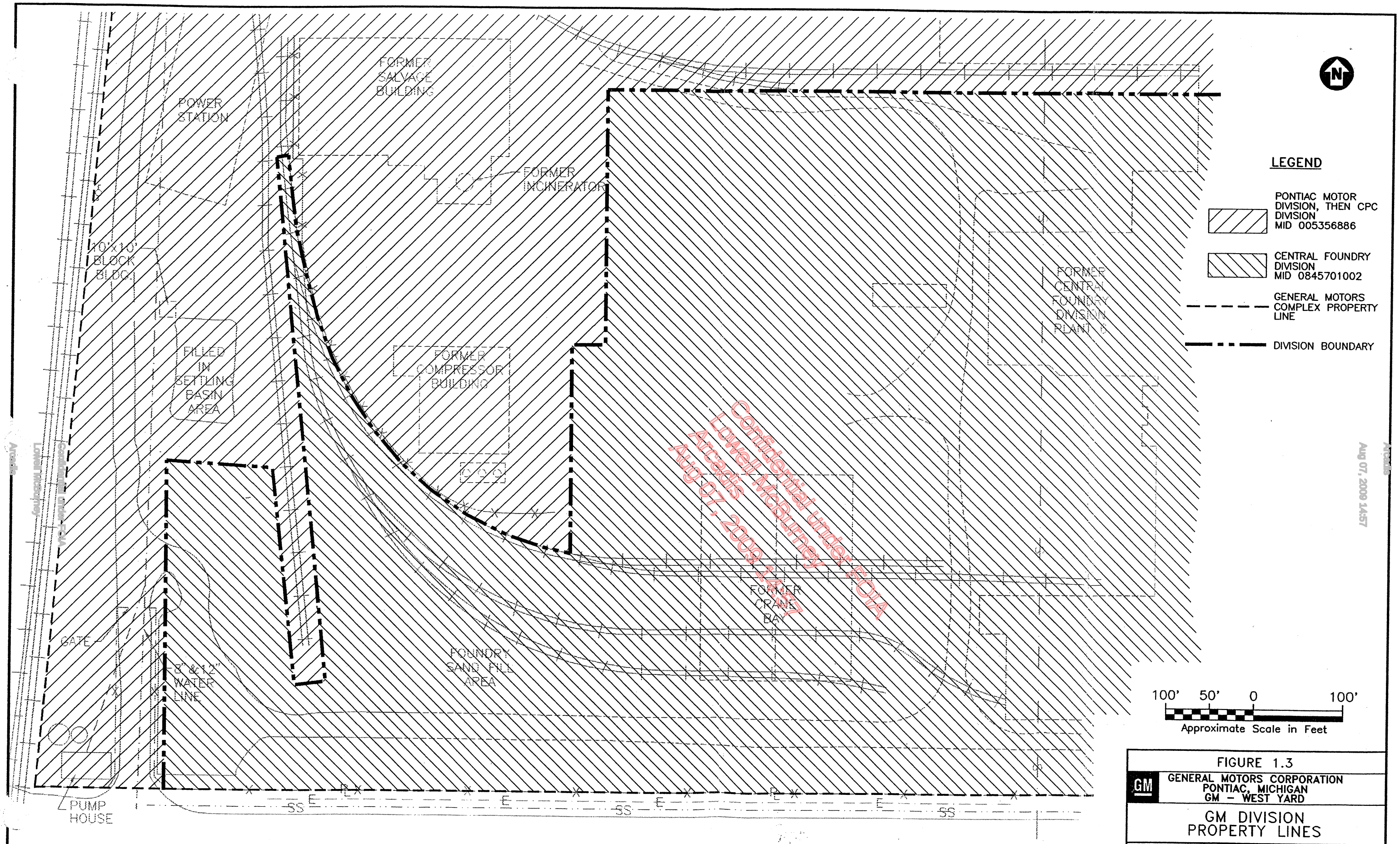
FIGURE 1.2

GM GENERAL MOTORS CORPORATION
PONTIAC, MICHIGAN
GM - WEST YARD

WEST YARD SITE MAP WITH HISTORIC USE

PARSONS ENGINEERING SCIENCE, INC.
DESIGN * RESEARCH * PLANNING
290 ELWOOD DAVIS ROAD * SUITE 312 * LIVERPOOL, N.Y. 13088 * 315/451-9560
OFFICES IN PRINCIPAL CITIES

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DATE: 02/28/97 (JHG)
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H:\CAD\727125\27125G22.DWG (PLOT: HP650-BW)

FIGURE 1.3

GM GENERAL MOTORS CORPORATION
PONTIAC, MICHIGAN
GM - WEST YARD

GM DIVISION PROPERTY LINES

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290 ELWOOD DAVIS ROAD * SUITE 312 * LIVERPOOL, N.Y. 13088 * 315/451-9560
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SECTION 2

FIELD INVESTIGATION ACTIVITIES

2.1 SCOPE OF FIELD ACTIVITIES

Field activities span closure activities at the hazardous waste pad in 1988 through West Yard investigations undertaken in 1995 and 1996. These were conducted by three different consulting firms. This section describes the type and location of field activities specifically at the storage pad and throughout the West Yard.

2.2 INITIAL CLOSURE ACTIVITIES AT THE HAZARDOUS WASTE STORAGE PAD

Initial closure activities at the hazardous waste storage pad were conducted by Dames & Moore starting July 1, 1988. Further investigation occurred in 1989. Activities included pad decontamination, subsurface soil sampling, concrete core sampling, monitoring well installation, and groundwater sampling. All activities were conducted according to the MDEQ-approved closure plan.

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2.2.1 Storage Pad Decontamination

Following the removal of empty hazardous waste storage containers, the storage pad was cleaned using high-water-pressure washing equipment. During washing, 16 wipe samples were collected at the locations shown on Figure 2.1, to evaluate the effectiveness of the cleaning. After the final rinse, samples of rinsate from the pad, the floor of the hazardous waste storage building and the sewer lines underneath the pad were collected to verify that the waters could be treated in the wastewater treatment plant at the facility.

Wipe and rinsate samples were analyzed for parameters listed in the closure plan (Table 2.1).

2.2.2 Soil Borings

Two sets of soil borings were installed from July 25 to 29, 1988 with hollow stem auger and split spoon sampling. Four background soil borings (BK-1 through BK-4) were located at the south end of the tracks in the Railroad Marshalling Area (Figure 2.2). Twelve soil borings reported as P-1 through P-12 (shown as 1 through 12 on Figure 2.1) were located on the storage pad using criteria outlined in the closure plan. Soil samples were collected at 1 foot intervals for the first 5 feet and then at 5 foot intervals to 20 feet. Background boring BK-4 and pad boring P-10 were only completed to 5 feet and pad boring P-12 to 6.5 feet due to obstruction by large steel debris near the substation.

Five soil borings were installed next to the location of each monitoring well (MW-1 through MW-5; see Figure 2.1) between November 7 and 29, 1988. Collecting soil samples during monitoring well installation was not possible due to the presence of heaving sands at depth. Soil samples were collected at 5 foot intervals to a depth of at least 25 feet, and to 30 feet where conditions permitted.

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Soil sampling and analysis activities for initial closure activities are summarized in Table 2.1. Individual boring logs are located in Appendix A.

2.2.3 Concrete Sampling

Concrete cores (CC-1 through CC-12) from soil boring locations P-1 through P-12 (Figure 2.1) were crushed and analyzed for the parameters listed in Table 2.1.

2.2.4 Monitoring Well Installation

Single monitoring wells (MW-1 through MW-5) were installed at five locations (Figure 2.1) from November 7 through 29, 1988. MW-6 through 8 were installed between March 7 and 9, 1989. Details of monitoring well construction are presented in Table 2.2 and on the individual geologic boring logs and well construction logs in Appendix A.

2.2.5 Groundwater Sampling and Analysis

One round of groundwater samples was collected on November 18, 1988 (MW-1 through MW-3) and December 1, 1988 (MW-4 and 5). A second round of sampling wells MW-1 through MW-8 occurred on March 13, 1989. Table 2.3 presents a summary of groundwater sampling and analysis activities.

2.3 ADDITIONAL CLOSURE ACTIVITIES AT THE HAZARDOUS WASTE STORAGE PAD

Groundwater Technology, Inc. (GTI) conducted additional monitoring well installation and groundwater sampling in 1990 and 1991 at, and in the vicinity of, the hazardous waste storage pad.

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2.3.1 Monitoring Well Installation

A total of six single monitoring wells, two soil vapor wells and two recovery wells were installed during this phase of closure activities. MW-9 through 12 were installed between April 30 and May 2, 1990. MW-13 and 14 were installed on August 23, 1991 (Figure 2.3). Monitoring well construction details are presented in Table 2.2. Soil samples were collected at 2 foot intervals during the installation of MW-13 (2 to 14 foot depth) and MW-14 (2 to 12 foot depth). Soil vapor wells SV-1 and SV-2 were installed on March 14, 1990 for soil vapor extraction tests. Recovery well RW-1 was installed on May 1, 1990 for aquifer testing. RW-1 was abandoned and replaced by RW-1A on August 24,1991 for additional pump tests.

2.3.2 Groundwater Sampling and Analysis

Four rounds of groundwater samples were collected on: March 12 through 19, 1990; October 3, 1990; August 14, 1991; and August 23 through 25, 1991. These samples were collected and analyzed in accordance with amendments to the closure plan. Not all wells were sampled in all sampling rounds. Table 2.3 presents a summary of these groundwater sampling and analysis activities.

2.3.3 Aquifer Pump Tests

GTI conducted two separate aquifer pump tests, the first in May 1990 and the second in August and September, 1991. In the May 1990 pump test, recovery well

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RW-1 at the north end of the pad was pumped at the same rate for 24 hours and the drawdown in nearby wells was measured. Drawdown data was analyzed using a computer program (Dansby and Price, 1987) to determine the hydrogeologic characteristics of the water-bearing zone. Results of the test are discussed in Section 3.

The August 1991 pump tests were conducted at the north end of the pad (pumping from MW-2) and the south end of the pad (pumping from MW-3). These were also 24 hour drawdown tests. Drawdown data in pumping and nearby monitoring wells was analyzed using Dansby and Price (1987). Results are discussed in Section 3.

2.3.4 NAPL Investigation

Lighter-than-water non-aqueous-phase liquid (NAPL) was observed in monitoring wells MW-6, MW-9, MW-10, and MW-11, the recovery well RW, and the soil vapor wells SV-1 and SV-2 (Figure 2.3) during water level measurements conducted as part of aquifer testing in May 1990. A thin layer of NAPL had been observed in MW-6 in March 1989. The depth to water and NAPL during aquifer testing was measured with an interface probe, and results are shown in Table 2.4.

Samples of NAPL from wells SV-1 and SV-2 were collected in April 1990 and were analyzed by infrared (IR) scan to develop spectrographs. These spectrographs were compared to one another and to spectrographs of samples of two lubricating oils used at the site to determine the possible source of the NAPL. Results are discussed in Section 4.4.

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2.4 WEST YARD INVESTIGATION

Parsons Engineering Science, Inc. (Parsons ES) conducted an investigation of the West Yard in 1996. Activities included excavation of test trenches, soil boring advancement to collect soil samples and geological information, monitoring well installation, *insitu* hydraulic conductivity testing, groundwater sampling, non-aqueous-phase liquid (NAPL) investigation, and cone penetrometer testing.

2.4.1 Test Trenches

Five test trenches were excavated at the locations shown on Figure 2.4 on January 22 and 23, 1996. These trenches were excavated and surface and subsurface soil samples collected as specified in the work plan (Parsons ES, 1995).

2.4.2 Soil Boring, Sampling, and Analysis

Three sets of soil borings (designated as SBs, WDs, and GTs as explained in the following paragraph) were conducted with hollow stem auger and split spoon sampling in accordance with the approved work plan. Augers were filled with bentonite mud at certain locations to control flowing sands. Both surface and subsurface soil samples were collected from these borings as specified in the approved work plan:

- Five borings (SB-1 through SB-5) were installed at the locations shown on Figure 2.4. These were completed between December 12 and 15, 1995. SB-1 is in the vicinity of a former settling basin west of the Railroad Marshalling Area. SB-2 is near the former Salvage Building. SB-3 and SB-4 are in the Railroad Marshalling Area. SB-5 is in the vicinity of a former refuse management area.

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- Three borings (WD-1 through WD-3) were conducted in historical solid waste disposal areas (Figure 2.4) on December 18 and 19, 1995.
- Four geotechnical borings (GT-1 through GT-4) were conducted around the perimeter of the West Yard (Figure 2.4) between November 28 and December 8, 1995. These borings provided geological information from ground surface to a depth of 100 feet or auger refusal. Geotechnical samples were collected from low permeability (clay and silt) zones to determine the vertical hydraulic conductivity of these layers. Boring GT-4 was cased with 10-inch steel to a depth of 25 feet to prevent vertical migration of compounds.

Table 2.5 presents a summary of soil sampling and analysis activities.

2.4.3 Slotted Auger Sampling and Analysis

Slotted auger water sampling was conducted in MW-22 at 10 and 20 feet below the water table, to determine the location of any confining layer and to determine the best placement for the well screen. Slotted auger sampling was not required to determine screen placement for the remaining wells because both shallow and deep wells were installed above the confining layer.

2.4.4 Monitoring Well Installation

Monitoring well pairs (nested wells) were installed at six locations (MW/DW-16 through MW/DW-20 and MW/DW-22). A single deep monitoring well (DW-21) was installed because the shallow water-bearing zone was too thin to install a shallow well. The monitoring wells were installed between December 10 and 20, 1995. An additional shallow monitoring well (MW-23) was installed at the southwest corner of the West Yard on September 23, 1996. Shallow monitoring wells were designated "MW", and deep wells designated "DW" (Figure 2.4). Details of monitoring well construction are presented in Table 2.2 and on the individual geologic boring logs and well construction logs in Appendix A. Soil samples for surface and subsurface soil characterization were collected at most monitoring well locations, as specified in the approved work plan.

Following installation, the wells were developed in accordance with procedures specified in the work plan (Parsons ES, 1995).

2.4.5 *InSitu* Hydraulic Conductivity Testing

Insitu "slug tests" were performed on January 18 and 19, 1996 to determine the hydraulic conductivity in the saturated zone surrounding each well. Hydraulic conductivity tests were performed by the rising and falling head slug test methods as specified in the approved work plan.

The slug tests were performed on eight monitoring wells (DW-17, DW-18, DW-19, DW-20, DW-22, MW-7, MW-8, and MW-12). Slug tests were performed only in the deep well of each of the well pairs because the deep wells showed complete saturation of the screened interval and had greater saturated thickness than the shallow wells. These two factors enabled a more accurate estimation of hydraulic conductivity to be made. DW-21 was the only deep well not tested because the screened interval was not fully saturated due to the shallow static water table at that location.

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Insitu permeability tests were analyzed by the Bouwer and Rice (1976, 1989) method using Geraghty and Miller's AQTESOLV computer model. Results are presented in Section 3.

2.4.6 Groundwater Sampling and Analysis

Three rounds of groundwater samples were collected on: January 16 through 18, 1996 (Round 1); February 13 and 14, 1996 (Round 2); and September 24 and 25, 1996 (Round 3). These samples were collected and analyzed in accordance with the approved work plan.

Table 2.6 presents a summary of groundwater sampling and analysis activities.

2.4.7 NAPL Investigation

Non-aqueous-phase liquids (NAPL) were found and measured by interface probe in three monitoring wells, MW-3 (0.7 foot thickness), MW-6 (9.2 foot thickness), and MW-13 (1.9 foot thickness) during January 1996 groundwater sampling. Two activities were undertaken to delineate the extent of NAPL in the vicinity of these wells: (1) analyses of NAPL samples from MW-6 and MW-13, and (2) Geoprobe™ soil borings in the vicinity of the affected wells to examine for presence of NAPL.

The NAPL samples were collected on January 24, 1996 (MW-6) and February 14, 1996 (MW-13). The samples were analyzed to determine: (1) if the NAPL in both wells was the same, (2) the absence or presence of PCBs, and (3) the levels of polynuclear aromatic hydrocarbons (PAHs) and purgeable halocarbons in the product, which could be used as an indication of the source of the material.

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To delineate the extent of the NAPL present, sixteen soil borings were conducted using a Geoprobe™ drilling rig (Figure 2.5). These borings were completed between February 14 and 16, 1996. The borings were located on a 50-foot grid in the vicinity of MW-3, MW-13, and MW-6. All borings were continuously sampled until water-saturated soil was encountered. Findings as to whether oil was present were noted in field log books. No soil or water samples were collected.

NAPL was observed in MW-22 (0.33 foot thickness) during groundwater sampling in September 1996. MW-22 is located near a suspected historical refuse management area.

2.4.8 Site Survey

Following completion of the field investigation, a Michigan-licensed land surveyor, Air-Land Surveys, Inc., measured vertical elevations and horizontal locations of each of the monitoring wells, borings, and trenches in accordance with the approved work plan.

2.4.9 Cone Penetrometer Testing

A series of 27 cone penetrometer tests (CPTs) were completed in the West Yard on November 20 through November 22, 1996. The purpose of the penetrometer testing was to further delineate West Yard geology encountered in previous soil borings.

The CPTs were conducted by Stratigraphics, Glen Ellyn, Michigan. Stratigraphs provided a truck mounted CPT rig and a crew of two people to perform the tests. The

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CPT tool is a 2 inch diameter steel rod with a cone shaped CPT transducer at the tip. The tool is advanced by adding extra rods and standing the weight of the truck on the rods, exerting up to 2 million pounds per square foot of vertical pressure. The transducer measures the "cone end-bearing resistance" or vertical pressure encountered as the tool is advanced through the soils. The transducer also measures the "friction ratio", a ratio between end-bearing pressure and friction alongside the tool (lateral friction). A third parameter, the electrical conductivity is also measured. The tool sampling interval is .008 feet.

The combination of the responses of the end-bearing load and friction ratio are diagnostic of different soil types. Coarser grained soils such as sands and gravels tend to require greater vertical loads to penetrate, yielding high end-bearing readings but low friction ratios. Larger grain sizes present less surface area against the side of the tool, hence less lateral friction. In contrast, finer grained soils such as silts and clays exhibit high friction ratios due to high cohesiveness, yet penetrate easily with lower vertical loads. The output is in the form of logs of the end-bearing load, friction ratio and conductivity, vs. depth. CPT results are discussed in Section 3.

Three lines of CPT test points were set up for the West Yard (Figure 2.6). Line 1, CPT points 1-7, was oriented north-south through the center of the site from existing buildings to the railroad tracks. The topography along this line has a gentle dip to the north of approximately six feet. The seven CPT points on this line were originally set at 100 foot spacings.

Line 2 was oriented east-west on a roadway along the southern margin of the site, parallel to Montcalm Street. CPT points 8-15 were originally planned along the north side of the roadway at the base of an embankment at 100 foot spacings. The roadway dips to the west and CP-15 is approximately 15 feet below the grade of CP-8. Also along this line were CP-16 in the flat concrete area near the south site gate off of Montcalm Street, and CP-17, drilled near MW-17.

Line 3 was oriented south-north beginning on the roadway near the demolished pump house (CP-18) and running north towards the power substation. A 100 foot spacing was planned for CPT points 18-27. The road along line 3 rises gently to the north and CP-27 is almost at the same elevation as CP-1.

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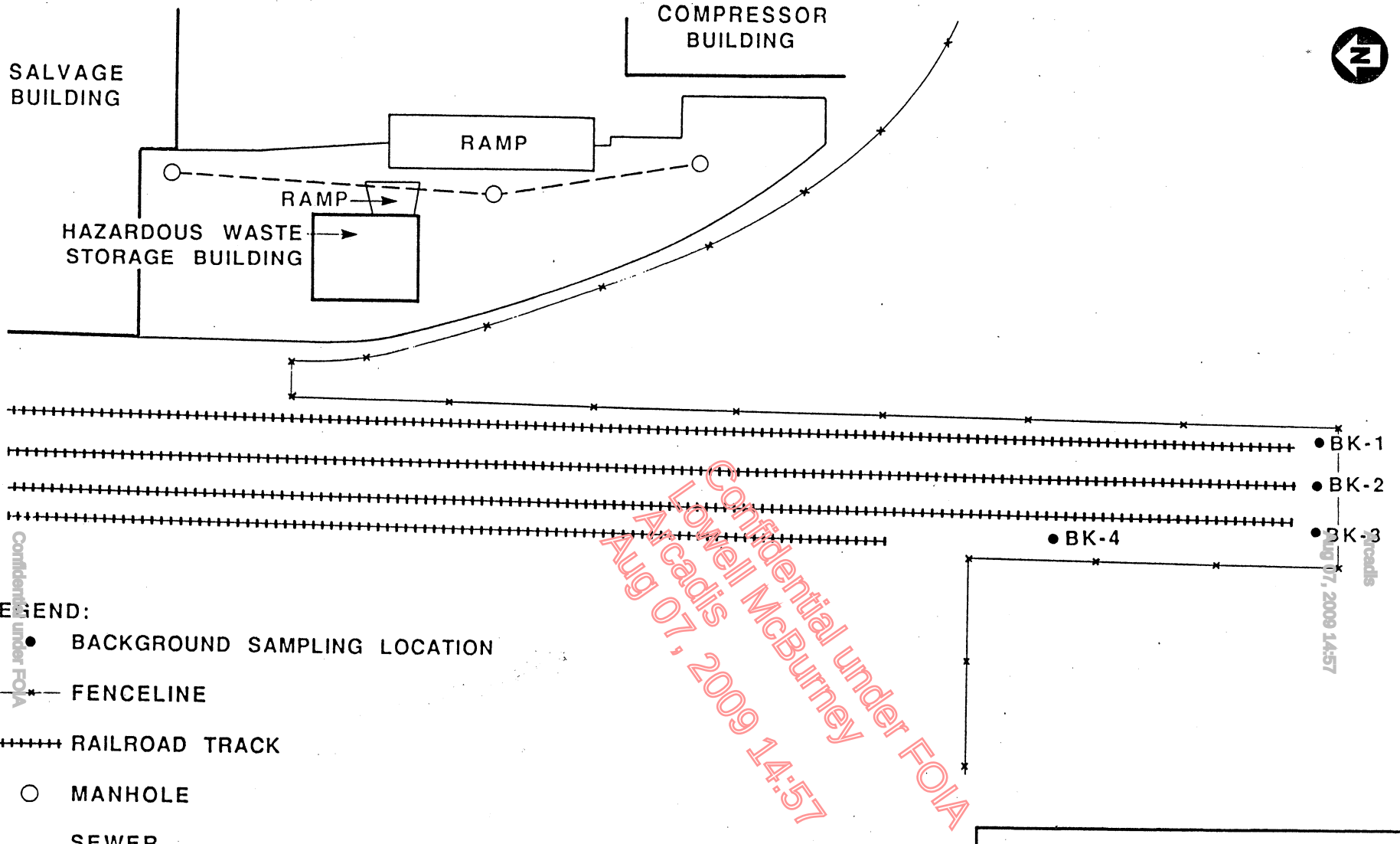


FIGURE 2.2

GENERAL MOTORS CORPORATION
PONTIAC, MICHIGAN
GM – WEST YARD

INITIAL CLOSURE BACKGROUND SOIL SAMPLE LOCATIONS

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290 ELWOOD DAVIS ROAD • SUITE 312 • LIVERPOOL, N.Y. 13088 • 315/451-9560
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DATE: 11/20/96 (JHG)
H:\CAD\727125\GM1185BD.DWG

SOURCE: DAMES & MOORE, 1989.

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LEGEND

- ◉ – MONITORING WELL
- ■ – SOIL VAPOR EXTRACTION WELL
- ▲ – RECOVERY WELL
- ● – POST
- o – CATCH BASIN
- Ⓢ – SUMP
- △ – ABANDONED RECOVERY WELL

0 40 80

SCALE IN FEET

REVISED: 11/21/96 (JHG)
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SOURCE: GROUNDWATER TECHNOLOGY, INC., 1991.

FIGURE 2.3

GM GENERAL MOTORS CORPORATION
PONTIAC, MICHIGAN
GM – WEST YARD

STORAGE PAD ADDITIONAL CLOSURE SAMPLE LOCATIONS

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WEST YARD BOUNDARY

FORMER SALVAGE BUILDING

POWER STATION

SB2

GT-4

FOUNDRY SAND FILL AREA

DW-21

FORMER INCINERATOR

TELEPHONE POLE

GT-1

MW-6

TT 1

TT 2

10'x10' BLOCK BLDG.

FILLED IN SETTLING BASIN AREA

SB5

WD-1

HAZARDOUS WASTE STORAGE PAD AREA

MW-16/ DW-16

MW-5

FORMER CENTRAL FOUNDRY DIVISION PLANT 6

MW-7

MW-13

FORMER COMPRESSOR BUILDING

TT 5

MW-22/DW-22

SB1

WEST YARD BOUNDARY

SB3

TT 3

WD-2

SEWER

MW-8

TT 4

MW-20/DW-20

WD-3

SB4

FORMER CRANE BAY

FOUNDRY SAND FILL AREA

RAILROAD MARSHALLING AREA

GATE

8" &12" WATER LINE

MW-17/DW-17

GT-2

FOUNDRY SAND FILL AREA

MW-19/DW-19

MW-18/DW-18

GT-3

MW-23

PUMP HOUSE

WEST YARD BOUNDARY

STORM SEWER

ELECTRICAL CABLE TO BE INSTALLED

MONTCALM STREET

REVISED: 12/06/96 (GTC)
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LEGEND

- WD — BORING IN WASTE DISPOSAL AREAS
- MW/DW — NESTED WELLS OR SINGLE WELL
- TT — TEST TRENCHES
- GT — GEOTECH BORING (PERMEABILITY)
- SB — BORINGS
- MW-5 — PREVIOUSLY INSTALLED MONITORING WELLS

100' 50' 0 100'

Approximate Scale in Feet

FIGURE 2.4

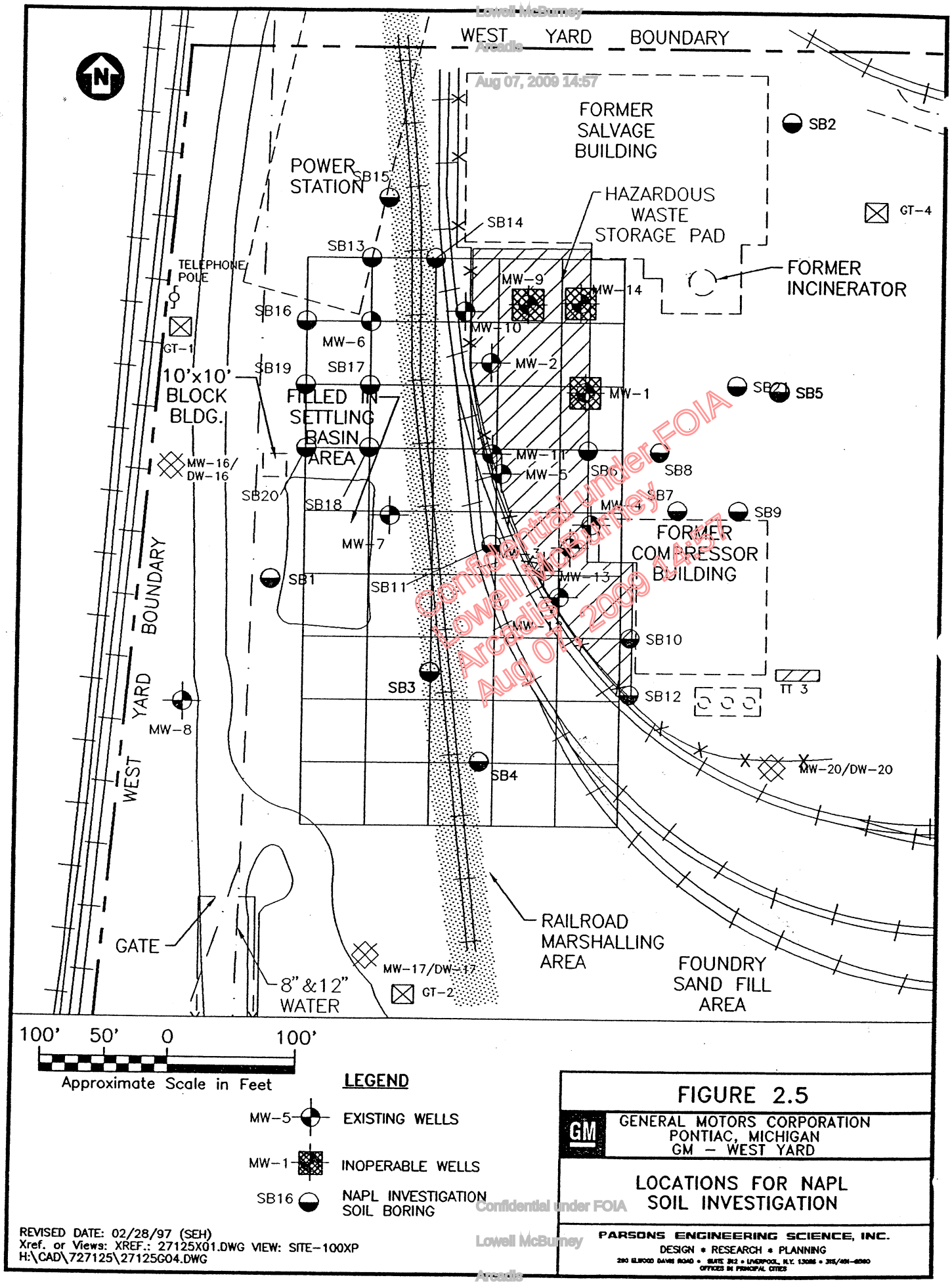
GM GENERAL MOTORS CORPORATION
PONTIAC, MICHIGAN
GM – WEST YARD

WEST YARD SAMPLING LOCATION MAP

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Xref. or Views: XREF.: 27125X01.DWG VIEW: SITE-100XP
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FIGURE 2.5

GENERAL MOTORS CORPORATION
PONTIAC, MICHIGAN
GM – WEST YARD

LOCATIONS FOR NAPL SOIL INVESTIGATION

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CP-26
CP-25
CP-27
100' NORTH
OF CP-26
POWER
STATION
CP-24
TELEPHONE
POLE
GT-1
CP-23
10'x10'
BLOCK
BLDG.
CP-22
MW-16/
DW-16
MW-6
FILLED IN
SETTLING
BASIN
AREA
MW-7
SB1
LINE 3
GRASSY AREA
CP-21
MW-8
BROWN PUMP
CONTROLLER
BLDG.
CP-20
CP-19
GATE
CP-18
PUMP
HOUSE
MW-23
FORMER
SALVAGE
BUILDING
HAZARDOUS
WASTE
STORAGE PAD
FORMER
INCINERATOR
MW-9
MW-14
MW-10
MW-2
MW-1
MW-11
MW-5
MW-4
MW-3
MW-13
MW-12
FORMER
COMPRESSOR
BUILDING
SB2
SB5
SB3
SB4
MW-17/DW-17
GT-2
8" &12"
WATER
LINE
CP-17
CP-16
CP-15
RAILROAD
MARSHALLING
AREA
STEEP
EMBANKMENT
FOUNDRY
SAND FILL
AREA
MW-18/DW-18
STEEP
EMBANKMENT
CP-14
CP-13
CP-12
CP-11
CP-10
CP-9
CP-8
MW-19/DW-19
GT-3
CONCRETE
LINE 2
MONTCALM STREET
STORM SEWER
ELECTRICAL CABLE
TO BE INSTALLED
CP-1
GT-4
FOUNDRY
SAND FILL
AREA
CP-2
TT 1
TT 2
CP-3
LINE 1
WD-1
CP-4
MW-22/DW-22
TT 3
CP-5
WD-2
TT 4
MW-20/DW-20
CP-6
WD-3
FORMER
CRANE
BAY
CP-7
FOUNDRY
SAND FILL
AREA
DW-21
FORMER
CENTRAL
FOUNDRY
DIVISION
PLANT 6
SEWER
N

LEGEND

- WD — BORING IN WASTE DISPOSAL AREAS
- MW/DW — NESTED OR SINGLE WELL(S)
- TT — TEST TRENCHES
- GT — GEOTECH BORING (PERMEABILITY)
- SB — BORINGS
- MW-9 — INOPERABLE WELL
- MW-5 — PREVIOUSLY INSTALLED MONITORING WELLS
- CP-3 — CONE PENETROMETER TEST POINTS

100' 50' 0 100'
Approximate Scale in Feet

REVISED: 02/28/97 (SEH)
Xref. or Views: XREF: 27125X01.DWG VIEW: GMSITE-100XP
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FIGURE 2.6
GENERAL MOTORS CORPORATION
PONTIAC, MICHIGAN
GM - WEST YARD
CONE PENETROMETER
TEST LOCATIONS

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TABLE 2.1
WEST YARD INVESTIGATION
GM, PONTIAC, MICHIGAN
CLOSURE INVESTIGATIONS ANALYTE SUMMARY TABLE

Analytes	Sample Type (1)						
	Wipe (W-1 to W-6B)	Rinsate (R-1, R-2, Bldg. Sewer, Pad)	Background Soil [2] (BK-1 to BK-4)	Storage Pad Soil [3] (P-1 to P-12)	MW Soil [4][5] (MW-1 to MW-5)	Concrete Core (CC-1 to CC-12)	MW Soil (MW-13SS to MW-14SS[6])
Benzene	X	X	X	X	X	X	X
Toluene	X	X	X	X	X	X	X
Xylenes	X	X	X	X	X	X	X
1,1,1-Trichloroethane	X	X	X	X	X	X	X
Methylene Chloride	X	X	X	X	X	X	X
Methyl Ethyl Ketone	X	X	X	X	X	X	X
1-Butanol	X	X	X	X	X	X	X
Arsenic			X				
Barium			X				
Cadmium			X				
Copper			X				
Lead	X	X	X	X	X	X	X
Mercury			X				
Selenium			X				
Zinc			X				

(1) See Figure 2.1 for sample locations.
(2) Background soil samples analyzed at 1 foot intervals from 1 to 5 foot depths.
(3) Borings P-1 through P-9 analyzed at depths 1, 2, 5, 10, 15, and 20 feet. P-10 analyzed at 1 and 2 foot depth. P-12 analyzed at 1 foot depth only.
(4) Boring MW-1 analyzed at 5, 10, 15, 20, 25, and 30 foot depth. MW-2 through MW-5 analyzed at 5, 10, 15, 20, and 25 feet.
(5) Boring MW-2-15 and MW-3-15 samples analyzed for listed analytes via TCLP.
(6) Boring MW-13SS analyzed at 2, 4, 6, 8, 10, and 12 foot depth.

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TABLE 2.2
WEST YARD INVESTIGATION
GM, PONTIAC, MICHIGAN
MONITORING WELL CONSTRUCTION

WELL ID	DATE OF INSTALLATION	DRILLING METHOD USED	TOP OF CASING (3) ELEVATION (feet)	GROUND SURFACE (3) ELEVATION (feet)	WELL SCREEN INTERVAL ELEVATION (feet)	CONSTRUCTION MATERIALS (feet)						
						2" ID 0.010 SLOT STAINLESS STEEL SCREEN	2" RISER (1)	SAND PACK (2)	BENTONITE SEAL	GROUT	2" PVC SUMP	FINE SAND
MW-1	11/7/89	6.25" ID HSA	962.06	959.84	929.84-939.84	10	20	12	6	16	5	0
MW-2	11/9/88	6.25" ID HSA	965.67	963.68	933.68-943.68	10	20	12	6	16	0	0
MW-3	11/10/88	6.25" ID HSA	966.97	964.99	934.99-949.99	10	20	12	6	16	0	0
MW-4	11/28/88	6.25" ID HSA	964.98	963.25	933.25-943.25	10	20	17	6	16	0	0
MW-5	11/29/88	6.25" ID HSA	966.42	964.44	934.44-944.44	10	20	12	6	16	0	0
MW-6	3/7/89	6.25" ID HSA	966.30	964.06	936.06-946.06	10	18	12	2	14	0	0
MW-7	3/8/89	6.25" ID HSA	966.12	963.82	935.82-945.82	10	18	12	2	14	0	0
MW-8	3/8/89	6.25" ID HSA	952.44	949.83	931.83-941.83	10	18	12	2	14	0	0
MW-9	4/30/90	6.25" ID HSA	961.46	959.72	939.72-954.72	15	5	18	1	1	0	0
MW-10	5/2/90	6.25" ID HSA	966.62	964.67	944.67-959.67	15	5	18	1	2	0	0
MW-11	5/1/90	6.25" ID HSA	965.94	964.33	944.33-959.33	15	5	17	1	2	0	0
MW-12	5/1/90	6.25" ID HSA	966.23	964.19	944.19-959.19	15	5	17	1	2	0	0
MW-13	8/23/91	6.25" ID HSA	965.18	963.31	949.31-959.31	10	4	12	1	1	0	0
MW-14	8/23/91	6.25" ID HSA	961.33	958.33	948.33-958.33	10	4	12	1	1	0	0
MW-16	12/20/95	4.25" ID HSA	952.59	950.05	941.55-946.55	5	3.5	7.5	1	1.5	2	0.5
MW-16	12/15/95	4.25" ID HSA	952.38	950.1	933.38-938.38	5	14	11	3	5	0	2
MW-17	12/12,20/95	4.25" ID HSA	948.55	946.16	937.66-942.66	5	3.5	5.5	2	1	0	0
MW-17	12/14/95	4.25" ID HSA	948.64	946.16	931.16-936.16	5	10	6	2	5	0	2
MW-18	12/13,14/95	4.25" ID HSA	957.78	955.27	938.27-943.57	5	12	6	2	7	0	2
MW-18	12/10,20/95	4.25" ID HSA	957.69	955.27	918.27-923.27	5	32	6	2	27	0	2
MW-19	12/18/95	4.25" ID HSA	971.01	968.42	939.42-944.42	5	19	6	2	19	0	2
MW-19	12/15/95	4.25" ID HSA	970.77	968.42	929.42-934.42	5	34	6	2	29	0	2
MW-20	12/20/95	4.25" ID HSA	971.2	968.73	942.73-947.73	5	21	8	2	16	2	2
DW-20	12/18,19/95	4.25" ID HSA	971.03	968.73	926.73-931.73	5	27	8	2	32	2	2
DW-21	12/19/95	4.25" ID HSA	968.21	966.02	947.02-952.02	5	14	6	2	26	0	2
MS-22	12/12/95	4.25" ID HSA	970.37	967.98	943.98-948.98	5	19	10	2	13	2	2
MW-22	12/19/95	4.25" ID HSA	970.31	967.98	931.98-936.98	5	31	6	2	26	0	2
MW-23	09/23/96	4.25" ID HSA	948.05	945.77	936.77-941.77	5	4	7	1	1	0	0

Notes

HSA - Hollow Stem Auger

(1) Indicates length of material below ground surface. MW-1 through MW-8 and MW-23 riser material is stainless steel. All other wells have PVC riser.

(2) Measured from bottom of well screen or sump.

(3) All top of casing and top of round elevations from 1996 survey except for MW-1, MW-9, and MW-14. These three wells were destroyed prior to 1996. Survey data fro these three wells are from GTI (1991).

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TABLE 2.3
WEST YARD INVESTIGATION
GM, PONTIAC, MICHIGAN
CLOSURE INVESTIGATIONS GROUNDWATER ANALYTE SUMMARY TABLE

	GROUNDWATER SAMPLING DATES/ANALYTES[1]					
MW	November 17-18, December 1, 1988	March 13, 1989	March 13-14, 1990	October 3, 1990	August 14, 1991	August 23-25, 1991
1,2	CP VOCs, Lead	CP VOCs, Lead	CP VOCs, Ethylbenzene, Lead	CP VOCs, Lead	CP VOCs, Total and Filtered Lead	CP VOCs, Filtered Lead
3	CP VOCs, Lead, Metals	CP VOCs, Lead	CP VOCs, Lead	CP VOCs, Lead	CP VOCs, Total and Filtered Lead	CP VOCs, Filtered Lead
4,5	CP VOCs, Lead	CP VOCs, Lead	CP VOCs, Lead	CP VOCs, Lead	CP VOCs, Total and Filtered Lead	CP VOCs, Filtered Lead
6,7		CP VOCs, Lead	CP VOCs, Lead	CP VOCs, Lead	CP VOCs, Total and Filtered Lead	CP VOCs, Filtered Lead
8		CP VOCs, Lead	CP VOCs, Ethylbenzene, Lead	CP VOCs, Lead		CP VOCs, Filtered Lead
9,10,12				CP VOCs, Lead	CP VOCs, Total and Filtered Lead	CP VOCs, Filtered Lead
11				CP VOCs, Lead		CP VOCs, Filtered Lead
13						CP VOCs, Filtered Lead

(1) Analytes include: CP VOCs (Benzene, Toluene, Xylenes, 1,1,1-Trichloroethane, Methylene Chloride, Methyl Ethyl Ketone, 1-Butanol)
Lead - Total Lead,
Metals - Aluminum, Arsenic, Barium, Cadmium, Calcium, Chromium, Copper, Iron, Magnesium, Mercury, Nickel, Silver, Zinc.

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TABLE 2.4
WEST YARD INVESTIGATION
GM, PONTIAC, MICHIGAN
NAPL OBSERVED DURING CLOSURE AQUIFER TESTS

WELL NUMBER	DATE	DEPTH TO WATER (FEET)	DEPTH TO PRODUCT (FEET)	PRODUCT THICKNESS (FEET)
MW-6	5/2/90	22.45	21.35	1.10
	5/8/90	21.51	20.30	1.21
	5/9/90	21.57	20.34	1.23
	6/12/90	22.94	21.92	1.02
MW-9	5/2/90	17.26	17.24	0.02
	5/8/90	15.97	NO PRODUCT	NONE
	5/9/90	16.02	NO PRODUCT	NONE
	6/12/90	16.86	NO PRODUCT	NONE
MW-11	5/2/90	18.97	18.95	0.02
	5/8/90	17.84	NO PRODUCT	NONE
	5/9/90	17.83	NO PRODUCT	NONE
	6/12/90	19.14	NO PRODUCT	NONE
MW-12	5/2/90	15.86	15.85	0.01
	5/8/90	14.86	NO PRODUCT	NONE
	5/9/90	14.84	NO PRODUCT	NONE
	6/12/90	16.13	15.99	0.14
RW-1	5/2/90	19.05	19.04	0.01
	5/8/90	17.17	17.00	0.17
	5/9/90	22.91	22.38	0.53
SV-1	6/12/90	18.95	18.55	0.40
SV-2	6/12/90	14.80	14.14	0.66

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TABLE 2.5

WEST YARD INVESTIGATION
GM, PONTIAC, MICHIGAN
WEST YARD INVESTIGATION SOIL ANALYTE SUMMARY TABLE

Soil Boring ID	Location	Surface Sample Analytes (1)	Subsurface Samples	
			Depth (ft.)	Analytes (1)
SB1	Settling Basin	TCL/TAL	16-18	TCL/TAL
SB2	Salvage Building	TCL/TAL	4-6	TCL/TAL
SB3	Railroad Marshalling Area	TCL/TAL	16-18	TCL/TAL
SB4	Refuse Disposal Area	TCL/TAL	6-8	TCL/TAL
SB5	Salvage Building	TCL/TAL	4-6	TCL/TAL
TT1	Refuse Disposal Area	APP. IX	10-15	TCL/TAL
TT2	Refuse Disposal Area	TCL/TAL	13-15	TCL/TAL
TT3	Refuse Disposal Area	APP. IX(2)	5-9	TCL/TAL
TT4	Refuse Disposal Area	APP. IX	3-10	TCL/TAL
TT5	Refuse Disposal Area	TCL/TAL(2)	3-5	TCL/TAL
WD1	Solid Waste Area	NA	4-6	TCL VOC
WD1	Solid Waste Area		10-12	TCL VOC
WD1	Solid Waste Area		14-16	APP. IX
WD1	Solid Waste Area		20-22	TCL VOC
WD1	Solid Waste Area		24-26	TCL VOC
WD1	Solid Waste Area		30-32	TCL VOC
WD1	Solid Waste Area		34-36	TCL VOC
WD2	Solid Waste Area	NA	4-6	TCL VOC
WD2	Solid Waste Area		10-12	TCL VOC
WD2	Solid Waste Area		14-16	TCL VOC
WD2	Solid Waste Area		20-22	TCL VOC
WD2	Solid Waste Area		24-26	APP. IX*
WD2	Solid Waste Area		30-32	TCL VOC
WD2	Solid Waste Area		34-36	TCL VOC

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TABLE 2.5 (CONT.)

WEST YARD INVESTIGATION
GM, PONTIAC, MICHIGAN
WEST YARD INVESTIGATION SOIL ANALYTE SUMMARY TABLE

Soil Boring ID	Location	Surface Sample Analytes (1)	Subsurface Samples Depth (ft.)	Subsurface Samples Analytes (1)
WD3	Solid Waste Area	NA	4-6	TCL VOC
WD3	Solid Waste Area		10-12	TCL VOC
WD3	Solid Waste Area		14-16	TCL VOC
WD3	Solid Waste Area		20-22	TCL VOC
WD3	Solid Waste Area		24-26	APP. IX
WD3	Solid Waste Area		30-32	TCL VOC
WD3	Solid Waste Area		34-36	TCL VOC
GT1	West Site	NA	28-36	Triaxial
GT2	Southwestern Site	NA	20-22	Triaxial
GT2	Southwestern Site		38-40	Triaxial
GT2	Southwestern Site		64-66	Triaxial
GT3	Southeastern Site	NA	40-42	Triaxial
GT3	Southeastern Site		56-58	Triaxial
GT3	Southeastern Site		78-80	Triaxial
GT4	Northern Site	NA	22-24	Triaxial
			40-42	Triaxial

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Notes:

(1) Analytes include:

TCL/TAL - Target Compound List Organics/Target Analyte List Metals
APP. IX - 40 CFR Part 264 Appendix IX
Triaxial - Triaxial Permeability Test

(2) Duplicate sample collected and analyzed.

NA Not Analyzed

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TABLE 2.6

WEST YARD INVESTIGATION
GM, PONTIAC, MICHIGAN
WEST YARD INVESTIGATION GROUNDWATER ANALYTE SUMMARY TABLE

Well ID	Location	Analytes		
		Round 1[1]	Round 2[2]	Other[1]
MW-5	Western Edge of Storage Pad	TCL/TAL	TAL	
MW-6	Downgradient of Railroad Marshalling Area	NAPL Analyses	NA	
MW-7	Downgradient of Railroad Marshalling Area	TCL/TAL[3]	TCL/TAL	
MW-8	Downgradient at Western Site Boundary	NA	NA	VOCs, PCBs, TAL, 8280[3]
MW-13	Middle of Storage Pad	NA	TAL	NAPL Analyses
MW-16	Downgradient at Western Site Boundary	TCL/TAL	TAL	8280
DW-16	Downgradient at Western Site Boundary	TCL/TAL	TAL	8280
MW-17	Downgradient of Railroad Marshalling Area	APP. IX	TAL	8280
DW-17	Downgradient of Railroad Marshalling Area	APP. IX	TAL	8280
MW-18	Downgradient of Foundry Sand Fill Area	TCL/TAL	TAL	8280
DW-18	Downgradient of Foundry Sand Fill Area	TCL/TAL	NA	8280
MW-19	Downgradient of Former Crane Bay	TCL/TAL	NA	8280
DW-19	Downgradient of Former Crane Bay	TCL/TAL	NA	8280
MW-20	Downgradient of Refuse Disposal Areas	APP. IX	TCL/TAL[3], SO_2	8280

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TABLE 2.6 (CONT.)

WEST YARD INVESTIGATION
GM, PONTIAC, MICHIGAN
WEST YARD INVESTIGATION GROUNDWATER ANALYTE SUMMARY TABLE

Well ID	Location	Analytes		
		Round 1[1]	Round 2[2]	Other[1]
DW-20	Downgradient of Refuse Disposal Areas	APP. IX[3]	TCL/TAL[3]	8280
DW-21	Upgradient	TCL/TAL	TCL/TAL	8280
MW-22	Downgradient of Refuse Disposal Areas	APP. IX	TAL	8280
DW-22	Downgradient of Refuse Disposal Areas	APP. IX	TAL[3]	8280
MW-23	SW Corner	NA	NA	8280

Notes:

(1) Analytes include:

TCL/TAL - Target Compound List Organics/Target Analyte List Metals
APP IX - 40 CFR Part 264 Appendix IX parameters
NAPL analyses - PCBs, purgeable halocarbons, polynuclear aromatics, and fingerprint analysis.
VOCs, SVOCs, PCBs - TCL parameters
8280 - SW-846 Method 8280 for polychlorinated dibenzo-p-dioxins and dibenzofurans.

(2) Detections from Round 1 only analyzed.

(3) Duplicate sample collected and analyzed.

NA Not Analyzed

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SECTION 3

PHYSICAL CHARACTERISTICS OF THE STUDY AREA

3.1 SURFACE FEATURES

The West Yard is located in the southwest portion of the 402-acre General Motors Pontiac Complex. The area has been filled to a relatively flat grade with foundry sand generated by former plant processes. Steep grades are present on the southern and western margins of the area which are bounded by Montcalm Street and the railroad tracks, respectively. The area is bounded on the north and east by Plants 9 and 6, respectively. Several structures (the Salvage Building, the Compressor Building, the crane bay and Plant 6, the Foundry) have been demolished, as indicated on Figure 3.1.

The former hazardous waste storage pad is located in the western portion of the West Yard. This pad is approximately 300 by 90 feet and was originally constructed of 8-inch reinforced concrete and surrounded by a 4-inch dike (GTI, 1991).

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3.2 GEOLOGY

3.2.1 West Yard

The West Yard is underlain by a variable thickness of fill composed primarily of foundry sand. Figure 3.1 shows the locations of two geological cross sections, AA' and BB', displayed on Figures 3.2 and 3.3, respectively. The depth of the fill is thickest in the central and southeastern portions of the site. As noted above, the top surface of the fill is approximately level, indicating that the fill was used to grade the original topographic surface.

The geological material beneath the fill consists of sand with lenses of silt or organic-rich peat and marl. This sand unit is highly variable in thickness. The peat and marl predominate at the southern edge of the site.

Low permeability materials, consisting of clay and silt with lenses of sand or sand and gravel, underlie the sand or peat/marl unit to a depth of 100 feet (maximum boring depths of the geotechnical borings). Figure 3.4 shows the elevation of the top of this low permeability zone measured in each well or boring installed during this investigation. There were not enough elevations to draw contour lines, but the surface of the low permeability zone appears to be at a higher elevation toward the north and central portions of the West Yard. As discussed below, the elevation of the top of this zone appears to control the direction of groundwater flow in the overlying sand and fill. Elevations of the top of this zone and geotechnical data are shown in Table 3.1.

The series of cone penetrometer tests (CPT) along the boundary of the West Yard showed a good correlation with the interpretation of West Yard geology from geotechnical and well borings. Figure 3.5 depicts the site geology as defined by the CPT survey. The area has a variable thickness of fill ranging from over 30 feet in the southeast corner to less than 8 feet along the western edge of the West Yard. The peat

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and marl layer was evident in all CPT soundings along the southern edge of the West Yard and for a short distance along the western edge. The peat and marl layer ranged in thickness from 3 feet at CP-12 to 10 feet at CP-16. The western CPT soundings showed a sand layer of variable thickness below the fill.

The clay layer was encountered at a depth of 27-43 feet, below thick fill in the center of the West Yard. Along the southern edge, clay was found at depths ranging from 56.6 feet (CP-8) to 15.8 feet (CP-14). These measurements suggest a relatively flat clay surface west of CP-8. The clay layer seen in CPT tests along the western boundary is correlative with the clay layer seen in the middle of the area and boring logs for GT-4, GT-3, MW-19, and MW-18 which note a "pink-grey clay with some silt" at approximately 40 feet. The clay can be seen clearly on CP-18 at a depth of 19.1 feet, at 19.3 feet on CP-23, and 22 feet on CP-24, and 31.3 feet on CP-27 which is upgradient of CP-24. At CPT points 21 and 22, the clay layer occurs approximately 10 feet deeper than in adjacent tests. The clay was encountered in these two tests below a thick dense sand to silty sand. This sand is anomalously thick at these two locations compared to the rest of the western boundary. The CPT results are included in Appendix H.

3.2.2 Hazardous Waste Storage Pad

Data from 12 soil borings were used to determine the hydrogeologic characteristics at the former hazardous waste storage pad. Figure 3.6 shows the location of three geological cross sections, shown on Figure 3.7 and 3.8, respectively.

The hazardous waste storage pad is also underlain by fill. The pad was constructed directly on top of a thin layer of graded fill placed on the foundry sand fill. The thickness of total fill ranges from about 2 feet beneath the northern end of the pad to 18 feet beneath the southern end of the pad. The fill extends beyond the pad in all directions.

Unconsolidated clay, silt, and sand underlay the fill to the maximum depth of investigation at the pad (35 feet). Clay and silt are dominant to a depth of about 21 feet below grade, except beneath the northern portion of the pad where sand predominates. A continuous layer of light brown to gray, fine-to coarse-grained sand is identified in all deep borings at the pad. This sand is located at a depth of about 10 feet below grade at the northern end of the pad and about 22 feet below grade beneath the southern end of the pad. At most locations beneath the pad, this sand layer is separated from the fill by at least 2 feet of silty clay.

3.3 GROUNDWATER HYDROLOGY AND HYDROGEOLOGY

Groundwater in the vicinity of the West Yard generally flows toward the southwest (Figure 3.9). The elevation of the top of the low permeability zone discussed in Section 3.2.1 appears to control the flow direction in the sand and fill zones. Deviations in the groundwater flow direction occur to the west and to the south along a groundwater divide, shown on Figure 3.9, corresponding to the ridge in the low permeability zone. These deviations in flow generally correlate to the elevation of the top of the low permeability zone.

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The groundwater contour map was constructed from water levels measured in February 1996 in monitoring wells which were screened in the sand layer overlying the low permeability zone, below any low permeability layer (silt, clay, peat or marl) which underlies the fill. Table 3.2 shows water level data.

A perched zone of saturation is located in the fill material beneath the southern three-quarters of the pad (cross section B-B' on Figure 3.8). The perched zone is the result of a localized clay lens that separates the fill from the deeper unconsolidated sand. This sand is underlain by an area-wide clay layer, shown on Figures 3.2 and 3.3.

Aquifer Tests

Aquifer pump and baildown tests were conducted in 1990 and 1991 on MW-1 through MW-5 and MW-10. Hydraulic conductivities ranged from 1.9E-02 centimeters per second (cm/sec)(high at MW-4) to 1.0E-04 cm/sec (low at MW-1)(Table 3.3). The wells are screened across the silt/clay and sand layers. Aquifer test data is presented in Appendix B.

Insitu hydraulic conductivity test (slug test) results from testing conducted in 1996 on eight monitoring wells ranged from 5.32E-02 cm/sec (high at DW-22) to 1.05E-05 cm/sec (low at DW-16) (Table 3.4). The wells are all screened in the sand layer overlying the low permeability zone. Data and calculations are presented in Appendix B.

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Slug test results for MW-7 and MW-12 were incomplete because the static water levels were within the screened intervals during testing. When this occurs, the injection test data is generally not used, but the withdrawal test data is considered valid. Withdrawal test data for MW-7 was irregular, so no hydraulic conductivity could be reliably calculated for MW-7.

Groundwater Elevations in Monitoring Well Pairs

The water levels measured in pairs of monitoring wells show a consistent downward gradient in the saturated zone (Table 3.2). Monitoring well pairs MW/DW-16, 17, 18, and 19, located at the western and southern boundary of the site had a downward gradient which increased to the southeast. For water levels measured in February 1996, the difference in water levels measured in monitoring well pairs varied from 0.1 foot at the western and southwestern boundary (wells MW/DW-16 and 17) to 2.03 feet at the southeastern boundary (MW/DW-19). The difference in water levels measured for pair MW/DW-18 was 1.17 feet.

Hydraulic Conductivity of Low Permeability Zone

Shelby tube samples were collected from clay layers within the low permeability silt and clay zone encountered in geotechnical borings GT-1 through GT-4. Hydraulic conductivities of the samples were measured using triaxial permeability tests (Table 3.1).

Permeabilities ranged from 1.33E-07 cm/sec (high at GT-2, 29 feet below ground surface) to 1.21E-08 cm/sec (low at GT-4, 41 feet below ground surface). Sample

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depths ranged from 21 to 79.5 feet below ground surface. The triaxial permeability test report is located in Appendix C. The very low hydraulic conductivities indicate that groundwater flow in the overlying sand of the saturated zone is preferentially horizontal and that downward mobility of groundwater through the low permeability zone, if occurring, is extremely slow.

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WEST YARD BOUNDARY

FORMER SALVAGE BUILDING

HAZARDOUS WASTE STORAGE PAD

FORMER INCINERATOR

POWER STATION

FOUNDRY SAND FILL AREA

FORMER CENTRAL FOUNDRY DIVISION PLANT 6

B

A'

TELEPHONE POLE

GT-1 *

10'x10' BLOCK BLDG.

FILLED IN SETTLING BASIN AREA

MW-16/DW-16 *

SB1 *

MW-6

MW-7

MW-9

MW-14

MW-10

MW-2

MW-1

MW-11

MW-5

MW-4

MW-3

MW-13

MW-12

SB2

SB5

GT-4

TT 1

TT 2

TT 3

TT 4

TT 5

WD-1

WD-2

WD-3

DW-21

MW-22/DW-22 *

MW-20/DW-20 *

SB3

SB4

MW-8

WEST YARD BOUNDARY

SEWER

GATE

8" &12" WATER LINE

RAILROAD MARSHALLING AREA

MW-17/DW-17

GT-2

FOUNDRY SAND FILL AREA

MW-18/DW-18

FORMER CRANE BAY

FOUNDRY SAND FILL AREA

MW-19/DW-19 *

GT-3 *

MW-23

PUMP HOUSE

WEST YARD BOUNDARY

MONTCALM STREET

STORM SEWER

ELECTRICAL CABLE TO BE INSTALLED

B'

N

LEGEND

WD — BORING IN WASTE DISPOSAL AREAS

MW/DW — NESTED OR SINGLE WELL(S)

TT — TEST TRENCHES

GT — GEOTECH BORING (PERMEABILITY)

SB — BORINGS

MW-9 — INOPERABLE WELL

MW-5 — PREVIOUSLY INSTALLED MONITORING WELLS

B' CROSS SECTION LINE

* DESIGNATES LOCATION PROJECTED PERPENDICULARLY INTO THE LINE OF SECTION

100' 50' 0 100'

Approximate Scale in Feet

REVISED: 02/28/97 (SEH)
Xref. or Views: XREF: 27125X01.DWG VIEW: GMSITE-100XP
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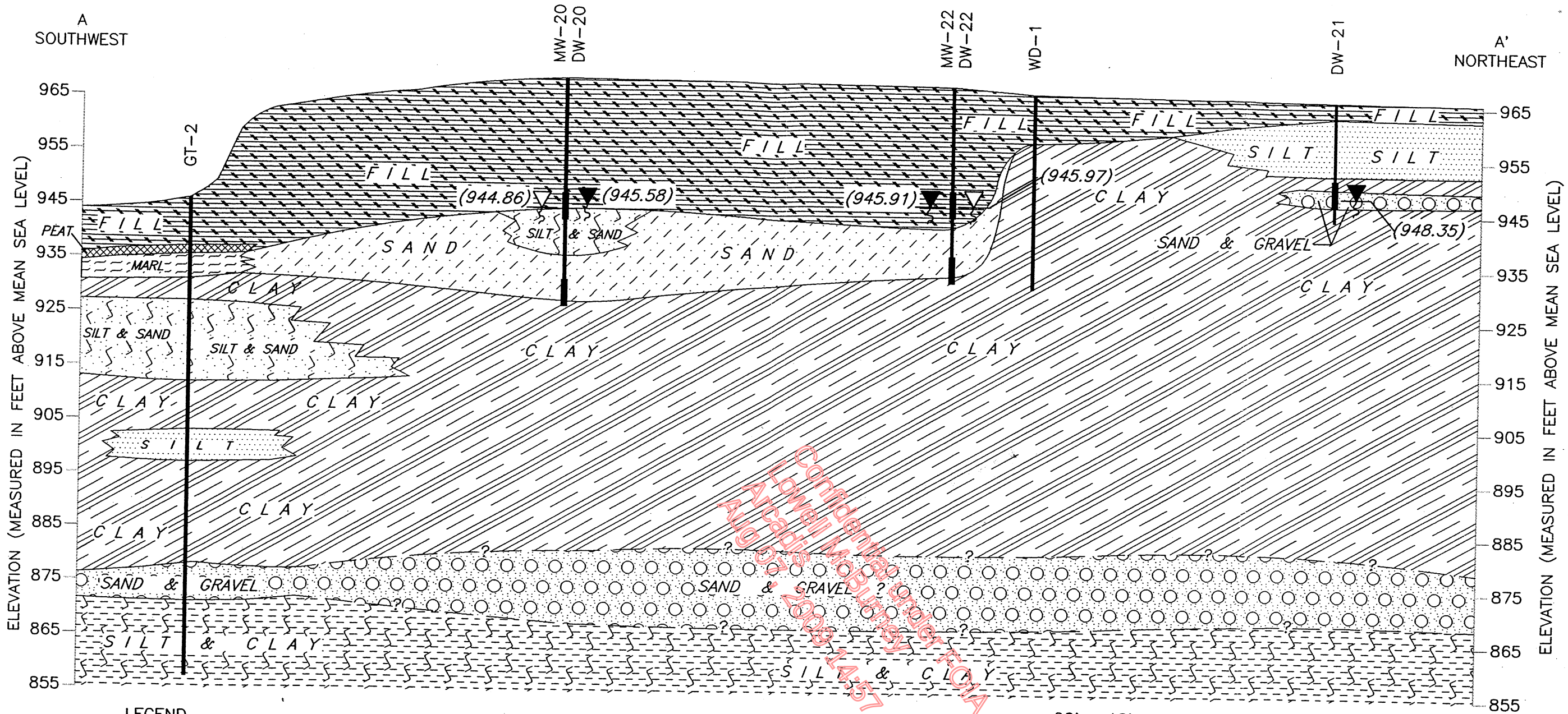
FIGURE 3.1

GENERAL MOTORS CORPORATION
PONTIAC, MICHIGAN
GM - WEST YARD

WEST YARD CROSS SECTION LOCATION MAP

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LEGEND

GT	GEOTECHNICAL SOIL BORING
SB	SOIL BORING
DW/MW	MONITORING WELLS
▼	STATIC WATER LEVEL IN DEEP WELLS
▽	STATIC WATER LEVEL IN SHALLOW WELLS
(945.58)	WATER LEVEL ELEVATION
— ? —	INFERRED BOUNDARY OF STRATUM DUE TO LACK OF DATA
	WELL OR BORING
	MONITORING WELL SCREEN INTERVAL

20' 10' 0 20'
Approximate Scale in Feet
VERTICAL SCALE

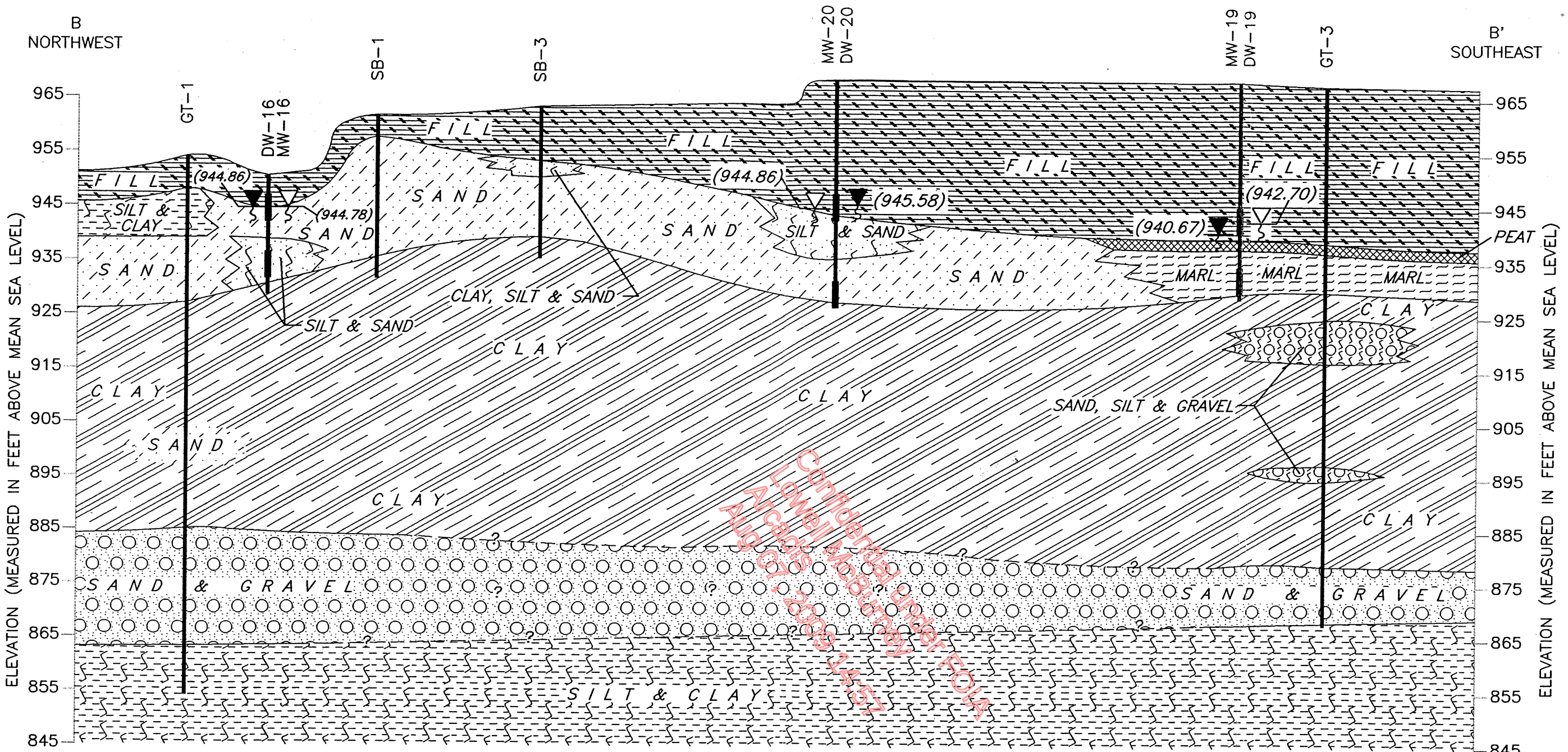
100' 50' 0 100'
Approximate Scale in Feet
HORIZONTAL SCALE

DATE: 2/28/97 (JHG)
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FIGURE 3.2
GENERAL MOTORS CORPORATION
PONTIAC, MICHIGAN
GM – WEST YARD
CROSS SECTION
A–A'

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LEGEND

GT GEOTECHNICAL SOIL BORING

SB SOIL BORING

DW/MW MONITORING WELLS

STATIC WATER LEVEL IN DEEP WELLS

STATIC WATER LEVEL IN SHALLOW WELLS

(944.78) WATER LEVEL ELEVATION

WELL OR BORING

MONITORING WELL SCREEN INTERVAL

INFERRED BOUNDARY OF STRATUM DUE TO LACK OF DATA

20' 10' 0 20'
Approximate Scale in Feet
VERTICAL SCALE

100' 50' 0 100'
Approximate Scale in Feet
HORIZONTAL SCALE

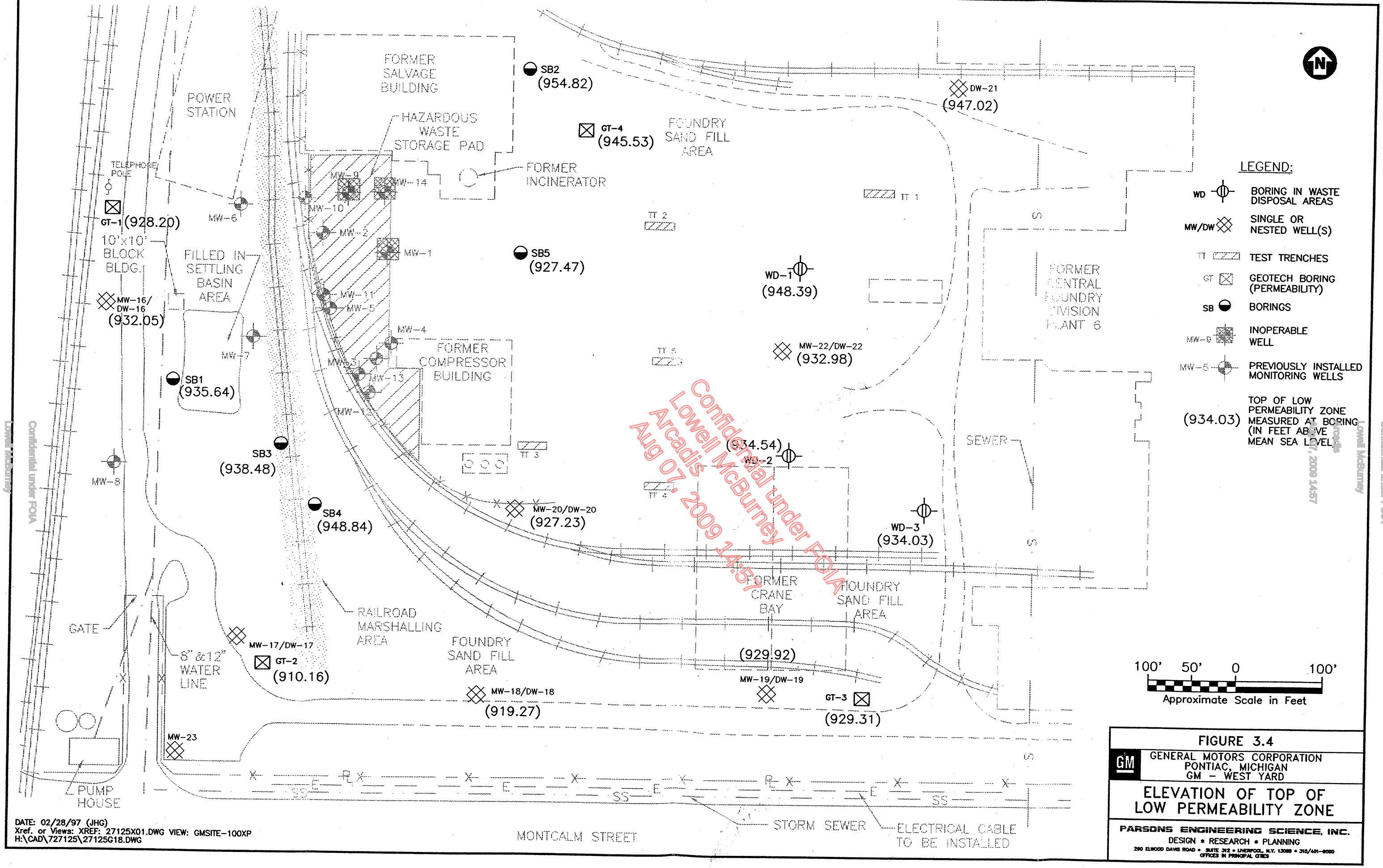
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FIGURE 3.3

GENERAL MOTORS CORPORATION
PONTIAC, MICHIGAN
GM – WEST YARD

CROSS SECTION
B – B"

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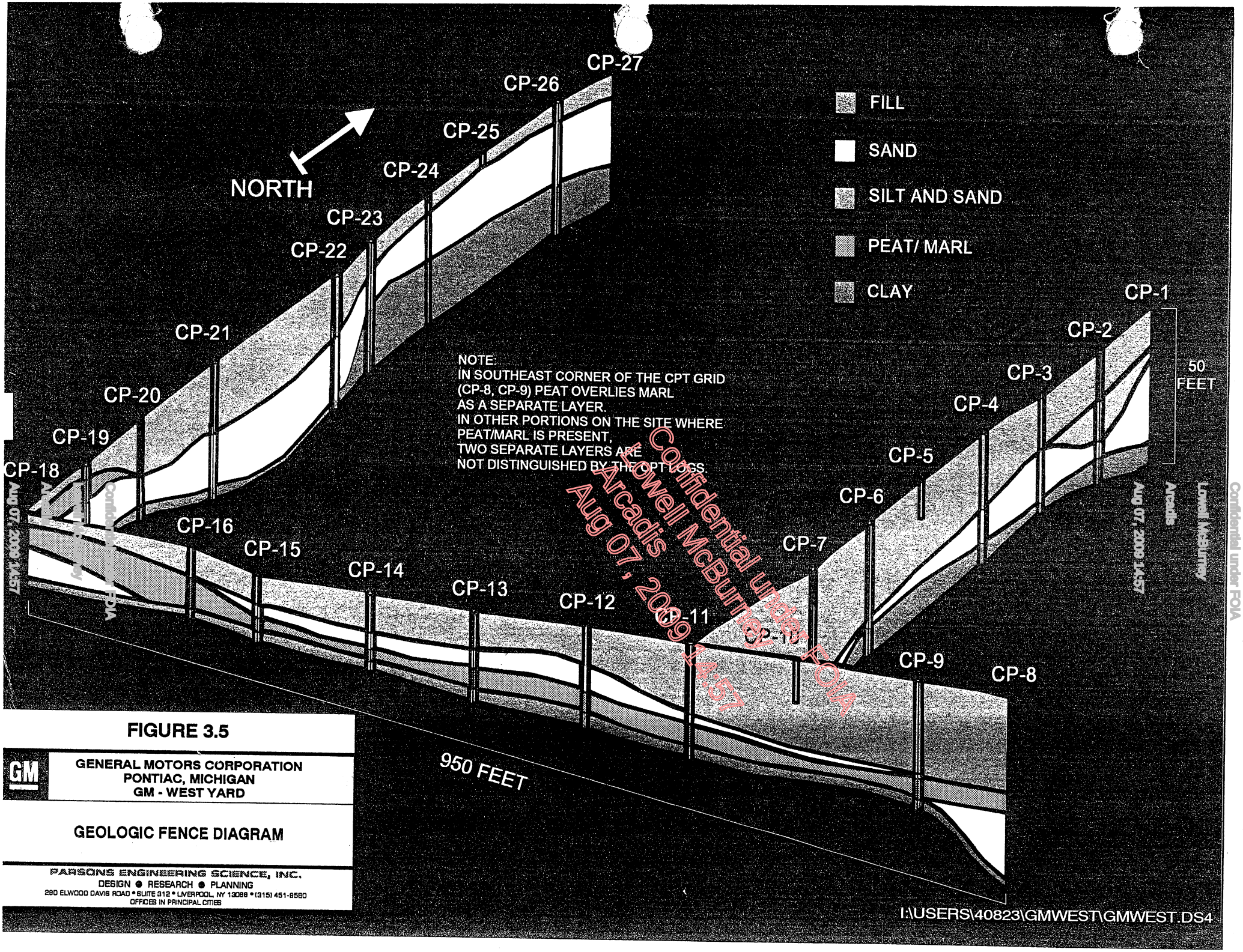
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Xref. or Views: XREF: 27125X01.DWG VIEW: GMSITE-100XP
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FIGURE 3.4

GENERAL MOTORS CORPORATION
PONTIAC, MICHIGAN
GM - WEST YARD

ELEVATION OF TOP OF LOW PERMEABILITY ZONE

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FIGURE 3.5

GM

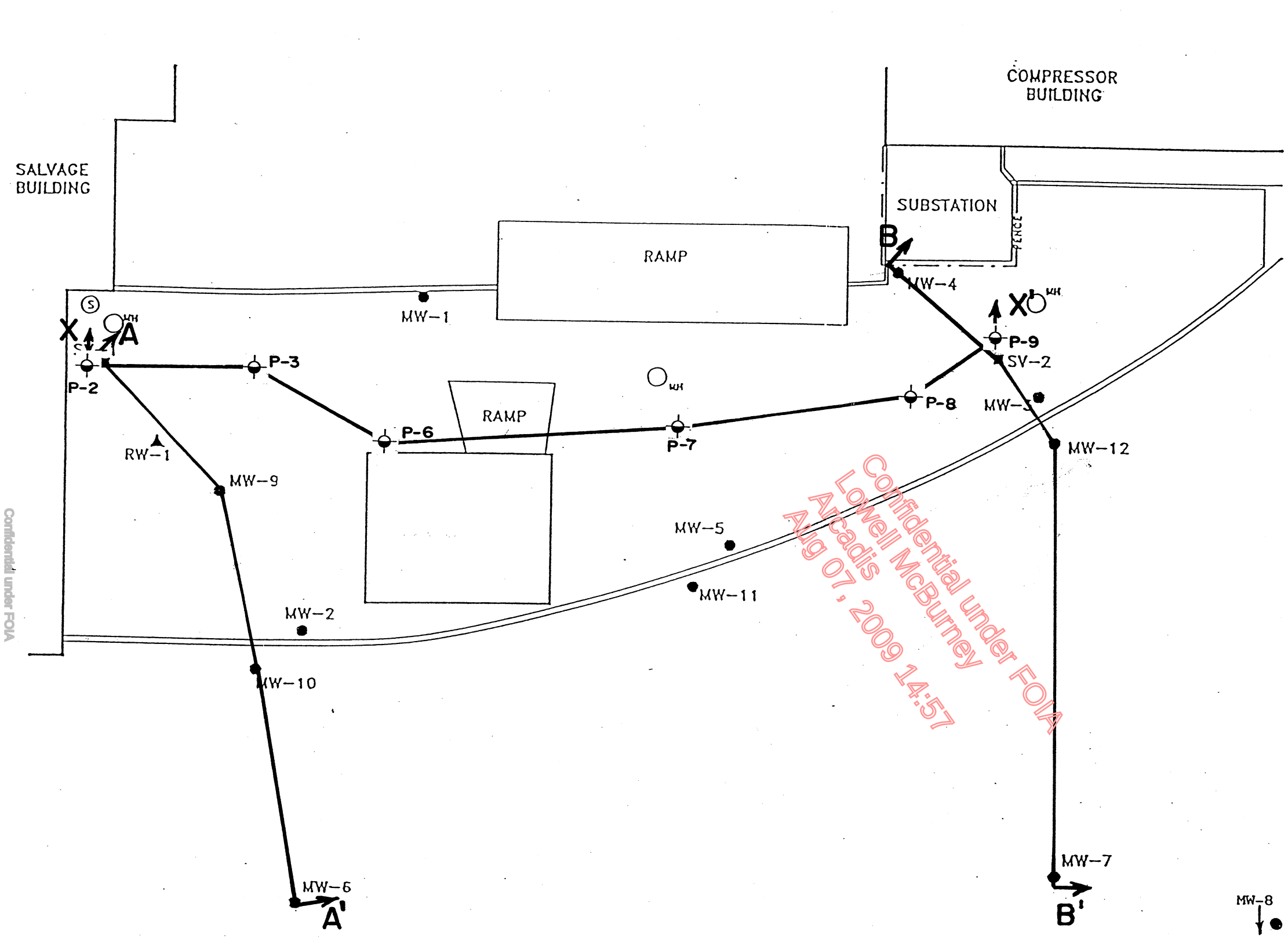
GENERAL MOTORS CORPORATION
PONTIAC, MICHIGAN
GM - WEST YARD

GEOLOGIC FENCE DIAGRAM

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LEGEND

- ● – MONITORING WELL
- ■ – SOIL VAPOR EXTRACTION WELL
- ▲ – RECOVERY WELL
- Ⓢ – SUMP
- ○MH – SEWER MANHOLE
- B — B' – CROSS SECTION LINE
- ⊕ P2 – SOIL BORINGS

0 30 60

SCALE IN FEET (approximate)

SOURCE: DAMES & MOORE, 1989.

GROUNDWATER TECHNOLOGY, INC., 1991.

REVISED: 11/22/96 (GTC)
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FIGURE 3.6

GM GENERAL MOTORS CORPORATION
PONTIAC, MICHIGAN
GM – WEST YARD

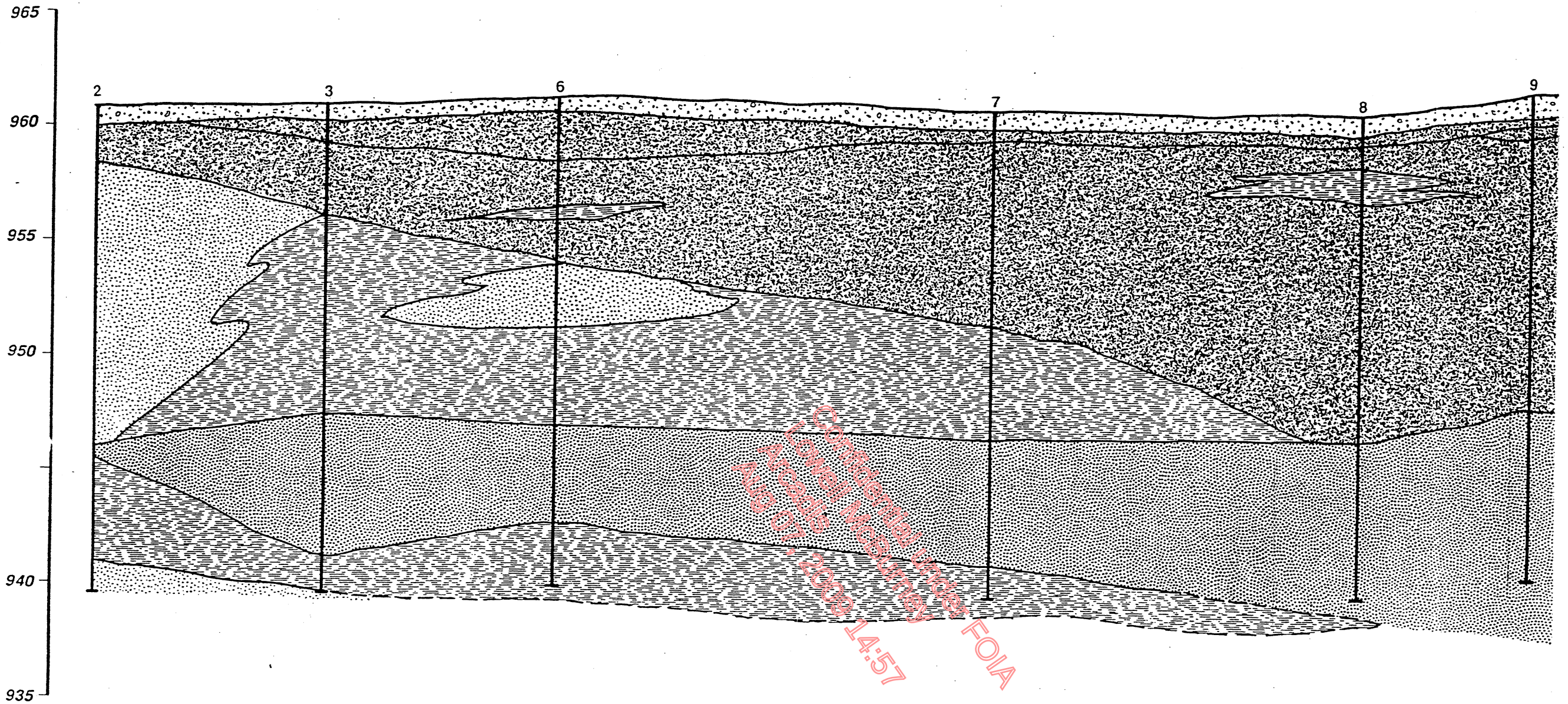
STORAGE PAD CROSS SECTION LOCATION MAP

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X
NORTH

X'
SOUTH



5
0
0 20

SCALE IN FEET
Vertical Exaggeration = 4x

LEGEND:

10 BOREHOLE NUMBER

CONCRETE

FILL

FINE SAND

CLAY

SILT

SOURCE: DAMES & MOORE, 1989.

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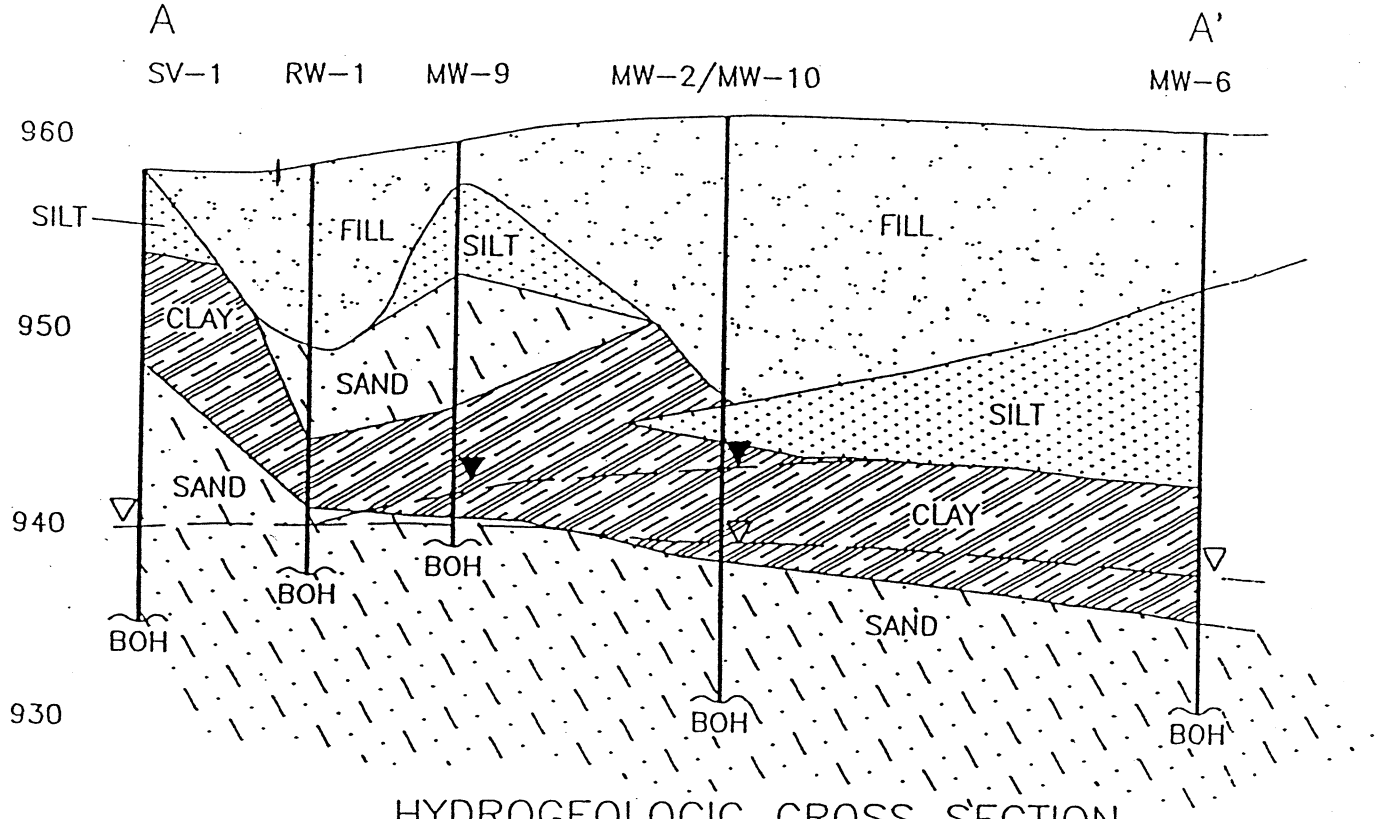
FIGURE 3.7

GM GENERAL MOTORS CORPORATION
PONTIAC, MICHIGAN
GM – WEST YARD

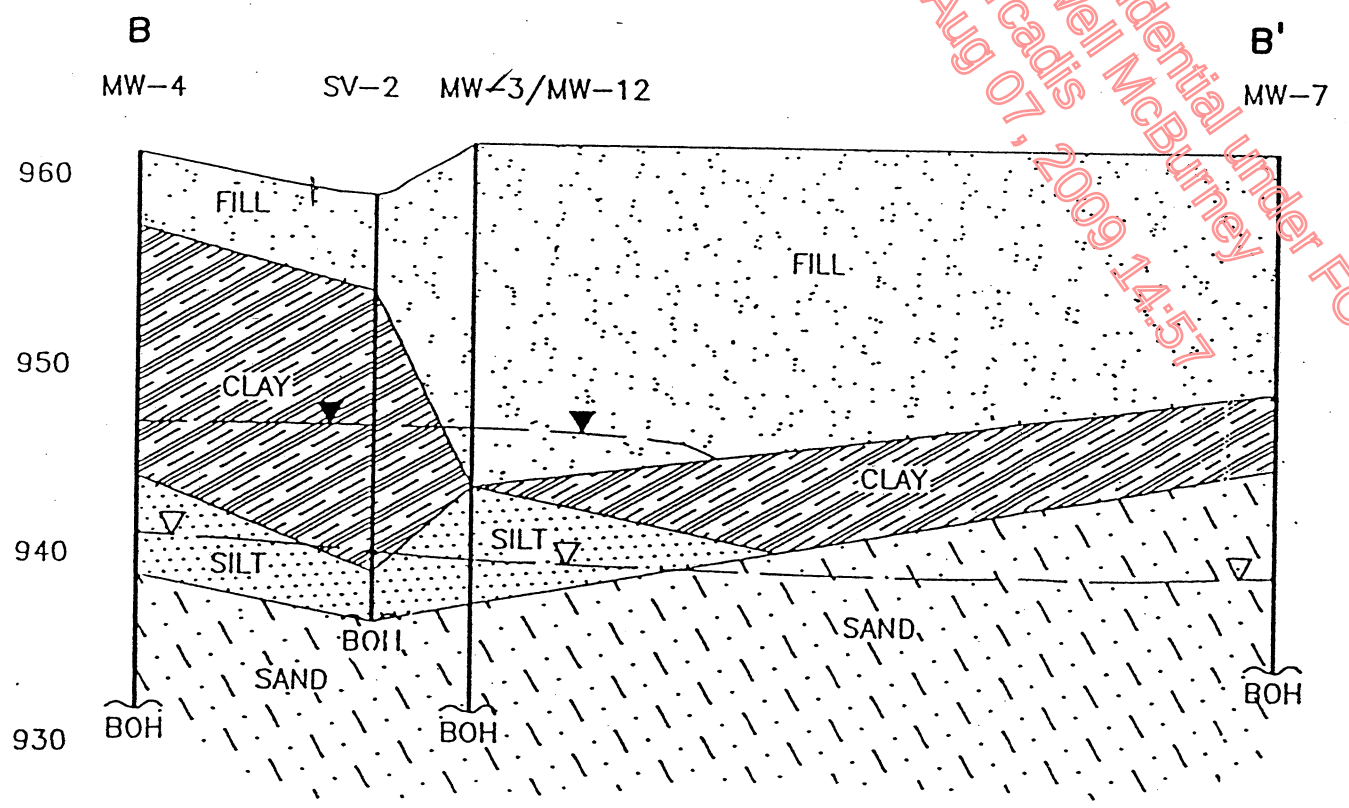
PAD CROSS SECTION
X–X"

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HYDROGEOLOGIC CROSS SECTION
SECTION A – A'



HYDROGEOLOGIC CROSS SECTION
SECTION B – B'

LEGEND

- ▽ – WATER TABLE
- ▼ – PERCHED ZONE
- — — — LINE OF POTENTIOMETRIC SURFACE
- BOH – BOTTOM OF HOLE
- – CLAY
- – SILT
- – SAND
- – FILL

VERTICAL
0 10 20
0 30 60
HORIZONTAL
SCALE IN FEET

SOURCE: GROUNDWATER TECHNOLOGY, INC., 1991.

REVISED: 11/22/96 (GTC)
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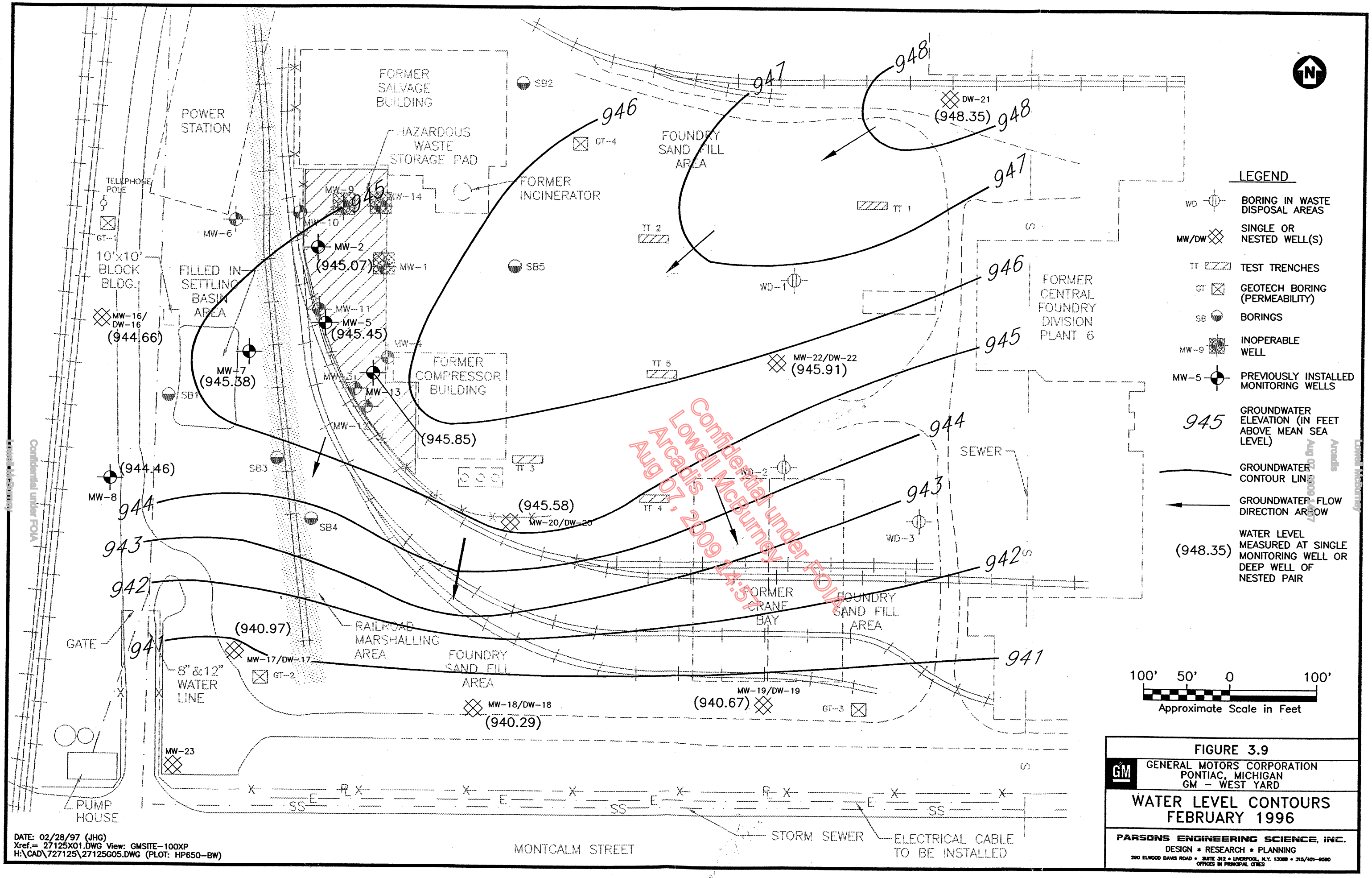
FIGURE 3.8

GM GENERAL MOTORS CORPORATION
PONTIAC, MICHIGAN
GM – WEST YARD

PAD CROSS SECTIONS
A – A' AND B – B'

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Xref.= 27125X01.DWG View: GMSITE-100XP
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FIGURE 3.9

GM GENERAL MOTORS CORPORATION
PONTIAC, MICHIGAN
GM - WEST YARD

WATER LEVEL CONTOURS
FEBRUARY 1996

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TABLE 3.1
WEST YARD INVESTIGATIONS
GM, PONTIAC, MICHIGAN

LOW PERMEABILITY ZONE ELEVATIONS AND GEOTECHNICAL RESULTS

BORING OR WELL ID	BORING OR WELL DEPTH *	GROUND SURFACE **	DEPTH TO LOW PERM ZONE	ELEV LOW PERM ZONE	GEOTECHNICAL TESTING (TRIAXIAL PERMEABILITY)					
					DEPTH *	PERM ***	DEPTH *	PERM ***	DEPTH *	PERM ***
MW-2	30.00	963.68								
MW-3	30.00	964.99								
MW-4	35.00	963.25								
MW-5	30.00	964.44								
MW-6	28.00	964.06								
MW-7	28.00	963.82								
MW-8	18.00	949.83								
MW-10	22.00	964.67								
MW-11	22.00	964.33								
MW-12	22.00	964.19								
MW-13	15.00	963.31								
MW-16	12.65	950.05								
DW-16	22.32	950.05	18.00	932.05						
MW-17	11.10	946.16								
DW-17	17.20	946.16								
MW-18	19.70	955.27								
DW-18	39.60	955.27	36.00	919.27						
MW-19	31.00	968.42								
DW-19	41.00	968.42	38.50	929.92						
MW-20	28.85	968.73								
DW-20	45.63	968.73	41.50	927.23						
DW-21	21.85	966.02	19.00	947.02						
MW-22	28.20	967.98								
DW-22	38.20	967.98	35.00	932.98						
WD-1	36.00	966.89	18.50	948.39						
WD-2	38.00	968.54	34.00	934.54						
WD-3	38.00	969.03	35.00	934.03						
SB-1	30.00	961.64	26.00	935.64						
SB-2	18.00	963.82	9.00	954.82						
SB-3	28.00	963.48	25.00	938.48						
SB-4	24.00	966.34	17.50	948.84						
SB-5	40.00	963.47	36.00	927.47						
GT-1	100.00	954.20	26.00	928.20	29.00	2.55E-08				
GT-2	89.00	946.16	36.00	910.16	21.00	1.33E-07	38.00	3.90E-08	65.00	2.78E-08
GT-3	100.00	967.81	38.50	929.31	41.00	1.67E-08	57.00	1.32E-08	79.50	1.46E-08
GT-4	94.00	963.03	17.50	945.53	23.50	2.62E-08	41.00	1.21E-08		

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* FEET BELOW GROUND SURFACE
** FEET ABOVE MEAN SEA LEVEL
*** PERMEABILITY IN CENTIMETERS PER SECOND

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TABLE 3.2
WEST YARD INVESTIGATION
GM, PONTIAC, MICHIGAN
GROUNDWATER LEVELS

WELL ID	WELL DEPTH *	TOP OF CASING **	WATER ELEVATION (MSL)											
			1-Dec-88	13-Mar-89	2-May-90	8-May-30	5-Jun-90	12-Jun-90	13-Jun-90	25-Jun-90	16-Jan-96	21-Dec-96	19-Jan-96	13-Feb-96
MW-2	30.00	965.67	939.88	939.43	939.07	940.07	939.69	938.46	939.51	939.41	NA	NA	945.22	945.07
MW-3	30.00	966.97	938.57	938.18	937.84	NR	NR	937.29	NR	NR	NA	NA	950.37	
MW-4	35.00	964.98	939.64	939.14	938.78	NR	NR	938.23	NR	NR	NA	NA	951.35	951.24
MW-5	30.00	966.42	939.26	938.79	938.57	939.46	NR	937.85	NR	NR	NA	NA	945.62	945.45
MW-6	28.00	966.30	NA	938.64	938.44	939.48	936.87	937.88	937.67	937.98	NA	NA	937.37	
MW-7	28.00	966.12	NA	938.61	937.32	NR	NR	NR	NR	NR	NA	NA	945.53	945.38
MW-8	18.00	952.44	NA	937.78	937.34	NR	NR	NR	NR	NR	NA	NA	944.91	944.46
MW-10	22.00	966.62	NA	NA	942.18	943.47	943.59	942.18	943.38	943.13	NA	NA	947.92	949.22
MW-11	22.00	965.94	NA	NA	941.94	943.03	NR	941.75	NR	NR	NA	NA	947.24	947.11
MW-12	22.00	966.23	NA	NA	945.45	946.42	NR	944.8	NR	NR	NA	NA	945.86	945.85
MW-13	15.00	965.18	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	949.37	
MW-16	12.65	952.59	NA	NA	NA	NA	NA	NA	NA	NA	944.91	944.96	945.1	944.76
DW-16	22.32	952.38	NA	NA	NA	NA	NA	NA	NA	NA	944.46	944.75	943.7	944.66
MW-17	11.10	948.55	NA	NA	NA	NA	NA	NA	NA	NA	941.03	941.24	941.24	941.1
DW-17	17.20	948.64	NA	NA	NA	NA	NA	NA	NA	NA	940.72	941.33	941.29	940.97
MW-18	19.70	957.78	NA	NA	NA	NA	NA	NA	NA	NA	941.32	941.55	941.64	941.38
DW-18	39.60	957.69	NA	NA	NA	NA	NA	NA	NA	NA	940.45	938.73	940.55	940.29
MW-19	31.00	971.01	NA	NA	NA	NA	NA	NA	NA	NA	942.8	943.56	942.93	942.7
DW-19	41.00	970.77	NA	NA	NA	NA	NA	NA	NA	NA	951.04	941.49	941.13	940.67
MW-20	28.85	971.20	NA	NA	NA	NA	NA	NA	NA	NA	945.22	945.52	945.15	944.86
DW-20	45.63	971.03	NA	NA	NA	NA	NA	NA	NA	NA	945.63	945.62	945.56	945.58
DW-21	21.85	968.21	NA	NA	NA	NA	NA	NA	NA	NA	949.23	949.53	949.21	948.35
MW-22	28.20	970.37	NA	NA	NA	NA	NA	NA	NA	NA	946.35	946.44	946.11	945.97
DW-22	38.20	970.31	NA	NA	NA	NA	NA	NA	NA	NA	946.15	946.27	946.01	945.91

* FEET BELOW GROUND SURFACE
** FEET ABOVE MEAN SEA LEVEL
NA - Not Applicable
NR - Not Recorded

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TABLE 3.3
WEST YARD INVESTIGATIONS
GM, PONTIAC, MICHIGAN
CLOSURE INVESTIGATIONS AQUIFER TEST RESULTS

Well	Test Method	Hydraulic Condutivity	
		ft/day	cm/sec
MW-1	Baildown	0.3	1.0^{6} x 10^{-4}
MW-2	Pump	12.6	4.4 x 10^{-3}
MW-3	Baildown	0.8	2.8 x 10^{-4}
MW-4	Pump	5.47	1.9 x 10^{-2}
MW-5	Baildown	0.4	1.4 x 10^{-4}
MW-1	Pump	2.7	9.5 x 10^{-4}
MW-2	Pump	2.7	9.5 x 10^{-4}
MW-10	Pump	16.8	5.9 x 10^{-3}
SV-1	Pump	2.8	9.9 x 10^{-4}

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TABLE 3.4
WEST YARD AND STORAGE INVESTIGATIONS
GM, PONTIAC, MICHIGAN
WEST YARD INVESTIGATION SLUG TEST SUMMARY SHEET

WELL NUMBER	TEST TYPE	ANALYSIS	INITIAL DRAWDOWN (ft)	RADIUS OF WELL CASING (ft)	WELL RADIUS (ft)	SCREEN LENGTH (ft)	SATURATED THICKNESS (ft)	K (ft/min)	y0 (ft)	K (cm/Sec)
MW-7	Injection	Bouwer-Rice	0.25	0.080	0.33	10.0	9.41	1.89E-02	119.7000	3.75E-02
MW-7	Withdrawal	Bouwer-Rice	0.25	0.080	0.33	10.0	10.41	(1)	(1)	(1)
MW-8	Injection	Bouwer-Rice	0.94	0.080	0.33	10.0	13.47	3.78E-03	1.2830	7.51E-03
MW-8	Withdrawal	Bouwer-Rice	1.00	0.080	0.33	10.0	13.47	3.84E-03	1.4580	7.64E-03
MW-12	Injection	Bouwer-Rice	0.85	0.080	0.33	15.0	4.43	9.79E-04	0.6788	1.95E-03
MW-12	Withdrawal	Bouwer-Rice	0.69	0.080	0.33	15.0	4.43	2.09E-03 (2)	0.7220 (2)	4.15E-03 (2)
DW-17	Injection	Bouwer-Rice	1.13	0.080	0.33	5.0	10.29	1.51E-03	0.9956	3.00E-03
DW-17	Withdrawal	Bouwer-Rice	1.20	0.080	0.33	5.0	9.80	1.48E-03	0.9499	2.93E-03
DW-16	Injection	Bouwer-Rice	1.80	0.080	0.33	5.0	13.67	5.26E-06	1.6590	1.05E-05
DW-16	Withdrawl	Bouwer-Rice	2.53	0.080	0.33	5.0	15.09	1.01E-05	1.4030	2.00E-05
DW-18	Injection	Bouwer-Rice	1.13	0.080	0.33	5.0	21.20	1.24E-02	0.9315	2.46E-02
DW-18	Withdrawal	Bouwer-Rice	0.79	0.080	0.33	5.0	21.20	1.32E-02	1.4190	2.62E-02
DW-19	Injection	Bouwer-Rice	1.22	0.080	0.33	5.0	9.49	1.23E-04	0.9658	2.44E-04
DW-19	Withdrawal	Bouwer-Rice	1.27	0.080	0.33	5.0	9.49	4.58E-05	0.8399	9.09E-05
DW-20	Injection	Bouwer-Rice	0.98	0.080	0.33	5.0	18.70	1.96E-02	3.8110	3.89E-02
DW-20	Withdrawal	Bouwer-Rice	0.98	0.080	0.33	5.0	18.70	2.68E-02	2.2640	5.32E-02
DW-22	Injection	Bouwer-Rice	0.21	0.080	0.33	5.0	12.01	6.29E-03	3.2350	1.25E-02
DW-22	Withdrawal	Bouwer-Rice	0.21	0.080	0.33	5.0	12.01	2.88E-03	0.2134	5.72E-03

(1) Due to erratic data, a line of best fit could not be established for this test. Therefore, the results have been declared invalid.
(2) Withdrawal test data questionable because static water level in screened interval.

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SECTION 4

DISCUSSION OF RESULTS

4.1 INTRODUCTION

This section presents and discusses the analytical results from previous activities associated with the hazardous waste storage pad and the current West Yard investigation activities. The storage pad closure analytical results for the pad surface and pad materials are presented and discussed relative to the specified criteria in the MDEQ-approved closure plan. The analytical results from soil and groundwater sampling conducted during the closure activities and the West Yard investigation are presented and discussed relative to the generic industrial land use-based criteria and soil saturation screening concentrations for soil and groundwater established under Part 201 of the Natural Resources and Environmental Protection Act (P.A. 451). As part of this conservative screening process, the analytical results were compared to the soil criteria on a location-by-location basis, not a statistical basis.

Comparison to the Part 201 criteria for industrial sites was considered most appropriate for several reasons. The West Yard is part of a large manufacturing site that has been operating since the 1920s. Given the history and nature of the site, the anticipated future use is industrial/commercial. Therefore, industrial criteria are most applicable and useful for assessing the potential impact of existing contamination.

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Furthermore, a single set of criteria was needed for screening purposes for this phase of work. Part 201 is the one common program that potentially applies to all portions of the West Yard. As shown on Figure 4.1, the eastern and central parts of the West Yard are controlled by the former foundry facility (Central Foundry Division, MID085470102). The former foundry facility is potentially subject to Part 201 but not the corrective action requirements under Part 111. The west end of the West Yard is part of the automotive manufacturing and support facility (Pontiac Motor Division, then CPC Division, MID005356886). That facility had a RCRA storage pad at the west end of the West Yard which has been unable to achieve final closure due to contamination from sources other than the pad. Thus the west end of the West Yard is potentially subject to both Part 201 and Part 111.

Essentially, Part 201 criteria are being used for screening soil and groundwater analytical data because the purpose of the investigations is to identify potential sources and the extent of contamination, to a level appropriate for an industrial land use setting, and where a significant portion of the site is not subject to Part 111.

Following submittal of the report, appropriate response activities will be evaluated to address environmental conditions in the West Yard. Response activities necessary to address the storage pad area will incorporate criteria that may also be acceptable pursuant to Part 111.

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MDEQ has promulgated several sets of soil and groundwater criteria applicable to industrial sites under Part 201 for the protection of human health and the environment. The West Yard sample results are compared to the criteria for the exposure pathways that are potentially completed. A brief description of these pathways for the West Yard and the criteria used for comparison with data obtained during the investigation is discussed below. Additional details on the potential exposure pathways is presented in the discussion of migration analysis in Section 5.

Soil Pathways and Criteria

The potential pathways by which onsite workers might be exposed to hazardous compounds in site soils include dermal contact, ingestion, and inhalation. All of these are pathways that may potentially be completed at the West Yard because surface soils are exposed, and subsurface soils could be disturbed during typical excavation/construction.

Part 201 generic soil criteria, based on risk and protective of the long-term health of industrial site workers, have been developed for the potential exposure pathways of dermal contact, ingestion, and inhalation. There is one set of criteria for dermal contact and ingestion, termed direct contact, contained in Environmental Response Division (ERD) Operational Memorandum, #14, Revision 2, first issued on June 6, 1994 and last revised on January 25, 1996 (MDEQ, 1996a) and the Addendum to Operational Memoranda #8, Revision 4 and #14, Revision 2 (MDEQ, 1996b). The inhalation criteria, covering both volatile compounds and particulates, are presented in the ERD Generic Soil Inhalation Criteria for Ambient Air: Technical Support Document, (MDEQ, 1997d).

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Generic soil criteria have also been developed by ERD that are protective of groundwater. The migration of contaminants from soil to groundwater is dependent on contaminant release from soil into soil pore water and pore air, which is based on a linear equilibrium soil/water partition (SWP) equation. These criteria are designated soil/water partitioning (SWP) criteria. Three sets of SWP criteria have been developed (ERD Generic Soil/Water Partitioning Criteria: Technical Support Document, January 17, 1997) for application at residential sites, at groundwater/surface water interface (GSI) areas, and at sites where contact with groundwater is the primary exposure pathway (MDEQ, 1997c). Only the third set of criteria for groundwater contact (GCC SWP criteria) are appropriate for the West Yard, since the former, current, and anticipated future land use at the West Yard is industrial/commercial, and there is no surface water on or immediately adjacent to the West Yard.

EDR has also developed generic soil saturation (C_{sat}) screening concentrations to indicate when free phase contaminants may be present in soils. These concentrations are intended to serve as an upper limit to the applicability of generic risk-based soil criteria, because certain default assumptions and models within the generic algorithm are not applicable when free phase contaminant is present in soil. C_{sat} concentrations have been developed to trigger a more in-depth evaluation of health and environmental risks when C_{sat} criteria are exceeded. Concentrations greater than C_{sat} criteria may not require a remedial response if saturated conditions are demonstrated not to exist. West Yard soil sample concentrations are compared to C_{sat} concentrations, as

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presented in ERD Generic Soil Saturation Screening Concentrations: Technical Support Document, November 19, 1996 (MDEQ, 1997b).

The Generic Industrial Direct Contact Criteria, the Generic GCC SWP criteria, the Generic C_{sat} concentrations, and the Generic Soil Inhalation Criteria are referred to collectively in this report as the soil screening criteria. The soil screening criteria for all compounds detected during closure and West Yard investigation soil sampling are listed in Table 4.1.

Groundwater Pathways and Criteria

Part 201 generic groundwater criteria have been developed by ERD to be protective of human health and the environment at industrial sites. The potential human health exposure pathways are ingestion, dermal contact, and inhalation. Of these, dermal contact and inhalation by site workers are potential exposure pathways at the West Yard. Ingestion is not a completed pathway because groundwater is not used as a drinking water source at the West Yard or downgradient. The City of Pontiac supplies water to the community from sources other than locally-obtained groundwater. Generic Groundwater Contact Criteria (GCC) have been developed (ERD Generic Groundwater Contact Criteria: Technical Support Document, January 17, 1997) to address dermal contact with groundwater contaminants where groundwater ingestion is not relevant, as in the West Yard (MDEQ, 1997a). These criteria address exposures that result from subsurface excavations, such as may result from subsurface utility repair, maintenance and operation. No criteria have been developed by MDEQ for the inhalation pathway from groundwater. Potential exposure pathways are discussed in more detail in Section 5.

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Another potential pathway for groundwater constituents is through migration to surface water. Although generic criteria have been developed for the groundwater/surface water interface (GSI), these are not applicable to West Yard groundwater because no surface water exists in or immediately adjacent to the West Yard.

4.2 HAZARDOUS WASTE STORAGE PAD CLOSURE ANALYTICAL RESULTS

Closure activities include initial closure activities conducted by Dames & Moore in 1988 and 1989 and additional closure activities conducted by GTI from 1989 through 1991.

Analytical results from closure samples from the pad surface and the pad materials (see Figure 2.1) were compared to the closure criteria in the MDEQ-approved closure plan, listed in Table 4.2. The closure criteria would be met if samples did not contain any detectable organics, or lead concentrations equal or less than a concentration derived from a statistical analysis of background samples.

4.2.1 Hazardous Waste Storage Pad Analytical Results

Following cleaning of the storage pad, wipe samples were collected at seven locations and analyzed for the closure plan analytes to evaluate the effectiveness of the

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cleaning. After the final rinse of the pad, samples of rinsate from the pad, the floor of the hazardous waste storage building, and the sewer lines underneath the pad were collected and analyzed for the closure plan analytes. Wipe and rinsate sample results are shown in Tables 4.3 and 4.4, respectively. The wipe sample results indicate that the pad was cleaned to acceptable levels as defined by the closure plan.

Twelve cores of concrete pad material were crushed and analyzed for the closure analytes. Results of concrete analyses are presented in Table 4.5. The concentrations of organics and lead in all concrete core samples were within acceptable ranges as defined for closure.

In summary, wipe, pad rinsate, and concrete core samples were within the acceptable limits as defined in the closure plan.

4.2.2 Surface Soil Analytical Results

A total of 17 surface soil samples (16 from 0 to 1 foot depth and one from 0 to 2 foot depth) were collected during closure activities. These included background samples (BK shown on Figure 2.2), and samples from below the concrete of the storage pad (P samples labeled as numbers only on Figure 2.1 and RW samples (shown on Figure 2.3). Analytical results are presented in Table 4.6. A summary of exceedences of the Part 201 soil screening criteria is shown in Table 4.7.

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Five of the seven organic compounds analyzed for were detected in one or more surface soil samples: benzene, toluene, xylenes, 1,1,1-trichloroethane, and methylene chloride. The surface sample from soil boring P-2 (labeled as 2 on Figure 2.1) contained the most detects of organic compounds, five of the seven analyzed.

Concentrations of lead in surface soil samples ranged from 1000 ug/kg in P-6 to 251,000 ug/kg in RW-1A.

None of the compounds detected in surface soil samples exceeded any of the soil screening criteria: Generic Industrial Direct Contact Criteria, Generic SWP GCC Criteria, Generic Soil Saturation Screening Concentrations, or Generic Industrial Soil Inhalation Criteria.

4.2.3 Subsurface Soil Analytical Results

A total of 121 subsurface soil samples were collected and analyzed during initial and additional closure activities from background soil borings (BK), borings from beneath the storage pad (P), and borings from monitoring, soil vapor and recovery well installation (MW, SV, and RW). Analytical results are presented in Table 4.8 (sample locations shown on Figures 2.1, 2.2, and 2.3). A summary of exceedences of the Part 201 soil screening criteria is shown in Table 4.9.

The volatile organic compound (VOC) that was detected most often was methylene chloride, which was detected in approximately one-third of the subsurface soil samples. Toluene, xylenes, and 2-butanone (MEK) were detected in approximately one-quarter of the samples. 1,1,1-Trichloroethane and benzene were detected less frequently. Toluene, xylenes, and methylene chloride were also detected in background samples. The soil borings that had the most detects of organics were P-2, MW-14, and SV-1 at

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the north end of the pad and P-9, MW-3, MW-13, and SV-2 at the south end of the pad.

Lead was detected in almost all subsurface soil samples. Lead concentrations ranged from non-detectable to 590,000 ug/kg.

Two subsurface soil samples of the 121 collected had one exceedence of a soil screening criteria. Soil boring P-9-5 (4.5 to 5 foot depth interval) at the south end of the pad (Figure 4.2) had a xylene concentration above the Generic Soil Saturation Concentration (C_{sat}). Soil boring P-3-5 (4.5 to 5 foot depth interval) at the north end of the pad (Figure 4.3) contained a lead concentration above the Generic Industrial Direct Contact Criteria. No exceedences of other C_{sat} or direct contact criteria or of Generic SWP GCC Criteria or Generic Industrial Soil Inhalation Criteria occurred.

Two subsurface samples (MW-2-7 and MW-3-7, both at 15 foot depth) were analyzed by the TCLP procedure for the closure analytes. The analytical results are shown in Table 4.10. The results indicate that these soils are not hazardous by the toxicity characteristic.

4.2.4 Groundwater Analytical Results

Six rounds of groundwater sampling were conducted from 1988 to 1991 as part of initial and additional closure activities. Analytical results for groundwater sampling are shown in Table 4.11. Well locations are shown on Figure 2.3. A summary of analytical results that exceeded the Part 201 Generic Groundwater Contact criteria is presented in Table 4.12.

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The organic compound most commonly detected (about one-half the time) was benzene; benzene was also detected at least once in 12 of the 14 wells sampled. Toluene and xylenes were also detected at least once in a majority of monitoring wells. The wells that most consistently had detections of benzene, toluene, and xylenes were MW-3, MW-9, and MW-12, and the soil vapor extraction wells SV-1 and SV-2. These wells are in locations or are close to soil boring locations that had detections of multiple organics, as discussed previously in the subsurface soils section. The other organic compounds were detected less frequently.

Total lead was detected in six of the 12 wells sampled, but was detected consistently only in MW-12 and SV-2. Dissolved lead was not detected in any wells sampled.

None of the groundwater concentrations exceeded the Generic Groundwater Contact Criteria.

Non-aqueous-phase liquid (NAPL) was identified in wells MW-6, MW-9, MW-11, MW-12, RW-1, SV-1, and SV-2 during some sampling events. This is described in detail in Section 4.4.

4.2.5 Summary of Closure Investigations

Closure activities at the hazardous waste storage pad included cleaning and sampling of the pad, and soil and groundwater sampling beneath and in the vicinity of the pad. Analytical results were compared to the closure criteria in the MDEQ-

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approved closure plan. Wipe samples, rinsate samples of the pad, and concrete core samples from the pad itself met closure criteria.

A number of soil and groundwater samples at various depths below the hazardous waste storage pad had concentrations of several organics and lead that exceeded the closure criteria. These compounds may not be related to hazardous waste storage activities at the storage pad. First, concrete pad samples were clean, indicating that at the locations tested, no hazardous wastes seeped through and entered the soil. Second, detected constituents were present at lower concentrations close to the pad than in deeper samples. Given the negligible chance of rainwater infiltration through the pad, any leak of contamination through the pad would be expected to remain near the surface. For example, Tables 4.13 and 4.14 show the concentrations of 2-butanone (MEK) and lead, respectively, over depth in soil borings. 2-butanone was generally present throughout these soil borings except at the 0 to 2 foot depth interval, closest to the pad. The highest concentration per boring occurred at the 10 foot, 15 foot, or 20 foot interval. Lead concentrations that exceeded the background concentration occurred at the 5 foot or 8 foot depth in five of the seven borings. Finally, the pad was built on top of the fill in an area that was historically used for containerized waste management activities. These residual concentrations are likely due to historic waste management activities which were conducted in the West Yard area.

Based on the sampling results collected at and around the storage pad, it appears infeasible to remediate the underlying soil and groundwater at the pad to the pad closure criteria. To develop a comprehensive program for both the pad and the immediately surrounding industrial area underlying it, GM agreed with the MDEQ to investigate the West Yard area to evaluate environmental conditions and assess the need to undertake appropriate response activities.

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4.3 WEST YARD INVESTIGATION ANALYTICAL RESULTS

The West Yard investigation was conducted by Parsons Engineering Science in 1995 and 1996. This section presents and discusses the analytical results from soil, groundwater, waste samples, and NAPL from locations spanning the West Yard.

4.3.1 Surface Soil Analytical Results

A total of 20 surface soil samples (0- to 6-inch depth) were collected from test trenches, soil borings, and monitoring wells installed during this investigation. Test trenches were excavated and soil borings (SB) were advanced to investigate known and suspected disposal areas and residue of past waste handling, treatment, and salvage activities. Select soil borings were converted to monitoring wells (MW and DW) to determine groundwater quality, and soil samples were collected as an additional investigation of possible contamination sources. Analytical results are presented in Table 4.15, and a summary of exceedences of Part 201 Soil Screening Criteria is given in Table 4.16.

4.3.1.1 Organic Compounds

Surface soil samples generally showed some evidence of several volatile organic compounds (VOCs), but at very low estimated concentrations (generally less than 100

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ppb). None of the VOC concentrations exceeded the soil screening criteria. The surface soil sample from SB5, located in a suspected refuse disposal area, contained the most VOCs (8), although at concentrations of 36 ppb or less. Surface soil samples from test trenches TT4 and TT5 contained six and seven VOCs, respectively, with acetone being present at the highest concentration. Test trenches were located in suspected disposal areas. The surface soil sample from MW-22, which was located next to a historic refuse disposal area, contained seven VOCs, but at higher concentrations (360 ppb or less) than in SB5. No VOCs were detected in the surface soil samples from SB3 and DW-16.

A variety of semivolatile organic compounds (SVOCs) were detected in most surface soil samples. No SVOCs were detected in SB5 and MW-20 surface soil samples. Concentrations were generally low (less than 0.5 ppm).

PCBs (Aroclors 1248 and 1254) were detected in six of the 20 surface soil samples: TT2 and TT4 in former disposal areas, SB3 located in a former refuse pit, MW-17 west of the Railroad Marshalling Area, and MW-22, located near the center of the site. A pesticide, methoxychlor, was detected in MW-18, located south of the foundry sand fill area.

Five surface soil samples (TT1, TT2, TT4, TT80 (duplicate of TT2), SB5) were analyzed for dioxins and found to contain trace levels.

No concentration of any organic compound in any surface soil sample exceeded any Part 201 soil screening criteria: Generic Industrial Direct Contact Criteria, Generic Soil Water Partitioning (SWP) Criteria, Generic Soil Saturation Screening Concentrations, or Generic Soil Inhalation Criteria.

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4.3.1.2 Inorganic Analytes

A range of inorganics were detected in surface soil samples. The only exceedences of Part 201 soil screening criteria that were found were for the Generic Particulate Soil Inhalation Criteria (PSIC) for the compound manganese in nine surface soil samples. Locations for the exceedences are shown on Figure 4.4. No other Part 201 soil screening criteria (Generic Industrial Direct Contact Criteria, Generic Soil Water Partitioning Criteria, Generic Soil Saturation Screening Concentrations, or Generic Soil Inhalation Criteria (except for manganese)) were exceeded.

4.3.2 Subsurface Soil Analytical Results

A total of 48 (including three duplicate) subsurface soil samples were collected from test trenches (TT), soil borings (SB and WD), and monitoring wells (MW and DW). Samples were collected from the fill and the underlying native soil. As discussed in the work plan, not all samples were analyzed for all analytes. Analytical results from subsurface soil samples are presented in Table 4.17, and a summary of Part 201 soil screening criteria exceedences is shown in Table 4.18.

4.3.2.1 Organic Compounds

Subsurface soil samples in fill and native soils generally contained very low levels of a few VOCs, with concentrations generally below 30 ug/kg. No VOC

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concentrations exceeded the screening criteria. Samples from four locations had relatively higher concentrations of VOCs: the 5 to 9 foot depth interval at TT3, the 4 to 6 foot depth interval at SB5, the 23 to 25 foot depth interval at MW-20, and the 16 to 18 foot depth interval at MW-22. VOCs in these samples included ethylbenzene, methylene, chloride, toluene, and xylenes.

Subsurface soil samples contained a range of SVOCs. Concentrations of SVOCs were highest (range 11,000 to 1,100,000 ug/kg) in the TT3 subsurface sample. All of the SVOCs detected in the subsurface soil samples from soil borings and monitoring wells were present at lower concentrations (generally less than 300 ppb).

PCBs (Aroclors 1248 and 1254) were detected in five subsurface samples (TT3 5 to 9 feet, TT4 3 to 10 feet, WD2 24 to 26 feet, MW-20 23 to 25 feet and duplicate sample, and MW-22 16 to 18 feet).

Eight subsurface soil samples (including one duplicate) were sampled for dioxins. Trace levels of dioxins were detected in five of the samples.

Exceedences of Part 201 soil screening criteria were limited. Test trench sample SBTT3 (3 to 9 foot depth) exceeded the Generic Soil Saturation Screening Concentration for butyl benzyl phthalate (Figure 4.2). The sample from MW-20 at a depth of 23 to 25 exceeded the Generic Industrial Direct Contact Criteria for PCBs (Figure 4.3). This sample interval was in the fill layer. Exposure to site workers via direct contact is highly unlikely due to the depth of the sample location. No other organic compound concentrations exceeded any other Part 201 soil screening criteria.

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4.3.2.2 Inorganic Analytes

Three subsurface soil samples had concentrations of one or more inorganics that exceeded Generic Direct Contact Industrial Criteria (Figure 4.3). Samples collected at the 4 to 6 foot interval at SB5, located in fill, barely exceeded the criteria for antimony and lead. The 24 to 28 foot interval at WD2, located in clay, and the 16 to 18 foot internal at MW-22, located in fill, contained approximately three times the criteria for lead. Due to the depth of these exceedences, there is very limited potential for exposure via direct contact.

Seven subsurface samples (locations shown on Figure 4.4) exceeded the Generic Particulate Soil Inhalation Criteria for manganese.

No other inorganic concentrations exceeded other Generic Industrial Direct Contact Criteria or other Generic Soil Inhalation Criteria. Generic Soil Water Partitioning Criteria and Generic Soil Saturation Screening Concentrations are not applicable to inorganic constituents.

4.3.3 Groundwater Analytical Results

Two rounds of groundwater sampling were conducted during January and February, 1996. All the new monitoring wells (MW/DW-16 through 20, DW-21, and MW/DW-22) were sampled during Rounds 1 and 2 (except DW-18 and MW/DW-19 which were not sampled in Round 2). Existing monitoring wells MW-5, and MW-7 were also sampled during Rounds 1 and 2. Existing MW-8 was sampled once in

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March, 1996. A third round of sampling for dioxins only was conducted on monitoring wells near the property boundary in September, 1996. In accordance with the work plan, not all groundwater samples were analyzed for the same parameters (see Table 2.3). Analytical results for groundwater are summarized in Table 4.19. A summary of exceedences of Generic Groundwater Contact (GCC) criteria is presented in Table 4.20.

4.3.3.1 Organic Compounds

One or more VOCs were detected in all but two of the monitoring wells (MW-18, MW-19) sampled in 1996. Concentrations of the VOC constituents detected were generally less than 10 ug/L. MW-20 and DW-20 had relatively higher concentrations (less than 310 ug/L) for three VOCs (chloroethane, 1,1-dichloroethane, and vinyl chloride).

SVOCs were detected sporadically in nine monitoring wells. Concentrations were generally low (less than 15 ppb).

PCBs (Aroclors 1221, 1248 or 1254) were detected in five wells (MW/DW-20, DW-21, DW-22, MW-8). The occurrence of PCBs was limited and sporadic, and PCBs do not appear to have migrated to the West Yard boundary.

Low levels of dioxins were detected in one nested well pair (MW/DW-20), shallow wells (MW-22 and MW-23) and the West Yard upgradient well DW-21). Trace levels of dioxins were detected in one other nested pair (MW/DW-17).

The only exceedences of the Part 201 Generic Groundwater Contact Criteria were for PCBs in two monitoring wells. One exceedence was in the site upgradient well DW-21, and the other exceedences were in shallow monitoring well MW-20 near the railroad tracks south of the Former Compressor Building (Figure 4.5). No other organic compound concentrations exceeded the GCC.

4.3.3.2 Inorganic Analytes

A range of inorganics was detected in West Yard monitoring wells. No patterns of occurrence was recognizable based on location or screen depth. None of the detections exceeded the Part 201 GCC.

4.4 NAPL INVESTIGATION

NAPL was discovered in seven wells during 1990 closure activities at the storage pad: MW-6, MW-9, MW-11, MW-12, SV-1, SV-2, and RW-1 (see Table 2.4 for NAPL thickness). Samples of NAPL from wells SV-1 (north end of pad) and SV-2 (south end of pad) and samples of lubricating oils used at the site were analyzed by Infrared (IR) scan and compared. The IR scans indicated that the NAPL in the wells was not similar in composition to the lubricating oils or to each other. It could not be concluded, however, whether the observed differences were the result of different sources or natural weathering of the material by the environment. The presence of NAPL at the northern end of the pad (SV-1, RW) may be related to waste management activities at and in the vicinity of the Salvage Building.

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NAPL was present in three wells in January 1996. The thickness of NAPL in MW-6 was 9.2 feet, MW-13 was 1.9 feet, and MW-3 was 0.7 feet. The NAPL investigation associated with the West Yard activities included analysis of material collected from MW-6 and MW-13, and installation of 16 soil borings in the vicinity of those wells to visually inspect for the presence of NAPL. No wells were available to check for NAPL in the northern end of the pad in 1996, where it had been present in 1990.

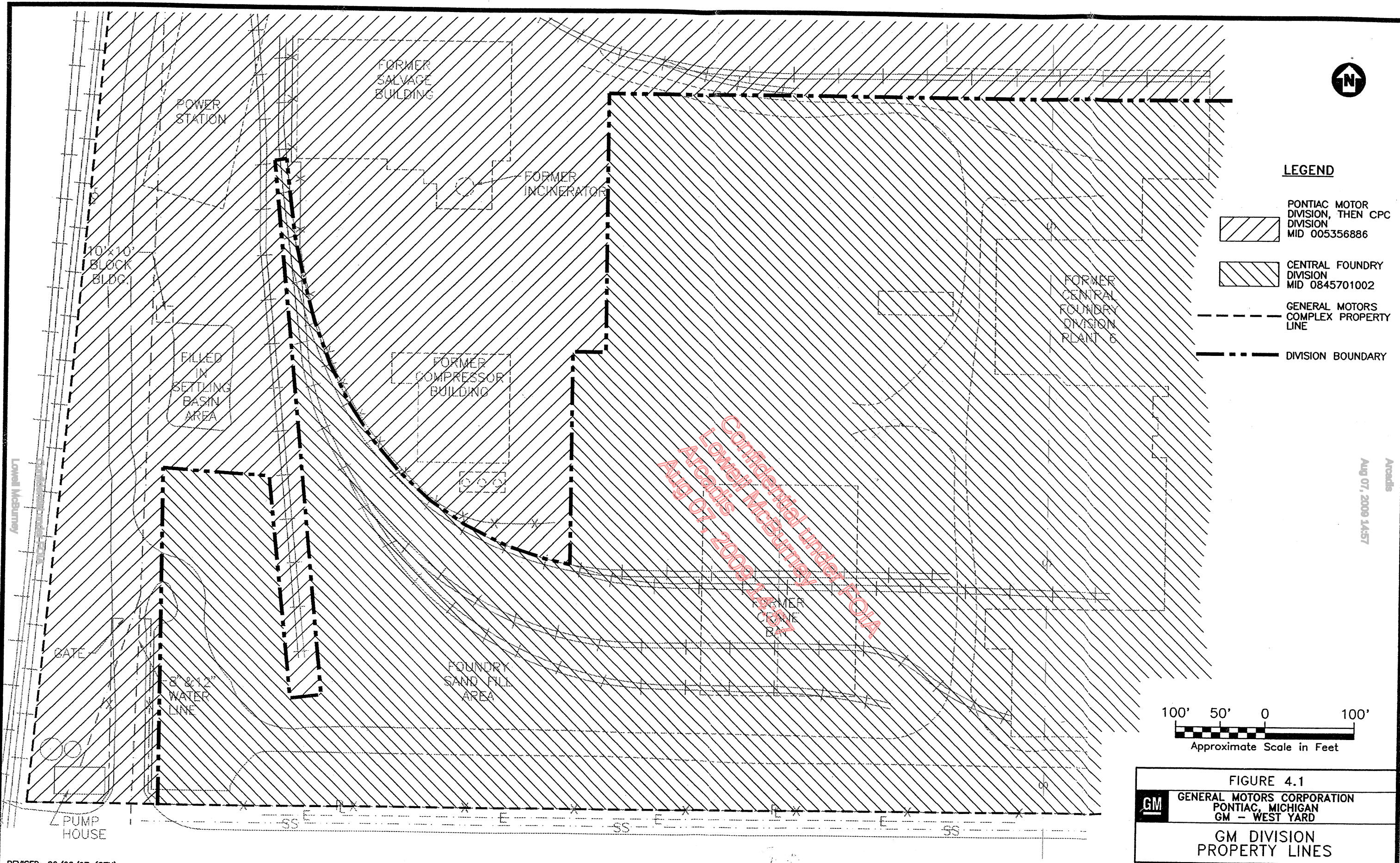
Analytical results from product sampling are presented in Table 4.21. The product sample from MW-13 contained several volatile organics. No volatile organics were detected in the product sample from MW-6. No polynuclear aromatic hydrocarbons were detected in either sample. PCBs were detected in the product from both wells, but the aroclor and concentrations were different. The MW-6 product contained 244,000 ug/L of Aroclor 1248 while the MW-13 product had 28,200 ug/L Aroclor 1254. The fingerprint analyses indicate that the product in both wells is made up of motor oil mixed with a small amount of diesel fuel (MW-6), and gasoline and fuel oil components (MW-13).

The visual inspection of Geoprobe™ soil borings resulted in a delineation of a very limited area around MW-6 and MW-13 in which a sheen was observed (Figure 4.6). The soil borings nearest the northern end of the pad, where NAPL had been present in 1990, did not show any presence of NAPL. Based on the delineation of two separate, small areas and the differences in VOCs and PCBs detected in the two product samples, it appears that there are two separate areas of product. The NAPL occurs in limited areas, and does not appear to be migrating to any extent.

NAPL (0.3 foot thickness) was present in MW-22 during groundwater sampling conducted in September 1996; it was not present in January and February 1996 sampling. MW-22 is located next to a former waste disposal area in the West Yard.

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Xref. or Views: GMSITE-100XP
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FIGURE 4.1

GM GENERAL MOTORS CORPORATION
PONTIAC, MICHIGAN
GM - WEST YARD

GM DIVISION PROPERTY LINES

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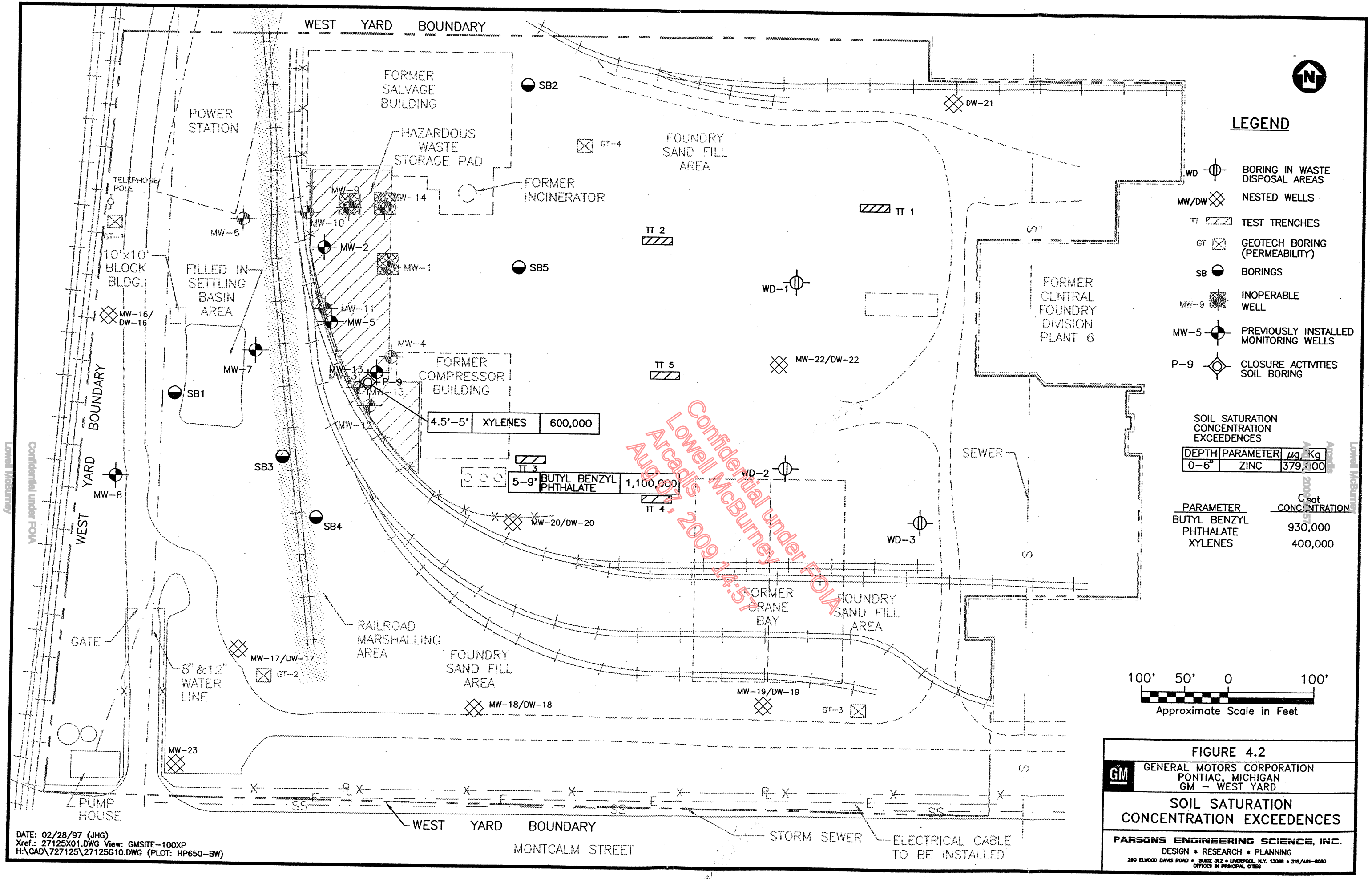


FIGURE 4.2

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PONTIAC, MICHIGAN
GM - WEST YARD

SOIL SATURATION CONCENTRATION EXCEEDENCES

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WEST YARD BOUNDARY

FORMER SALVAGE BUILDING

HAZARDOUS WASTE STORAGE PAD

FORMER INCINERATOR

POWER STATION

FOUNDRY SAND FILL AREA

TELEPHONE POLE

GT-1

10'x10' BLOCK BLDG.

FILLED IN SETTLING BASIN AREA

MW-16/DW-16

MW-6

MW-9

MW-14

MW-10

P-9

MW-2

MW-1

MW-11

MW-5

MW-4

MW-3

MW-13

MW-7

SB1

SB2

GT-4

4.5'-5' | LEAD | 590,000

SB5

4-6'	ANTIMONY	1,740,000
4-6'	LEAD	573,000

TT 1

TT 2

TT 5

WD-1

MW-22/DW-22

16-18'	LEAD	1,350,000

DW-21

FORMER CENTRAL FOUNDRY DIVISION PLANT 6

SEWER

SB3

TT 3

TT 4

WD-2

24'-26'	LEAD	1,300,000

MW-20/DW-20

23-25'	PCBs	38,000 43,000 (DUP)

SB4

WD-3

WEST YARD BOUNDARY

MW-8

GATE

8" &12" WATER LINE

MW-17/DW-17

GT-2

RAILROAD MARSHALLING AREA

FOUNDRY SAND FILL AREA

FORMER CRANE BAY

FOUNDRY SAND FILL AREA

MW-18/DW-18

MW-19/DW-19

GT-3

MW-23

PUMP HOUSE

WEST YARD BOUNDARY

STORM SEWER

ELECTRICAL CABLE TO BE INSTALLED

MONTCALM STREET

N

LEGEND

- WD — BORING IN WASTE DISPOSAL AREAS
- MW/DW — NESTED WELLS
- TT — TEST TRENCHES
- GT — GEOTECH BORING (PERMEABILITY)
- SB — BORINGS
- MW-9 — INOPERABLE WELL
- MW-5 — PREVIOUSLY INSTALLED MONITORING WELLS
- P-9 — CLOSURE ACTIVITIES SOIL BORING

SOIL DIRECT CONTACT CRITERIA EXCEEDENCES

DEPTH	PARAMETER	µg/Kg
0-6"	LEAD	579,000

PARAMETER	GENERIC INDUSTRIAL DIRECT CONTACT CRITERIA µg/Kg
ANTIMONY	1,600,000
LEAD	400,000
PCBs	21,000

100' 50' 0 100'

Approximate Scale in Feet

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Xref.: 27125X01.DWG View: GMSITE-100XP
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FIGURE 4.3

GENERAL MOTORS CORPORATION
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SOIL DIRECT CONTACT CRITERIA EXCEEDENCES

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WEST YARD BOUNDARY

FORMER SALVAGE BUILDING

POWER STATION

HAZARDOUS WASTE STORAGE PAD

FORMER INCINERATOR

FOUNDRY SAND FILL AREA

FORMER CENTRAL FOUNDRY DIVISION PLANT 6

TELEPHONE POLE

GT-1

10'x10' BLOCK BLDG.

FILLED IN SETTLING BASIN AREA

MW-16/ DW-16

MW-6

MW-9

MW-14

MW-10

P-9

MW-2

MW-1

MW-11

MW-5

MW-4

MW-3

MW-13

MW-12

MW-7

SB1
0–0.5' MANGANESE 1,760,000

SB2
0–0.5' MANGANESE 870,000

GT-4

DW-21

TT 1
0–0.5' MANGANESE 2,080,000
10–15' MANGANESE 894,000

TT 2
0–0.5' MANGANESE 2,040,000

SB5
4–6' MANGANESE 3,510,000

WD-1
14–16' MANGANESE 936,000

0–0.5' MANGANESE 4,580,000
16–18' MANGANESE 3,900,000
MW-22/DW-22

TT 5
0–0.5' MANGANESE 4,600,000
1,530,000(DUP)
3–5' MANGANESE 1,790,000

SB3

TT 3
5–9' MANGANESE 1,990,000

WD-2

TT 4
0–0.5' MANGANESE 4,490,000
3–10' MANGANESE 1,690,000

MW-20/DW-20

SB4
0–0.5' MANGANESE 2,430,000

WD-3

MW-8

BOUNDARY

YARD

WEST

SEWER

GATE

8" &12" WATER LINE

MW-17/DW-17

GT-2

RAILROAD MARSHALLING AREA

FOUNDRY SAND FILL AREA

FORMER CRANE BAY

FOUNDRY SAND FILL AREA

MW-18/DW-18
0–0.5' MANGANESE 991,000

MW-19/DW-19

GT-3

MW-23

PUMP HOUSE

WEST YARD BOUNDARY

MONTCALM STREET

STORM SEWER

ELECTRICAL CABLE TO BE INSTALLED

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Xref.: 27125X01.DWG View: GMSITE-100XP
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LEGEND

- WD — BORING IN WASTE DISPOSAL AREAS
- MW/DW — NESTED WELLS
- TT — TEST TRENCHES
- GT — GEOTECH BORING (PERMEABILITY)
- SB — BORINGS
- MW-9 — INOPERABLE WELL
- MW-5 — PREVIOUSLY INSTALLED MONITORING WELLS
- P-9 — CLOSURE ACTIVITIES SOIL BORING

SOIL INHALATION CRITERIA EXCEEDENCES

DEPTH	PARAMETER	µg/Kg
0–6"	MANGANESE	579,000

PARTICULATE SOIL INHALATION CRITERIA (20 ACRE SOURCE)

PARAMETER	(20 ACRE SOURCE)
MANGANESE	850,000

100' 50' 0 100'
Approximate Scale in Feet

FIGURE 4.4

GM GENERAL MOTORS CORPORATION
PONTIAC, MICHIGAN
GM – WEST YARD

SOIL INHALATION CRITERIA EXCEEDENCES

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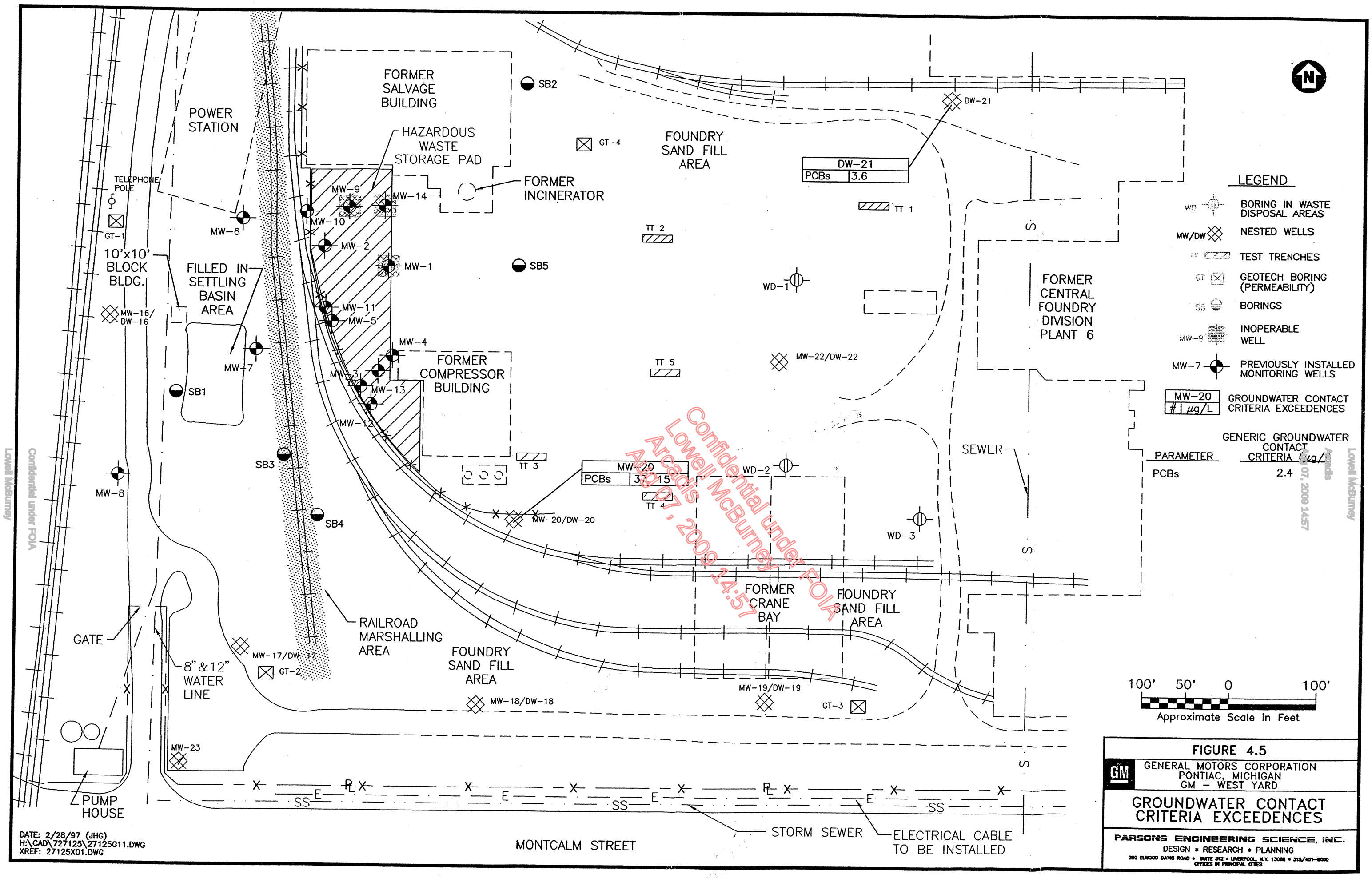


FIGURE 4.5

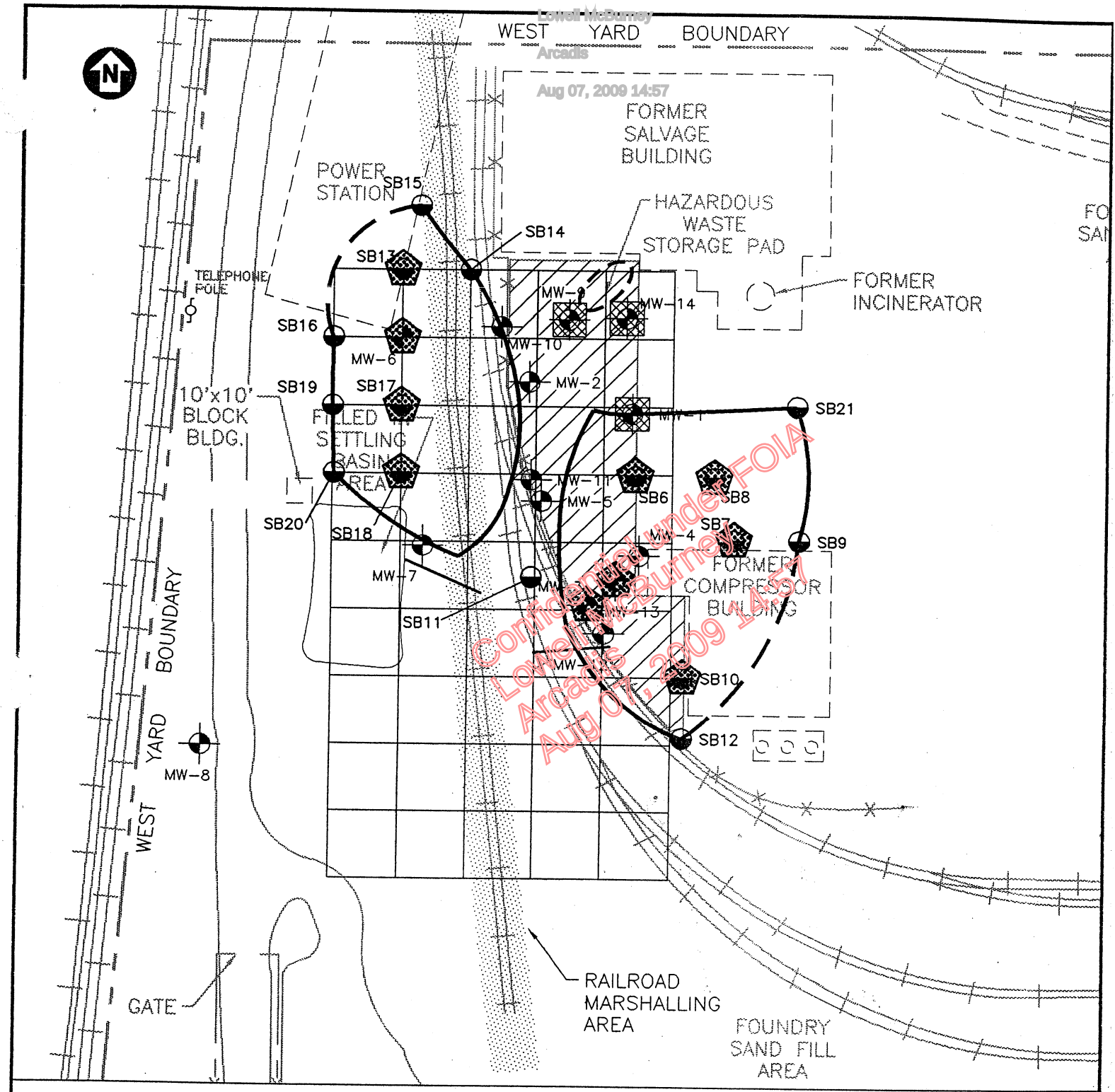
GENERAL MOTORS CORPORATION
PONTIAC, MICHIGAN
GM – WEST YARD

GROUNDWATER CONTACT CRITERIA EXCEEDENCES

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100' 50' 0 100'
Approximate Scale in Feet

LEGEND

- MW-5 — EXISTING WELLS
- MW-1 — INOPERABLE WELLS
- SB16 — NAPL SOIL BORING
- NO OIL SHEEN/NAPL
- NAPL OBSERVED DURING CLOSURE ACTIVITIES
- OIL SHEEN/NAPL OBSERVED/MEASURED

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XREF: 27125X01.DWG

FIGURE 4.6

GENERAL MOTORS CORPORATION
PONTIAC, MICHIGAN
GM – WEST YARD

NAPL INVESTIGATION SOIL INSPECTION RESULTS

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TABLE 4.1
WEST YARD INVESTIGATION
GM, PONTIAC, MICHIGAN
PART 201 GENERIC SOIL SCREENING CRITERIA

CAS NO.	COMPOUND	UNITS	GENERIC INDUSTRIAL DIRECT CONTACT CRITERIA (1997a)	GENERIC SWP GCC CRITERIA (1997c)	GENERIC SOIL SATURATION SCREENING CONCENTRATIONS (Csat) (1997b)	GENERIC INDUSTRIAL SOIL INHALATION CRITERIA (1997d) 20 ACRE SITE SOURCE	
						VOLATILE	PARTICULATE
	VOLATILES						
67-64-1	Acetone	UG/KG	74,000,000	52,000,000	64,000,000	110,000,000	100,000,000,000
71-43-2	Benzene	UG/KG	850,000	35,000	770,000	16,500	140,000,000
78-93-3	2-Butanone (MEK)	UG/KG	1,000,000,000	420,000,000	17,000,000	250,000	17,500,000,000
75-15-0	Carbon disulfide	UG/KG	82,000,000	4,800,000	560,000	1,250,000	12,000,000,000
106-46-7	1,4-Dichlorobenzene	UG/KG	1,000,000	60,000	NC	95,000	1,650,000,000
75-34-3	1,1-Dichloroethane	UG/KG	89,000,000	5,500,000	1,100,000	26,500,000	140,000,000,000
100-41-4	Ethylbenzene	UG/KG	72,000,000	2,300,000	380,000	8,000,000	17,500,000,000
591-78-6	2-Hexanone	UG/KG	100,000,000	NC	10,000,000	NC	850,000,000
108-10-1	4-Methyl-2-pentanone (MIBK)	UG/KG	37,000,000	5,200,000	3,000,000	38,000,000	35,500,000,000
75-09-2	Methylene chloride	UG/KG	3,300,000	240,000	2,400,000	255,000	2,450,000,000
127-18-4	Tetrachloroethene	UG/KG	490,000	37,000	210,000	220,000	2,000,000,000
108-88-3	Toluene	UG/KG	160,000,000	4,100,000	620,000	2,350,000	7,000,000,000
79-01-6	Trichloroethene	UG/KG	1,600,000	82,000	1,200,000	95,000	700,000,000
75-01-4	Vinyl chloride	UG/KG	11,000	980	800,000	19,500	435,000,000
1330-20-7	Xylenes (total)	UG/KG	1,000,000,000	2,400,000	400,000	38,500,000	75,000,000,000
156-59-2	cis-1,2-Dichloroethene	UG/KG	8,000,000	510,000	1,000,000	34,500,000	135,000,000,000
	SEMIVOLATILES						
83-32-9	Acenaphthene	UG/KG	810,000,000	970,000	NC	70,000,000	3,650,000,000
208-96-8	Acenaphthylene	UG/KG	16,000,000	NC	NC	NC	600,000,000
120-12-7	Anthracene	UG/KG	1,000,000,000	41,000	NC	1,150,000,000	17,500,000,000
56-55-3	Benzo(a)anthracene	UG/KG	210,000	NC	NC	NC	NC
50-32-8	Benzo(a)pyrene	UG/KG	21,000	NC	NC	600,000	550,000
205-99-2	Benzo(b)fluoranthene	UG/KG	2,100,000	NC	NC	NC	NC
191-24-2	Benzo(ghi)perylene	UG/KG	16,000,000	NC	NC	NC	205,000,000
207-08-9	Benzo(k)fluoranthene	UG/KG	2,100,000	NC	NC	NC	NC
85-68-7	Butyl benzyl phthalate	UG/KG	720,000,000	5,900,000	930,000	8,500,000,000	12,000,000,000
86-74-8	Carbazole	UG/KG	NC	21,000	NC	NC	NC
218-01-9	Chrysene	UG/KG	21,000,000	NC	NC	NC	NC
84-74-2	Di-n-butyl phthalate	UG/KG	540,000,000	12,000,000	2,300,000	600,000,000	1,700,000,000
117-84-0	Di-n-octyl phthalate	UG/KG	81,000,000	190,000,000	430,000,000	NC	NC
53-70-3	Dibenz(a,h)anthracene	UG/KG	21,000	NC	NC	NC	NC
132-64-9	Dibenzofuran	UG/KG	NC	NC	NC	NC	NC
105-67-9	2,4-Dimethylphenol	UG/KG	230,000,000	3,700,000	NC	28,000,000	1,200,000,000
206-44-0	Fluoranthene	UG/KG	540,000,000	710,000	NC	650,000,000	2,400,000,000
86-73-7	Fluorene	UG/KG	540,000,000	880,000	NC	105,000,000	2,400,000,000
193-39-5	Indeno(1,2,3-cd)pyrene	UG/KG	210,000	NC	NC	NC	NC
91-57-6	2-Methylnaphthalene	UG/KG	NC	1,600,000	NC	NC	NC
95-48-7	2-Methylphenol	UG/KG	37,000,000	2,200,000	NC	20,500,000	1,750,000,000
108-39-4	3-Methylphenol	UG/KG	230,000,000	2,400,000	7,400,000	NC	NC
106-44-5	4-Methylphenol	UG/KG	23,000,000	2,300,000	NC	NC	NC
91-20-3	Naphthalene	UG/KG	160,000,000	2,000,000	NC	11,500,000	2,400,000,000
76-01-7	Pentachloroethane	UG/KG	NC	NC	NC	NC	NC
85-01-8	Phenanthrene	UG/KG	16,000,000	950,000	NC	NC	34,500,000
108-95-2	Phenol	UG/KG	450,000,000	64,000,000	140,000,000	140,000,000	10,500,000,000
129-00-0	Pyrene	UG/KG	340,000,000	450,000	NC	550,000,000	1,750,000,000
117-81-7	bis(2-Ethylhexyl) phthalate	UG/KG	11,000,000	NC	31,000,000	2,400,000,000	260,000,000

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TABLE 4.1
WEST YARD INVESTIGATION
GM, PONTIAC, MICHIGAN
PART 201 GENERIC SOIL SCREENING CRITERIA

CAS NO.	COMPOUND	UNITS	GENERIC INDUSTRIAL DIRECT CONTACT CRITERIA (1997a)	GENERIC SWP GCC CRITERIA (1997c)	GENERIC SOIL SATURATION SCREENING CONCENTRATIONS (Csat) (1997b)	GENERIC INDUSTRIAL SOIL INHALATION CRITERIA (1997d) 20 ACRE SITE SOURCE	
						VOLATILE	PARTICULATE
	PESTICIDES/PCBs						
72-43-5	Methoxychlor	UG/KG	23,000,000	140,000	NC	NC	NC
TPCBS	Total PCBs	UG/KG	21,000	NC	NC	NC	1,150,000
	DIOXINS						
TDIOXINS	Total TEFs	UG/KG	0.99	NC	NC	32	26
	INORGANICS						
7429-90-5	Aluminum	UG/KG	NC	NC	NC	NC	NC
7440-36-0	Antimony	UG/KG	1,600,000	54,000,000	NC	NC	24,000,000
7440-38-2	Arsenic	UG/KG	83,000	2,200,000	NC	NC	270,000
7440-39-3	Barium	UG/KG	320,000,000	NC	NC	NC	85,000,000
7440-41-7	Beryllium	UG/KG	35,000	21,000,000	NC	NC	480,000
7440-43-9	Cadmium	UG/KG	2,300,000	130,000,000	NC	NC	650,000
7440-70-2	Calcium	UG/KG	NC	NC	NC	NC	NC
7440-47-3	Chromium (III)	UG/KG	22,000,000	310,000,000	NC	NC	34,500,000
7440-48-4	Cobalt	UG/KG	23,000,000	NC	NC	NC	3,540,000
7440-50-8	Copper	UG/KG	170,000,000	NC	NC	NC	34,500,000
7439-89-6	Iron	UG/KG	NC	NC	NC	NC	NC
7439-92-1	Lead	UG/KG	400,000	NC	NC	NC	26,000,000
7439-95-4	Magnesium	UG/KG	1,000,000,000	NC	NC	NC	1,750,000,000
7439-96-5	Manganese	UG/KG	22,000,000	NC	NC	NC	850,000
7439-97-6	Mercury	UG/KG	1,000,000	47,000	NC	NC	5,000,000
7440-02-0	Nickel	UG/KG	340,000,000	NC	NC	NC	4,800,000
7440-09-7	Potassium	UG/KG	NC	NC	NC	NC	NC
7782-49-2	Selenium	UG/KG	23,000,000	50,000,000	NC	NC	34,500,000
7440-22-4	Silver	UG/KG	21,000,000	230,000,000	NC	NC	1,750,000
7440-23-5	Sodium	UG/KG	1,000,000,000	NC	NC	NC	NC
7440-31-5	Tin	UG/KG	NC	NC	NC	NC	NC
7440-62-2	Vanadium	UG/KG	39,000,000	NC	NC	NC	NC
7440-66-6	Zinc	UG/KG	1,030,000,000	NC	NC	NC	NC
57-12-5	Cyanide	UG/KG	99,000,000	NC	NC	NC	850,000,000
	OTHER						
18496-25-8	Sulfide	UG/KG	NC	NC	NC	NC	NC
10-31-1	Total Solids	%	NC	NC	NC	NC	NC

NC - No Criteria

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TABLE 4.2
WEST YARD INVESTIGATION
GM, PONTIAC, MICHIGAN
STORAGE PAD CLOSURE CRITERIA

Compounds	Criteria to be Met to Achieve Closure	
	Soil ug/Kg	Water ug/L
ORGANICS		
Benzene	< 2,000	< 2.0
Toluene	< 2,000	< 2.0
Xylenes	< 2,000	< 2.0
1,1,1-Trichloroethane	< 300	< 2.0
Methylene Chloride	< 2,000	< 2.0
2-Butanone (MEK)	< 50,000	< 50.0
1-Butanol	< 500,000	< 500.0
INORGANICS		
Lead	67,000	50.0

(1) Based on statistical analysis of lead analytical results in soil background samples.

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TABLE 4.3
WEST YARD INVESTIGATION
GM, PONTIAC, MICHIGAN
CLOSURE WIPE SAMPLE ANALYTICAL RESULTS

Compound	Units	Sample ID											
		BKGD	W-1	W-2	W-2A	W-3	W-3A	W-4	W-4A	W-5A	W-5B	W-6A	W-6B
ORGANICS													
Benzene	ug/wipe	---	---	---	---	---	---	---	---	---	---	---	---
Toluene	ug/wipe	---	---	---	---	---	---	---	---	---	---	---	---
Xylenes	ug/wipe	---	---	---	---	---	---	---	---	---	---	---	---
1,1,1-Trichloroethane	ug/wipe	---	---	---	---	---	---	---	---	---	---	---	---
Methylene Chloride	ug/wipe	---	---	---	---	---	---	---	---	---	---	---	---
2-Butanone (MEK)	ug/wipe	---	---	---	---	---	---	---	---	---	---	---	---
1-Butanol	ug/wipe	---	---	---	---	---	---	---	---	---	---	---	---
INORGANICS													
Lead	ug/wipe	<50	200	---	---	---	---	---	---	100		---	

See Figure 2.1 for sample locations.
--- Not Detected

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TABLE 4.4
WEST YARD INVESTIGATION
GM, PONTIAC, MICHIGAN
CLOSURE RINSATE SAMPLE ANALYTICAL RESULTS

Compounds	Units	Sample ID				
		R-1(1)	R-2(2)	H.W. Bldg.	Sewer	Pad
ORGANICS						
Benzene	ug/L	---	---	---	14	---
Toluene	ug/L	12	---	2	1400	22
Xylenes	ug/L	39	---	---	160	14
1,1,1-Trichloroethane	ug/L	---	---	---	210	1
Methylene Chloride	ug/L	---	---	4	70	4
2-Butanone (MEK)	ug/L	---	---	---	---	---
1-Butanol	ug/L	---	---	---	---	---
INORGANICS						
Lead	ug/L	---	<50		70	<50

See Figure 2.1 for sample locations.

--- Not Detected

(1) Rinsate sample from hazardous waste storage building.

(2) Sample of water used for washing pad.

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TABLE 4.5
WEST YARD INVESTIGATION
GM, PONTIAC, MICHIGAN
CLOSURE CONCRETE CORE SAMPLE ANALYTICAL RESULTS

Compound	Units	Sample ID											
		CC-1	CC-2	CC-3	CC-4	CC-5	CC-6	CC-7	CC-8	CC-9	CC-10	CC-11	CC-12
ORGANICS													
Benzene	ug/Kg	---	---	---	---	---	---	---	---	---	---	---	---
Toluene	ug/Kg	---	---	---	---	---	---	---	---	---	---	---	---
Xylenes	ug/Kg	---	---	---	---	---	---	---	---	---	---	---	---
1,1,1-Trichloroethane	ug/Kg	---	---	---	---	---	---	---	---	---	---	---	---
Methylene Chloride	ug/Kg	---	---	---	---	---	---	---	---	---	---	---	---
2-Butanone (MEK)	ug/Kg	---	---	---	---	---	---	---	---	---	---	---	---
1-Butanol	ug/Kg	---	---	---	---	---	---	---	---	---	---	---	---
INORGANICS													
Lead	ug/Kg	2500	---	3500	4700	4500	3000	2400	---	---	4900	3900	3300

See Figure 2.1 for sample locations.
--- Not Detected

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TABLE 4.6
WEST YARD INVESTIGATION
GM, PONTIAC, MICHIGAN
CLOSURE SURFACE SOIL ANALYTICAL RESULTS

Compound	Sample ID [1]: / Depth (Ft.): / Units	BK-1 0-1	BK-2 0-1	BK-3 0-1	BK-4 0-1	P-1 0-1	P-2 0-1	P-3 0-1	P-4 0-1	P-5 0-1	P-6 0-1	P-7 0-1	P-8 0-1	P-9 0-1	P-10 0-1	P-11 0-1	P-12 0-1	RW-1A 0-2
ORGANICS																		
Benzene	ug/Kg		-	-	-	-	3,000	-	-	-	-	-	-	-	-	-	-	40
Toluene	ug/Kg		-	-	-	-	100,000	-	-	-	-	8,000	-	5,000	19,000	-	5,000	850
Xylenes	ug/Kg		-	-	-	-	140,000	-	-	-	-	32,000	-	-	63,000	-	36,000	50
1,1,1-Trichloroethane	ug/Kg		-	-	-	-	240,000	-	-	-	-	-	-	-	-	-	-	-
Methylene Chloride	ug/Kg		9,000	3,000	-	-	16,000	-	44,000	-	3,000	-	4,000	5,000	8,000	-	16,000	-
2-Butanone (MEK)	ug/Kg		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2,300
1-Butanol	ug/Kg		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
INORGANICS																		
Lead	ug/Kg	71,000	19,000	14,000	23,000	5,700	93,000	3,100	57,000	100,000	2,000	29,000	5,500	18,000	50,000	12,000	5,600	251,000
Arsenic	ug/Kg	5,500	3,200	3,200	4,600													
Barium	ug/Kg	4,200	40,000	88,000	100,000													
Cadmium	ug/Kg	800	-	-	4,100													
Chromium	ug/Kg	19,000	22,000	35,000	48,000													
Copper	ug/Kg	28,000	25,000	27,000	84,000													
Mercury	ug/Kg	60	-	40	40													
Selenium	ug/Kg	-	-	-	-													
Silver	ug/Kg	-	-	-	-													
Zinc	ug/Kg	320,000	38,000	19,000	94,000													

- Not Detected
(1) Sample Identifiers: BK - background
P - pad
RW - recovery well

BK sample locations shown on Figure 2.2.
P sample locations (indicated by number only) shown on Figure 2.1.
RW sample locations shown on Figure 2.3.

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TABLE 4.7
WEST YARD INVESTIGATION
GM, PONTIAC, MICHIGAN
PART 201 SOIL SCREENING CRITERIA EXCEEDENCES - CLOSURE SURFACE SOIL SAMPLES

Compounds	Units	Maximum Concentration	Average Detected Concentration[1]	No. Exceedences[2] / No. Locations	Location of Exceedences
ORGANICS					
Benzene	ug/Kg	3,000	1,500	0/17	None
Toluene	ug/Kg	100,000	23,000	0/17	None
Xylenes	ug/Kg	140,000	54,000	0/17	None
1,1,1-Trichloroethane	ug/Kg	240,000	240,000	0/17	None
Methylene Chloride	ug/Kg	44,000	12,000	0/17	None
2-Butanone (MEK)	ug/Kg	2,300	2,300	0/17	None
1-Butanol	ug/Kg	---	---	0/17	None
INORGANICS					
Lead	ug/Kg	251,000	45,000	0/17	None
Arsenic	ug/Kg	5,500	4,100	0/4	None
Barium	ug/Kg	100,000	68,000	0/4	None
Cadmium	ug/Kg	4,100	1,900	0/4	None
Chromium	ug/Kg	48,000	31,000	0/4	None
Copper	ug/Kg	84,000	41,000	0/4	None
Mercury	ug/Kg	60	47	0/4	None
Selenium	ug/Kg	400	400	0/4	None
Silver	ug/Kg	900	900	0/4	None
Zinc	ug/Kg	320,000	120,000	0/4	None

--- Not Detected

Sample locations shown on Figures 2.1, 2.2, and 2.3.

(1) Average concentration calculated using detected values only.

(2) See Table 4.5 for Part 201 soil screening criteria values.

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TABLE 4.8
WEST YARD INVESTIGATION
GM, PONTIAC, MICHIGAN
CLOSURE SUBSURFACE SOIL SAMPLE ANALYTICAL RESULTS

Compounds	Sample ID: Depth (ft.):	BK-1-2 2-3	BK-1-3 3-4	BK-1-4 4-5	BK-1-5 5-6	BK-2-2 2-3	BK-2-3 3-4	BK-2-4 4-5	BK-2-5 5-6	BK-3-2 2-3	BK-3-3 3-4
	Units										
ORGANICS											
Benzene	ug/Kg	-	-	-	-	-	-	-	-	-	-
Toluene	ug/Kg	-	4,000	-	-	-	-	-	-	-	-
Xylenes	ug/Kg	-	-	-	-	-	-	-	-	-	-
1,1,1-Trichloroethane	ug/Kg	-	-	-	-	-	-	-	-	-	-
Methylene Chloride	ug/Kg	-	-	-	-	6,000	-	3,000	-	-	-
2-Butanone (MEK)	ug/Kg	-	-	-	-	-	-	-	-	-	-
1-Butanol	ug/Kg	-	-	-	-	-	-	-	-	-	-
Ethylbenzene	ug/Kg										
INORGANICS											
Lead	ug/Kg	22,000	26,000	28,000	7,400	9,400	3,900	4,700	18,000	8,800	2,500
Arsenic	ug/Kg	4,800	4,500	6,000	3,500	3,500	4,300	1,800	3,600	9,800	1,400
Barium	ug/Kg	89,000	73,000	37,000	22,000	22,000	27,000	14,000	32,000	18,000	8,900
Cadmium	ug/Kg	600	600	-	-	500	-	-	-	800	800
Chromium	ug/Kg	33,000	39,000	13,000	18,000	36,000	32,000	7,700	30,000	13,000	4,500
Copper	ug/Kg	28,000	38,000	15,000	21,000	18,000	33,000	9,800	35,000	9,100	3,900
Mercury	ug/Kg	110	30	30	-	20	110	-	-	20	20
Selenium	ug/Kg	900	-	300	-	-	-	-	-	400	400
Silver	ug/Kg	-	-	-	-	-	-	-	-	900	900
Zinc	ug/Kg	77,000	74,000	23,000	17,000	20,000	10,000	8,300	16,000	8,300	6,600

- Not Detected
See Figure 2.2 for sample locations.

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TABLE 4.8 (CONTINUED)
WEST YARD INVESTIGATION
GM, PONTIAC, MICHIGAN
CLOSURE SUBSURFACE SOIL SAMPLE ANALYTICAL RESULTS

Compounds	Sample ID: / Depth (ft.):	BK-3-4 3.5-4	BK-3-5 4.5-5	BK-4-2 1.5-2	BK-4-3 2.5-3	BK-4-4 3.5-4	BK-4-5 4.5-5	P-1-2 1.5-2	P-1-5 4.5-5	P-1-6 9.5-10	P-1-7 14.5-15	P-1-8 19.5-20
	Units											
ORGANICS												
Benzene	ug/Kg	-	-	-	-	-	-	-	-	-	-	-
Toluene	ug/Kg	-	-	3,000	-	-	-	-	-	-	-	-
Xylenes	ug/Kg	-	-	10,000	-	-	-	-	-	-	-	-
1,1,1-Trichloroethane	ug/Kg	-	-	-	-	-	-	-	-	-	-	-
Methylene Chloride	ug/Kg	-	-	-	-	-	-	-	-	-	-	-
2-Butanone (MEK)	ug/Kg	-	-	-	-	-	-	5,000	-	5,000	-	-
1-Butanol	ug/Kg	-	-	-	-	-	-	-	88,000	97,000	68,000	70,000
Ethylbenzene	ug/Kg											
INORGANICS												
Lead	ug/Kg	3,200	2,000	40,000	28,000	19,000	24,000	57,000	5,500	3,200	2,900	2,000
Arsenic	ug/Kg	3,200	1,900	11,000	3,300	4,400	3,600					
Barium	ug/Kg	18,000	17,000	270,000	140,000	200,000	150,000					
Cadmium	ug/Kg	800	800	800	800	800	800					
Chromium	ug/Kg	13,000	14,000	210,000	52,000	100,000	47,000					
Copper	ug/Kg	29,000	27,000	100,000	58,000	94,000	44,000					
Mercury	ug/Kg	220	90	20	50	20	20					
Selenium	ug/Kg	400	400	400	400	400	400					
Silver	ug/Kg	900	900	1,200	1,500	1,600	900					
Zinc	ug/Kg	20,000	11,000	51,000	35,000	17,000	16,000					

- Not Detected
See Figure 2.2 for sample locations.

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TABLE 4.8 (CONTINUED)
WEST YARD INVESTIGATION
GM, PONTIAC, MICHIGAN
CLOSURE SUBSURFACE SOIL SAMPLE ANALYTICAL RESULTS

Compounds	Sample ID: / Depth (ft.):	P-2-2 1.5-2	P-2-5 4.5-5	P-2-6 9.5-10	P-2-7 14.5-15	P-2-8 19.5-20	P-3-2 1.5-2	P-3-5 4.5-5	P-3-6 9.5-10	P-3-7 14.5-15	P-3-8 19.5-20	P-4-2 1.5-2
	Units											
ORGANICS												
Benzene	ug/Kg	5,000	4,000	7,000	2,000	2,000	-	-	-	-	-	-
Toluene	ug/Kg	140,000	110,000	290,000	-	-	-	-	-	-	-	-
Xylenes	ug/Kg	120,000	75,000	130,000	-	-	-	-	-	-	-	-
1,1,1-Trichloroethane	ug/Kg	300,000	33,000	410,000	-	-	-	-	-	-	-	-
Methylene Chloride	ug/Kg	18,000	3,000	14,000	3,000	2,000	-	4,000	-	3,000	2,000	34,000
2-Butanone (MEK)	ug/Kg	-	66,000	530,000	100,000	110,000	-	110,000	62,000	80,000	110,000	-
1-Butanol	ug/Kg	-	-	-	-	-	-	-	-	-	-	-
Ethylbenzene	ug/Kg											
INORGANICS												
Lead	ug/Kg	72,000	350,000	-	10,000	-	61,000	590,000	7,900	2,400	3,200	9,400
Arsenic	ug/Kg											
Barium	ug/Kg											
Cadmium	ug/Kg											
Chromium	ug/Kg											
Copper	ug/Kg											
Mercury	ug/Kg											
Selenium	ug/Kg											
Silver	ug/Kg											
Zinc	ug/Kg											

- Not Detected
See Figure 2.2 for sample locations.

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TABLE 4.8 (CONTINUED)
WEST YARD INVESTIGATION
GM, PONTIAC, MICHIGAN
CLOSURE SUBSURFACE SOIL SAMPLE ANALYTICAL RESULTS

Compounds	Sample ID: / Depth (ft.):	P-4-5 4.5-5	P-4-6 9.5-10	P-4-7 14.5-15	P-4-8 19.5-20	P-5-2 1.5-2	P-5-5 4.5-5	P-5-6 9.5-10	P-5-7 14.5-15	P-5-8 19.5-20	P-6-2 1.5-2	P-6-5 4.5-5
	Units											
ORGANICS												
Benzene	ug/Kg	-	-	-	2,000	-	-	-	-	-	-	-
Toluene	ug/Kg	-	-	-	2,000	-	-	-	-	-	-	-
Xylenes	ug/Kg	-	-	-	-	-	-	-	-	-	-	-
1,1,1-Trichloroethane	ug/Kg	-	-	-	300	-	-	-	-	-	-	-
Methylene Chloride	ug/Kg	-	-	-	3,000	13,000	4,000	8,000	10,000	4,000	4,000	3,000
2-Butanone (MEK)	ug/Kg	65,000	95,000	65,000	120,000	-	110,000	190,000	120,000	67,000	-	75,000
1-Butanol	ug/Kg	-	-	-	-	-	-	-	-	-	-	-
Ethylbenzene	ug/Kg											
INORGANICS												
Lead	ug/Kg	18,000	7,700	7,000		170,000	4,700	3,000	5,800	4,700	22,000	5,900
Arsenic	ug/Kg											
Barium	ug/Kg											
Cadmium	ug/Kg											
Chromium	ug/Kg											
Copper	ug/Kg											
Mercury	ug/Kg											
Selenium	ug/Kg											
Silver	ug/Kg											
Zinc	ug/Kg											

- Not Detected
See Figure 2.2 for sample locations.

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TABLE 4.8 (CONTINUED)
WEST YARD INVESTIGATION
GM, PONTIAC, MICHIGAN
CLOSURE SUBSURFACE SOIL SAMPLE ANALYTICAL RESULTS

Compounds	Sample ID: / Depth (ft.):	P-6-6 9.5-10	P-6-7 14.5-15	P-6-8 19.5-20	P-7-2 1.5-2	P-7-5 4.5-5	P-7-6 9.5-10	P-7-7 14.5-15	P-7-8 19.5-20	P-8-2 1.5-2	P-8-5 4.5-5	P-8-6 9.5-10
	Units											
ORGANICS												
Benzene	ug/Kg	2,000	2,000	-	-	-	-	-	-	-	2,000	2,000
Toluene	ug/Kg	-	-	-	3,000	-	-	-	-	-	-	-
Xylenes	ug/Kg	-	-	-	16,000	-	-	-	-	-	-	-
1,1,1-Trichloroethane	ug/Kg	-	-	-	-	-	-	-	-	-	-	-
Methylene Chloride	ug/Kg	-	6,000	6,000	-	-	-	18,000	-	3,000	-	-
2-Butanone (MEK)	ug/Kg	65,000	90,000	60,000	-	76,000	90,000	55,000	-	-	150,000	70,000
1-Butanol	ug/Kg	-	-	-	-	-	-	-	-	-	-	-
Ethylbenzene	ug/Kg											
INORGANICS												
Lead	ug/Kg	19,000	3,100	2,700	5,700	2,900	38,000	-	4,600	4,400	96,000	-
Arsenic	ug/Kg											
Barium	ug/Kg											
Cadmium	ug/Kg											
Chromium	ug/Kg											
Copper	ug/Kg											
Mercury	ug/Kg											
Selenium	ug/Kg											
Silver	ug/Kg											
Zinc	ug/Kg											

- Not Detected
See Figure 2.2 for sample locations.

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TABLE 4.8 (CONTINUED)
WEST YARD INVESTIGATION
GM, PONTIAC, MICHIGAN
CLOSURE SUBSURFACE SOIL SAMPLE ANALYTICAL RESULTS

Compounds	Sample ID: / Depth (ft.):	P-8-7 14.5-15	P-8-8 19.5-20	P-9-2 1.5-2	P-9-5 4.5-5	P-9-6 9.5-10	P-9-7 14.5-15	P-9-8 19.5-20	P-10-2 1.5-2	P-11-2 1.5-2	P-11-5 4.5-5	P-11-6 1.5-13
	Units											
ORGANICS												
Benzene	ug/Kg	-	-	-	18,000	5,000	4,000	3,000	-	-	-	-
Toluene	ug/Kg	-	-	28,000	220,000	230,000	2,000	-	-	-	-	-
Xylenes	ug/Kg	-	-	13,000	600,000	360,000	24,000	-	-	-	-	-
1,1,1-Trichloroethane	ug/Kg	-	-	-	-	-	-	-	-	-	-	-
Methylene Chloride	ug/Kg	-	9,000	-	78,000	-	4,000	-	68,000	-	4,000	3,000
2-Butanone (MEK)	ug/Kg	67,000	-	-	770,000	150,000	180,000	97,000	-	-	83,000	-
1-Butanol	ug/Kg	-	-	-	-	-	-	-	-	-	-	-
Ethylbenzene	ug/Kg											
INORGANICS												
Lead	ug/Kg	-	3,800	42,000	180,000	26,000	3,100	3,900	34,000	60,000	7,100	6,500
Arsenic	ug/Kg											
Barium	ug/Kg											
Cadmium	ug/Kg											
Chromium	ug/Kg											
Copper	ug/Kg											
Mercury	ug/Kg											
Selenium	ug/Kg											
Silver	ug/Kg											
Zinc	ug/Kg											

- Not Detected
See Figure 2.2 for sample locations.

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TABLE 4.8 (CONTINUED)
WEST YARD INVESTIGATION
GM, PONTIAC, MICHIGAN
CLOSURE SUBSURFACE SOIL SAMPLE ANALYTICAL RESULTS

Compounds	Sample ID: Depth (ft.):	P-11-7 14.5-15	P-11-8 19.5-20	MW-1-1 4-5	MW-1-2 9-10	MW-1-3 14-15	MW-1-4 19-20	MW-1-5 24-25	MW-1-6 29-30	MW-2-1 4-5	MW-2-2 9-10	MW-2-3 14-15
	Units											
ORGANICS												
Benzene	ug/Kg	-	-	-	-	-	-	-	-	-	-	-
Toluene	ug/Kg	-	-	-	-	-	-	-	-	-	-	-
Xylenes	ug/Kg	-	-	-	-	-	-	-	5,000	-	-	-
1,1,1-Trichloroethane	ug/Kg	-	-	-	-	-	-	-	-	-	-	-
Methylene Chloride	ug/Kg	5,000	4,000	35,000	3,000	3,000	7,000	3,000	30,000	-	-	4,000
2-Butanone (MEK)	ug/Kg	120,000	-	-	-	-	-	-	-	-	-	-
1-Butanol	ug/Kg	-	-	-	-	-	-	-	-	-	-	-
Ethylbenzene	ug/Kg											
INORGANICS												
Lead	ug/Kg	-	6,500	7,400	5,000	4,800	4,000	64,000	-	3,800	4,300	-
Arsenic	ug/Kg											
Barium	ug/Kg											
Cadmium	ug/Kg											
Chromium	ug/Kg											
Copper	ug/Kg											
Mercury	ug/Kg											
Selenium	ug/Kg											
Silver	ug/Kg											
Zinc	ug/Kg											

- Not Detected
See Figure 2.2 for sample locations.

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TABLE 4.8 (CONTINUED)
WEST YARD INVESTIGATION
GM, PONTIAC, MICHIGAN
CLOSURE SUBSURFACE SOIL SAMPLE ANALYTICAL RESULTS

Compounds	Sample ID: Depth (ft.):	MW-2-4 19-20	MW-2-5 24-25	MW-3-1 4-5	MW-3-2 9-10	MW-3-3 14-15	MW-3-4 19-20	MW-3-5 24-25	MW-4-1 4-5	MW-4-2 9-10	MW-4-3 14-15	MW-4-4 19-20
	Units											
ORGANICS												
Benzene	ug/Kg	-	-	-	-	-	-	-	-	-	-	-
Toluene	ug/Kg	-	-	-	15,000	10,000	-	-	8,000	-	-	-
Xylenes	ug/Kg	-	-	-	35,000	4,000	-	-	40,000	-	-	-
1,1,1-Trichloroethane	ug/Kg	-	-	-	-	-	-	-	-	-	-	-
Methylene Chloride	ug/Kg	-	3,000	10,000	5,000	4,000	-	-	-	-	-	-
2-Butanone (MEK)	ug/Kg	-	-	-	-	50,000	-	-	-	-	-	-
1-Butanol	ug/Kg	-	-	-	-	-	-	-	-	-	-	-
Ethylbenzene	ug/Kg											
INORGANICS												
Lead	ug/Kg	2,200	-	4,400	3,300	-	3,000	-	28,000	10,000	4,800	4,700
Arsenic	ug/Kg											
Barium	ug/Kg											
Cadmium	ug/Kg											
Chromium	ug/Kg											
Copper	ug/Kg											
Mercury	ug/Kg											
Selenium	ug/Kg											
Silver	ug/Kg											
Zinc	ug/Kg											

- Not Detected
See Figure 2.2 for sample locations.

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TABLE 4.8 (CONTINUED)
WEST YARD INVESTIGATION
GM, PONTIAC, MICHIGAN
CLOSURE SUBSURFACE SOIL SAMPLE ANALYTICAL RESULTS

Compounds	Sample ID: Depth (ft.):	MW-4-5 24-25	MW-5-1 4-5	MW-5-2 9-10	MW-5-3 14-15	MW-5-4 19-20	MW-5-5 24-25	MW-13-SS1 0-2	MW-13-SS2 2-4	MW-13-SS3 4-6	MW-13-SS4 6-8	MW-13-SS5 8-10
	Units											
ORGANICS												
Benzene	ug/Kg	-	-	-	20,000	-	-	430	300	90	190	50
Toluene	ug/Kg	-	-	-	10,000	-	-	33,000	13,000	3,300	4,100	70
Xylenes	ug/Kg	-	5,000	-	6,000	4,000	-	41,000	26,000	9,800	15,000	1,200
1,1,1-Trichloroethane	ug/Kg	-	-	-	-	-	-	-	-	-	-	-
Methylene Chloride	ug/Kg	-	-	-	-	-	-	-	-	-	-	-
2-Butanone (MEK)	ug/Kg	-	-	-	-	-	-	-	-	-	-	-
1-Butanol	ug/Kg	-	-	-	-	-	-	-	-	-	-	-
Ethylbenzene	ug/Kg											
INORGANICS												
Lead	ug/Kg	10,000	-	5,800	27,000	4,000	-	51,000	232,000	98,000	254,000	3,800
Arsenic	ug/Kg											
Barium	ug/Kg											
Cadmium	ug/Kg											
Chromium	ug/Kg											
Copper	ug/Kg											
Mercury	ug/Kg											
Selenium	ug/Kg											
Silver	ug/Kg											
Zinc	ug/Kg											

- Not Detected
See Figure 2.2 for sample locations.

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TABLE 4.8 (CONTINUED)
WEST YARD INVESTIGATION
GM, PONTIAC, MICHIGAN
CLOSURE SUBSURFACE SOIL SAMPLE ANALYTICAL RESULTS

Compounds	Sample ID: Depth (ft.):	MW-13-SS6 10-12	MW-13-SS7 12-14	MW-14-SS1 0-2	MW-14-SS2 2-4	MW-14-SS3 4-6	MW-14-SS4 6-8	MW-14-SS5 8-10	MW-14-SS6 10-12	SV-1-1 5-6.5	SV-1-2 10-11.5	SV-1-3 15-16.5
	Units											
ORGANICS												
Benzene	ug/Kg	100	70	200	200	200	-	-	-	-	-	-
Toluene	ug/Kg	60	60	11,000	16,000	30,000	20,000	6,500	20,000	230,000	80,000	55,000
Xylenes	ug/Kg	3,000	1,400	18,000	22,000	42,000	20,000	9,800	30,000	200,000	100,000	45,000
1,1,1-Trichloroethane	ug/Kg	-	-	9,400	3,800	3,800	-	-	-	25,000	15,000	35,000
Methylene Chloride	ug/Kg	-	-	-	-	-	-	-	-	-	-	-
2-Butanone (MEK)	ug/Kg	-	-	-	1,700	-	-	4,400	-	-	-	-
1-Butanol	ug/Kg	-	-	-	-	-	-	-	-	-	-	-
Ethylbenzene	ug/Kg									38,000	15,000	10,000
INORGANICS												
Lead	ug/Kg	9,700	12,000	26,000	33,000	23,000	9,000	8,600	6,400			
Arsenic	ug/Kg											
Barium	ug/Kg											
Cadmium	ug/Kg											
Chromium	ug/Kg											
Copper	ug/Kg											
Mercury	ug/Kg											
Selenium	ug/Kg											
Silver	ug/Kg											
Zinc	ug/Kg											

- Not Detected
See Figure 2.2 for sample locations.

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TABLE 4.8 (CONTINUED)
WEST YARD INVESTIGATION
GM, PONTIAC, MICHIGAN
CLOSURE SUBSURFACE SOIL SAMPLE ANALYTICAL RESULTS

Compounds	Sample ID: Depth (ft.):	SV-1-4 20-21.5	SV-2-1 5-6.5	SV-2-2 10-11.5	SV-2-3 15-16.5	SV-2-4 20-21.5	RW-1A-SS1 0-2	RW-1A-SS2 2-4	RW-1A-SS3 4-6	RW-1A-SS4 6-8	RW-1A-SS5 8-10	RW-1A-SS6 10-12	RW-1A-SS7 12-14
	Units												
ORGANICS													
Benzene	ug/Kg	-	-	-	-	-	40	-	-	-	30	290	280
Toluene	ug/Kg	6,000	40,000	15,000	-	150,000	850	30	70	10	1,500	6,100	3,600
Xylenes	ug/Kg	6,000	120,000	60,000	9,000	300,000	50	30	80	-	3,000	11,000	3,300
1,1,1-Trichloroethane	ug/Kg	2,000	-	-	-	-	-	10	60	-	1,500	6,200	3,800
Methylene Chloride	ug/Kg	-	-	-	-	-	-	-	-	-	-	-	-
2-Butanone (MEK)	ug/Kg	-	-	-	-	-	2,300	-	-	-	1,200	18,000	29,000
1-Butanol	ug/Kg	-	-	-	-	-	-	-	-	-	-	-	-
Ethylbenzene	ug/Kg	-	25,000	17,000	3,000	85,000							
INORGANICS													
Lead	ug/Kg						251,000	33,000	58,000	5,500	8,200	7,400	7,700
Arsenic	ug/Kg												
Barium	ug/Kg												
Cadmium	ug/Kg												
Chromium	ug/Kg												
Copper	ug/Kg												
Mercury	ug/Kg												
Selenium	ug/Kg												
Silver	ug/Kg												
Zinc	ug/Kg												

- Not Detected
See Figure 2.2 for sample locations.

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TABLE 4.9
WEST YARD INVESTIGATION
GM, PONTIAC MICHIGAN
PART 201 SOIL SCREENING CRITERIA EXCEEDENCES - CLOSURE SUBSURFACE SOIL SAMPLES

Compounds	Units	Maximum Concentration	Average Detected Concentration[1]	No. Exceedences[2] No. Locations	Criteria Exceeded	Location of Exceedances
ORGANICS						
Benzene	ug/Kg	20,000	2,800	0/121	None	None
Toluene	ug/Kg	290,000	43,000	0/121	None	None
Xylenes	ug/Kg	600,000	59,000	1/121	C_{sat}	P-9-5
1,1,1-Trichloroethane	ug/Kg	410,000	53,000	0/121	None	None
Methylene Chloride	ug/Kg	78,000	11,000	0/121	None	None
2-Butanone (MEK)	ug/Kg	770,000	110,000	0/121	None	None
1-Butanol	ug/Kg	-	81,000	0/121	None	None
Ethylbenzene	ug/Kg	85,000	28,000	0/8	None	None
INORGANICS						
Lead	ug/Kg	590,000	36,000	1/113	Direct Contact	P-3-5
Arsenic	ug/Kg	11,000	4,400	0/16	None	None
Barium	ug/Kg	270,000	71,000	0/16	None	None
Cadmium	ug/Kg	800	740	0/16	None	None
Chromium	ug/Kg	210,000	41,000	0/16	None	None
Copper	ug/Kg	100,000	35,000	0/16	None	None
Mercury	ug/Kg	220	59	0/16	None	None
Selenium	ug/Kg	900	440	0/16	None	None
Silver	ug/Kg	1,600	1,100	0/16	None	None
Zinc	ug/Kg	77,000	26,000	0/16	None	None

- Not Detected
Sample locations shown on Figures 2.1, 2.2, and 2.3.
[1] Average concentration calculated using detected values only.
[2] See Table 4.5 for Part 201 soil screening criteria values.

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TABLE 4.10
WEST YARD INVESTIGATION
GM, PONTIAC, MICHIGAN
SUBSURFACE SOIL TCLP RESULTS

Compounds	Units	TCLP Regulatory Level	MW-2-3 (15 feet)	MW-3-3 (15 feet)
ORGANICS				
Benzene	ug/L	500	-	-
Toluene	ug/L	NS	-	10
Xylenes	ug/L	NS	-	4
1,1,1-Trichloroethane	ug/L	NS	-	-
Methylene Chloride	ug/L	NS	4	4
2-Butanone (MEK)	ug/L	200,000	-	50
1-Butanol	ug/L	NS	-	-
INORGANICS				
Lead	ug/L	5	-	-

- Not Detected
NS - No Standard

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TABLE 4.11
WEST YARD INVESTIGATION
GM, PONTIAC, MICHIGAN
CLOSURE GROUNDWATER SAMPLE ANALYTICAL RESULTS

Compounds	Sample ID: / Date:	MW-1 11/18/88	MW-1 3/13/89	MW-1 3/13/90	MW-1 10/3/90	MW-1 8/14/91	MW-1 8/23, 25/91	MW-2 11/17/88	MW-2 3/13/89	MW-2 3/13/90	MW-2 10/3/90	MW-2 8/14/91	MW-2 8/23, 25/91
	Units												
ORGANICS													
Benzene	ug/L	-	25	-	-	-	-	4	-	-	-	-	-
Toluene	ug/L	-	-	3	-	-	-	-	-	-	-	-	-
Xylenes	ug/L	-	-	-	-	-	-	3	-	8	-	-	-
1,1,1-Trichloroethane	ug/L	-	-	-	-	5	-	-	-	-	-	-	-
Methylene Chloride	ug/L	-	-	-	-	-	-	-	-	-	-	-	-
2-Butanone (MEK)	ug/L	-	-	-	-	-	-	-	-	-	-	-	-
1-Butanol	ug/L	-	-	-	-	-	-	-	-	-	-	-	-
Ethylbenzene	ug/L			-						-			
INORGANICS													
Lead, total	ug/L	-	-	-	-	-	-	-	-	-	-	-	-
Lead, filtered	ug/L											-	-

- Not Detected
See Figure 2.3 for sample locations.

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TABLE 4.11 (CONTINUED)
WEST YARD INVESTIGATION
GM, PONTIAC, MICHIGAN
CLOSURE GROUNDWATER SAMPLE ANALYTICAL RESULTS

Compounds	Sample ID: / Date:	MW-3 11/17/88	MW-3 3/13/89	MW-3 3/13/90	MW-3 10/3/90	MW-3 8/14/91	MW-3 8/23, 25/91	MW-4 12/1/88	MW-4 3/13/89	MW-4 3/14/90	MW-4 10/3/90	MW-4 8/14/91	MW-4 8/23, 25/91
	Units												
ORGANICS													
Benzene	ug/L	9	65	110	110	140	76	-	15	50	35	42	11
Toluene	ug/L	20	140	375	600	670	1200	-	-	-	1	1	-
Xylenes	ug/L	-	15	40	31	60	4300	-	-	2	-	-	-
1,1,1-Trichloroethane	ug/L	-	-	-	-	-	-	-	-	-	-	-	-
Methylene Chloride	ug/L	-	-	-	-	-	-	-	-	-	-	-	-
2-Butanone (MEK)	ug/L	-	-	-	-	-	-	-	-	-	-	-	-
1-Butanol	ug/L	-	-	-	3900	-	-	-	-	-	-	-	-
Ethylbenzene	ug/L												
INORGANICS													
Lead, total	ug/L	110	-	50	-	-	-	-	-	-	-	-	-
Lead, Filtered	ug/L					-	-					-	-

- Not Detected

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TABLE 4.11 (CONTINUED)
WEST YARD INVESTIGATION
GM, PONTIAC, MICHIGAN
CLOSURE GROUNDWATER SAMPLE ANALYTICAL RESULTS

Compounds	Sample ID: Date:	MW-5 12/1/88	MW-5 3/13/89	MW-5 3/14/90	MW-5 10/3/90	MW-5 8/14/91	MW-6 8/23, 25/91	MW-6 3/13/89	MW-6 3/13/90	MW-6 10/3/90	MW-6 8/14/91	MW-6 8/23, 25/91
	Units											
ORGANICS												
Benzene	ug/L	-	-	-	3	3	-	-	4	-	-	-
Toluene	ug/L	-	-	5	-	-	-	-	27	2	-	-
Xylenes	ug/L	3	-	-	-	-	-	-	14	-	-	-
1,1,1-Trichloroethane	ug/L	-	-	-	-	-	-	-	-	-	-	-
Methylene Chloride	ug/L	-	-	-	-	-	-	-	-	-	-	-
2-Butanone (MEK)	ug/L	-	-	-	-	-	-	-	-	-	-	-
1-Butanol	ug/L	-	-	-	-	-	-	-	-	-	-	-
Ethylbenzene	ug/L											
INORGANICS												
Lead, total	ug/L	-	-	-	-	-	-	-	-	-	-	-
Lead, Filtered	ug/L						-				-	-

- Not Detected

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TABLE 4.11 (CONTINUED)
WEST YARD INVESTIGATION
GM, PONTIAC, MICHIGAN
CLOSURE GROUNDWATER SAMPLE ANALYTICAL RESULTS

Compounds	Sample ID: / Date:	MW-7 3/13/89	MW-7 3/13/90	MW-7 10/3/90	MW-7 8/14/91	MW-7 8/23, 25/91	MW-8 3/13/89	MW-8 3/13/90	MW-8 10/3/90	MW-8 8/23, 25/91	MW-9 10/3/90	MW-9 8/14/91	MW-9 8/23, 25/91
	Units												
ORGANICS													
Benzene	ug/L	-	-	3	7	11	-	2	4	3	-	40	22
Toluene	ug/L	-	3	-	-	-	-	3	1	-	240	120	66
Xylenes	ug/L	-	-	-	-	-	-	10	-	-	-	-	1
1,1,1-Trichloroethane	ug/L	-	-	-	-	-	3	-	-	-	-	-	-
Methylene Chloride	ug/L	-	-	-	-	-	-	-	-	-	-	-	4
2-Butanone (MEK)	ug/L	-	-	-	-	-	-	-	-	-	12,000	310	220
1-Butanol	ug/L	-	-	-	-	-	-	-	-	-	-	-	-
Ethylbenzene	ug/L							-					
INORGANICS													
Lead, total	ug/L	60	-	-	-	-	-	-	-	-	70	-	-
Lead, Filtered	ug/L				-	-				-		-	-

- Not Detected

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TABLE 4.11 (CONTINUED)
WEST YARD INVESTIGATION
GM, PONTIAC, MICHIGAN
CLOSURE GROUNDWATER SAMPLE ANALYTICAL RESULTS

Compounds	Sample ID: / Date:	MW-10 10/3/90	MW-10 8/14/91	MW-10 8/23, 25/91	MW-11 10/3/90	MW-12 10/3/90	MW-12 8/14/91	MW-12 8/23, 25/91	SV-1 10/3/90	SV-1 8/14/91	SV-1 8/23, 25/91	SV-2 10/3/90	SV-2 8/14/91	SV-2 8/23, 25/91
	Units													
ORGANICS														
Benzene	ug/L	-	-	-	-	70	80	140	-	13	220	220	300	440
Toluene	ug/L	-	-	-	10	770	790	640	600	360	3400	51,000	3400	5000
Xylenes	ug/L	-	-	-	94	1100	2500	74	-	240	750	12,000	4900	6900
1,1,1-Trichloroethane	ug/L	-	-	-	-	-	-	-	4200	2700	42,000	400	-	-
Methylene Chloride	ug/L	-	-	-	-	-	-	-	-	-	-	-	-	-
2-Butanone (MEK)	ug/L	-	-	-	-	-	-	73	-	-	-	-	-	-
1-Butanol	ug/L	-	-	-	-	-	-	-	-	-	-	250,000	-	-
Ethylbenzene	ug/L													
INORGANICS														
Lead, total	ug/L	50	-		90	120	400		-	-		140	410	-
Lead, Filtered	ug/L		-	-			-			-	-		-	

- Not Detected

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TABLE 4.12
WEST YARD INVESTIGATION
GM, PONTIAC, MICHIGAN
PART 201 GROUNDWATER CRITERIA EXCEEDENCES - CLOSURE GROUNDWATER SAMPLES

Compounds	Units	Generic Groundwater Contact Criteria (1997a)	Maximum Concentration	No. Exceedences / No. Locations	Location of Exceedences
ORGANICS					
Benzene	ug/L	9,200	440	0/14	None
Toluene	ug/L	530,000	51,000	0/14	None
Xylenes	ug/L	190,000	12,000	0/14	None
1,1,1-Trichloroethane	ug/L	330,000	42,000	0/14	None
Methylene Chloride	ug/L	110,000	4	0/14	None
2-Butanone (MEK)	ug/L	240,000,000	12,000	0/14	None
1-Butanol	ug/L	8,300,000	250,000	0/14	None
Ethylbenzene	ug/L	170,000	-	0/3	None
INORGANICS					
Lead, total	ug/L	NC	410	0/14	None
Lead, filtered	ug/L	NC	-	0/13	None

Sample locations shown on Figure 2.3.
- Not Detected
NC - No Criteria

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TABLE 4.13
WEST YARD INVESTIGATION
GM, PONTIAC, MICHIGAN
CONCENTRATIONS OF 2-BUTANONE IN SOIL BORINGS

Depth (Feet)	2-Butanone (ug/Kg)										
	Soil Boring P-1	Soil Boring P-2	Soil Boring P-3	Soil Boring P-4	Soil Boring P-5	Soil Boring P-6	Soil Boring P-7	Soil Boring P-8	Soil Boring P-9	Soil Boring P-11	Soil Boring MW-14-SS
1	-	-	-	-	-	-	-	-	-	-	-
2	-	-	-	-	-	-	-	-	-	-	
3											1,700
4											
5	88,000	66,000	110,000	65,000	110,000	75,000	76,000	150,000	770,000	83,000	-
6											
7											
8											
9											4,400
10	97,000	530,000	62,000	95,000	190,000	65,000	90,000	70,000	150,000	-	
11											-
12											
13											
14											
15	68,000	100,000	80,000	65,000	120,000	93,000	55,000	67,000	180,000	120,000	
16											
17											
18											
19											
20	70,000	110,000	110,000	120,000	67,000	60,000	-	-	97,000	-	

- Not Detected
See Figures 2.1 and 2.3 for sample locations.

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TABLE 4.14
WEST YARD INVESTIGATION
GM, PONTIAC, MICHIGAN
CONCENTRATIONS OF LEAD IN SOIL BORINGS

Depth (Feet)	Lead (ug/Kg)						
	Soil Boring P-2	Soil Boring P-3	Soil Boring P-5	Soil Boring P-8	Soil Boring P-9	Soil Boring MW-13	Soil Boring RW-1A
1	93,000	3,100	100,000	5,500	18,000		
2	72,000	61,000	170,000	4,400	42,000	51,000	251,000
3							
4						232,000	33,000
5	350,000	590,000	4,700	96,000	180,000		
6						98,000	58,000
7							
8						254,000	5,500
9							
10	-	7,900	3,000		26,000	3,800	8,200
11							
12						9,700	7,400
13							
14						12,000	7,700
15	10,000	2,400	5,800		3,100		
16							
17							
18							
19							
20	-	3,200	4,700	3,800	3,900		

- Not Detected
See Figures 2.1 and 2.3 for sample locations.

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TABLE 4.15
WEST YARD INVESTIGATION
GM, PONTIAC, MICHIGAN
DETECTED ANALYTES - WEST YARD SURFACE SOIL

		SAMPLE ID: [1]	SSTT1	SSTT2	SSTT3	SSTT80 (DUP OF SSTT3)	SSTT4
		DEPTH:	0.0-0.5'	0.0-0.5'	0.0-0.5'	0.0-0.5'	0.0-0.5'
		LAB ID:	A6A250126-001	A6A250126-003	A6A250126-005	A6A250126-006	A6A250126-008
		SOURCE:	QUANTERRA	QUANTERRA	QUANTERRA	QUANTERRA	QUANTERRA
		SDG:	A6A250126	A6A250126	A6A250126	A6A250126	A6A250126
		MATRIX:	SOLID	SOLID	SOLID	SOLID	SOLID
		SAMPLED:	1/22/96	1/22/96	1/22/96	1/22/96	1/23/96
CAS NO.	COMPOUND	UNITS:					
	VOLATILES						
67-64-1	Acetone	UG/KG	6.8 J	96 J	2.3 J	-	270
71-43-2	Benzene	UG/KG	-	-	-	-	-
78-93-3	2-Butanone (MEK)	UG/KG	-	-	-	-	46 J
106-46-7	1,4-Dichlorobenzene	UG/KG	-	-	-	2.4 J	-
100-41-4	Ethylbenzene	UG/KG	-	-	-	-	10 J
591-78-6	2-Hexanone	UG/KG	4.1 J	-	-	-	-
108-10-1	4-Methyl-2-pentanone (MIBK)	UG/KG	-	-	-	-	16 J
75-09-2	Methylene chloride	UG/KG	2.8 J	-	-	-	-
127-18-4	Tetrachloroethene	UG/KG	-	-	-	-	-
108-88-3	Toluene	UG/KG	-	-	-	-	27
79-01-6	Trichloroethene	UG/KG	-	-	-	-	-
1330-20-7	Xylenes (total)	UG/KG	-	28 J	-	-	36 J
	SEMIVOLATILES						
83-32-9	Acenaphthene	UG/KG	120 J	36000	-	-	1800 J
208-96-8	Acenaphthylene	UG/KG	-	2000 J	-	-	-
120-12-7	Anthracene	UG/KG	290 J	21000	20 J	-	830 J
56-55-3	Benzo(a)anthracene	UG/KG	180 J	15000	58 J	35 J	-
50-32-8	Benzo(a)pyrene	UG/KG	94 J	8600 J	69 J	31 J	-
205-99-2	Benzo(b)fluoranthene	UG/KG	140 J	11000	120 J	49 J	-
191-24-2	Benzo(ghi)perylene	UG/KG	110 J	4500 J	45 J	21 J	-
207-08-9	Benzo(k)fluoranthene	UG/KG	-	5300 J	48 J	25 J	-
85-68-7	Butyl benzyl phthalate	UG/KG	240 J	2300 J	-	-	32000
86-74-8	Carbazole	UG/KG	81 J	11000	-	-	-
218-01-9	Chrysene	UG/KG	230 J	16000	73 J	44 J	-
84-74-2	Di-n-butyl phthalate	UG/KG	-	-	-	-	-
117-84-0	Di-n-octyl phthalate	UG/KG	-	-	-	-	-
53-70-3	Dibenz(a,h)anthracene	UG/KG	-	-	-	-	-
132-64-9	Dibenzofuran	UG/KG	330 J	27000	-	-	-
105-67-9	2,4-Dimethylphenol	UG/KG	250 J	-	-	-	-
206-44-0	Fluoranthene	UG/KG	390	82000	150 J	86 J	-
86-73-7	Fluorene	UG/KG	210 J	36000	-	-	9900
193-39-5	Indeno(1,2,3-cd)pyrene	UG/KG	57 J	3700 J	40 J	21 J	-
91-57-6	2-Methylnaphthalene	UG/KG	5500	23000	46 J	-	2300 J
95-48-7	2-Methylphenol	UG/KG	930	-	-	-	-
108-39-4	3-Methylphenol	UG/KG	400		-	-	-
106-44-5	4-Methylphenol	UG/KG	450	-	-	-	-
91-20-3	Naphthalene	UG/KG	2900	97000	34 J	-	-
85-01-8	Phenanthrene	UG/KG	1300	110000	74 J	65 J	11000
108-95-2	Phenol	UG/KG	2100	-	23 J	-	-
129-00-0	Pyrene	UG/KG	360 J	50000	140 J	73 J	830 J
117-81-7	bis(2-Ethylhexyl) phthalate	UG/KG	240 J	-	150 J	110 J	-

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TABLE 4.15
WEST YARD INVESTIGATION
GM, PONTIAC, MICHIGAN
DETECTED ANALYTES - WEST YARD SURFACE SOIL

CAS NO.	COMPOUND	SAMPLE ID: [1] / DEPTH: / LAB ID: / SOURCE: / SDG: / MATRIX: / SAMPLED: / UNITS:	SSTT1 0.0-0.5' A6A250126-001 QUANTERRA A6A250126 SOLID 1/22/96	SSTT2 0.0-0.5' A6A250126-003 QUANTERRA A6A250126 SOLID 1/22/96	SSTT3 0.0-0.5' A6A250126-005 QUANTERRA A6A250126 SOLID 1/22/96	SSTT80 (DUP OF SSTT3) 0.0-0.5' A6A250126-006 QUANTERRA A6A250126 SOLID 1/22/96	SSTT4 0.0-0.5' A6A250126-008 QUANTERRA A6A250126 SOLID 1/23/96
	PCBs						
72-43-5	Methoxychlor	UG/KG	-	-	-	-	-
12672-29-6	Aroclor 1248	UG/KG	-	710	-	-	470
11097-69-1	Aroclor 1254	UG/KG	-	-	-	-	520
TPCBS	Total PCBs	UG/KG	-	710	-	-	990
	DIOXINS						
TDIOXINS	Total TEFs	UG/KG	0.00000391	2.60E-08		6.44E-07	5.66E-04
	INORGANICS						
7429-90-5	Aluminum	UG/KG	3450000	4250000	1790000 J	3270000 J	438000
7440-36-0	Antimony	UG/KG	2200 J	4180 J	-	-	22500
7440-38-2	Arsenic	UG/KG	7770 J	7270 J	3710	3650	44300
7440-39-3	Barium	UG/KG	45200	79100 J	12800 J	34400 J	9740
7440-41-7	Beryllium	UG/KG	416	753	-	-	-
7440-43-9	Cadmium	UG/KG	2410	2320	132	121	129
7440-70-2	Calcium	UG/KG	5550000 J	31900000	66900000	89700000	5920000
7440-47-3	Chromium	UG/KG	81900	251000	4480 J	11700 J	1660000
7440-48-4	Cobalt	UG/KG	6060	11800	5110	4070	64400
7440-50-8	Copper	UG/KG	57900 J	221000	6690 J	12700 J	1590000
57-12-5	Cyanide	UG/KG	530	360	-	390	-
7439-89-6	Iron	UG/KG	69000000	107000000	10500000	7800000	64800000
7439-92-1	Lead	UG/KG	151000	117000	3320 J	5810 J	16400
7439-95-4	Magnesium	UG/KG	1230000	3490000 J	8160000 J	12000000 J	2700000
7439-96-5	Manganese	UG/KG	2080000	2040000	543000 J	270000 J	4490000
7439-97-6	Mercury	UG/KG		92.1	-	-	-
7440-02-0	Nickel	UG/KG	25000 J	84700 J	5140 J	11100 J	601000
7440-09-7	Potassium	UG/KG	616000	579000	777000	645000	-
7782-49-2	Selenium	UG/KG	-	-	-	-	-
7440-22-4	Silver	UG/KG	357	487	-	-	382
7440-23-5	Sodium	UG/KG	382000	675000	210000	201000	109000
7440-31-5	Tin	UG/KG	27000	-	-	-	84000
7440-62-2	Vanadium	UG/KG	5460	35000	5460 J	10700 J	46400
7440-66-6	Zinc	UG/KG	3640000	3790000	1690000 J	31300 J	99800
	OTHER						
18496-25-8	Sulfide	UG/KG	-		-	-	100000
10-31-1	Total Solids	%	84.1	86.3	89.1	87.2	94.3

J = Estimated Value
- = Not Detected
* = Elevated detection limit due to matrix interference.
[1] Duplicate samples are designated by adding 50 to the test trench number.

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TABLE 4.15
WEST YARD INVESTIGATION
GM, PONTIAC, MICHIGAN
DETECTED ANALYTES - WEST YARD SURFACE SOIL

CAS NO.	COMPOUND	SAMPLE ID: [1] DEPTH: LAB ID: SOURCE: SDG: MATRIX: SAMPLED: UNITS:	SSTT5 0.0-0.5' A6A250126-011 QUANTERRA A6A250126 SOLID 1/23/96	SSTT55 (DUP OF SSTT5) 0.0-0.5' A6A250126-010 QUANTERRA A6A250126 SOLID 1/23/96	SSSB1 0.0-0.5' A5L150192-001 QUANTERRA L15192 SOIL 12/12/95	SSSB2 0.0-0.5' A5L150193-002 QUANTERRA L15193 SOIL 12/14/95	SSSB3 0.0-0.5' A5L150193-004 QUANTERRA L15193 SOIL 12/14/95
	VOLATILES						
67-64-1	Acetone	UG/KG	110	8.4 J	22 J	16 J	-
71-43-2	Benzene	UG/KG	-	-	-	-	-
78-93-3	2-Butanone (MEK)	UG/KG	20 J	-	6 J	3.9 J	-
106-46-7	1,4-Dichlorobenzene	UG/KG	-	-	-	-	-
100-41-4	Ethylbenzene	UG/KG	3.3 J	-	-	-	-
591-78-6	2-Hexanone	UG/KG	4 J	-	-	-	-
108-10-1	4-Methyl-2-pentanone (MIBK)	UG/KG	4.2 J	-	-	-	-
75-09-2	Methylene chloride	UG/KG	-	-	-	-	-
127-18-4	Tetrachloroethene	UG/KG	-	-	18 J	-	-
108-88-3	Toluene	UG/KG	8.3	-	-	4 J	-
79-01-6	Trichloroethene	UG/KG	-	-	27 J	-	-
1330-20-7	Xylenes (total)	UG/KG	12 J	-	-	-	-
	SEMIVOLATILES						
83-32-9	Acenaphthene	UG/KG	-	51 J	-	-	-
208-96-8	Acenaphthylene	UG/KG	-	-	-	-	-
120-12-7	Anthracene	UG/KG	-	100 J	-	45 J	-
56-55-3	Benzo(a)anthracene	UG/KG	-	120 J	79 J	210	-
50-32-8	Benzo(a)pyrene	UG/KG	-	73 J	72 J	190	-
205-99-2	Benzo(b)fluoranthene	UG/KG	-	130 J	110 J	300	-
191-24-2	Benzo(ghi)perylene	UG/KG	-	43 J	60 J	120 J	-
207-08-9	Benzo(k)fluoranthene	UG/KG	-	41 J	42 J	140 J	-
85-68-7	Butyl benzyl phthalate	UG/KG	-	120 J	800	-	-
86-74-8	Carbazole	UG/KG	-	40 J	-	23 J	-
218-01-9	Chrysene	UG/KG	-	160 J	94 J	220	-
84-74-2	Di-n-butyl phthalate	UG/KG	-	-	-	39 J	-
117-84-0	Di-n-octyl phthalate	UG/KG	-	-	-	-	-
53-70-3	Dibenz(a,h)anthracene	UG/KG	-	-	-	34 J	-
132-64-9	Dibenzofuran	UG/KG	-	140 J	18 J	-	-
105-67-9	2,4-Dimethylphenol	UG/KG	-	120 J	-	-	-
206-44-0	Fluoranthene	UG/KG	-	200	140 J	340	-
86-73-7	Fluorene	UG/KG	3500 J	78 J	-	-	-
193-39-5	Indeno(1,2,3-cd)pyrene	UG/KG	-	26 J	53 J	19 J	-
91-57-6	2-Methylnaphthalene	UG/KG	2400 J	2900	50 J	33 J	-
95-48-7	2-Methylphenol	UG/KG	-	260	-	-	-
108-39-4	3-Methylphenol	UG/KG			-	-	-
106-44-5	4-Methylphenol	UG/KG	-	140 J	-	-	-
91-20-3	Naphthalene	UG/KG	-	1500	-	25 J	-
85-01-8	Phenanthrene	UG/KG	3700 J	500	96 J	200	-
108-95-2	Phenol	UG/KG	-	930	-	-	-
129-00-0	Pyrene	UG/KG	-	200	96 J	180 J	-
117-81-7	bis(2-Ethylhexyl) phthalate	UG/KG	1300 J	56 J	23 J	-	-

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TABLE 4.15
WEST YARD INVESTIGATION
GM, PONTIAC, MICHIGAN
DETECTED ANALYTES - WEST YARD SURFACE SOIL

		SAMPLE ID: (1)	SSTT5	SSTT55 (DUP OF SSTT5)	SSSB1	SSSB2	SSSB3
		DEPTH:	0.0-0.5'	0.0-0.5'	0.0-0.5'	0.0-0.5'	0.0-0.5'
		LAB ID:	A6A250126-011	A6A250126-010	A5L150192-001	A5L150193-002	A5L150193-004
		SOURCE:	QUANTERRA	QUANTERRA	QUANTERRA	QUANTERRA	QUANTERRA
		SDG:	A6A250126	A6A250126	L15192	L15193	L15193
		MATRIX:	SOLID	SOLID	SOIL	SOIL	SOIL
		SAMPLED:	1/23/96	1/23/96	12/12/95	12/14/95	12/14/95
CAS NO.	COMPOUND	UNITS:					
	PCBs						
72-43-5	Methoxychlor	UG/KG	-	-	-	-	-
12672-29-6	Aroclor 1248	UG/KG	2000	-	-	-	-
11097-69-1	Aroclor 1254	UG/KG	1100	-	-	-	-
TPCBS	Total PCBs	UG/KG	3100	-	-	-	-
	DIOXINS						
TDIOXINS	Total TEFs	UG/KG					
	INORGANICS						
7429-90-5	Aluminum	UG/KG	799000 J	3960000 J	7000000	4660000	1890000 J
7440-36-0	Antimony	UG/KG	16600 J	2940 J	1420	8490	-
7440-38-2	Arsenic	UG/KG	67100 J	3350 J	4110	4030	1050
7440-39-3	Barium	UG/KG	41600 J	83200 J	65400	353000	14700 J
7440-41-7	Beryllium	UG/KG	-	720 J	745	338	163
7440-43-9	Cadmium	UG/KG	205	573	255	6090	76.3
7440-70-2	Calcium	UG/KG	-	19300000 J	30600000	35200000	2710000
7440-47-3	Chromium	UG/KG	940000 J	163000 J	42000	50400	4750 J
7440-48-4	Cobalt	UG/KG	69500 J	4820 J	4410	13400	-
7440-50-8	Copper	UG/KG	587000 J	82700 J	52100	221000	7740 J
57-12-5	Cyanide	UG/KG	370	520	-	450	-
7439-89-6	Iron	UG/KG	7000000 J	5230000 J	20600000	26300000	3390000 J
7439-92-1	Lead	UG/KG	18800 J	5150 J	46400	221000	14500 J
7439-95-4	Magnesium	UG/KG	492000 J	153000 J	4370000	6190000	817000
7439-96-5	Manganese	UG/KG	4600000 J	1530000 J	1760000	870000	78500 J
7439-97-6	Mercury	UG/KG	-	-	106	1140	-
7440-02-0	Nickel	UG/KG	557000 J	44700 J	36500	139000	5180 J
7440-09-7	Potassium	UG/KG	-	-	575000	-	-
7782-49-2	Selenium	UG/KG	-	-	-	-	-
7440-22-4	Silver	UG/KG	447	-	-	-	-
7440-23-5	Sodium	UG/KG	-	440000	253000	231000	126000
7440-31-5	Tin	UG/KG					
7440-62-2	Vanadium	UG/KG	52700 J	7400 J	13600	14000	4740 J
7440-66-6	Zinc	UG/KG	66000 J	1370000 J	44900	343000	16600
	OTHER						
18496-25-8	Sulfide	UG/KG					
10-31-1	Total Solids	%	90.7	90.3	94	88.81	91.76

J = Estimated Value
- = Not Detected
* = Elevated detection limit due to matrix interference.
(1) Duplicate samples are designated by adding 50 to the test trench numl

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TABLE 4.15
WEST YARD INVESTIGATION
GM, PONTIAC, MICHIGAN
DETECTED ANALYTES - WEST YARD SURFACE SOIL

CAS NO.	COMPOUND	SAMPLE ID: [1] DEPTH: LAB ID: SOURCE: SDG: MATRIX: SAMPLED: UNITS:	SSSB53 (DUP OF SSSB3) 0.0-0.5' A5L150193-006 QUANTERRA L15193 SOIL 12/14/95	SSSB4 0.0-0.5' A5L160125-001 QUANTERRA L16125 SOIL 12/15/95	SSSB5 0.0-0.5' A5L160125-003 QUANTERRA L15192 SOIL 12/12/95	SSDW16 0.0-0.5' A5L160125-003 QUANTERRA L16125 SOIL 12/15/95	SSMW17 0.0-0.5' A5L150193-008 QUANTERRA L15193 SOIL 12/14/95
	VOLATILES						
67-64-1	Acetone	UG/KG	-	7.3 J	36 J	-	11 J
71-43-2	Benzene	UG/KG	-	-	3.1 J	-	-
78-93-3	2-Butanone (MEK)	UG/KG	-	-	9.5 J	-	-
106-46-7	1,4-Dichlorobenzene	UG/KG	-	-	5.6 J	-	-
100-41-4	Ethylbenzene	UG/KG	-	-	2.5 J	-	-
591-78-6	2-Hexanone	UG/KG	-	-	-	-	-
108-10-1	4-Methyl-2-pentanone (MIBK)	UG/KG	-	-	-	-	-
75-09-2	Methylene chloride	UG/KG	-	-	6.7 J	-	-
127-18-4	Tetrachloroethene	UG/KG	-	2.8 J	-	-	-
108-88-3	Toluene	UG/KG	-	-	3.9 J	-	3.7 J
79-01-6	Trichloroethene	UG/KG	-	-	-	-	-
1330-20-7	Xylenes (total)	UG/KG	-	-	7.8 J	-	-
	SEMIVOLATILES						
83-32-9	Acenaphthene	UG/KG	-	-	-	-	-
208-96-8	Acenaphthylene	UG/KG	-	27 J	-	-	-
120-12-7	Anthracene	UG/KG	-	48 J	-	-	-
56-55-3	Benzo(a)anthracene	UG/KG	-	120 J	150 J	24 J	110 J
50-32-8	Benzo(a)pyrene	UG/KG	-	140 J	-	24 J	86 J
205-99-2	Benzo(b)fluoranthene	UG/KG	-	200 J	-	46 J	170
191-24-2	Benzo(ghi)perylene	UG/KG	-	120 J	-	20 J	77 J
207-08-9	Benzo(k)fluoranthene	UG/KG	-	100 J	-	-	57 J
85-68-7	Butyl benzyl phthalate	UG/KG	-	340	270 J	-	1100
86-74-8	Carbazole	UG/KG	-	-	-	-	-
218-01-9	Chrysene	UG/KG	-	180 J	150 J	38 J	130 J
84-74-2	Di-n-butyl phthalate	UG/KG	-	-	240 J	-	-
117-84-0	Di-n-octyl phthalate	UG/KG	-	-	-	-	-
53-70-3	Dibenz(a,h)anthracene	UG/KG	-	28 J	-	-	23 J
132-64-9	Dibenzofuran	UG/KG	-	43 J	-	-	40 J
105-67-9	2,4-Dimethylphenol	UG/KG	-	-	-	-	-
206-44-0	Fluoranthene	UG/KG	-	220	-	54 J	200
86-73-7	Fluorene	UG/KG	-	-	-	-	-
193-39-5	Indeno(1,2,3-cd)pyrene	UG/KG	-	98 J	-	22 J	78 J
91-57-6	2-Methylnaphthalene	UG/KG	-	170 J	150 J	28 J	130 J
95-48-7	2-Methylphenol	UG/KG	-	-	-	-	-
108-39-4	3-Methylphenol	UG/KG	-	-	-	-	-
106-44-5	4-Methylphenol	UG/KG	-	-	-	-	-
91-20-3	Naphthalene	UG/KG	-	110 J	120 J	21 J	100 J
85-01-8	Phenanthrene	UG/KG	-	180 J	210 J	41 J	150 J
108-95-2	Phenol	UG/KG	-	-	-	-	-
129-00-0	Pyrene	UG/KG	-	140 J	230 J	35 J	120 J
117-81-7	bis(2-Ethylhexyl) phthalate	UG/KG	-	-	200 J	-	-

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TABLE 4.15
WEST YARD INVESTIGATION
GM, PONTIAC, MICHIGAN
DETECTED ANALYTES - WEST YARD SURFACE SOIL

CAS NO.	COMPOUND	SAMPLE ID: [1] / DEPTH: / LAB ID: / SOURCE: / SDG: / MATRIX: / SAMPLED: / UNITS:	SSSB53 (DUP OF SSSB3) 0.0-0.5' A5L150193-006 QUANTERRA L15193 SOIL 12/14/95	SSSB4 0.0-0.5' A5L160125-001 QUANTERRA L16125 SOIL 12/15/95	SSSB5 0.0-0.5' A5L160125-003 QUANTERRA L15192 SOIL 12/12/95	SSDW16 0.0-0.5' A5L160125-003 QUANTERRA L16125 SOIL 12/15/95	SSMW17 0.0-0.5' A5L150193-008 QUANTERRA L15193 SOIL 12/14/95
	PCBs						
72-43-5	Methoxychlor	UG/KG	-	-	-	-	-
12672-29-6	Aroclor 1248	UG/KG	-	-	730	-	-
11097-69-1	Aroclor 1254	UG/KG	-	-	-	-	480
TPCBS	Total PCBs	UG/KG	-	-	730	-	480
	DIOXINS						
TDIOXINS	Total TEFs	UG/KG			0.00000568		
	INORGANICS						
7429-90-5	Aluminum	UG/KG	3590000 J	7340000	4090000	2830000	5940000
7440-36-0	Antimony	UG/KG	-	2920	494 J	-	1450
7440-38-2	Arsenic	UG/KG	1350	9400	2230 J	3600	2300
7440-39-3	Barium	UG/KG	26200 J	83000	82700	17900	43300
7440-41-7	Beryllium	UG/KG	270	805	321	169	423
7440-43-9	Cadmium	UG/KG	46.8	817	868 J	183	1160
7440-70-2	Calcium	UG/KG	2900000	24200000	10200000 J	48800000	13400000
7440-47-3	Chromium	UG/KG	7680 J	271000	19700 J	7450	44700
7440-48-4	Cobalt	UG/KG	7180	2670	2820	5600	
7440-50-8	Copper	UG/KG	11500 J	125000	57600	16400	82500
57-12-5	Cyanide	UG/KG		330	-	-	-
7439-89-6	Iron	UG/KG	5760000 J	5510000	12900000	6720000	32600000
7439-92-1	Lead	UG/KG	8350 J	82300	13000 J	10900	67100
7439-95-4	Magnesium	UG/KG	604000	2490000	2120000 J	10900000	3170000
7439-96-5	Manganese	UG/KG	142000 J	2430000	463000	218000	721000
7439-97-6	Mercury	UG/KG	-	71	78.9	-	59.7
7440-02-0	Nickel	UG/KG	11400 J	63300	28200 J	9570	51000
7440-09-7	Potassium	UG/KG	-	575000	-	-	558000
7782-49-2	Selenium	UG/KG	-	1090	515	-	628
7440-22-4	Silver	UG/KG	-	-	-	-	-
7440-23-5	Sodium	UG/KG	168000	249000	426000	402000	273000
7440-31-5	Tin	UG/KG			13100		
7440-62-2	Vanadium	UG/KG	7400 J	17600	7600	10600	19300
7440-66-6	Zinc	UG/KG	12300	212000	30200	45000	95000
	OTHER						
18496-25-8	Sulfide	UG/KG					
10-31-1	Total Solids	%	92.61	86.99	93.5	88.8	94.61

J = Estimated Value
- = Not Detected
* = Elevated detection limit due to matrix interference.
[1] Duplicate samples are designated by adding 50 to the test trench numl

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TABLE 4.15
WEST YARD INVESTIGATION
GM, PONTIAC, MICHIGAN
DETECTED ANALYTES - WEST YARD SURFACE SOIL

CAS NO.	COMPOUND	SAMPLE ID: [1] / DEPTH: / LAB ID: / SOURCE: / SDG: / MATRIX: / SAMPLED: / UNITS:	SSMW18 0.0-0.5' A5L150193-007 QUANTERRA L15193 SOIL 12/14/95	SSMW19 0.0-0.5' A5L190138-014 QUANTERRA L16128 SOIL 12/18/95	SSMW20 0.0-0.5' A5L190138-015 QUANTERRA L16128 SOIL 12/18/95	SSDW21 0.0-0.5' A5L200142-013 QUANTERRA L20142 SOIL 12/19/95	SSMW22 0.0-0.5' A5L150192-004 QUANTERRA L15192 SOIL 12/12/95
	VOLATILES						
67-64-1	Acetone	UG/KG	-	-	-	2.8 J	360 J
71-43-2	Benzene	UG/KG	-	-	-	-	6.4 J
78-93-3	2-Butanone (MEK)	UG/KG	3.5 J	-	-	-	67 J
106-46-7	1,4-Dichlorobenzene	UG/KG	-	-	-	-	-
100-41-4	Ethylbenzene	UG/KG	-	-	-	-	24 J
591-78-6	2-Hexanone	UG/KG	-	-	-	-	-
108-10-1	4-Methyl-2-pentanone (MIBK)	UG/KG	-	-	-	-	-
75-09-2	Methylene chloride	UG/KG	3.1 J	-	-	-	5.3 J
127-18-4	Tetrachloroethene	UG/KG	-	4.9 J	3.5 J	-	-
108-88-3	Toluene	UG/KG	2.7 J	-	-	-	26 J
79-01-6	Trichloroethene	UG/KG	-	-	-	-	-
1330-20-7	Xylenes (total)	UG/KG	-	2.8 J	-	-	79 J
	SEMIVOLATILES						
83-32-9	Acenaphthene	UG/KG	-	-	-	-	-
208-96-8	Acenaphthylene	UG/KG	-	38 J	-	-	-
120-12-7	Anthracene	UG/KG	-	72 J	-	-	-
56-55-3	Benzo(a)anthracene	UG/KG	-	990	-	68 J	-
50-32-8	Benzo(a)pyrene	UG/KG	-	930	-	75 J	-
205-99-2	Benzo(b)fluoranthene	UG/KG	-	1500	-	93 J	-
191-24-2	Benzo(ghi)perylene	UG/KG	-	480	-	47 J	-
207-08-9	Benzo(k)fluoranthene	UG/KG	-	440	-	49 J	-
85-68-7	Butyl benzyl phthalate	UG/KG	-	270	-	-	-
86-74-8	Carbazole	UG/KG	-	190 J	-	-	-
218-01-9	Chrysene	UG/KG	30 J	890	-	84 J	-
84-74-2	Di-n-butyl phthalate	UG/KG	-	-	-	-	-
117-84-0	Di-n-octyl phthalate	UG/KG	-	-	-	-	-
53-70-3	Dibenz(a,h)anthracene	UG/KG	-	180	-	-	-
132-64-9	Dibenzofuran	UG/KG	23 J			-	-
105-67-9	2,4-Dimethylphenol	UG/KG	-	-	-	-	-
206-44-0	Fluoranthene	UG/KG	30 J	1600	-	170 J	-
86-73-7	Fluorene	UG/KG	-	-	-	-	710 J
193-39-5	Indeno(1,2,3-cd)pyrene	UG/KG	-	530	-	43 J	-
91-57-6	2-Methylnaphthalene	UG/KG	60 J	47 J	-	-	660 J
95-48-7	2-Methylphenol	UG/KG	-	-	-	-	-
108-39-4	3-Methylphenol	UG/KG	-	-	-	-	-
106-44-5	4-Methylphenol	UG/KG	-	-	-	-	-
91-20-3	Naphthalene	UG/KG	43 J	-	-	-	-
85-01-8	Phenanthrene	UG/KG	67 J	170 J	-	60 J	1100 J
108-95-2	Phenol	UG/KG	-	-	-	-	-
129-00-0	Pyrene	UG/KG	20 J	1000	-	98 J	-
117-81-7	bis(2-Ethylhexyl) phthalate	UG/KG	-	-	-	-	-

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TABLE 4.15
WEST YARD INVESTIGATION
GM, PONTIAC, MICHIGAN
DETECTED ANALYTES - WEST YARD SURFACE SOIL

CAS NO.	COMPOUND	SAMPLE ID: [1] / DEPTH: / LAB ID: / SOURCE: / SDG: / MATRIX: / SAMPLED: / UNITS:	SSMW18 0.0-0.5' A5L150193-007 QUANTERRA L15193 SOIL 12/14/95	SSMW19 0.0-0.5' A5L190138-014 QUANTERRA L16128 SOIL 12/18/95	SSMW20 0.0-0.5' A5L190138-015 QUANTERRA L16128 SOIL 12/18/95	SSDW21 0.0-0.5' A5L200142-013 QUANTERRA L20142 SOIL 12/19/95	SSMW22 0.0-0.5' A5L150192-004 QUANTERRA L15192 SOIL 12/12/95
	PCBs						
72-43-5	Methoxychlor	UG/KG	90	-	-	-	-
12672-29-6	Aroclor 1248	UG/KG	-	-	-	-	500
11097-69-1	Aroclor 1254	UG/KG	-	-	-	-	340
TPCBS	Total PCBs	UG/KG	-	-	-	-	840
	DIOXINS						
TDIOXINS	Total TEFs	UG/KG					
	INORGANICS						
7429-90-5	Aluminum	UG/KG	5690000	5630000	2280000	8500000	1850000
7440-36-0	Antimony	UG/KG	824	1720	1530	-	26500
7440-38-2	Arsenic	UG/KG	2870	5780	3070	5790	59600
7440-39-3	Barium	UG/KG	41000	183000	14600	43300	45600
7440-41-7	Beryllium	UG/KG	537	-	-	337	-
7440-43-9	Cadmium	UG/KG	50.9	1080	120	146	258
7440-70-2	Calcium	UG/KG	19000000	37300000	4070000	40100000	6980000
7440-47-3	Chromium	UG/KG	21600	49400	64500	12100	1270000
7440-48-4	Cobalt	UG/KG	5750	6100	3580	6340	46900
7440-50-8	Copper	UG/KG	61500	124000	64000	13500	1170000
57-12-5	Cyanide	UG/KG	-	-	-	-	310
7439-89-6	Iron	UG/KG	38100000	28400000	36600000	14200000	567000000
7439-92-1	Lead	UG/KG	21600	61900	11600	14700	123000
7439-95-4	Magnesium	UG/KG	2870000	5530000	698000	8170000	892000
7439-96-5	Manganese	UG/KG	991000	826000	504000	377000	4580000
7439-97-6	Mercury	UG/KG	-	237	-	-	71.7
7440-02-0	Nickel	UG/KG	52100	40000	28400	15800	468000
7440-09-7	Potassium	UG/KG	-	741000	-	1270000	-
7782-49-2	Selenium	UG/KG	-	-	-	-	-
7440-22-4	Silver	UG/KG	-	-	380	-	1640
7440-23-5	Sodium	UG/KG	548000	276000	164000	197000	177000
7440-31-5	Tin	UG/KG					
7440-62-2	Vanadium	UG/KG	14900	13400	6070	17500	53700
7440-66-6	Zinc	UG/KG	11100	129000	26400	57600	1680000
	OTHER						
18496-25-8	Sulfide	UG/KG					
10-31-1	Total Solids	%	93.04	91.8	89.5	89.1	

J = Estimated Value
- = Not Detected
* = Elevated detection limit due to matrix interference.
[1] Duplicate samples are designated by adding 50 to the test trench numl

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TABLE 4.16
WEST YARD INVESTIGATION
GM, PONTIAC, MICHIGAN
PART 201 SOIL SCREENING CRITERIA EXCEEDENCE SUMMARY - WEST YARD SURFACE SOIL SAMPLES

CAS NO.	COMPOUND	UNITS:	Maximum Concentration	Average [1] Detected Concentration	No. of Exceedences [2] No. of Locations	Criteria Exceeded	Location of Exceedences
	VOLATILES						
67-64-1	Acetone	UG/KG	360 J	73	0/17	NONE	NONE
71-43-2	Benzene	UG/KG	6.4 J	4.8	0/17	NONE	NONE
78-93-3	2-Butanone (MEK)	UG/KG	67 J	22	0/17	NONE	NONE
106-46-7	1,4-Dichlorobenzene	UG/KG	5.6 J	4	0/17	NONE	NONE
100-41-4	Ethylbenzene	UG/KG	24 J	10	0/17	NONE	NONE
591-78-6	2-Hexanone	UG/KG	4.1 J	4.1	0/17	NONE	NONE
108-10-1	4-Methyl-2-pentanone (MIBK)	UG/KG	16 J	10	0/17	NONE	NONE
75-09-2	Methylene chloride	UG/KG	6.7 J	4.5	0/17	NONE	NONE
127-18-4	Tetrachloroethene	UG/KG	18 J	7	0/17	NONE	NONE
108-88-3	Toluene	UG/KG	27 J	11	0/17	NONE	NONE
79-01-6	Trichloroethene	UG/KG	27 J	27	0/17	NONE	NONE
1330-20-7	Xylenes (total)	UG/KG	79 J	28	0/17	NONE	NONE
	SEMIVOLATILES						
83-32-9	Acenaphthene	UG/KG	36000	9500	0/17	NONE	NONE
208-96-8	Acenaphthylene	UG/KG	2000 J	690	0/17	NONE	NONE
120-12-7	Anthracene	UG/KG	21000	2800	0/17	NONE	NONE
56-55-3	Benzo(a)anthracene	UG/KG	15000	1300	0/17	NONE	NONE
50-32-8	Benzo(a)pyrene	UG/KG	8600 J	900	0/17	NONE	NONE
205-99-2	Benzo(b)fluoranthene	UG/KG	11000	1200	0/17	NONE	NONE
191-24-2	Benzo(ghi)perylene	UG/KG	4500 J	470	0/17	NONE	NONE
207-08-9	Benzo(k)fluoranthene	UG/KG	5300 J	520	0/17	NONE	NONE
85-68-7	Butyl benzyl phthalate	UG/KG	32000	4200	0/17	NONE	NONE
86-74-8	Carbazole	UG/KG	11000	2200	0/17	NONE	NONE
218-01-9	Chrysene	UG/KG	16000	1300	0/17	NONE	NONE
84-74-2	Di-n-butyl phthalate	UG/KG	240 J	140	0/17	NONE	NONE
53-70-3	Dibenz(a,h)anthracene	UG/KG	180	70	0/17	NONE	NONE
132-64-9	Dibenzofuran	UG/KG	27000	4000	0/17	NONE	NONE
105-67-9	2,4-Dimethylphenol	UG/KG	250 J	190	0/17	NONE	NONE
206-44-0	Fluoranthene	UG/KG	82000	6600	0/17	NONE	NONE
86-73-7	Fluorene	UG/KG	36000	8400	0/17	NONE	NONE
193-39-5	Indeno(1,2,3-cd)pyrene	UG/KG	3700 J	390	0/17	NONE	NONE
91-57-6	2-Methylnaphthalene	UG/KG	23000	2500	0/17	NONE	NONE
95-48-7	2-Methylphenol	UG/KG	930	600	0/17	NONE	NONE
108-39-4	3-Methylphenol	UG/KG	400	400	0/15	NONE	NONE
106-44-5	4-Methylphenol	UG/KG	450	300	0/17	NONE	NONE
91-20-3	Naphthalene	UG/KG	97000	10000	0/17	NONE	NONE
85-01-8	Phenanthrene	UG/KG	110000	7600	0/17	NONE	NONE
108-95-2	Phenol	UG/KG	2100	1000	0/17	NONE	NONE
129-00-0	Pyrene	UG/KG	50000	3600	0/17	NONE	NONE
117-81-7	bis(2-Ethylhexyl) phthalate	UG/KG	1300 J	300	0/17	NONE	NONE

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TABLE 4.16
WEST YARD INVESTIGATION
GM, PONTIAC, MICHIGAN
PART 201 SOIL SCREENING CRITERIA EXCEEDENCE SUMMARY - WEST YARD SURFACE SOIL SAMPLES

CAS NO.	COMPOUND	UNITS:	Maximum Concentration	Average [1] Detected Concentration	No. of Exceedences [2] / No. of Locations	Criteria Exceeded	Location of Exceedences
	PCBs						
72-43-5	Methoxychlor	UG/KG	90	90	0/17	NONE	NONE
TPCBS	Total PCBs	UG/KG	3100	1100	0/17	NONE	NONE
	DIOXIN						
TDIOXINS	TOTAL TEFs	UG/KG	0.000566	0.000115	0/5	NONE	NONE
	INORGANICS						
7429-90-5	Aluminum	UG/KG	8,500,000	3960000	0/17	NONE	NONE
7440-36-0	Antimony	UG/KG	26,500	6700	0/17	NONE	NONE
7440-38-2	Arsenic	UG/KG	67100 J	12100	0/17	NONE	NONE
7440-39-3	Barium	UG/KG	353,000	66000	0/17	NONE	NONE
7440-41-7	Beryllium	UG/KG	805	461	0/17	NONE	NONE
7440-43-9	Cadmium	UG/KG	6,090	837	0/17	NONE	NONE
7440-70-2	Calcium	UG/KG	89700000	26000000	0/17	NONE	NONE
7440-47-3	Chromium	UG/KG	1660000	244000	0/17	NONE	NONE
7440-48-4	Cobalt	UG/KG	69500 J	15100	0/17	NONE	NONE
7440-50-8	Copper	UG/KG	1590000	248000	0/17	NONE	NONE
57-12-5	Cyanide	UG/KG	590	415	0/17	NONE	NONE
7439-89-6	Iron	UG/KG	567,000,000	56600000	0/17	NONE	NONE
7439-92-1	Lead	UG/KG	221,000	53000	0/17	NONE	NONE
7439-95-4	Magnesium	UG/KG	12000000 J	3970000	0/17	NONE	NONE
7439-96-5	Manganese	UG/KG	4600000 J	1488000	9/17	PSIC[3]	SSTT1, SSTT2, SSTT4, SSTT5, SSSB1, SSSB2, SSSB4, SSMW18, SSMW22
7439-97-6	Mercury	UG/KG	1,140	232	0/17	NONE	NONE
7440-02-0	Nickel	UG/KG	601000	214000	0/17	NONE	NONE
7440-09-7	Potassium	UG/KG	1,270,000	703000	0/17	NONE	NONE
7782-49-2	Selenium	UG/KG	1,090	744	0/17	NONE	NONE
7440-22-4	Silver	UG/KG	1,640	616	0/17	NONE	NONE
7440-23-5	Sodium	UG/KG	675000	290000	0/17	NONE	NONE
7440-31-5	Tin	UG/KG	84000	41400	0/4	NONE	NONE
7440-62-2	Vanadium	UG/KG	53,700	17200	0/17	NONE	NONE
7440-66-6	Zinc	UG/KG	3640000	415000	0/17	NONE	NONE
	OTHER						
18496-25-8	Sulfide	UG/KG	100000	446	0/3	NONE	NONE
10-31-1	Total Solids	%	94.6	90.3	0/16	NONE	NONE

J = Estimated Value.
(1) Average concentration calculated using detected values only.
(2) See Table 4.5 for Part 201 soil screening criteria values.
(3) Particulate Soil Inhalation Criteria.

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TABLE 4.17
WEST YARD INVESTIGATION
GM, PONTIAC, MICHIGAN
DETECTED ANALYTES - WEST YARD SUBSURFACE SOIL DATA

CAS NO.	COMPOUND	SAMPLE ID: [1] / DEPTH: / LAB ID: / SOURCE: / SDG: / MATRIX: / SAMPLED: / UNITS:	SBTT1 10-15' A6A250126-002 QUANTERRA A6A250126 SOLID 1/22/96	SBTT2 15-15' A6A250126-004 QUANTERRA A6A250126 SOLID 1/22/96	SBTT3 05-09' A6A250126-007 QUANTERRA A6A250126 SOLID 1/23/96	SBTT4 03-10' A6A250126-009 QUANTERRA A6A250126 SOLID 1/23/96	SBTT5 03-05' A6A250126-012 QUANTERRA A6A250126 SOLID 1/23/96
	VOLATILES						
67-64-1	Acetone	UG/KG	4.2 J	42 J	-	32 J	2.7 J
71-43-2	Benzene	UG/KG	-	-	-	-	-
78-93-3	2-Butanone (MEK)	UG/KG	-	17 J	-	6.6 J	-
75-15-0	Carbon disulfide	UG/KG	-	-	-	-	-
106-46-7	1,4-Dichlorobenzene	UG/KG	-	-	-	2.7 J	-
75-34-3	1,1-Dichloroethane	UG/KG	-	-	-	-	-
100-41-4	Ethylbenzene	UG/KG	-	22 J	15000	-	-
591-78-6	2-Hexanone	UG/KG	-	-	-	-	-
108-10-1	4-Methyl-2-pentanone (MIBK)	UG/KG	-	-	-	3.9 J	-
75-09-2	Methylene chloride	UG/KG	-	-	25000	-	-
127-18-4	Tetrachloroethene	UG/KG	-	-	-	-	-
108-88-3	Toluene	UG/KG	-	36	42000	5.1 J	-
79-01-6	Trichloroethene	UG/KG	-	-	-	-	-
75-01-4	Vinyl chloride	UG/KG	-	-	-	-	-
1330-20-7	Xylenes (total)	UG/KG	-	160	75000	7.3 J	-
156-59-2	cis-1,2-Dichloroethene	UG/KG	-	-	-	-	-
	SEMIVOLATILES						
83-32-9	Acenaphthene	UG/KG	24 J	-	14000 J	-	57 J
208-96-8	Acenaphthylene	UG/KG	-	-	-	-	-
120-12-7	Anthracene	UG/KG	47 J	-	11000 J	-	300
56-55-3	Benzo(a)anthracene	UG/KG	480	-	-	-	190
50-32-8	Benzo(a)pyrene	UG/KG	690	-	-	-	140 J
205-99-2	Benzo(b)fluoranthene	UG/KG	1200	-	-	-	240
191-24-2	Benzo(ghi)perylene	UG/KG	580	-	-	-	82 J
207-08-9	Benzo(k)fluoranthene	UG/KG	460	-	-	-	77 J
85-68-7	Butyl benzyl phthalate	UG/KG	-	-	100000	3000 J	130 J
86-74-8	Carbazole	UG/KG	21 J	-	-	-	110 J
218-01-9	Chrysene	UG/KG	730	-	-	-	230
84-74-2	Di-n-butyl phthalate	UG/KG	-	-	-	-	-
117-84-0	Di-n-octyl phthalate	UG/KG	-	-	37000 J	-	-
53-70-3	Dibenz(a,h)anthracene	UG/KG	250	-	-	-	23 J
132-64-9	Dibenzofuran	UG/KG	48 J	-	13000 J	-	170 J
105-67-9	2,4-Dimethylphenol	UG/KG	24 J	-	72000 J	-	150 J
206-44-0	Fluoranthene	UG/KG	320	-	22000 J	-	340
86-73-7	Fluorene	UG/KG	40 J	-	26000 J	-	91 J
193-39-5	Indeno(1,2,3-cd)pyrene	UG/KG	510	-	-	-	53 J
91-57-6	2-Methylnaphthalene	UG/KG	350	7200 J	34000 J	-	2700
95-48-7	2-Methylphenol	UG/KG	41 J	-	-	-	320
108-39-4	3-Methylphenol	UG/KG					
106-44-5	4-Methylphenol	UG/KG	45 J	-	70000 J	-	180
91-20-3	Naphthalene	UG/KG	190	3700 J	70000 J	-	1400
76-01-7	Pentachloroethane	UG/KG	-				
85-01-8	Phenanthrene	UG/KG	300	4900 J	52000 J	3100 J	600
108-95-2	Phenol	UG/KG	110 J	-	140000	-	900
129-00-0	Pyrene	UG/KG	310	-	17000 J	-	300
117-81-7	bis(2-Ethylhexyl) phthalate	UG/KG	-	-	32000 J	-	83 J

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TABLE 4.17
WEST YARD INVESTIGATION
GM, PONTIAC, MICHIGAN
DETECTED ANALYTES - WEST YARD SUBSURFACE SOIL DATA

CAS NO.	COMPOUND	SAMPLE ID: (1) / DEPTH: / LAB ID: / SOURCE: / SDG: / MATRIX: / SAMPLED: / UNITS:	SBTT1 10-15' A6A250126-002 QUANTERRA A6A250126 SOLID 1/22/96	SBTT2 15-15' A6A250126-004 QUANTERRA A6A250126 SOLID 1/22/96	SBTT3 05-09' A6A250126-007 QUANTERRA A6A250126 SOLID 1/23/96	SBTT4 03-10' A6A250126-009 QUANTERRA A6A250126 SOLID 1/23/96	SBTT5 03-05' A6A250126-012 QUANTERRA A6A250126 SOLID 1/23/96
	PESTICIDE/PCBs						
72-43-5	Methoxychlor	UG/KG	-	-	-	-	-
12672-29-6	Aroclor 1248	UG/KG	-	-	13000	830	-
11097-69-1	Aroclor 1254	UG/KG	-	-	7400	840	-
TPCBS	Total PCBs	UG/KG	-	-	20400	1670	-
	DIOXINS						
TDIOXINS	Total TEFs	UG/KG					
	INORGANICS						
7429-90-5	Aluminum	UG/KG	2740000	1890000	6200000	2750000	3950000
7440-36-0	Antimony	UG/KG	416	638	2760	5440	2330
7440-38-2	Arsenic	UG/KG	797	872	7120	9460	4050
7440-39-3	Barium	UG/KG	26200 J	18000	306000	32000	78400
7440-41-7	Beryllium	UG/KG	425	-	614	-	655
7440-43-9	Cadmium	UG/KG	122	121	10700	425	546
7440-70-2	Calcium	UG/KG	7210000	2420000	15600000	8370000	16600000
7440-47-3	Chromium	UG/KG	12400 J	9820	161000	340000	143000
7440-48-4	Cobalt	UG/KG	-	-	11300	14000	6170
7440-50-8	Copper	UG/KG	8500	26900	2370000	350000	93800
57-12-5	Cyanide	UG/KG	430	490	3600	380	930
7439-89-6	Iron	UG/KG	6660000	6090000	69400000	14200000	68800000
7439-92-1	Lead	UG/KG	16400 J	5950	180000	48300	202000
7439-95-4	Magnesium	UG/KG	622000 J	730000	3460000	623000	1380000
7439-96-5	Manganese	UG/KG	894000	107000	1990000	1690000	1790000
7439-97-6	Mercury	UG/KG	-	82.4	156	-	-
7440-02-0	Nickel	UG/KG	5950 J	5950	195000	145000	33500
7440-09-7	Potassium	UG/KG	-	-	744000	-	-
7782-49-2	Selenium	UG/KG	370	-	836	-	-
7440-22-4	Silver	UG/KG	-	-	886	-	-
7440-23-5	Sodium	UG/KG	252000 J	624000	616000	209000	468000
7440-31-5	Tin	UG/KG					
7440-62-2	Vanadium	UG/KG	6730 J	8750	10300	13300	6720
7440-66-6	Zinc	UG/KG	43700 J	9920	602000	69900	1120000
	OTHER						
10-31-1	Solids, Percent	%	94.2	94	73.3	95.7	91.5

J = Estimated Value
- = Not Detected
R = Rejected Value
(1) Duplicate samples are designated by adding 50 to the soil boring number.

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TABLE 4.17
WEST YARD INVESTIGATION
GM, PONTIAC, MICHIGAN
DETECTED ANALYTES - WEST YARD SUBSURFACE SOIL DATA

		SAMPLE ID: [1]	SBSB1	SBSB2	SBSB3	SBSB4	SBSB5
		DEPTH:	16-18'	04-06'	16-18'	06-08'	04-06'
		LAB ID:	A5L150192-002	A5L150193-003	A5L150193-005	A5L160125-002	A5L150193-001
		SOURCE:	QUANTERRA	QUANTERRA	QUANTERRA	QUANTERRA	QUANTERRA
		SDG:	L15192	L15193	L15193	L16125	L15193
		MATRIX:	SOIL	SOIL	SOIL	SOIL	SOIL
		SAMPLED:	12/12/95	12/14/95	12/14/95	12/15/95	12/12/95
CAS NO.	COMPOUND	UNITS:					
	VOLATILES						
67-64-1	Acetone	UG/KG	-	-	16 J	-	2200 J
71-43-2	Benzene	UG/KG	-	-	-	-	720 J
78-93-3	2-Butanone (MEK)	UG/KG	-	-	2.9 J	-	1600 J
75-15-0	Carbon disulfide	UG/KG	-	-	-	-	-
106-46-7	1,4-Dichlorobenzene	UG/KG	-	-	-	-	-
75-34-3	1,1-Dichloroethane	UG/KG	-	-	-	-	-
100-41-4	Ethylbenzene	UG/KG	-	-	-	-	25000
591-78-6	2-Hexanone	UG/KG	-	-	-	-	-
108-10-1	4-Methyl-2-pentanone (MIBK)	UG/KG	-	-	-	-	-
75-09-2	Methylene chloride	UG/KG	-	-	-	-	-
127-18-4	Tetrachloroethene	UG/KG	-	-	-	-	-
108-88-3	Toluene	UG/KG	-	-	2.4 J	-	34000
79-01-6	Trichloroethene	UG/KG	-	-	-	-	-
75-01-4	Vinyl chloride	UG/KG	-	-	-	-	-
1330-20-7	Xylenes (total)	UG/KG	-	-	6.8 J	-	150000
156-59-2	cis-1,2-Dichloroethene	UG/KG	-	-	-	-	-
	SEMIVOLATILES						
83-32-9	Acenaphthene	UG/KG	-	-	-	-	-
208-96-8	Acenaphthylene	UG/KG	-	-	-	-	-
120-12-7	Anthracene	UG/KG	-	-	-	20 J	-
56-55-3	Benzo(a)anthracene	UG/KG	-	-	-	54 J	-
50-32-8	Benzo(a)pyrene	UG/KG	-	-	-	41 J	-
205-99-2	Benzo(b)fluoranthene	UG/KG	-	-	-	71 J	-
191-24-2	Benzo(ghi)perylene	UG/KG	-	-	-	28 J	-
207-08-9	Benzo(k)fluoranthene	UG/KG	-	-	-	36 J	-
85-68-7	Butyl benzyl phthalate	UG/KG	-	-	-	-	-
86-74-8	Carbazole	UG/KG	-	-	-	-	-
218-01-9	Chrysene	UG/KG	-	-	-	67 J	-
84-74-2	Di-n-butyl phthalate	UG/KG	-	-	-	-	480000
117-84-0	Di-n-octyl phthalate	UG/KG	-	-	-	-	-
53-70-3	Dibenz(a,h)anthracene	UG/KG	-	-	-	-	-
132-64-9	Dibenzofuran	UG/KG	-	-	-	-	-
105-67-9	2,4-Dimethylphenol	UG/KG	-	-	-	-	-
206-44-0	Fluoranthene	UG/KG	-	-	-	130 J	-
86-73-7	Fluorene	UG/KG	-	-	-	-	-
193-39-5	Indeno(1,2,3-cd)pyrene	UG/KG	-	-	-	27 J	-
91-57-6	2-Methylnaphthalene	UG/KG	-	-	-	27 J	55000
95-48-7	2-Methylphenol	UG/KG	-	-	-	-	-
108-39-4	3-Methylphenol	UG/KG	-				-
106-44-5	4-Methylphenol	UG/KG	-	-	-	-	-
91-20-3	Naphthalene	UG/KG	-	-	-	22 J	19000 J
76-01-7	Pentachloroethane	UG/KG	-				-
85-01-8	Phenanthrene	UG/KG	-	-	1200 J	120 J	11000 J
108-95-2	Phenol	UG/KG	-	-	-	-	-
129-00-0	Pyrene	UG/KG	-	-	-	72 J	-
117-81-7	bis(2-Ethylhexyl) phthalate	UG/KG	24 J	-	-	-	-

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TABLE 4.17
WEST YARD INVESTIGATION
GM, PONTIAC, MICHIGAN
DETECTED ANALYTES - WEST YARD SUBSURFACE SOIL DATA

CAS NO.	COMPOUND	SAMPLE ID: (1)	SBSB1	SBSB2	SBSB3	SBSB4	SBSB5
		DEPTH:	16-18'	04-06'	16-18'	06-08'	04-06'
		LAB ID:	A5L150192-002	A5L150193-003	A5L150193-005	A5L160125-002	A5L150193-001
		SOURCE:	QUANTERRA	QUANTERRA	QUANTERRA	QUANTERRA	QUANTERRA
		SDG:	L15192	L15193	L15193	L16125	L15193
		MATRIX:	SOIL	SOIL	SOIL	SOIL	SOIL
		SAMPLED:	12/12/95	12/14/95	12/14/95	12/15/95	12/12/95
		UNITS:					
	PESTICIDE/PCBs						
72-43-5	Methoxychlor	UG/KG	-	-	-	-	-
12672-29-6	Aroclor 1248	UG/KG	-	-	-	-	-
11097-69-1	Aroclor 1254	UG/KG	-	-	-	-	-
TPCBS	Total PCBs	UG/KG	-	-	-	-	-
	DIOXINS						
TDIOXINS	Total TEFs	UG/KG					1.36E-04
	INORGANICS						
7429-90-5	Aluminum	UG/KG	1660000	10800000	2070000	6580000	3910000
7440-36-0	Antimony	UG/KG	-	-	-	341	1740000
7440-38-2	Arsenic	UG/KG	862	5390	878	1350	35700
7440-39-3	Barium	UG/KG	5310	61300	5090	34800	1200000
7440-41-7	Beryllium	UG/KG		580	163	439	-
7440-43-9	Cadmium	UG/KG	57.9	62.2	49	36.8	5180
7440-70-2	Calcium	UG/KG	39700000	88500000	58400000	12100000	13200000
7440-47-3	Chromium	UG/KG	3850	78200	3800	10300	1020000
7440-48-4	Cobalt	UG/KG		6730	-	3070	34600
7440-50-8	Copper	UG/KG	4190	14900	3300	15500	729000
57-12-5	Cyanide	UG/KG	-	-	-	-	4100
7439-89-6	Iron	UG/KG	3360000	14300000	4400000	14200000	376000000
7439-92-1	Lead	UG/KG	2100	30100	2220	711	573000
7439-95-4	Magnesium	UG/KG	7890000	16500000	13200000	2130000	975000
7439-96-5	Manganese	UG/KG	87600	333000	117000	563000	3510000
7439-97-6	Mercury	UG/KG	-	-	-	-	2230
7440-02-0	Nickel	UG/KG	4250	19500	4330	13100	354000
7440-09-7	Potassium	UG/KG	-	2690000	-	551000	-
7782-49-2	Selenium	UG/KG	-	-	-	-	7670
7440-22-4	Silver	UG/KG	-	-	-	-	-
7440-23-5	Sodium	UG/KG	244000	277000	173000	221000	434000
7440-31-5	Tin	UG/KG	-				51300
7440-62-2	Vanadium	UG/KG	6910	24700	9150	14600	61400
7440-66-6	Zinc	UG/KG	11500	45000	13100	5370	932000
	OTHER						
10-31-1	Solids, Percent	%	84.7	86.2	92.3	91.17	87.16

J = Estimated Value
- = Not Detected
R = Rejected Value
(1) Duplicate samples are designated by adding 50 to the soil boring numbe

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TABLE 4.17
WEST YARD INVESTIGATION
GM, PONTIAC, MICHIGAN
DETECTED ANALYTES - WEST YARD SUBSURFACE SOIL DATA

CAS NO.	COMPOUND	SAMPLE ID: [1] / DEPTH: / LAB ID: / SOURCE: / SDG: / MATRIX: / SAMPLED: / UNITS:	SBWD1 04-06' A5L190138-001 QUANTERRA L16128 SOIL 12/18/95	SBWD1 10-12' A5L190138-002 QUANTERRA L16128 SOIL 12/18/95	SBWD1 14-16' A5L190138-003 QUANTERRA L16128 SOIL 12/18/95	SBWD1 20-22' A5L190138-004 QUANTERRA L16128 SOIL 12/18/95	SBWD1 24-26' A5L190138-005 QUANTERRA L16128 SOIL 12/18/95
	VOLATILES						
67-64-1	Acetone	UG/KG	-	14 J	30 J	51 J	14 J
71-43-2	Benzene	UG/KG	-	-	-	-	-
78-93-3	2-Butanone (MEK)	UG/KG	-	2.5 J	5.5 J	10 J	-
75-15-0	Carbon disulfide	UG/KG	-	-	-	-	-
106-46-7	1,4-Dichlorobenzene	UG/KG	-	-	-	-	-
75-34-3	1,1-Dichloroethane	UG/KG	-	-	-	-	-
100-41-4	Ethylbenzene	UG/KG	-	-	-	-	-
591-78-6	2-Hexanone	UG/KG	-	-	-	-	-
108-10-1	4-Methyl-2-pentanone (MIBK)	UG/KG	-	-	-	-	-
75-09-2	Methylene chloride	UG/KG	-	-	2.4 J	-	-
127-18-4	Tetrachloroethene	UG/KG	2.5 J	2.3 J	3 J	-	-
108-88-3	Toluene	UG/KG	-	-	-	-	-
79-01-6	Trichloroethene	UG/KG	-	-	-	-	-
75-01-4	Vinyl chloride	UG/KG	-	-	-	-	-
1330-20-7	Xylenes (total)	UG/KG	-	-	-	-	-
156-59-2	cis-1,2-Dichloroethene	UG/KG	-	-	-	-	-
	SEMIVOLATILES						
83-32-9	Acenaphthene	UG/KG			-		
208-96-8	Acenaphthylene	UG/KG			-	-	-
120-12-7	Anthracene	UG/KG			-		
56-55-3	Benzo(a)anthracene	UG/KG			120 J		
50-32-8	Benzo(a)pyrene	UG/KG			120 J		
205-99-2	Benzo(b)fluoranthene	UG/KG			210		
191-24-2	Benzo(ghi)perylene	UG/KG			42 J		
207-08-9	Benzo(k)fluoranthene	UG/KG			-		
85-68-7	Butyl benzyl phthalate	UG/KG			-		
86-74-8	Carbazole	UG/KG			-		
218-01-9	Chrysene	UG/KG			110 J		
84-74-2	Di-n-butyl phthalate	UG/KG			-		
117-84-0	Di-n-octyl phthalate	UG/KG	-	-	-	-	-
53-70-3	Dibenz(a,h)anthracene	UG/KG			18 J		
132-64-9	Dibenzofuran	UG/KG			-		
105-67-9	2,4-Dimethylphenol	UG/KG			-		
206-44-0	Fluoranthene	UG/KG			-		
86-73-7	Fluorene	UG/KG			-		
193-39-5	Indeno(1,2,3-cd)pyrene	UG/KG			43 J		
91-57-6	2-Methylnaphthalene	UG/KG			320		
95-48-7	2-Methylphenol	UG/KG			34 J		
108-39-4	3-Methylphenol	UG/KG			54 J		
106-44-5	4-Methylphenol	UG/KG			54 J		
91-20-3	Naphthalene	UG/KG			-		
76-01-7	Pentachloroethane	UG/KG			-		
85-01-8	Phenanthrene	UG/KG			-		
108-95-2	Phenol	UG/KG	-	-	-	-	-
129-00-0	Pyrene	UG/KG			-		
117-81-7	bis(2-Ethylhexyl) phthalate	UG/KG			-		

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TABLE 4.17
WEST YARD INVESTIGATION
GM, PONTIAC, MICHIGAN
DETECTED ANALYTES - WEST YARD SUBSURFACE SOIL DATA

		SAMPLE ID: (1)	SBWD1	SBWD1	SBWD1	SBWD1	SBWD1
		DEPTH:	04-06'	10-12'	14-16'	20-22'	24-26'
		LAB ID:	A5L190138-001	A5L190138-002	A5L190138-003	A5L190138-004	A5L190138-005
		SOURCE:	QUANTERRA	QUANTERRA	QUANTERRA	QUANTERRA	QUANTERRA
		SDG:	L16128	L16128	L16128	L16128	L16128
		MATRIX:	SOIL	SOIL	SOIL	SOIL	SOIL
		SAMPLED:	12/18/95	12/18/95	12/18/95	12/18/95	12/18/95
CAS NO.	COMPOUND	UNITS:					
	PESTICIDE/PCBs						
72-43-5	Methoxychlor	UG/KG			-		
12672-29-6	Aroclor 1248	UG/KG			-		
11097-69-1	Aroclor 1254	UG/KG			-		
TPCBS	Total PCBs	UG/KG			-		
	DIOXINS						
TDIOXINS	Total TEFs	UG/KG			1.35E-05		
	INORGANICS						
7429-90-5	Aluminum	UG/KG			3600000		
7440-36-0	Antimony	UG/KG			444 J		
7440-38-2	Arsenic	UG/KG			1890		
7440-39-3	Barium	UG/KG			26100		
7440-41-7	Beryllium	UG/KG			-		
7440-43-9	Cadmium	UG/KG			69.4		
7440-70-2	Calcium	UG/KG			9980000 J		
7440-47-3	Chromium	UG/KG			20300 J		
7440-48-4	Cobalt	UG/KG			-		
7440-50-8	Copper	UG/KG			9220		
57-12-5	Cyanide	UG/KG			-		
7439-89-6	Iron	UG/KG			6280000		
7439-92-1	Lead	UG/KG			8190		
7439-95-4	Magnesium	UG/KG			749000		
7439-96-5	Manganese	UG/KG			936000		
7439-97-6	Mercury	UG/KG			-		
7440-02-0	Nickel	UG/KG			7050		
7440-09-7	Potassium	UG/KG			-		
7782-49-2	Selenium	UG/KG			316 J		
7440-22-4	Silver	UG/KG			-		
7440-23-5	Sodium	UG/KG			546000		
7440-31-5	Tin	UG/KG					
7440-62-2	Vanadium	UG/KG			5105		
7440-66-6	Zinc	UG/KG			17300 J		
	OTHER						
10-31-1	Solids, Percent	%	93.1	89.8	94.3	81.8	90.5

J = Estimated Value
- = Not Detected
R = Rejected Value
(1) Duplicate samples are designated by adding 50 to the soil boring numbe

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TABLE 4.17
WEST YARD INVESTIGATION
GM, PONTIAC, MICHIGAN
DETECTED ANALYTES - WEST YARD SUBSURFACE SOIL DATA

CAS NO.	COMPOUND	SAMPLE ID: [1] / DEPTH: / LAB ID: / SOURCE: / SDG: / MATRIX: / SAMPLED: / UNITS:	SBWD1 30-32' A5L190138-006 QUANTERRA L16128 SOIL 12/18/95	SBWD1 34-36' A5L190138-007 QUANTERRA L16128 SOIL 12/18/95	SBWD2 04-06' A5L190138-008 QUANTERRA L16128 SOIL 12/18/95	SBWD2 10-12' A5L190138-009 QUANTERRA L16128 SOIL 12/18/95	SBWD2 14-16' A5L190138-010 QUANTERRA L16128 SOIL 12/18/95
	VOLATILES						
67-64-1	Acetone	UG/KG	8.9 J	9.1 J	11 J	99	25 J
71-43-2	Benzene	UG/KG	-	-	-	-	-
78-93-3	2-Butanone (MEK)	UG/KG	-	-	2.2 J	20 J	4 J
75-15-0	Carbon disulfide	UG/KG	-	-	-	3.9 J	-
106-46-7	1,4-Dichlorobenzene	UG/KG	-	-	-	-	-
75-34-3	1,1-Dichloroethane	UG/KG	-	-	-	-	-
100-41-4	Ethylbenzene	UG/KG	-	-	-	-	-
591-78-6	2-Hexanone	UG/KG	-	-	-	2.5 J	-
108-10-1	4-Methyl-2-pentanone (MIBK)	UG/KG	-	-	-	-	-
75-09-2	Methylene chloride	UG/KG	-	-	-	-	-
127-18-4	Tetrachloroethene	UG/KG	-	-	-	-	-
108-88-3	Toluene	UG/KG	-	-	-	-	-
79-01-6	Trichloroethene	UG/KG	-	-	-	-	-
75-01-4	Vinyl chloride	UG/KG	-	-	-	-	-
1330-20-7	Xylenes (total)	UG/KG	-	-	-	-	-
156-59-2	cis-1,2-Dichloroethene	UG/KG	-	-	-	-	-
	SEMIVOLATILES						
83-32-9	Acenaphthene	UG/KG					
208-96-8	Acenaphthylene	UG/KG				-	-
120-12-7	Anthracene	UG/KG					
56-55-3	Benzo(a)anthracene	UG/KG					
50-32-8	Benzo(a)pyrene	UG/KG					
205-99-2	Benzo(b)fluoranthene	UG/KG					
191-24-2	Benzo(ghi)perylene	UG/KG					
207-08-9	Benzo(k)fluoranthene	UG/KG					
85-68-7	Butyl benzyl phthalate	UG/KG					
86-74-8	Carbazole	UG/KG					
218-01-9	Chrysene	UG/KG					
84-74-2	Di-n-butyl phthalate	UG/KG					
117-84-0	Di-n-octyl phthalate	UG/KG	-	-	-	-	-
53-70-3	Dibenz(a,h)anthracene	UG/KG					
132-64-9	Dibenzofuran	UG/KG					
105-67-9	2,4-Dimethylphenol	UG/KG					
206-44-0	Fluoranthene	UG/KG					
86-73-7	Fluorene	UG/KG					
193-39-5	Indeno(1,2,3-cd)pyrene	UG/KG					
91-57-6	2-Methylnaphthalene	UG/KG					
95-48-7	2-Methylphenol	UG/KG					
108-39-4	3-Methylphenol	UG/KG					
106-44-5	4-Methylphenol	UG/KG					
91-20-3	Naphthalene	UG/KG					
76-01-7	Pentachloroethane	UG/KG					
85-01-8	Phenanthrene	UG/KG					
108-95-2	Phenol	UG/KG	-	-	-	-	-
129-00-0	Pyrene	UG/KG					
117-81-7	bis(2-Ethylhexyl) phthalate	UG/KG					

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TABLE 4.17
WEST YARD INVESTIGATION
GM, PONTIAC, MICHIGAN
DETECTED ANALYTES - WEST YARD SUBSURFACE SOIL DATA

CAS NO.	COMPOUND	SAMPLE ID: (1) DEPTH: LAB ID: SOURCE: SDG: MATRIX: SAMPLED: UNITS:	SBWD1 30-32' A5L190138-006 QUANTERRA L16128 SOIL 12/18/95	SBWD1 34-36' A5L190138-007 QUANTERRA L16128 SOIL 12/18/95	SBWD2 04-06' A5L190138-008 QUANTERRA L16128 SOIL 12/18/95	SBWD2 10-12' A5L190138-009 QUANTERRA L16128 SOIL 12/18/95	SBWD2 14-16' A5L190138-010 QUANTERRA L16128 SOIL 12/18/95
	PESTICIDE/PCBs						
72-43-5	Methoxychlor	UG/KG					
12672-29-6	Aroclor 1248	UG/KG					
11097-69-1	Aroclor 1254	UG/KG					
TPCBS	Total PCBs	UG/KG					
	DIOXINS						
TDIOXINS	Total TEFs	UG/KG					
	INORGANICS						
7429-90-5	Aluminum	UG/KG					
7440-36-0	Antimony	UG/KG					
7440-38-2	Arsenic	UG/KG					
7440-39-3	Barium	UG/KG					
7440-41-7	Beryllium	UG/KG					
7440-43-9	Cadmium	UG/KG					
7440-70-2	Calcium	UG/KG					
7440-47-3	Chromium	UG/KG					
7440-48-4	Cobalt	UG/KG					
7440-50-8	Copper	UG/KG					
57-12-5	Cyanide	UG/KG					
7439-89-6	Iron	UG/KG					
7439-92-1	Lead	UG/KG					
7439-95-4	Magnesium	UG/KG					
7439-96-5	Manganese	UG/KG					
7439-97-6	Mercury	UG/KG					
7440-02-0	Nickel	UG/KG					
7440-09-7	Potassium	UG/KG					
7782-49-2	Selenium	UG/KG					
7440-22-4	Silver	UG/KG					
7440-23-5	Sodium	UG/KG					
7440-31-5	Tin	UG/KG					
7440-62-2	Vanadium	UG/KG					
7440-66-6	Zinc	UG/KG					
	OTHER						
10-31-1	Solids, Percent	%	89.7	91.3	93.2	89.2	80.1

J = Estimated Value
- = Not Detected
R = Rejected Value
(1) Duplicate samples are designated by adding 50 to the soil boring numbe

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TABLE 4.17
WEST YARD INVESTIGATION
GM, PONTIAC, MICHIGAN
DETECTED ANALYTES - WEST YARD SUBSURFACE SOIL DATA

CAS NO.	COMPOUND	SAMPLE ID: [1] / DEPTH: / LAB ID: / SOURCE: / SDG: / MATRIX: / SAMPLED: / UNITS:	SBWD2 20-22' A5L190138-011 QUANTERRA L16128 SOIL 12/18/95	SBWD2 24-26' A5L190138-012 QUANTERRA L16128 SOIL 12/18/95	SBWD2 24-26' A5L200158-001 QUANTERRA L16128 SOIL 12/18/95	SBWD2 30-32' A5L200158-002 QUANTERRA L16128 SOIL 12/19/95	SBWD2 34-36' A5L200158-003 QUANTERRA L16128 SOIL 12/19/95
	VOLATILES						
67-64-1	Acetone	UG/KG	-	-	-	14 J	-
71-43-2	Benzene	UG/KG	-	-	-	-	-
78-93-3	2-Butanone (MEK)	UG/KG	17 J	6.9 J	6.3 J	2.4 J	-
75-15-0	Carbon disulfide	UG/KG	-	-	-	-	-
106-46-7	1,4-Dichlorobenzene	UG/KG	-	-	-	-	-
75-34-3	1,1-Dichloroethane	UG/KG	-	-	-	-	-
100-41-4	Ethylbenzene	UG/KG	-	4.1 J	-	-	-
591-78-6	2-Hexanone	UG/KG	-	-	-	-	-
108-10-1	4-Methyl-2-pentanone (MIBK)	UG/KG	3 J	-	-	-	-
75-09-2	Methylene chloride	UG/KG	3.1 J	-	-	-	-
127-18-4	Tetrachloroethene	UG/KG	7.5 J	-	-	-	-
108-88-3	Toluene	UG/KG	-	-	-	-	-
79-01-6	Trichloroethene	UG/KG	-	-	-	-	-
75-01-4	Vinyl chloride	UG/KG	-	-	-	-	-
1330-20-7	Xylenes (total)	UG/KG	-	-	-	-	-
156-59-2	cis-1,2-Dichloroethene	UG/KG	-	-	-	-	-
	SEMIVOLATILES						
83-32-9	Acenaphthene	UG/KG			-		
208-96-8	Acenaphthylene	UG/KG			-	-	-
120-12-7	Anthracene	UG/KG			-		
56-55-3	Benzo(a)anthracene	UG/KG			63 J		
50-32-8	Benzo(a)pyrene	UG/KG			93 J		
205-99-2	Benzo(b)fluoranthene	UG/KG			120 J		
191-24-2	Benzo(ghi)perylene	UG/KG			51 J		
207-08-9	Benzo(k)fluoranthene	UG/KG			49 J		
85-68-7	Butyl benzyl phthalate	UG/KG			-		
86-74-8	Carbazole	UG/KG			-		
218-01-9	Chrysene	UG/KG			72 J		
84-74-2	Di-n-butyl phthalate	UG/KG			-		
117-84-0	Di-n-octyl phthalate	UG/KG	-	-	-	-	-
53-70-3	Dibenz(a,h)anthracene	UG/KG					
132-64-9	Dibenzofuran	UG/KG					
105-67-9	2,4-Dimethylphenol	UG/KG					
206-44-0	Fluoranthene	UG/KG			97 J		
86-73-7	Fluorene	UG/KG			200		
193-39-5	Indeno(1,2,3-cd)pyrene	UG/KG			46 J		
91-57-6	2-Methylnaphthalene	UG/KG			150 J		
95-48-7	2-Methylphenol	UG/KG			-		
108-39-4	3-Methylphenol	UG/KG			-		
106-44-5	4-Methylphenol	UG/KG			-		
91-20-3	Naphthalene	UG/KG			50 J		
76-01-7	Pentachloroethane	UG/KG			99 J		
85-01-8	Phenanthrene	UG/KG			390		
108-95-2	Phenol	UG/KG	-	-	-	-	-
129-00-0	Pyrene	UG/KG			77 J		
117-81-7	bis(2-Ethylhexyl) phthalate	UG/KG			170 J		

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TABLE 4.17
WEST YARD INVESTIGATION
GM, PONTIAC, MICHIGAN
DETECTED ANALYTES - WEST YARD SUBSURFACE SOIL DATA

CAS NO.	COMPOUND	SAMPLE ID: (1) DEPTH: LAB ID: SOURCE: SDG: MATRIX: SAMPLED: UNITS:	SBWD2 20-22' A5L190138-011 QUANTERRA L16128 SOIL 12/18/95	SBWD2 24-26' A5L190138-012 QUANTERRA L16128 SOIL 12/18/95	SBWD2 24-26' A5L200158-001 QUANTERRA L16128 SOIL 12/18/95	SBWD2 30-32' A5L200158-002 QUANTERRA L16128 SOIL 12/19/95	SBWD2 34-36' A5L200158-003 QUANTERRA L16128 SOIL 12/19/95
	PESTICIDE/PCBs						
72-43-5	Methoxychlor	UG/KG			-		
12672-29-6	Aroclor 1248	UG/KG			2400		
11097-69-1	Aroclor 1254	UG/KG			-		
TPCBS	Total PCBs	UG/KG			2400		
	DIOXINS						
TDIOXINS	Total TEFs	UG/KG			2.45E-05		
	INORGANICS						
7429-90-5	Aluminum	UG/KG			2880000		
7440-36-0	Antimony	UG/KG			-		
7440-38-2	Arsenic	UG/KG			1780		
7440-39-3	Barium	UG/KG			32200		
7440-41-7	Beryllium	UG/KG			-		
7440-43-9	Cadmium	UG/KG			-		
7440-70-2	Calcium	UG/KG			17000000		
7440-47-3	Chromium	UG/KG			13800		
7440-48-4	Cobalt	UG/KG			-		
7440-50-8	Copper	UG/KG			19700		
57-12-5	Cyanide	UG/KG			-		
7439-89-6	Iron	UG/KG			7430000		
7439-92-1	Lead	UG/KG			1300000		
7439-95-4	Magnesium	UG/KG			913000		
7439-96-5	Manganese	UG/KG			223000		
7439-97-6	Mercury	UG/KG			-		
7440-02-0	Nickel	UG/KG			16300		
7440-09-7	Potassium	UG/KG			-		
7782-49-2	Selenium	UG/KG			-		
7440-22-4	Silver	UG/KG			-		
7440-23-5	Sodium	UG/KG			268000		
7440-31-5	Tin	UG/KG			-		
7440-62-2	Vanadium	UG/KG			6430		
7440-66-6	Zinc	UG/KG			9810		
	OTHER						
10-31-1	Solids, Percent	%	81.8	77.8	83.6	83.8	90.4

J = Estimated Value
- = Not Detected
R = Rejected Value
(1) Duplicate samples are designated by adding 50 to the soil boring numbe

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TABLE 4.17
WEST YARD INVESTIGATION
GM, PONTIAC, MICHIGAN
DETECTED ANALYTES - WEST YARD SUBSURFACE SOIL DATA

CAS NO.	COMPOUND	SAMPLE ID: (1) / DEPTH: / LAB ID: / SOURCE: / SDG: / MATRIX: / SAMPLED: / UNITS:	SBWD3 30-32' A5L200142-009 QUANTERRA L20142 SOIL 12/19/95	SBWD3 34-36' A5L200142-010 QUANTERRA L20142 SOIL 12/19/95	SBMW16 05-07' A5L210121-003 QUANTERRA L20142 SOIL 12/20/95	SBDW16 16-18' A5L160125-004 QUANTERRA L16125 SOIL 12/15/95	SBMW17 06-08' A5L210121-004 QUANTERRA L20142 SOIL 12/20/95
	VOLATILES						
67-64-1	Acetone	UG/KG	9.8 J	16 J	-	2.5 J	-
71-43-2	Benzene	UG/KG	-	-	-	-	-
78-93-3	2-Butanone (MEK)	UG/KG	2.6 J	3 J	-	-	-
75-15-0	Carbon disulfide	UG/KG	-	-	-	-	2.6 J
106-46-7	1,4-Dichlorobenzene	UG/KG	-	-	-	-	-
75-34-3	1,1-Dichloroethane	UG/KG	-	-	-	-	-
100-41-4	Ethylbenzene	UG/KG	-	-	-	-	-
591-78-6	2-Hexanone	UG/KG	-	-	-	-	-
108-10-1	4-Methyl-2-pentanone (MIBK)	UG/KG	-	-	-	-	-
75-09-2	Methylene chloride	UG/KG	-	-	3.2 J	-	-
127-18-4	Tetrachloroethene	UG/KG	-	-	2.4 J	-	2.5 J
108-88-3	Toluene	UG/KG	-	-	-	-	-
79-01-6	Trichloroethene	UG/KG	-	-	-	-	-
75-01-4	Vinyl chloride	UG/KG	-	-	-	-	-
1330-20-7	Xylenes (total)	UG/KG	-	-	-	-	-
156-59-2	cis-1,2-Dichloroethene	UG/KG	-	-	-	-	-
	SEMIVOLATILES						
83-32-9	Acenaphthene	UG/KG			-	-	33 J
208-96-8	Acenaphthylene	UG/KG			-	-	-
120-12-7	Anthracene	UG/KG			-	-	-
56-55-3	Benzo(a)anthracene	UG/KG			-	-	-
50-32-8	Benzo(a)pyrene	UG/KG			-	-	-
205-99-2	Benzo(b)fluoranthene	UG/KG			-	-	-
191-24-2	Benzo(ghi)perylene	UG/KG			-	-	-
207-08-9	Benzo(k)fluoranthene	UG/KG			-	-	-
85-68-7	Butyl benzyl phthalate	UG/KG			-	-	-
86-74-8	Carbazole	UG/KG			-	-	-
218-01-9	Chrysene	UG/KG			-	-	-
84-74-2	Di-n-butyl phthalate	UG/KG			-	-	-
117-84-0	Di-n-octyl phthalate	UG/KG	-	-	-	-	-
53-70-3	Dibenz(a,h)anthracene	UG/KG			-	-	-
132-64-9	Dibenzofuran	UG/KG			-	-	26 J
105-67-9	2,4-Dimethylphenol	UG/KG			-	-	-
206-44-0	Fluoranthene	UG/KG			-	-	46 J
86-73-7	Fluorene	UG/KG			-	-	46 J
193-39-5	Indeno(1,2,3-cd)pyrene	UG/KG			-	-	-
91-57-6	2-Methylnaphthalene	UG/KG			-	-	230
95-48-7	2-Methylphenol	UG/KG			-	-	38 J
108-39-4	3-Methylphenol	UG/KG					
106-44-5	4-Methylphenol	UG/KG			-	-	83 J
91-20-3	Naphthalene	UG/KG			-	-	210
76-01-7	Pentachloroethane	UG/KG					
85-01-8	Phenanthrene	UG/KG			-	-	120 J
108-95-2	Phenol	UG/KG	-	-	-	-	-
129-00-0	Pyrene	UG/KG			-	-	32 J
117-81-7	bis(2-Ethylhexyl) phthalate	UG/KG			-	-	-

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TABLE 4.17
WEST YARD INVESTIGATION
GM, PONTIAC, MICHIGAN
DETECTED ANALYTES - WEST YARD SUBSURFACE SOIL DATA

CAS NO.	COMPOUND	SAMPLE ID: (1) DEPTH: LAB ID: SOURCE: SDG: MATRIX: SAMPLED: UNITS:	SBWD3 30-32' A5L200142-009 QUANTERRA L20142 SOIL 12/19/95	SBWD3 34-36' A5L200142-010 QUANTERRA L20142 SOIL 12/19/95	SBMW16 05-07' A5L210121-003 QUANTERRA L20142 SOIL 12/20/95	SBDW16 16-18' A5L160125-004 QUANTERRA L16125 SOIL 12/15/95	SBMW17 06-08' A5L210121-004 QUANTERRA L20142 SOIL 12/20/95
	PESTICIDE/PCBs						
72-43-5	Methoxychlor	UG/KG			-	-	-
12672-29-6	Aroclor 1248	UG/KG			-	-	-
11097-69-1	Aroclor 1254	UG/KG			-	-	-
TPCBS	Total PCBs	UG/KG			-	-	-
	DIOXINS						
TDIOXINS	Total TEFs	UG/KG					
	INORGANICS						
7429-90-5	Aluminum	UG/KG			1870000	2580000	1600000
7440-36-0	Antimony	UG/KG			-	-	664
7440-38-2	Arsenic	UG/KG			730	2790	2430
7440-39-3	Barium	UG/KG			6100	9070	16400
7440-41-7	Beryllium	UG/KG			-	165	-
7440-43-9	Cadmium	UG/KG			44.9	63.2	-
7440-70-2	Calcium	UG/KG			34800000	75400000	1230000
7440-47-3	Chromium	UG/KG			4010	3810	30500
7440-48-4	Cobalt	UG/KG			-	3080	-
7440-50-8	Copper	UG/KG			4960	6320	55800
57-12-5	Cyanide	UG/KG			-	-	620
7439-89-6	Iron	UG/KG			3020000	5540000	16300000
7439-92-1	Lead	UG/KG			2250	1680	6170
7439-95-4	Magnesium	UG/KG			7340000	23900000	814000
7439-96-5	Manganese	UG/KG			78400	179000	248000
7439-97-6	Mercury	UG/KG			-	-	-
7440-02-0	Nickel	UG/KG			5640	7040	33800
7440-09-7	Potassium	UG/KG			-	-	-
7782-49-2	Selenium	UG/KG			-	-	-
7440-22-4	Silver	UG/KG			-	-	-
7440-23-5	Sodium	UG/KG			303000	464000	226000
7440-31-5	Tin	UG/KG					
7440-62-2	Vanadium	UG/KG			6780	10500	5290
7440-66-6	Zinc	UG/KG			13000	12400	7910
	OTHER						
10-31-1	Solids, Percent	%	84.5	90.4	86.9	90.93	83.4

J = Estimated Value
- = Not Detected
R = Rejected Value
(1) Duplicate samples are designated by adding 50 to the soil boring numbe

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TABLE 4.17
WEST YARD INVESTIGATION
GM, PONTIAC, MICHIGAN
DETECTED ANALYTES - WEST YARD SUBSURFACE SOIL DATA

		SAMPLE ID: [1]	SBMW17	SBMW18	SBDW18	SBDW68 (DUP OF SBDW18)	SBMW19
		DEPTH:	10-12'	16-18'	34-36'	34-36'	25-27'
		LAB ID:	A5L150193-009	A5L150193-010	A5L210121-005	A5L210121-006	A5L190138-013
		SOURCE:	QUANTERRA	QUANTERRA	QUANTERRA	QUANTERRA	QUANTERRA
		SDG:	L15193	L15193	L20142	L20142	L16128
		MATRIX:	SOIL	SOIL	SOIL	SOIL	SOIL
		SAMPLED:	12/14/95	12/14/95	12/20/95	12/20/95	12/18/95
CAS NO.	COMPOUND	UNITS:					
	VOLATILES						
67-64-1	Acetone	UG/KG	-	20 J	-	-	22 J
71-43-2	Benzene	UG/KG	-	-	-	-	-
78-93-3	2-Butanone (MEK)	UG/KG	-	-	-	-	3.4 J
75-15-0	Carbon disulfide	UG/KG	-	-	-	-	-
106-46-7	1,4-Dichlorobenzene	UG/KG	-	-	-	-	-
75-34-3	1,1-Dichloroethane	UG/KG	-	-	-	-	-
100-41-4	Ethylbenzene	UG/KG	-	-	-	-	-
591-78-6	2-Hexanone	UG/KG	-	-	-	-	-
108-10-1	4-Methyl-2-pentanone (MIBK)	UG/KG	-	-	-	-	-
75-09-2	Methylene chloride	UG/KG	-	-	-	-	-
127-18-4	Tetrachloroethene	UG/KG	-	-	-	-	2.9 J
108-88-3	Toluene	UG/KG	-	-	-	-	-
79-01-6	Trichloroethene	UG/KG	-	-	-	-	-
75-01-4	Vinyl chloride	UG/KG	-	-	-	-	-
1330-20-7	Xylenes (total)	UG/KG	-	-	-	-	-
156-59-2	cis-1,2-Dichloroethene	UG/KG	-	-	-	-	-
	SEMIVOLATILES						
83-32-9	Acenaphthene	UG/KG	-	38 J	-	-	-
208-96-8	Acenaphthylene	UG/KG	-	-	-	-	-
120-12-7	Anthracene	UG/KG	-	23 J	-	-	-
56-55-3	Benzo(a)anthracene	UG/KG	-	42 J	-	-	-
50-32-8	Benzo(a)pyrene	UG/KG	-	25 J	-	-	-
205-99-2	Benzo(b)fluoranthene	UG/KG	-	43 J	-	-	-
191-24-2	Benzo(ghi)perylene	UG/KG	-	21 J	-	-	-
207-08-9	Benzo(k)fluoranthene	UG/KG	-	-	-	-	-
85-68-7	Butyl benzyl phthalate	UG/KG	-	-	-	-	-
86-74-8	Carbazole	UG/KG	-	-	-	-	-
218-01-9	Chrysene	UG/KG	-	55 J	-	-	-
84-74-2	Di-n-butyl phthalate	UG/KG	-	-	-	-	-
117-84-0	Di-n-octyl phthalate	UG/KG	-	-	-	-	-
53-70-3	Dibenz(a,h)anthracene	UG/KG	-	-	-	-	-
132-64-9	Dibenzofuran	UG/KG	-	22 J	-	-	-
105-67-9	2,4-Dimethylphenol	UG/KG	-	-	-	-	-
206-44-0	Fluoranthene	UG/KG	-	99 J	-	-	-
86-73-7	Fluorene	UG/KG	-	-	-	-	-
193-39-5	Indeno(1,2,3-cd)pyrene	UG/KG	-	-	-	-	-
91-57-6	2-Methylnaphthalene	UG/KG	-	61 J	-	-	-
95-48-7	2-Methylphenol	UG/KG	-		-	-	-
108-39-4	3-Methylphenol	UG/KG					
106-44-5	4-Methylphenol	UG/KG	-	-	-	-	-
91-20-3	Naphthalene	UG/KG	-	130 J	-	-	-
76-01-7	Pentachloroethane	UG/KG					
85-01-8	Phenanthrene	UG/KG	-	150 J	-	-	-
108-95-2	Phenol	UG/KG	-	-	-	-	-
129-00-0	Pyrene	UG/KG	-	53 J	-	-	-
117-81-7	bis(2-Ethylhexyl) phthalate	UG/KG	-	-	-	-	-

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TABLE 4.17
WEST YARD INVESTIGATION
GM, PONTIAC, MICHIGAN
DETECTED ANALYTES - WEST YARD SUBSURFACE SOIL DATA

CAS NO.	COMPOUND	SAMPLE ID: (1) DEPTH: LAB ID: SOURCE: SDG: MATRIX: SAMPLED: UNITS:	SBMW17 10-12' A5L150193-009 QUANTERRA L15193 SOIL 12/14/95	SBMW18 16-18' A5L150193-010 QUANTERRA L15193 SOIL 12/14/95	SBDW18 34-36' A5L210121-005 QUANTERRA L20142 SOIL 12/20/95	SBDW68 (DUP OF SBDW18) 34-36' A5L210121-006 QUANTERRA L20142 SOIL 12/20/95	SBMW19 25-27' A5L190138-013 QUANTERRA L16128 SOIL 12/18/95
	PESTICIDE/PCBs						
72-43-5	Methoxychlor	UG/KG	-	-	-	-	-
12672-29-6	Aroclor 1248	UG/KG	-	-	-	-	-
11097-69-1	Aroclor 1254	UG/KG	-	-	-	-	-
TPCBS	Total PCBs	UG/KG	-	-	-	-	-
	DIOXINS						
TDIOXINS	Total TEFs	UG/KG					
	INORGANICS						
7429-90-5	Aluminum	UG/KG	625000	2670000	1700000	1340000	1660000
7440-36-0	Antimony	UG/KG	-	467	-	-	1410
7440-38-2	Arsenic	UG/KG	603	1610	2150	3160	1180
7440-39-3	Barium	UG/KG	156000	20400	10200	7180	11600
7440-41-7	Beryllium	UG/KG	-	178	-	-	-
7440-43-9	Cadmium	UG/KG	121	157	42.9	43.4	-
7440-70-2	Calcium	UG/KG	42500000	5800000	51300000	51100000	-
7440-47-3	Chromium	UG/KG	1690	21400	3810	4830	4380
7440-48-4	Cobalt	UG/KG	-	-	-	-	-
7440-50-8	Copper	UG/KG	2790	28400	4000	4140	3200
57-12-5	Cyanide	UG/KG	-	-	1900	-	-
7439-89-6	Iron	UG/KG	2060000	9980000	3620000	3020000	4050000
7439-92-1	Lead	UG/KG	-	175000	1800	1840	70200
7439-95-4	Magnesium	UG/KG	9630000	885000	10100000	9220000	328000
7439-96-5	Manganese	UG/KG	425000	227000	124000	110000	32400
7439-97-6	Mercury	UG/KG	-	-	-	-	-
7440-02-0	Nickel	UG/KG	3060	33200	4410	4570	4760
7440-09-7	Potassium	UG/KG	-	-	-	-	-
7782-49-2	Selenium	UG/KG	-	339	-	-	-
7440-22-4	Silver	UG/KG	-	-	-	-	-
7440-23-5	Sodium	UG/KG	679000	227000	336000	324000	159000
7440-31-5	Tin	UG/KG					
7440-62-2	Vanadium	UG/KG	-	7310	6270	5610	4850
7440-66-6	Zinc	UG/KG	3960	23000	13300	14100	7900
	OTHER						
10-31-1	Solids, Percent	%	55.57	84.08	85.1		82.9

J = Estimated Value
- = Not Detected
R = Rejected Value
(1) Duplicate samples are designated by adding 50 to the soil boring numbe

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TABLE 4.17
WEST YARD INVESTIGATION
GM, PONTIAC, MICHIGAN
DETECTED ANALYTES - WEST YARD SUBSURFACE SOIL DATA

CAS NO.	COMPOUND	SAMPLE ID: [1] / DEPTH: / LAB ID: / SOURCE: / SDG: / MATRIX: / SAMPLED: / UNITS:	SBDW19 36-38' A5L160128-001 QUANTERRA L16128 SOIL 12/15/95	SBMW20 23-25' A5L210121-001 QUANTERRA L20142 SOIL 12/20/95	SBMW70 (DUP OF SBMW20) 23-25' A5L210121-002 QUANTERRA L20142 SOIL 12/20/95	SBDW20 40-42' A5L200142-011 QUANTERRA L20142 SOIL 12/19/95	SBDW70 (DUP OF SBDW20) 40-42' A5L200142-012 QUANTERRA L20142 SOIL 12/19/95
	VOLATILES						
67-64-1	Acetone	UG/KG	88	-	310 J	12 J	11 J
71-43-2	Benzene	UG/KG	-	-	-	-	-
78-93-3	2-Butanone (MEK)	UG/KG	18 J	-	1100 J	2.5 J	2.8 J
75-15-0	Carbon disulfide	UG/KG	9.6 J	-	-	-	-
106-46-7	1,4-Dichlorobenzene	UG/KG	-	-	-	-	-
75-34-3	1,1-Dichloroethane	UG/KG	-	-	-	16	21
100-41-4	Ethylbenzene	UG/KG	-	6100	5400	-	-
591-78-6	2-Hexanone	UG/KG	-	-	-	-	-
108-10-1	4-Methyl-2-pentanone (MIBK)	UG/KG	-	-	-	-	-
75-09-2	Methylene chloride	UG/KG	-	-	-	-	-
127-18-4	Tetrachloroethene	UG/KG	-	-	-	-	-
108-88-3	Toluene	UG/KG	3.7 J	1500	2500	-	-
79-01-6	Trichloroethene	UG/KG	-	-	-	-	-
75-01-4	Vinyl chloride	UG/KG	-	-	-	4 J	15
1330-20-7	Xylenes (total)	UG/KG	-	20000	17000	-	-
156-59-2	cis-1,2-Dichloroethene	UG/KG	-	-	-	8.6	16
	SEMIVOLATILES						
83-32-9	Acenaphthene	UG/KG	-	3300 J	6500	-	-
208-96-8	Acenaphthylene	UG/KG	-	-	-	-	-
120-12-7	Anthracene	UG/KG	-	-	-	-	-
56-55-3	Benzo(a)anthracene	UG/KG	-	5600 J	6300	-	-
50-32-8	Benzo(a)pyrene	UG/KG	-	-	-	-	-
205-99-2	Benzo(b)fluoranthene	UG/KG	-	4200 J	8300	-	-
191-24-2	Benzo(ghi)perylene	UG/KG	-	-	-	-	-
207-08-9	Benzo(k)fluoranthene	UG/KG	-	-	-	-	-
85-68-7	Butyl benzyl phthalate	UG/KG	-	8200 J	-	380	-
86-74-8	Carbazole	UG/KG	-	-	-	-	-
218-01-9	Chrysene	UG/KG	-	8000 J	9700	-	-
84-74-2	Di-n-butyl phthalate	UG/KG	-	-	-	-	-
117-84-0	Di-n-octyl phthalate	UG/KG	-	-	-	-	-
53-70-3	Dibenz(a,h)anthracene	UG/KG	-	-	-	-	-
132-64-9	Dibenzofuran	UG/KG	-	-	4200	-	-
105-67-9	2,4-Dimethylphenol	UG/KG	-			41 J	30 J
206-44-0	Fluoranthene	UG/KG	-	15000 J	21000	38 J	-
86-73-7	Fluorene	UG/KG	-	7500 J	9200	-	-
193-39-5	Indeno(1,2,3-cd)pyrene	UG/KG	-	-	-	-	-
91-57-6	2-Methylnaphthalene	UG/KG	-	85000	120000	110 J	-
95-48-7	2-Methylphenol	UG/KG	-	-	-	25 J	27 J
108-39-4	3-Methylphenol	UG/KG				-	-
106-44-5	4-Methylphenol	UG/KG	-	-	-	-	-
91-20-3	Naphthalene	UG/KG	-	12000 J	19000	-	-
76-01-7	Pentachloroethane	UG/KG				-	-
85-01-8	Phenanthrene	UG/KG	-	21000 J	26000	45 J	-
108-95-2	Phenol	UG/KG	-	-	-	-	-
129-00-0	Pyrene	UG/KG	-	13000 J	13000	24 J	-
117-81-7	bis(2-Ethylhexyl) phthalate	UG/KG	-	24000 J	35000	-	-

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TABLE 4.17
WEST YARD INVESTIGATION
GM, PONTIAC, MICHIGAN
DETECTED ANALYTES - WEST YARD SUBSURFACE SOIL DATA

		SAMPLE ID: (1)	SBDW19	SBMW20	SBMW70 (DUP OF SBMW20)	SBDW20	SBDW70 (DUP OF SBDW20)
		DEPTH:	36-38'	23-25'	23-25'	40-42'	40-42'
		LAB ID:	A5L160128-001	A5L210121-001	A5L210121-002	A5L200142-011	A5L200142-012
		SOURCE:	QUANTERRA	QUANTERRA	QUANTERRA	QUANTERRA	QUANTERRA
		SDG:	L16128	L20142	L20142	L20142	L20142
		MATRIX:	SOIL	SOIL	SOIL	SOIL	SOIL
		SAMPLED:	12/15/95	12/20/95	12/20/95	12/19/95	12/19/95
CAS NO.	COMPOUND	UNITS:					
	PESTICIDE/PCBs						
72-43-5	Methoxychlor	UG/KG	-	-	-	-	-
12672-29-6	Aroclor 1248	UG/KG	-	27000	31000	-	-
11097-69-1	Aroclor 1254	UG/KG	-	11000	12000	-	-
TPCBS	Total PCBs	UG/KG	-	38000	43000	-	-
	DIOXINS						
TDIOXINS	Total TEFs	UG/KG				7.80E-08	3.31E-07
	INORGANICS						
7429-90-5	Aluminum	UG/KG	1790000	1850000	2250000	1210000	1200000
7440-36-0	Antimony	UG/KG	-	1010	971	-	-
7440-38-2	Arsenic	UG/KG	8300	2890	2280	1580	1710
7440-39-3	Barium	UG/KG	60900	187000	267000	4730	4590
7440-41-7	Beryllium	UG/KG	-	-	-	-	-
7440-43-9	Cadmium	UG/KG	99.7	997	984	47.3	42.3
7440-70-2	Calcium	UG/KG	30100000	5030000	3430000	35700000	34900000
7440-47-3	Chromium	UG/KG	3550	17200	14200	3260	2960
7440-48-4	Cobalt	UG/KG	-	-	-	-	-
7440-50-8	Copper	UG/KG	15700	143000	126000	6180	3740
57-12-5	Cyanide	UG/KG	-	2900	3500	-	-
7439-89-6	Iron	UG/KG	10800000	10600000	8430000	2950000	2820000
7439-92-1	Lead	UG/KG	2260	112000	89800	2270	1830
7439-95-4	Magnesium	UG/KG	10700000	1140000	1100000	7810000	7170000
7439-96-5	Manganese	UG/KG	340000	252000	170000	93500	95100
7439-97-6	Mercury	UG/KG	-	647	1390	-	-
7440-02-0	Nickel	UG/KG	6950	60500	47800	5140	4650
7440-09-7	Potassium	UG/KG	-	-	-	-	-
7782-49-2	Selenium	UG/KG	-	386	-	-	-
7440-22-4	Silver	UG/KG	-	-	-	-	-
7440-23-5	Sodium	UG/KG	404000	299000	371000	406000	399000
7440-31-5	Tin	UG/KG				-	-
7440-62-2	Vanadium	UG/KG	6490	48200	57600	5100	4620
7440-66-6	Zinc	UG/KG	19800	68400	73200	10500	9590
	OTHER						
10-31-1	Solids, Percent	%	66.2	88.3	85.3	84.6	84

J = Estimated Value
- = Not Detected
R = Rejected Value
(1) Duplicate samples are designated by adding 50 to the soil boring numbe

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TABLE 4.17
WEST YARD INVESTIGATION
GM, PONTIAC, MICHIGAN
DETECTED ANALYTES - WEST YARD SUBSURFACE SOIL DATA

CAS NO.	COMPOUND	SAMPLE ID:[1] / DEPTH: / LAB ID: / SOURCE: / SDG: / MATRIX: / SAMPLED: / UNITS:	SBDW21 18-20' A5L200142-014 QUANTERRA L20142 SOIL 12/19/95	SBMW22 16-18' A5L150192-005 QUANTERRA L15192 SOIL 12/12/95	SBDW22 32-34' A5L200142-015 QUANTERRA L20142 SOIL 12/19/95
	VOLATILES				
67-64-1	Acetone	UG/KG	-	210 J	11 J
71-43-2	Benzene	UG/KG	-	-	-
78-93-3	2-Butanone (MEK)	UG/KG	-	58 J	-
75-15-0	Carbon disulfide	UG/KG	-	-	-
106-46-7	1,4-Dichlorobenzene	UG/KG	-	-	-
75-34-3	1,1-Dichloroethane	UG/KG	-	-	-
100-41-4	Ethylbenzene	UG/KG	-	300	-
591-78-6	2-Hexanone	UG/KG	-	-	-
108-10-1	4-Methyl-2-pentanone (MIBK)	UG/KG	-	-	-
75-09-2	Methylene chloride	UG/KG	-	-	-
127-18-4	Tetrachloroethene	UG/KG	-	-	-
108-88-3	Toluene	UG/KG	-	250	-
79-01-6	Trichloroethene	UG/KG	-	-	-
75-01-4	Vinyl chloride	UG/KG	-	-	-
1330-20-7	Xylenes (total)	UG/KG	-	2400	-
156-59-2	cis-1,2-Dichloroethene	UG/KG	-	-	-
	SEMIVOLATILES				
83-32-9	Acenaphthene	UG/KG	-	-	-
208-96-8	Acenaphthylene	UG/KG	-	-	-
120-12-7	Anthracene	UG/KG	310 J	4900 J	54 J
56-55-3	Benzo(a)anthracene	UG/KG	-	7700 J	42 J
50-32-8	Benzo(a)pyrene	UG/KG	-	-	-
205-99-2	Benzo(b)fluoranthene	UG/KG	-	-	28 J
191-24-2	Benzo(ghi)perylene	UG/KG	-	4200 J	-
207-08-9	Benzo(k)fluoranthene	UG/KG	-	-	-
85-68-7	Butyl benzyl phthalate	UG/KG	-	-	390
86-74-8	Carbazole	UG/KG	-	-	43 J
218-01-9	Chrysene	UG/KG	-	12000 J	47 J
84-74-2	Di-n-butyl phthalate	UG/KG	-	-	-
117-84-0	Di-n-octyl phthalate	UG/KG	-	-	-
53-70-3	Dibenz(a,h)anthracene	UG/KG	-	-	-
132-64-9	Dibenzofuran	UG/KG	-	-	-
105-67-9	2,4-Dimethylphenol	UG/KG	-	-	54 J
206-44-0	Fluoranthene	UG/KG	350 J	19000 J	190
86-73-7	Fluorene	UG/KG	1200 J	5400 J	54 J
193-39-5	Indeno(1,2,3-cd)pyrene	UG/KG	-	-	-
91-57-6	2-Methylnaphthalene	UG/KG	2400	19000 J	130 J
95-48-7	2-Methylphenol	UG/KG	-	-	-
108-39-4	3-Methylphenol	UG/KG			110 J
106-44-5	4-Methylphenol	UG/KG	-	-	110 J
91-20-3	Naphthalene	UG/KG	-	7100 J	69 J
76-01-7	Pentachloroethane	UG/KG			-
85-01-8	Phenanthrene	UG/KG	3100	25000 J	230
108-95-2	Phenol	UG/KG	-	-	-
129-00-0	Pyrene	UG/KG	350 J	13000 J	110 J
117-81-7	bis(2-Ethylhexyl) phthalate	UG/KG	-	-	-

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TABLE 4.17
WEST YARD INVESTIGATION
GM, PONTIAC, MICHIGAN
DETECTED ANALYTES - WEST YARD SUBSURFACE SOIL DATA

CAS NO.	COMPOUND	SAMPLE ID: (1) DEPTH: LAB ID: SOURCE: SDG: MATRIX: SAMPLED: UNITS:	SBDW21 18-20' A5L200142-014 QUANTERRA L20142 SOIL 12/19/95	SBMW22 16-18' A5L150192-005 QUANTERRA L15192 SOIL 12/12/95	SBDW22 32-34' A5L200142-015 QUANTERRA L20142 SOIL 12/19/95
	PESTICIDE/PCBs				
72-43-5	Methoxychlor	UG/KG	-	R	-
12672-29-6	Aroclor 1248	UG/KG	-	8200 J	-
11097-69-1	Aroclor 1254	UG/KG	-	R	-
TPCBS	Total PCBs	UG/KG	-	8200	-
	DIOXINS				
TDIOXINS	Total TEFs	UG/KG			1.40E-04
	INORGANICS				
7429-90-5	Aluminum	UG/KG	4360000	8220000	2000000
7440-36-0	Antimony	UG/KG	-	150000	394
7440-38-2	Arsenic	UG/KG	5020	20000	3360
7440-39-3	Barium	UG/KG	30900	5720000	51500
7440-41-7	Beryllium	UG/KG	-	1050	-
7440-43-9	Cadmium	UG/KG	77.4	3510	114
7440-70-2	Calcium	UG/KG	27300000	28800000	90800000
7440-47-3	Chromium	UG/KG	8010	207000	7990
7440-48-4	Cobalt	UG/KG	5860	29200	4620
7440-50-8	Copper	UG/KG	9970	1110000	18700
57-12-5	Cyanide	UG/KG		3100	-
7439-89-6	Iron	UG/KG	8670000	120000000	7500000
7439-92-1	Lead	UG/KG	4970	1350000	8520
7439-95-4	Magnesium	UG/KG	13600000	4100000	15100000
7439-96-5	Manganese	UG/KG	192000	3900000	216000
7439-97-6	Mercury	UG/KG		1560	-
7440-02-0	Nickel	UG/KG	11300	351000	14800
7440-09-7	Potassium	UG/KG		737000	-
7782-49-2	Selenium	UG/KG	-	1940	-
7440-22-4	Silver	UG/KG	-	2370	-
7440-23-5	Sodium	UG/KG	274000	890000	368000
7440-31-5	Tin	UG/KG			-
7440-62-2	Vanadium	UG/KG	15200	37100	6250
7440-66-6	Zinc	UG/KG	22500	4040000	28900
	OTHER				
10-31-1	Solids, Percent	%	85.3		87.6

J = Estimated Value
- = Not Detected
R = Rejected Value
(1) Duplicate samples are designated by adding 50 to the soil boring numbe

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TABLE 4.18
WEST YARD INVESTIGATION
GM, PONTIAC, MICHIGAN
PART 201 SOIL SCREENING CRITERIA EXCEEDANCE SUMMARY - WEST YARD SUBSURFACE SOIL

CAS NO.	COMPOUND	UNITS:	Maximum Concentration	Average Detected Concentration [1]	No. of Exceedences [2] / No. of Locations	Criteria Exceeded	Location of Exceedences
	VOLATILES						
67-64-1	Acetone	UG/KG	2200 J	106	0/45	NONE	NONE
71-43-2	Benzene	UG/KG	720 J	720	0/45	NONE	NONE
78-93-3	2-Butanone (MEK)	UG/KG	1600 J	110	0/45	NONE	NONE
75-15-0	Carbon disulfide	UG/KG	9.6 J	5.4	0/45	NONE	NONE
106-46-7	1,4-Dichlorobenzene	UG/KG	2.7 J	2.7	0/45	NONE	NONE
75-34-3	1,1-Dichloroethane	UG/KG	21	19	0/45	NONE	NONE
100-41-4	Ethylbenzene	UG/KG	25000	7400	0/45	NONE	NONE
591-78-6	2-Hexanone	UG/KG	2.5 J	2.5	0/45	NONE	NONE
108-10-1	4-Methyl-2-pentanone (MIBK)	UG/KG	3.9 J	3.5	0/45	NONE	NONE
75-09-2	Methylene chloride	UG/KG	25000 J	4200	0/45	NONE	NONE
127-18-4	Tetrachloroethene	UG/KG	7.5 J	3.6	0/45	NONE	NONE
108-88-3	Toluene	UG/KG	42000	8900	0/45	NONE	NONE
75-01-4	Vinyl chloride	UG/KG	15	10	0/45	NONE	NONE
1330-20-7	Xylenes (total)	UG/KG	150000	29000	0/45	NONE	NONE
156-59-2	cis-1,2-Dichloroethene	UG/KG	16	12	0/45	NONE	NONE
	SEMIVOLATILES						
83-32-9	Acenaphthene	UG/KG	14000 J	3700	0/26	NONE	NONE
120-12-7	Anthracene	UG/KG	11000 J	2100	0/26	NONE	NONE
56-55-3	Benzo(a)anthracene	UG/KG	7700 J	2100	0/26	NONE	NONE
50-32-8	Benzo(a)pyrene	UG/KG	690	180	0/26	NONE	NONE
205-99-2	Benzo(b)fluoranthene	UG/KG	8300	1600	0/26	NONE	NONE
191-24-2	Benzo(ghi)perylene	UG/KG	4200 J	710	0/26	NONE	NONE
207-08-9	Benzo(k)fluoranthene	UG/KG	460	160	0/26	NONE	NONE
85-68-7	Butyl benzyl phthalate	UG/KG	1100000	190000	1/26	C_{sat}	SBTT3
86-74-8	Carbazole	UG/KG	110 J	60	0/26	NONE	NONE
218-01-9	Chrysene	UG/KG	12000 J	3100	0/26	NONE	NONE
84-74-2	Di-n-butyl phthalate	UG/KG	480000	41000	0/26	NONE	NONE
117-84-0	Di-n-octyl phthalate	UG/KG	37000 J	37000	0/45	NONE	NONE
53-70-3	Dibenz(a,h)anthracene	UG/KG	250	87	0/26	NONE	NONE
132-64-9	Dibenzofuran	UG/KG	13000 J	2900	0/26	NONE	NONE
105-67-9	2,4-Dimethylphenol	UG/KG	72000 J	12000	0/26	NONE	NONE
206-44-0	Fluoranthene	UG/KG	22000 J	6000	0/26	NONE	NONE
86-73-7	Fluorene	UG/KG	26000 J	5000	0/26	NONE	NONE
193-39-5	Indeno(1,2,3-cd)pyrene	UG/KG	510	140	0/26	NONE	NONE
91-57-6	2-Methylnaphthalene	UG/KG	120000	19000	0/26	NONE	NONE
95-48-7	2-Methylphenol	UG/KG	320	80	0/26	NONE	NONE
108-39-4	3-Methylphenol	UG/KG	110 J	82	0/7	NONE	NONE
106-44-5	4-Methylphenol	UG/KG	70000 J	12000	0/26	NONE	NONE
91-20-3	Naphthalene	UG/KG	70000 J	10000	0/26	NONE	NONE
76-01-7	Pentachloroethane	UG/KG	99 J	99	0/8	NONE	NONE
85-01-8	Phenanthrene	UG/KG	52000 J	8300	0/26	NONE	NONE
108-95-2	Phenol	UG/KG	140000	47000	0/45	NONE	NONE
129-00-0	Pyrene	UG/KG	17000 J	4400	0/26	NONE	NONE
117-81-7	bis(2-Ethylhexyl) phthalate	UG/KG	35000	15000	0/26	NONE	NONE

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TABLE 4.18
WEST YARD INVESTIGATION
GM, PONTIAC, MICHIGAN
PART 201 SOIL SCREENING CRITERIA EXCEEDANCE SUMMARY - WEST YARD SUBSURFACE SOIL

CAS NO.	COMPOUND	UNITS:	Maximum Concentration	Average Detected Concentration (1)	No. of Exceedences (2) / No. of Locations	Criteria Exceeded	Location of Exceedences
	PESTICIDE/PCBs						
TPCBS	Total PCBs	UG/KG	43000	19000	1/26	Direct Contact	SBMW20,SBMW70(SBMW20 DUP)
	DIOXINS						
TDIOXINS	Total TEFs	UG/KG	0.00014	0.000052	0/7	NONE	NONE
	INORGANICS						
7429-90-5	Aluminum	UG/KG	10800000	3050000	0/26	NONE	NONE
7440-36-0	Antimony	UG/KG	1740000	119000	1/26	Direct Contact	SBSB5
7440-38-2	Arsenic	UG/KG	35700	4570	0/26	NONE	NONE
7440-39-3	Barium	UG/KG	5720000	290000	0/26	NONE	NONE
7440-41-7	Beryllium	UG/KG	1050	474	0/26	NONE	NONE
7440-43-9	Cadmium	UG/KG	10700	914	0/26	NONE	NONE
7440-70-2	Calcium	UG/KG	425000000	41800000	0/26	NONE	NONE
7440-47-3	Chromium	UG/KG	1020000	74700	0/26	NONE	NONE
7440-48-4	Cobalt	UG/KG	34600	11900	0/26	NONE	NONE
7440-50-8	Copper	UG/KG	2370000	179000	0/26	NONE	NONE
7439-89-6	Iron	UG/KG	376000000	28200000	0/26	NONE	NONE
7439-92-1	Lead	UG/KG	1350000	151000	3/26	Direct Contact	SBSB5, SBWD2, SBMW22
7439-95-4	Magnesium	UG/KG	23900000	5950000	0/26	NONE	NONE
7439-96-5	Manganese	UG/KG	3900000	657000	7/26	PSIC (3)	SBTT1, SBTT3, SBTT4, SBTT5, SBSB5, SBWD1, SBMW22
7439-97-6	Mercury	UG/KG	2230	2010	0/26	NONE	NONE
7440-02-0	Nickel	UG/KG	354000	49100	0/26	NONE	NONE
7440-09-7	Potassium	UG/KG	2690000	1180000	0/26	NONE	NONE
7782-49-2	Selenium	UG/KG	7670	1690	0/26	NONE	NONE
7440-22-4	Silver	UG/KG	2370	1630	0/26	NONE	NONE
7440-23-5	Sodium	UG/KG	2490000	446000	0/26	NONE	NONE
7440-31-5	Tin	UG/KG	51300	51300	0/3	NONE	NONE
7440-62-2	Vanadium	UG/KG	61400	11200	0/26	NONE	NONE
7440-66-6	Zinc	UG/KG	4040000	259000	0/26	NONE	NONE
57-12-5	Cyanide	UG/KG	4100	1790	0/25	NONE	NONE
	OTHER						
10-31-1	Solids, Percent	%	96.7	86.7	0/4	NONE	NONE

J = Estimated Value
(1) Average concentration calculated using detected values only.
(2) See Table 4.5 for Part 201 soil screening criteria values.
(3) Particulate Soil Inhalation Criteria

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TABLE 4.19
WEST YARD INVESTIGATION
GM, PONTIAC, MICHIGAN
DETECTED ANALYTES - WEST YARD GROUNDWATER

CAS NO.	COMPOUND	SAMPLE ID: [1] LAB ID: SOURCE: SDG: MATRIX: SAMPLED: UNITS:	MW5 A6A190124-002 QUANTERRA A6A190124 WATER 1/18/96	MW5 A6B150157-012 QUANTERRA A6B150157 WATER 2/13/96	MW7 A6A180129-003 QUANTERRA A6A180129 WATER 1/17/96	MW57 (DUP OF MW7) A6A180129-005 QUANTERRA A6A180129 WATER 1/17/96	MW7 A6B150157-015 QUANTERRA A6B150157 WATER 2/14/96
	VOLATILES						
67-64-1	Acetone	UG/L	-		6.6 J	5.6 J	
71-43-2	Benzene	UG/L	1.1 J		17	15	13
78-93-3	2-Butanone (MEK)	UG/L	-		-	-	
75-00-3	Chloroethane	UG/L	24		1.6	1.6	
75-34-3	1,1-Dichloroethane	UG/L	4.5		11	12	
107-06-2	1,2-Dichloroethane	UG/L	1.3		-	-	
100-41-4	Ethylbenzene	UG/L	-		-	-	
108-88-3	Toluene	UG/L	-		-	-	
75-01-4	Vinyl chloride	UG/L	-		12	12	13
1330-20-7	Xylenes (total)	UG/L	-		-	-	
156-59-2	cis-1,2-Dichloroethene	UG/L			7.8	7.9	
	SEMIVOLATILES						
120-12-7	Anthracene	UG/L	-		-	-	
100-51-6	Benzyl alcohol	UG/L					
85-68-7	Butyl benzyl phthalate	UG/L	-		-	-	
218-01-9	Chrysene	UG/L	-		-	-	
105-67-9	2,4-Dimethylphenol	UG/L	-		-	2.8 J	
206-44-0	Fluoranthene	UG/L	-		-	-	
86-73-7	Fluorene	UG/L	-			-	
91-57-6	2-Methylnaphthalene	UG/L	-		-	-	
95-48-7	2-Methylphenol	UG/L	-		-	-	
108-39-4	3-Methylphenol	UG/L					
106-44-5	4-Methylphenol	UG/L	-		-	-	
91-20-3	Naphthalene	UG/L	-		-	-	
85-01-8	Phenanthrene	UG/L	-		-	-	
129-00-0	Pyrene	UG/L	-		-	-	
117-81-7	bis(2-Ethylhexyl) phthalate	UG/L	3.7 J		16	0.92 J	-

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TABLE 4.19
WEST YARD INVESTIGATION
GM, PONTIAC, MICHIGAN
DETECTED ANALYTES - WEST YARD GROUNDWATER

		SAMPLE ID: (1)	MW5	MW5	MW7	MW57 (DUP OF MW7)	MW7
		LAB ID:	A6A190124-002	A6B150157-012	A6A180129-003	A6A180129-005	A6B150157-015
		SOURCE:	QUANTERRA	QUANTERRA	QUANTERRA	QUANTERRA	QUANTERRA
		SDG:	A6A190124	A6B150157	A6A180129	A6A180129	A6B150157
		MATRIX:	WATER	WATER	WATER	WATER	WATER
		SAMPLED:	1/18/96	2/13/96	1/17/96	1/17/96	2/14/96
CAS NO.	COMPOUND	UNITS:					
	VOLATILES						
	PCBs						
11104-28-2	Aroclor 1221	UG/L					
12672-29-6	Aroclor 1248	UG/L	-		-	-	
11097-69-1	Aroclor 1254	UG/L	-		-	-	
TPCBS	Total PCBs	UG/L	-		-	-	
	DIOXINS						
TDIOXINS	Total TEFs	UG/L					
	INORGANICS						
7429-90-5	Aluminum -DISS	UG/L	199	156	148	515	105
7440-38-2	Arsenic -DISS	UG/L	5.1		5.4	5.2	
7440-39-3	Barium -DISS	UG/L	229		398	396	
7440-70-2	Calcium -DISS	UG/L	75500	73300	82100	82900	74800
7439-89-6	Iron -DISS	UG/L	2930	2320	5340	5550	4670
7439-92-1	Lead -DISS	UG/L	-	-	-	-	
7439-95-4	Magnesium -DISS	UG/L	29200		25300	25300	
7439-96-5	Manganese -DISS	UG/L	115	104	101	105	90
7440-02-0	Nickel -DISS	UG/L	-		-	-	
7440-09-7	Potassium -DISS	UG/L	24600	16900	30900	30400	24300
7440-23-5	Sodium -DISS	UG/L	763000	663000	1370000	1250000	1010000
7440-66-6	Zinc -DISS	UG/L	-	-	-	26	
	OTHER						
57-12-5	Cyanide	UG/L	21		-	-	
18496-25-8	Sulfide	MG/L					

J = Estimated Value
- = Not Detected
* = Elevated detection limit due to matrix interference.
** = Identity suspect due to matrix interference
*** = Identity suspect due to matrix interference
(1) Duplicate samples are designated by adding 50 to the well number.

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TABLE 4.19
WEST YARD INVESTIGATION
GM, PONTIAC, MICHIGAN
DETECTED ANALYTES - WEST YARD GROUNDWATER

CAS NO.	COMPOUND	SAMPLE ID: (1) LAB ID: SOURCE: SDG: MATRIX: SAMPLED: UNITS:	MW8 A6C080138-001 QUANTERRA C08138 WATER 3/01/96	MW8 T966118 TRIANGLE 38976 WATER 9/24/96	MW108 (DUP OF MW8) T966119 TRIANGLE 38976 WATER 9/24/96	MW16 A6A180129-004 QUANTERRA A6A180129 WATER 1/17/96	MW16 A6B150157-013 QUANTERRA A6B150157 WATER 2/14/96
	VOLATILES						
67-64-1	Acetone	UG/L	7.2 J			-	
71-43-2	Benzene	UG/L	1.4 J			1.5 J	
78-93-3	2-Butanone (MEK)	UG/L				-	
75-00-3	Chloroethane	UG/L	2			11	
75-34-3	1,1-Dichloroethane	UG/L	1.3			2.4	
107-06-2	1,2-Dichloroethane	UG/L	1.4			-	
100-41-4	Ethylbenzene	UG/L				-	
108-88-3	Toluene	UG/L				-	
75-01-4	Vinyl chloride	UG/L	9.1			-	
1330-20-7	Xylenes (total)	UG/L				-	
156-59-2	cis-1,2-Dichloroethene	UG/L	2.5			-	
	SEMIVOLATILES						
120-12-7	Anthracene	UG/L				-	
100-51-6	Benzyl alcohol	UG/L					
85-68-7	Butyl benzyl phthalate	UG/L				-	
218-01-9	Chrysene	UG/L				-	
105-67-9	2,4-Dimethylphenol	UG/L				-	
206-44-0	Fluoranthene	UG/L				-	
86-73-7	Fluorene	UG/L				-	
91-57-6	2-Methylnaphthalene	UG/L				-	
95-48-7	2-Methylphenol	UG/L				-	
108-39-4	3-Methylphenol	UG/L					
106-44-5	4-Methylphenol	UG/L				-	
91-20-3	Naphthalene	UG/L				-	
85-01-8	Phenanthrene	UG/L				-	
129-00-0	Pyrene	UG/L				-	
117-81-7	bis(2-Ethylhexyl) phthalate	UG/L				-	

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TABLE 4.19
WEST YARD INVESTIGATION
GM, PONTIAC, MICHIGAN
DETECTED ANALYTES - WEST YARD GROUNDWATER

		SAMPLE ID: (1)	MW8	MW8	MW108 (DUP OF MW8)	MW16	MW16
		LAB ID:	A6C080138-001	T966118	T966119	A6A180129-004	A6B150157-013
		SOURCE:	QUANTERRA	TRIANGLE	TRIANGLE	QUANTERRA	QUANTERRA
		SDG:	C08138	38976	38976	A6A180129	A6B150157
		MATRIX:	WATER	WATER	WATER	WATER	WATER
		SAMPLED:	3/01/96	9/24/96	9/24/96	1/17/96	2/14/96
CAS NO.	COMPOUND	UNITS:					
	VOLATILES						
	PCBs						
11104-28-2	Aroclor 1221	UG/L	0.16 *				
12672-29-6	Aroclor 1248	UG/L				-	
11097-69-1	Aroclor 1254	UG/L				-	
TPCBS	Total PCBs	UG/L	0.16 *			-	
	DIOXINS						
TDIOXINS	Total TEFs	UG/L		1.13E-06	1.47E-06		
	INORGANICS						
7429-90-5	Aluminum -DISS	UG/L				-	
7440-38-2	Arsenic -DISS	UG/L				-	
7440-39-3	Barium -DISS	UG/L				-	
7440-70-2	Calcium -DISS	UG/L	88400			98200	104000
7439-89-6	Iron -DISS	UG/L	248			4220	4480
7439-92-1	Lead -DISS	UG/L				-	
7439-95-4	Magnesium -DISS	UG/L	23500			30400	
7439-96-5	Manganese -DISS	UG/L	283			130	135
7440-02-0	Nickel -DISS	UG/L				-	
7440-09-7	Potassium -DISS	UG/L	20400			-	
7440-23-5	Sodium -DISS	UG/L	944000			461000	396000
7440-66-6	Zinc -DISS	UG/L				-	
	OTHER						
57-12-5	Cyanide	UG/L				25	
18496-25-8	Sulfide	MG/L					

J = Estimated Value
- = Not Detected
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*** = Identity suspect due to matrix interference
(1) Duplicate samples are designated by adding 50 to the well number.

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TABLE 4.19
WEST YARD INVESTIGATION
GM, PONTIAC, MICHIGAN
DETECTED ANALYTES - WEST YARD GROUNDWATER

		SAMPLE ID: (1)	MW16	DW16	DW16	DW16	MW17
		LAB ID:	T966120	A6A190124-001	A6B150157-014	T966121	A6A170141-001
		SOURCE:	TRIANGLE	QUANTERRA	QUANTERRA	TRIANGLE	QUANTERRA
		SDG:	38976	A6A190124	A6B150157	38976	A6A170141
		MATRIX:	WATER	WATER	WATER	WATER	WATER
		SAMPLED:	9/24/96	1/18/96	2/14/96	9/24/96	1/16/96
CAS NO.	COMPOUND	UNITS:					
	VOLATILES						
67-64-1	Acetone	UG/L		7.7 J			4 J
71-43-2	Benzene	UG/L		-			-
78-93-3	2-Butanone (MEK)	UG/L		-			-
75-00-3	Chloroethane	UG/L		3.9			-
75-34-3	1,1-Dichloroethane	UG/L		1.1			-
107-06-2	1,2-Dichloroethane	UG/L		-			-
100-41-4	Ethylbenzene	UG/L		-			-
108-88-3	Toluene	UG/L		-			-
75-01-4	Vinyl chloride	UG/L		-			-
1330-20-7	Xylenes (total)	UG/L		-			-
156-59-2	cis-1,2-Dichloroethene	UG/L		1.5			-
	SEMIVOLATILES						
120-12-7	Anthracene	UG/L		-			-
100-51-6	Benzyl alcohol	UG/L		-			-
85-68-7	Butyl benzyl phthalate	UG/L		-			-
218-01-9	Chrysene	UG/L		-			-
105-67-9	2,4-Dimethylphenol	UG/L		-			-
206-44-0	Fluoranthene	UG/L		-			-
86-73-7	Fluorene	UG/L		-			-
91-57-6	2-Methylnaphthalene	UG/L		-			1.7 J
95-48-7	2-Methylphenol	UG/L		-			-
108-39-4	3-Methylphenol	UG/L		-			1.2 J
106-44-5	4-Methylphenol	UG/L		-			1.3 J
91-20-3	Naphthalene	UG/L		-			1.9 J
85-01-8	Phenanthrene	UG/L		-			0.62 J
129-00-0	Pyrene	UG/L		-			-
117-81-7	bis(2-Ethylhexyl) phthalate	UG/L		4.7 J			-

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TABLE 4.19
WEST YARD INVESTIGATION
GM, PONTIAC, MICHIGAN
DETECTED ANALYTES - WEST YARD GROUNDWATER

CAS NO.	COMPOUND	SAMPLE ID: [1] / LAB ID: / SOURCE: / SDG: / MATRIX: / SAMPLED: / UNITS:	MW16 / T966120 / TRIANGLE / 38976 / WATER / 9/24/96	DW16 / A6A190124-001 / QUANTERRA / A6A190124 / WATER / 1/18/96	DW16 / A6B150157-014 / QUANTERRA / A6B150157 / WATER / 2/14/96	DW16 / T966121 / TRIANGLE / 38976 / WATER / 9/24/96	MW17 / A6A170141-001 / QUANTERRA / A6A170141 / WATER / 1/16/96
	VOLATILES						
	PCBs						
11104-28-2	Aroclor 1221	UG/L					
12672-29-6	Aroclor 1248	UG/L		-			-
11097-69-1	Aroclor 1254	UG/L		-			-
TPCBS	Total PCBs	UG/L		-			-
	DIOXINS						
TDIOXINS	Total TEFs	UG/L	3.40E-06			3.89E-06	1.30E-07
	INORGANICS						
7429-90-5	Aluminum -DISS	UG/L		-			-
7440-38-2	Arsenic -DISS	UG/L		-			-
7440-39-3	Barium -DISS	UG/L		622			-
7440-70-2	Calcium -DISS	UG/L		151000	194000		53600
7439-89-6	Iron -DISS	UG/L		100			2550
7439-92-1	Lead -DISS	UG/L		-			-
7439-95-4	Magnesium -DISS	UG/L		34100			31700
7439-96-5	Manganese -DISS	UG/L		196	201		271
7440-02-0	Nickel -DISS	UG/L		104	-		-
7440-09-7	Potassium -DISS	UG/L		22800	27800		23200
7440-23-5	Sodium -DISS	UG/L		1490000	1440000		172000
7440-66-6	Zinc -DISS	UG/L					-
	OTHER						
57-12-5	Cyanide	UG/L		-			-
18496-25-8	Sulfide	MG/L					-

J = Estimated Value
- = Not Detected
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[1] Duplicate samples are designated by adding 50 to the well number.

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TABLE 4.19
WEST YARD INVESTIGATION
GM, PONTIAC, MICHIGAN
DETECTED ANALYTES - WEST YARD GROUNDWATER

		SAMPLE ID: (1)	MW17	MW17	DW17	DW17	DW17
		LAB ID:	A6B150157-001	T966105	A6A170141-002	A6B150157-002	T966106
		SOURCE:	QUANTERRA	TRIANGLE	QUANTERRA	QUANTERRA	TRIANGLE
		SDG:	A6B150157	38976	A6A170141	A6B150157	38976
		MATRIX:	WATER	WATER	WATER	WATER	WATER
		SAMPLED:	2/13/96	9/24/96	1/16/96	2/13/96	9/24/96
CAS NO.	COMPOUND	UNITS:					
	VOLATILES						
67-64-1	Acetone	UG/L			4.2 J		
71-43-2	Benzene	UG/L			-		
78-93-3	2-Butanone (MEK)	UG/L			-		
75-00-3	Chloroethane	UG/L			-		
75-34-3	1,1-Dichloroethane	UG/L			-		
107-06-2	1,2-Dichloroethane	UG/L			-		
100-41-4	Ethylbenzene	UG/L			-		
108-88-3	Toluene	UG/L			-		
75-01-4	Vinyl chloride	UG/L			-		
1330-20-7	Xylenes (total)	UG/L			-		
156-59-2	cis-1,2-Dichloroethene	UG/L			-		
	SEMIVOLATILES						
120-12-7	Anthracene	UG/L			-		
100-51-6	Benzyl alcohol	UG/L			-		
85-68-7	Butyl benzyl phthalate	UG/L			-		
218-01-9	Chrysene	UG/L			-		
105-67-9	2,4-Dimethylphenol	UG/L			-		
206-44-0	Fluoranthene	UG/L			-		
86-73-7	Fluorene	UG/L			-		
91-57-6	2-Methylnaphthalene	UG/L			2.1 J		
95-48-7	2-Methylphenol	UG/L			-		
108-39-4	3-Methylphenol	UG/L			0.99 J		
106-44-5	4-Methylphenol	UG/L			1.1 J		
91-20-3	Naphthalene	UG/L			1.4 J		
85-01-8	Phenanthrene	UG/L			0.99 J		
129-00-0	Pyrene	UG/L			-		
117-81-7	bis(2-Ethylhexyl) phthalate	UG/L			-		

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TABLE 4.19
WEST YARD INVESTIGATION
GM, PONTIAC, MICHIGAN
DETECTED ANALYTES - WEST YARD GROUNDWATER

CAS NO.	COMPOUND	SAMPLE ID: (1) LAB ID: SOURCE: SDG: MATRIX: SAMPLED: UNITS:	MW17 A6B150157-001 QUANTERRA A6B150157 WATER 2/13/96	MW17 T966105 TRIANGLE 38976 WATER 9/24/96	DW17 A6A170141-002 QUANTERRA A6A170141 WATER 1/16/96	DW17 A6B150157-002 QUANTERRA A6B150157 WATER 2/13/96	DW17 T966106 TRIANGLE 38976 WATER 9/24/96
	VOLATILES						
	PCBs						
11104-28-2	Aroclor 1221	UG/L			-		
12672-29-6	Aroclor 1248	UG/L			-		
11097-69-1	Aroclor 1254	UG/L			-		
TPCBS	Total PCBs	UG/L			-		
	DIOXINS						
TDIOXINS	Total TEFs	UG/L		5.70E-07	4.48E-06		1.15E-06
	INORGANICS						
7429-90-5	Aluminum -DISS	UG/L			-		
7440-38-2	Arsenic -DISS	UG/L			-		
7440-39-3	Barium -DISS	UG/L			-		
7440-70-2	Calcium -DISS	UG/L	51500		60700	60600	
7439-89-6	Iron -DISS	UG/L	6480		7550	6710	
7439-92-1	Lead -DISS	UG/L			-		
7439-95-4	Magnesium -DISS	UG/L			29900		
7439-96-5	Manganese -DISS	UG/L	293		366	320	
7440-02-0	Nickel -DISS	UG/L			-		
7440-09-7	Potassium -DISS	UG/L	23300		28000	26700	
7440-23-5	Sodium -DISS	UG/L	183000		236000	212000	
7440-66-6	Zinc -DISS	UG/L			-		
	OTHER						
57-12-5	Cyanide	UG/L			-		
18496-25-8	Sulfide	MG/L			-		

J = Estimated Value
- = Not Detected
* = Elevated detection limit due to matrix interference.
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(1) Duplicate samples are designated by adding 50 to the well number.

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TABLE 4.19
WEST YARD INVESTIGATION
GM, PONTIAC, MICHIGAN
DETECTED ANALYTES - WEST YARD GROUNDWATER

		SAMPLE ID: [1]	MW18	MW18	MW18	DW18	DW18
		LAB ID:	A6A170141-003	A6B150157-003	T966114	A6A170141-004	T966115
		SOURCE:	QUANTERRA	QUANTERRA	TRIANGLE	QUANTERRA	TRIANGLE
		SDG:	A6A170141	A6B150157	38976	A6A170141	38976
		MATRIX:	WATER	WATER	WATER	WATER	WATER
		SAMPLED:	1/16/96	2/13/96	9/24/96	1/16/96	9/24/96
CAS NO.	COMPOUND	UNITS:					
	VOLATILES						
67-64-1	Acetone	UG/L	-			8.4 J	
71-43-2	Benzene	UG/L	-			-	
78-93-3	2-Butanone (MEK)	UG/L	-			-	
75-00-3	Chloroethane	UG/L	-			4.5	
75-34-3	1,1-Dichloroethane	UG/L	-			-	
107-06-2	1,2-Dichloroethane	UG/L	-			-	
100-41-4	Ethylbenzene	UG/L	-			-	
108-88-3	Toluene	UG/L	-			-	
75-01-4	Vinyl chloride	UG/L	-			-	
1330-20-7	Xylenes (total)	UG/L	-			-	
156-59-2	cis-1,2-Dichloroethene	UG/L	-			-	
	SEMIVOLATILES						
120-12-7	Anthracene	UG/L	-			-	
100-51-6	Benzyl alcohol	UG/L	-			-	
85-68-7	Butyl benzyl phthalate	UG/L	-			-	
218-01-9	Chrysene	UG/L	-			-	
105-67-9	2,4-Dimethylphenol	UG/L	-			-	
206-44-0	Fluoranthene	UG/L	-			-	
86-73-7	Fluorene	UG/L	-			-	
91-57-6	2-Methylnaphthalene	UG/L	-			-	
95-48-7	2-Methylphenol	UG/L	-			-	
108-39-4	3-Methylphenol	UG/L					
106-44-5	4-Methylphenol	UG/L	-			-	
91-20-3	Naphthalene	UG/L	0.58 J			-	
85-01-8	Phenanthrene	UG/L	0.64 J			-	
129-00-0	Pyrene	UG/L	-			-	
117-81-7	bis(2-Ethylhexyl) phthalate	UG/L	-			-	

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TABLE 4.19
WEST YARD INVESTIGATION
GM, PONTIAC, MICHIGAN
DETECTED ANALYTES - WEST YARD GROUNDWATER

CAS NO.	COMPOUND	SAMPLE ID: [1] LAB ID: SOURCE: SDG: MATRIX: SAMPLED: UNITS:	MW18 A6A170141-003 QUANTERRA A6A170141 WATER 1/16/96	MW18 A6B150157-003 QUANTERRA A6B150157 WATER 2/13/96	MW18 T966114 TRIANGLE 38976 WATER 9/24/96	DW18 A6A170141-004 QUANTERRA A6A170141 WATER 1/16/96	DW18 T966115 TRIANGLE 38976 WATER 9/24/96
	VOLATILES						
	PCBs						
11104-28-2	Aroclor 1221	UG/L					
12672-29-6	Aroclor 1248	UG/L	-			-	
11097-69-1	Aroclor 1254	UG/L	-			-	
TPCBS	Total PCBs	UG/L	-			-	
	DIOXINS						
TDIOXINS	Total TEFs	UG/L			2.84E-06		5.93E-07
	INORGANICS						
7429-90-5	Aluminum -DISS	UG/L	-			536	
7440-38-2	Arsenic -DISS	UG/L	5.5			-	
7440-39-3	Barium -DISS	UG/L				278	
7440-70-2	Calcium -DISS	UG/L	115000	109000		57400	
7439-89-6	Iron -DISS	UG/L	16700	15900		5200	
7439-92-1	Lead -DISS	UG/L	-			-	
7439-95-4	Magnesium -DISS	UG/L	37400			21700	
7439-96-5	Manganese -DISS	UG/L	505	474		36	
7440-02-0	Nickel -DISS	UG/L				-	
7440-09-7	Potassium -DISS	UG/L	19300	17900		12800	
7440-23-5	Sodium -DISS	UG/L	77800			1170000	
7440-66-6	Zinc -DISS	UG/L	84			-	
	OTHER						
57-12-5	Cyanide	UG/L	-			-	
18496-25-8	Sulfide	MG/L					

J = Estimated Value
- = Not Detected
* = Elevated detection limit due to matrix interference.
** = Identity suspect due to matrix interference
*** = Identity suspect due to matrix interference
[1] Duplicate samples are designated by adding 50 to the well number.

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TABLE 4.19
WEST YARD INVESTIGATION
GM, PONTIAC, MICHIGAN
DETECTED ANALYTES - WEST YARD GROUNDWATER

		SAMPLE ID: (1)	MW19	MW19	DW19	DW19	MW20
		LAB ID:	A6A170141-005	T966116	A6A170141-006	T966117	A6A190124-005
		SOURCE:	QUANTERRA	TRIANGLE	QUANTERRA	TRIANGLE	QUANTERRA
		SDG:	A6A170141	38976	A6A170141	38976	A6A190124
		MATRIX:	WATER	WATER	WATER	WATER	WATER
		SAMPLED:	1/16/96	9/24/96	1/16/96	9/24/96	1/18/96
CAS NO.	COMPOUND	UNITS:					
	VOLATILES						
67-64-1	Acetone	UG/L	-		5.1 J		-
71-43-2	Benzene	UG/L	-		-		19
78-93-3	2-Butanone (MEK)	UG/L	-		-		-
75-00-3	Chloroethane	UG/L	-		-		21
75-34-3	1,1-Dichloroethane	UG/L	-		-		15
107-06-2	1,2-Dichloroethane	UG/L	-		-		-
100-41-4	Ethylbenzene	UG/L	-		-		56
108-88-3	Toluene	UG/L	-		-		38
75-01-4	Vinyl chloride	UG/L	-		-		6.4
1330-20-7	Xylenes (total)	UG/L	-		-		170
156-59-2	cis-1,2-Dichloroethene	UG/L	-		-		3.8
	SEMIVOLATILES						
120-12-7	Anthracene	UG/L	-		-		-
100-51-6	Benzyl alcohol	UG/L	-				-
85-68-7	Butyl benzyl phthalate	UG/L	-		-		-
218-01-9	Chrysene	UG/L	-		-		-
105-67-9	2,4-Dimethylphenol	UG/L	-		-		390
206-44-0	Fluoranthene	UG/L	-		-		-
86-73-7	Fluorene	UG/L	-		-		7.3 J
91-57-6	2-Methylnaphthalene	UG/L	-		-		47 J
95-48-7	2-Methylphenol	UG/L	-		-		7.6 J
108-39-4	3-Methylphenol	UG/L	-		-		-
106-44-5	4-Methylphenol	UG/L	-		-		-
91-20-3	Naphthalene	UG/L	-		-		10 J
85-01-8	Phenanthrene	UG/L	-		-		13 J
129-00-0	Pyrene	UG/L	-		-		-
117-81-7	bis(2-Ethylhexyl) phthalate	UG/L	-		-		-

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TABLE 4.19
WEST YARD INVESTIGATION
GM, PONTIAC, MICHIGAN
DETECTED ANALYTES - WEST YARD GROUNDWATER

CAS NO.	COMPOUND	SAMPLE ID: (1) LAB ID: SOURCE: SDG: MATRIX: SAMPLED: UNITS:	MW19 A6A170141-005 QUANTERRA A6A170141 WATER 1/16/96	MW19 T966116 TRIANGLE 38976 WATER 9/24/96	DW19 A6A170141-006 QUANTERRA A6A170141 WATER 1/16/96	DW19 T966117 TRIANGLE 38976 WATER 9/24/96	MW20 A6A190124-005 QUANTERRA A6A190124 WATER 1/18/96
	VOLATILES						
	PCBs						
11104-28-2	Aroclor 1221	UG/L					
12672-29-6	Aroclor 1248	UG/L	-		-		37
11097-69-1	Aroclor 1254	UG/L	-		-		-
TPCBS	Total PCBs	UG/L	-		-		37
	DIOXINS						
TDIOXINS	Total TEFs	UG/L		9.310E-07		1.65E-06	2.12E-04
	INORGANICS						
7429-90-5	Aluminum -DISS	UG/L	138		-		185
7440-38-2	Arsenic -DISS	UG/L	5.8		-		-
7440-39-3	Barium -DISS	UG/L	-		287		906
7440-70-2	Calcium -DISS	UG/L	92500		258000		10700
7439-89-6	Iron -DISS	UG/L	36200		571		482
7439-92-1	Lead -DISS	UG/L	5.1		-		-
7439-95-4	Magnesium -DISS	UG/L	29700		74800		9340
7439-96-5	Manganese -DISS	UG/L	342		435		28
7440-02-0	Nickel -DISS	UG/L			-		-
7440-09-7	Potassium -DISS	UG/L	26300		-		25100
7440-23-5	Sodium -DISS	UG/L	109000		128000		175000
7440-66-6	Zinc -DISS	UG/L	-		56		27
	OTHER						
57-12-5	Cyanide	UG/L	-		-		1600
18496-25-8	Sulfide	MG/L					5

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TABLE 4.19
WEST YARD INVESTIGATION
GM, PONTIAC, MICHIGAN
DETECTED ANALYTES - WEST YARD GROUNDWATER

CAS NO.	COMPOUND	SAMPLE ID: [1] LAB ID: SOURCE: SDG: MATRIX: SAMPLED: UNITS:	MW20 A6B150157-008 QUANTERRA A6B150157 WATER 2/13/96	MW20 W116507 TRIANGLE 38993C WATER 9/25/96	MW70 (DUP OF MW20) A6B150157-010 QUANTERRA A6B150157 WATER 2/13/96	DW20 A6A190124-004 QUANTERRA A6A190124 WATER 1/18/96	DW70 (DUP OF DW20) A6A190124-003 QUANTERRA A6A190124 WATER 1/18/96
	VOLATILES						
67-64-1	Acetone	UG/L				-	-
71-43-2	Benzene	UG/L	22			-	-
78-93-3	2-Butanone (MEK)	UG/L				-	-
75-00-3	Chloroethane	UG/L				18	18
75-34-3	1,1-Dichloroethane	UG/L				30	26
107-06-2	1,2-Dichloroethane	UG/L				-	-
100-41-4	Ethylbenzene	UG/L				-	-
108-88-3	Toluene	UG/L				-	-
75-01-4	Vinyl chloride	UG/L	5			280	280
1330-20-7	Xylenes (total)	UG/L				-	-
156-59-2	cis-1,2-Dichloroethene	UG/L				84	89
	SEMIVOLATILES						
120-12-7	Anthracene	UG/L				-	-
100-51-6	Benzyl alcohol	UG/L				11 J	9.8 J
85-68-7	Butyl benzyl phthalate	UG/L				4 J	4.2 J
218-01-9	Chrysene	UG/L				-	-
105-67-9	2,4-Dimethylphenol	UG/L	350			21	18 J
206-44-0	Fluoranthene	UG/L				-	-
86-73-7	Fluorene	UG/L				-	-
91-57-6	2-Methylnaphthalene	UG/L	150			8 J	7.6 J
95-48-7	2-Methylphenol	UG/L				49	48
108-39-4	3-Methylphenol	UG/L				-	-
106-44-5	4-Methylphenol	UG/L				-	-
91-20-3	Naphthalene	UG/L				-	-
85-01-8	Phenanthrene	UG/L				-	-
129-00-0	Pyrene	UG/L				-	-
117-81-7	bis(2-Ethylhexyl) phthalate	UG/L				-	-

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TABLE 4.19
WEST YARD INVESTIGATION
GM, PONTIAC, MICHIGAN
DETECTED ANALYTES - WEST YARD GROUNDWATER

CAS NO.	COMPOUND	SAMPLE ID: (1) LAB ID: SOURCE: SDG: MATRIX: SAMPLED: UNITS:	MW20 A6B150157-008 QUANTERRA A6B150157 WATER 2/13/96	MW20 W116507 TRIANGLE 38993C WATER 9/25/96	MW70 (DUP OF MW20) A6B150157-010 QUANTERRA A6B150157 WATER 2/13/96	DW20 A6A190124-004 QUANTERRA A6A190124 WATER 1/18/96	DW70 (DUP OF DW20) A6A190124-003 QUANTERRA A6A190124 WATER 1/18/96
	VOLATILES						
	PCBs						
11104-28-2	Aroclor 1221	UG/L					
12672-29-6	Aroclor 1248	UG/L	15			0.17 **	0.6 **
11097-69-1	Aroclor 1254	UG/L	-			-	0.35
TPCBS	Total PCBs	UG/L	15			0.17	0.95
	DIOXINS						
TDIOXINS	Total TEFs	UG/L		1.17E-03		1.60E-04	7.61E-05
	INORGANICS						
7429-90-5	Aluminum -DISS	UG/L	708			426	565
7440-38-2	Arsenic -DISS	UG/L				5	5.9
7440-39-3	Barium -DISS	UG/L				352	336
7440-70-2	Calcium -DISS	UG/L	14000			50900	47800
7439-89-6	Iron -DISS	UG/L	2270			6070	6490
7439-92-1	Lead -DISS	UG/L				-	-
7439-95-4	Magnesium -DISS	UG/L				28400	26200
7439-96-5	Manganese -DISS	UG/L				139	140
7440-02-0	Nickel -DISS	UG/L				-	-
7440-09-7	Potassium -DISS	UG/L				31700	29700
7440-23-5	Sodium -DISS	UG/L	167000			1390000	1290000
7440-66-6	Zinc -DISS	UG/L				258	41
	OTHER						
57-12-5	Cyanide	UG/L	4500		1500	23	-
18496-25-8	Sulfide	MG/L	3			5	5

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TABLE 4.19
WEST YARD INVESTIGATION
GM, PONTIAC, MICHIGAN
DETECTED ANALYTES - WEST YARD GROUNDWATER

CAS NO.	COMPOUND	SAMPLE ID: [1] LAB ID: SOURCE: SDG: MATRIX: SAMPLED: UNITS:	DW20 T966287 TRIANGLE 38993Ar2 WATER 9/25/96	DW20 A6B150157-009 QUANTERRA A6B150157 WATER 2/13/96	DW70 (DUP OF DW20) A6B150157-011 QUANTERRA A6B150157 WATER 2/13/96	DW21 A6A170141-007 QUANTERRA A6A170141 WATER 1/16/96	DW21 A6B150157-007 QUANTERRA A6B150157 WATER 2/13/96
	VOLATILES						
67-64-1	Acetone	UG/L				5 J	
71-43-2	Benzene	UG/L				-	
78-93-3	2-Butanone (MEK)	UG/L				-	
75-00-3	Chloroethane	UG/L				-	
75-34-3	1,1-Dichloroethane	UG/L				-	
107-06-2	1,2-Dichloroethane	UG/L				-	
100-41-4	Ethylbenzene	UG/L				-	
108-88-3	Toluene	UG/L				-	
75-01-4	Vinyl chloride	UG/L		310	260	-	
1330-20-7	Xylenes (total)	UG/L				-	
156-59-2	cis-1,2-Dichloroethene	UG/L		87	84	-	
	SEMIVOLATILES						
120-12-7	Anthracene	UG/L				2.6 J	
100-51-6	Benzyl alcohol	UG/L				-	
85-68-7	Butyl benzyl phthalate	UG/L				-	
218-01-9	Chrysene	UG/L				0.69 J	
105-67-9	2,4-Dimethylphenol	UG/L		16 J	12 J	-	
206-44-0	Fluoranthene	UG/L				2.7 J	
86-73-7	Fluorene	UG/L				10	
91-57-6	2-Methylnaphthalene	UG/L		-	-	43	22
95-48-7	2-Methylphenol	UG/L				-	
108-39-4	3-Methylphenol	UG/L					
106-44-5	4-Methylphenol	UG/L				-	
91-20-3	Naphthalene	UG/L				-	
85-01-8	Phenanthrene	UG/L				25	
129-00-0	Pyrene	UG/L				3.6 J	
117-81-7	bis(2-Ethylhexyl) phthalate	UG/L				-	

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TABLE 4.19
WEST YARD INVESTIGATION
GM, PONTIAC, MICHIGAN
DETECTED ANALYTES - WEST YARD GROUNDWATER

CAS NO.	COMPOUND	SAMPLE ID: [1] LAB ID: SOURCE: SDG: MATRIX: SAMPLED: UNITS:	DW20 T966287 TRIANGLE 38993Ar2 WATER 9/25/96	DW20 A6B150157-009 QUANTERRA A6B150157 WATER 2/13/96	DW70 (DUP OF DW20) A6B150157-011 QUANTERRA A6B150157 WATER 2/13/96	DW21 A6A170141-007 QUANTERRA A6A170141 WATER 1/16/96	DW21 A6B150157-007 QUANTERRA A6B150157 WATER 2/13/96
	VOLATILES						
	PCBs						
11104-28-2	Aroclor 1221	UG/L					
12672-29-6	Aroclor 1248	UG/L		-	-	3.6	0.61
11097-69-1	Aroclor 1254	UG/L		-	-	-	-
TPCBS	Total PCBs	UG/L		-	-	3.6	0.61
	DIOXINS						
TDIOXINS	Total TEFs	UG/L	5.33E-06				
	INORGANICS						
7429-90-5	Aluminum -DISS	UG/L		210	267	-	
7440-38-2	Arsenic -DISS	UG/L				29.2	
7440-39-3	Barium -DISS	UG/L				206	
7440-70-2	Calcium -DISS	UG/L		48800	43800	144000	136000
7439-89-6	Iron -DISS	UG/L		6310	5810	13000	14000
7439-92-1	Lead -DISS	UG/L				-	
7439-95-4	Magnesium -DISS	UG/L				46000	
7439-96-5	Manganese -DISS	UG/L		38	82	459	295
7440-02-0	Nickel -DISS	UG/L		-	-	-	
7440-09-7	Potassium -DISS	UG/L		27600	25600	-	
7440-23-5	Sodium -DISS	UG/L		1120000	1070000	240000	
7440-66-6	Zinc -DISS	UG/L				-	
	OTHER						
57-12-5	Cyanide	UG/L				-	
18496-25-8	Sulfide	MG/L		0.5	0.8		

J = Estimated Value
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TABLE 4.19
WEST YARD INVESTIGATION
GM, PONTIAC, MICHIGAN
DETECTED ANALYTES - WEST YARD GROUNDWATER

		SAMPLE ID: (1)	DW21	MW22	MW22	MW22	DW22
		LAB ID:	T966297	A6A180129-002	A6B150157-004	T966485	A6A180129-001
		SOURCE:	TRIANGLE	QUANTERRA	QUANTERRA	TRIANGLE	QUANTERRA
		SDG:	38993Ar2	A6A180129	A6B150157	38993Cr1	A6A180129
		MATRIX:	WATER	WATER	WATER	WATER	WATER
		SAMPLED:	9/25/96	1/17/96	2/13/96	9/25/96	1/17/96
CAS NO.	COMPOUND	UNITS:					
	VOLATILES						
67-64-1	Acetone	UG/L		5.7 J			-
71-43-2	Benzene	UG/L		1 J			-
78-93-3	2-Butanone (MEK)	UG/L		2.6 J			-
75-00-3	Chloroethane	UG/L		-			-
75-34-3	1,1-Dichloroethane	UG/L		-			-
107-06-2	1,2-Dichloroethane	UG/L		-			-
100-41-4	Ethylbenzene	UG/L		-			-
108-88-3	Toluene	UG/L		1.1			-
75-01-4	Vinyl chloride	UG/L		-			-
1330-20-7	Xylenes (total)	UG/L		4.8			-
156-59-2	cis-1,2-Dichloroethene	UG/L		-			-
	SEMIVOLATILES						
120-12-7	Anthracene	UG/L		-			-
100-51-6	Benzyl alcohol	UG/L		-			-
85-68-7	Butyl benzyl phthalate	UG/L		-			-
218-01-9	Chrysene	UG/L		-			-
105-67-9	2,4-Dimethylphenol	UG/L		-			-
206-44-0	Fluoranthene	UG/L		-			-
86-73-7	Fluorene	UG/L		-			-
91-57-6	2-Methylnaphthalene	UG/L		1.9 J			-
95-48-7	2-Methylphenol	UG/L		-			-
108-39-4	3-Methylphenol	UG/L		-			-
106-44-5	4-Methylphenol	UG/L		-			-
91-20-3	Naphthalene	UG/L		1.4 J			-
85-01-8	Phenanthrene	UG/L		0.71 J			-
129-00-0	Pyrene	UG/L		-			-
117-81-7	bis(2-Ethylhexyl) phthalate	UG/L		-			-

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TABLE 4.19
WEST YARD INVESTIGATION
GM, PONTIAC, MICHIGAN
DETECTED ANALYTES - WEST YARD GROUNDWATER

CAS NO.	COMPOUND	SAMPLE ID: [1] LAB ID: SOURCE: SDG: MATRIX: SAMPLED: UNITS:	DW21 T966297 TRIANGLE 38993Ar2 WATER 9/25/96	MW22 A6A180129-002 QUANTERRA A6A180129 WATER 1/17/96	MW22 A6B150157-004 QUANTERRA A6B150157 WATER 2/13/96	MW22 T966485 TRIANGLE 38993Cr1 WATER 9/25/96	DW22 A6A180129-001 QUANTERRA A6A180129 WATER 1/17/96
	VOLATILES						
	PCBs						
11104-28-2	Aroclor 1221	UG/L					
12672-29-6	Aroclor 1248	UG/L		0.11 ***			-
11097-69-1	Aroclor 1254	UG/L		-			-
TPCBS	Total PCBs	UG/L		0.11			-
	DIOXINS						
TDIOXINS	Total TEFs	UG/L	7.72E-05	1.18E-04		1.26E-04	8.39E-06
	INORGANICS						
7429-90-5	Aluminum -DISS	UG/L		109	100		-
7440-38-2	Arsenic -DISS	UG/L		14.9			-
7440-39-3	Barium -DISS	UG/L		312			1910
7440-70-2	Calcium -DISS	UG/L		21800	23300		415000
7439-89-6	Iron -DISS	UG/L		2850	5050		13600
7439-92-1	Lead -DISS	UG/L		-			-
7439-95-4	Magnesium -DISS	UG/L		16500			114000
7439-96-5	Manganese -DISS	UG/L		220	270		2570
7440-02-0	Nickel -DISS	UG/L					-
7440-09-7	Potassium -DISS	UG/L		30700	39600		38200
7440-23-5	Sodium -DISS	UG/L		311000	288000		1710000
7440-66-6	Zinc -DISS	UG/L		-			-
	OTHER						
57-12-5	Cyanide	UG/L		78			-
18496-25-8	Sulfide	MG/L		0.6	-		-

J = Estimated Value
- = Not Detected
* = Elevated detection limit due to matrix interference.
** = Identity suspect due to matrix interference
*** = Identity suspect due to matrix interference
[1] Duplicate samples are designated by adding 50 to the well number.

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TABLE 4.19
WEST YARD INVESTIGATION
GM, PONTIAC, MICHIGAN
DETECTED ANALYTES - WEST YARD GROUNDWATER

		SAMPLE ID: [1]	DW22	DW72 (DUP OF DW22)	DW22	MW23
		LAB ID:	A6B150157-005	A6B150157-006	T966282	T966113
		SOURCE:	QUANTERRA	QUANTERRA	TRIANGLE	TRIANGLE
		SDG:	A6B150157	A6B150157	38993Ar1	38976
		MATRIX:	WATER	WATER	WATER	WATER
		SAMPLED:	2/13/96	2/13/96	9/25/96	9/24/96
CAS NO.	COMPOUND	UNITS:				
	VOLATILES					
67-64-1	Acetone	UG/L				
71-43-2	Benzene	UG/L				
78-93-3	2-Butanone (MEK)	UG/L				
75-00-3	Chloroethane	UG/L				
75-34-3	1,1-Dichloroethane	UG/L				
107-06-2	1,2-Dichloroethane	UG/L				
100-41-4	Ethylbenzene	UG/L				
108-88-3	Toluene	UG/L				
75-01-4	Vinyl chloride	UG/L				
1330-20-7	Xylenes (total)	UG/L				
156-59-2	cis-1,2-Dichloroethene	UG/L				
	SEMIVOLATILES					
120-12-7	Anthracene	UG/L				
100-51-6	Benzyl alcohol	UG/L				
85-68-7	Butyl benzyl phthalate	UG/L				
218-01-9	Chrysene	UG/L				
105-67-9	2,4-Dimethylphenol	UG/L				
206-44-0	Fluoranthene	UG/L				
86-73-7	Fluorene	UG/L				
91-57-6	2-Methylnaphthalene	UG/L				
95-48-7	2-Methylphenol	UG/L				
108-39-4	3-Methylphenol	UG/L				
106-44-5	4-Methylphenol	UG/L				
91-20-3	Naphthalene	UG/L				
85-01-8	Phenanthrene	UG/L				
129-00-0	Pyrene	UG/L				
117-81-7	bis(2-Ethylhexyl) phthalate	UG/L				

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TABLE 4.19
WEST YARD INVESTIGATION
GM, PONTIAC, MICHIGAN
DETECTED ANALYTES - WEST YARD GROUNDWATER

CAS NO.	COMPOUND	SAMPLE ID: [1] LAB ID: SOURCE: SDG: MATRIX: SAMPLED: UNITS:	DW22 A6B150157-005 QUANTERRA A6B150157 WATER 2/13/96	DW72 (DUP OF DW22) A6B150157-006 QUANTERRA A6B150157 WATER 2/13/96	DW22 T966282 TRIANGLE 38993Ar1 WATER 9/25/96	MW23 T966113 TRIANGLE 38976 WATER 9/24/96
	VOLATILES					
	PCBs					
11104-28-2	Aroclor 1221	UG/L				
12672-29-6	Aroclor 1248	UG/L				
11097-69-1	Aroclor 1254	UG/L				
TPCBS	Total PCBs	UG/L				
	DIOXINS					
TDIOXINS	Total TEFs	UG/L			2.53E-06	2.01E-05
	INORGANICS					
7429-90-5	Aluminum -DISS	UG/L		-		
7440-38-2	Arsenic -DISS	UG/L				
7440-39-3	Barium -DISS	UG/L				
7440-70-2	Calcium -DISS	UG/L	422000	425000		
7439-89-6	Iron -DISS	UG/L	14100	14300		
7439-92-1	Lead -DISS	UG/L				
7439-95-4	Magnesium -DISS	UG/L				
7439-96-5	Manganese -DISS	UG/L	2780	2820		
7440-02-0	Nickel -DISS	UG/L		-		
7440-09-7	Potassium -DISS	UG/L	33300	35200		
7440-23-5	Sodium -DISS	UG/L	1680000	1780000		
7440-66-6	Zinc -DISS	UG/L				
	OTHER					
57-12-5	Cyanide	UG/L				
18496-25-8	Sulfide	MG/L				

J = Estimated Value
- = Not Detected
* = Elevated detection limit due to matrix interference.
** = Identity suspect due to matrix interference
*** = Identity suspect due to matrix interference
[1] Duplicate samples are designated by adding 50 to the well number.

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TABLE 4.20
WEST YARD INVESTIGATION
GM, PONTIAC, MICHIGAN
PART 201 GROUNDWATER CONTACT CRITERIA EXCEEDENCE SUMMARY - WEST YARD GROUNDWATER SAMPLES

CAS NO.	COMPOUND	GENERIC GROUNDWATER CONTACT CRITERIA [1]	UNITS	Maximum Concentration	Average Detected Concentration [2]	No. of Exceedences / No. of Locations	Location of Exceedences [3]
	VOLATILES						
67-64-1	Acetone	30,000,000	UG/L	8.4 J	6	0/18	NONE
71-43-2	Benzene	9,200	UG/L	22	10	0/22	NONE
78-93-3	2-Butanone (MEK)	240,000,000	UG/L	2.6 J	2.6	0/17	NONE
75-00-3	Chloroethane	200,000	UG/L	24	11	0/18	NONE
75-34-3	1,1-Dichloroethane	2,100,000	UG/L	30	11	0/18	NONE
107-06-2	1,2-Dichloroethane	11,000	UG/L	1.4	1.4	0/18	NONE
100-41-4	Ethylbenzene	170,000	UG/L	56	56	0/17	NONE
108-88-3	Toluene	530,000	UG/L	38	20	0/17	NONE
75-01-4	Vinyl chloride	290	UG/L	310	120	1/24	DW20
1330-20-7	Xylenes (total)	190,000	UG/L	170	87	0/17	NONE
156-59-2	cis-1,2-Dichloroethene	170,000	UG/L	89	41	0/20	NONE
	SEMIVOLATILES						
120-12-7	Anthracene	43	UG/L	2.6 J	2.6	0/17	NONE
100-51-6	Benzyl alcohol	44,000,000	UG/L	11 J	10	0/17	NONE
85-68-7	Butyl benzyl phthalate	2,690	UG/L	4.2 J	4.1	0/17	NONE
218-01-9	Chrysene	2	UG/L	0.69 J	0.69	0/17	NONE
105-67-9	2,4-Dimethylphenol	440,000	UG/L	390	110	0/20	NONE
206-44-0	Fluoranthene	206	UG/L	2.7 J	2.7	0/17	NONE
86-73-7	Fluorene	1,980	UG/L	10	9	0/17	NONE
91-57-6	2-Methylnaphthalene	24,600	UG/L	150	31	0/21	NONE
95-48-7	2-Methylphenol	690,000	UG/L	49	35	0/17	NONE
108-39-4	3-Methylphenol	760,000	UG/L	1.2 J	1.1	0/7	NONE
106-44-5	4-Methylphenol	76,000	UG/L	1.2 J	1.2	0/17	NONE
91-20-3	Naphthalene	31,000	UG/L	18 J	3.1	0/17	NONE
85-01-8	Phenanthrene	1,000	UG/L	25	6.3	0/17	NONE
9-00-0	Pyrene	135	UG/L	3.6 J	3.6	0/17	NONE
1-81-7	bis(2-Ethylhexyl) phthalate	46	UG/L	16	6.3	0/20	NONE
	PCBs						
TPCBS	Total PCBs	2.4	UG/L	37	7.2	2/22	MW20, DW21
	DIOXINS						
TDIOXINS	Total TEFs	NC	UG/L	0.00117	0.000086	0/23	NONE
	INORGANICS						
7429-90-5	Aluminum -DISS	70,000,000	UG/L	708	291	0/24	NONE
7440-38-2	Arsenic -DISS	4,700	UG/L	29.2	9.11	0/17	NONE
7440-39-3	Barium -DISS	15,000,000	UG/L	1910	519	0/17	NONE
7440-70-2	Calcium -DISS	NC	UG/L	425000	115000	0/32	NONE
7439-89-6	Iron -DISS	NC	UG/L	56200	8130	0/31	NONE
7439-92-1	Lead -DISS	NC	UG/L	5.1	5.1	0/17	NONE
7439-95-4	Magnesium -DISS	1,000,000,000	UG/L	114000	36600	0/18	NONE
7439-96-5	Manganese -DISS	10,000,000	UG/L	2820	462	0/31	NONE
7440-02-0	Nickel -DISS	160,000,000	UG/L	104	104	0/21	NONE
7440-09-7	Potassium -DISS	NC	UG/L	40700	26700	0/29	NONE
7440-23-5	Sodium -DISS	1,000,000,000	UG/L	1780000	778000	0/30	NONE
7440-66-6	Zinc -DISS	120,000,000	UG/L	258	82	0/17	NONE
57-12-5	Cyanide	650,000	UG/L	4500	1110	0/19	NONE
	OTHER						
18496-25-8	Sulfide	NC	UG/L	5000	2840	0/11	NONE

J = Estimated Value.
NC = No Criteria
[1] Source: MDEQ Environmental Response Division Addendum to Interim Operational Memoranda #8, Revision 4 and #14, Revision 2, April 12, 1996.
[2] Average concentration calculated using detected concentrations only.
[3] Duplicate samples are designated by adding 50 to the well number.

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TABLE 4.21
WEST YARD INVESTIGATION
GM, PONTIAC, MICHIGAN
DETECTED ANALYTES - WEST YARD NAPL ANALYSIS

COMPOUND	SAMPLE ID: LAB ID: SOURCE: SDG: MATRIX: SAMPLED: UNITS:	MW6 MW006 SPL 9601374-02 OIL 1/24/96	MW13 MW013 SPL 9602218-01 LIQUID 1/16/96
HALOGENATED VOCs			
1,1-Dichloroethene	UG/L	-	17,000
Tetrachloroethene	UG/L	-	940
Chlorobenzene	UG/L	-	660
1,2-Dichlororbenzene	UG/L	-	30,000
1,3-Dichlororbenzene	UG/L	-	560
1,4-Dichlororbenzene	UG/L	-	1,200
FAB:			
NONE	UG/L	-	-
PCB			
PCB-1248	UG/L	244,000	-
PCB-1254	UG/L	-	28,200
FINGERPRINT ANALYSIS		The free product appears to be motor oil with a small amount of diesel fuel	The unknown hydrocarbon is made up of motor oil mixed with gasoline and fuel oil range components.

- = Not Detected.

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SECTION 5

MIGRATION ANALYSIS

The purpose of this section is to identify likely pathways through which parameters detected in the various environmental media may migrate and produce a human health risk, based on sampling results presented in Section 4.

A preliminary site conceptual model was developed for the work plan (Parsons ES, 1995) to illustrate the relationship among potential source areas, release mechanisms, migration pathways, and receptors. This investigation was intended to address potential constituent migration from former disposal or treatment areas in the West Yard to underlying soils and groundwater.

The following sections discuss the potential migration routes for hazardous substances in surface soil, subsurface soil, and groundwater, and potential impacts to exposed receptors.

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5.1 SURFACE SOIL ROUTE

Surface soils could potentially lead to exposure to impacted surface soils by site personnel via direct contact or inhalation. Soil exposure via the direct contact exposure pathway, while potentially complete for site workers at the West Yard, does not pose an unacceptable health risk as shown by the meeting of Generic Direct Contact Industrial Criteria. The purpose of the direct contact criteria is to protect workers against long-term health effects from dermal contact and ingestion of hazardous substances in site soils. The algorithms used to calculate the values use exposure assumptions for a worker who spends significant time outdoors. The concentrations of organic compounds and inorganics in West Yard surface soil samples were below these criteria.

The exposure pathway of inhalation of particulates is potentially complete for site workers at the West Yard because most of the site is not covered by pavement or vegetation. Nine West Yard surface soil sample locations exceeded the Generic Particulate Soil Inhalation Criteria for manganese - the only exceedences even though sampling was biased towards areas of suspected prior waste management activities. The purpose of the soil inhalation criteria is to protect site workers against long-term health effects from exposure to ambient airborne substances in site soils. The algorithms for calculating the criteria use exposure assumptions for a worker who spends significant time outdoors, which is a conservative assumption at the West Yard.

5.2 SUBSURFACE SOIL ROUTE

The potential exposure pathways for hazardous substances in disturbed subsurface soils would be the same as for surface soils: direct contact and inhalation. The potential for these completed pathways is limited compared to surface soils, however, because the extent of disturbance would be limited in size and time. The potential for

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migration of subsurface soils is also limited. Subsurface soils are stationary unless disturbed through excavation or construction activities. Only a few sporadic soil samples had concentrations of one or two parameters that exceeded the Generic Direct Contact Industrial Criteria. Most of the exceedences occurred at depths greater than 16 feet below ground surface, which would not be disturbed during typical excavation/construction due to their depth of occurrence. Seven of the 26 subsurface soil samples had concentrations of manganese that exceeded the Generic Particulate Soil Inhalation Criteria.

5.3 GROUNDWATER ROUTE

The potential routes for migration of hazardous substances in groundwater are through groundwater flow through soil, and migration to surface water. Groundwater at the West Yard flows towards the southwest in sand and fill zones confined by an underlying very low permeability zone (1E-07 to 1E-08 cm/sec). Migration to surface water is not a pertinent pathway because there is no surface water onsite or immediately adjacent offsite. A small lake (Harris Lake) is located within one half mile downgradient.

Potential exposure pathways to groundwater receptors are through dermal contact, inhalation, and ingestion. Of these pathways, dermal contact for onsite workers is considered to be the most realistic (but nevertheless unlikely) pathway, with inhalation being a possibility only under confined space conditions. Exposure via dermal contact is the most likely scenario for sites in urban areas (MDEQ, 1996c). The scenarios in which dermal contact with water constituents could possible occur are during drilling, excavation or construction activities that reach groundwater. Depth to groundwater at the West Yard varies from approximately 5 feet to 27 feet below ground surface, which minimizes the possibility that typical excavation or construction activities would reach site groundwater.

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Contact with onsite groundwater is not considered a significant health risk because the concentrations of organic and inorganic compounds in site groundwater, with one exception, did not exceed the Generic Groundwater Contact Criteria that are protective of worker health. PCB concentrations in two wells, MW-20 and DW-21 (the site upgradient well), exceeded the groundwater contact criteria.

The inhalation pathway for groundwater may be a completed pathway if subsurface excavation leads to confined space conditions, i.e. workers enter an excavation deeper than 4 feet. However, the low concentrations of VOCs in monitoring wells (generally less than 40 ppb) indicate that the risk would be low.

Ingestion is not a completed pathway onsite, because West Yard groundwater is not used as a potable water source. Another possible exposure scenario is residential ingestion of groundwater downgradient of the West Yard. This is an unlikely pathway for hazardous substances for several reasons.

Organic compound concentrations are lower in wells near the downgradient (south and west) boundary than in mid-site wells. This absence of evidence of widespread migration of organic compounds from the West Yard reduces or eliminates risk to

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offsite receptors. The peat and marl layers beneath the Fill along the southern (downgradient) boundary of the West Yard also may act to attenuate organic groundwater constituents. Peat has a significant organic content and marl is fine grained, both properties which increase the sorption of organic compounds.

Furthermore, the local residents obtain their water from a municipal water supply located outside the area. There are no individual supply wells within 1 mile of the West Yard. The closest individual supply wells were located between 1 and 2 miles south of the site, which are not downgradient of the West Yard (Environmental Data Resources, 1996) (Appendix G). Residences in Pontiac are served by a public water system, and it is unlikely that any residences downgradient of the West Yard would be dependent in the future on groundwater as their potable water supply.

Given the continued industrial use of the property and the existence of the municipal water supply system, it is highly unlikely that groundwater at this site will have a further use.

5.4 NAPL

NAPL was detected in the area of the former hazardous waste storage pad during closure activities and, during the West Yard investigation, in three pad monitoring wells (MW3, MW6, and MW13), in seven Geoprobe™ soil borings around the wells, and in MW-22. The area with NAPL appears to be limited to the immediate vicinity of these wells. No NAPL delineation has currently been conducted in the vicinity of MW-22. There is no evidence to suggest significant impact on downgradient groundwater quality based on data from downgradient perimeter wells.

One soil sample from beneath the storage pad exceeded the C_{sat} concentration for xylenes. This sample was at a location at the southern end of the pad where NAPL has been observed, and is within the area of NAPL delineation

One subsurface soil sample from Test Trench 3 exceeded the C_{sat} concentration for butyl benzyl phthalate. This indicates that possibility that free phase may be present in this area in the central portion of the West Yard. No free phase has been observed in well pair MW/DW-20, the closest downgradient wells to TT3.

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SECTION 6

SUMMARY AND CONCLUSIONS

6.1 SUMMARY

6.1.1 Storage Pad Closure Activities

The objective of initial closure activities at the former storage hazardous waste pad was to clean the pad after discontinuing hazardous waste storage activities and to document that clean closure had been achieved. All samples collected were analyzed for parameters that were representative of what had been stored on the pad during its operation, and analytical results were compared to closure criteria specified in the MDEQ-approved closure plan. Following cleaning, the storage pad was sampled by wipe samples, rinsate samples, and concrete core samples. These samples met the closure criteria. Samples taken from soil borings to a depth of 20 feet below the pad, and groundwater samples from monitoring wells installed at and near the pad, had some concentrations of organics and lead that exceeded the closure criteria.

Additional closure activities were conducted to further delineate the extent of groundwater concentrations that exceeded closure criteria. These activities included the installation of additional monitoring wells.

Review of the pad sampling results and the sampling results from soils and monitoring wells indicates that the source of compounds in soils and groundwater under the pad most likely was not the activities at the pad, but historical waste management activities in the entire West Yard area associated with automotive manufacturing and support operations.

Soil samples from soil borings to a depth of 20 feet below the pad for the most part did not exceed Part 201 Generic Industrial Direct Contact Criteria, Generic Soil Water Partitioning Criteria, Generic Soil Saturation Screening (C_{sat}) Concentrations, and Generic Soil Inhalation Criteria. The exceptions were one subsurface soil sample from soil boring P-9 that exceeded the C_{sat} concentration for xylenes, and one subsurface soil sample from soil boring P-3 that exceeded the direct contact criteria for lead.

Groundwater samples from monitoring wells installed during closure activities did not exceed part 201 Generic Groundwater Contact Criteria.

MDEQ has accepted the closure of the pad surface itself. GM agreed to conduct a West Yard area-wide investigation to evaluate the environmental conditions and assess the need for any appropriate corrective actions.

6.1.2 West Yard Investigation

6.1.2.1 Achievement of Objectives

The objectives of the West Yard investigation were to:

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- Characterize the nature and extent of impacts (if any) to surface soil, subsurface soil, and groundwater over the West Yard area.
- Characterize groundwater quality and flow downgradient of the former hazardous waste storage pad.
- Characterize the nature and extent of NAPL in three historical solid waste disposal areas and two wells.
- Characterize the presence and extent of geological low permeability zones.
- Characterize the hydraulic properties of subsurface geologic material.

The objectives were achieved as described in the following paragraphs and sections.

The geology of the West Yard consists of variable thicknesses of fill, composed primarily of foundry sand, overlying sand with lenses of silt or peat and marl. The sand unit is variable in thickness and overlies a very low permeability (1E-07 to 1E-08 cm/sec) clay and silt.

Groundwater in the vicinity of the West Yard generally flows toward the southwest in the sand and peat or marl unit, apparently controlled by the top of the low permeability zone. Hydraulic conductivity in wells screened in the sand unit ranged from 1E-05 to 5E-02 cm/sec.

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6.1.2.2 Analytes Detected in Soils

Subsurface soil sampling conducted across the site showed exceedences of Generic Direct Contact Industrial Soil Criteria for only one organic (one location for PCBs) and for two organics (one location for antimony and three locations for lead). There were no surface soil exceedences of direct contact criteria, and three of the five subsurface soil exceedences were at depths of 16 feet bgs or more.

No soil sample concentrations exceeded GCC SWP criteria, and only one subsurface soil sample from TT3 exceeded the C_{sat} concentration for one compound, butyl benzyl phthalate.

Nine of 17 surface soil samples and seven of 26 subsurface soil samples had concentrations of manganese that exceeded the Generic Particulate Soil Inhalation Criteria.

6.1.2.3 Analytes Detected in Groundwater

Organic constituents detected in groundwater at the site include VOCs, SVOCs, PCBs, and dioxins. Exceedences of Generic Groundwater Contact Criteria occurred for PCBs only in two wells.

A range of inorganics were detected in site groundwater, but no exceedences of Generic Groundwater Contact Criteria were found.

NAPL was observed in three monitoring wells near the storage pad (MW-3, MW-6, MW-13) and one well near a suspected disposal area (MW-22) during groundwater sampling. NAPL sampled from MW-6 contained PCBs only, and NAPL sampled from

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MW-13 contained six VOCs, and a different PCB aroclor at a concentration an order of magnitude lower than detected in MW-6. The difference in analytical results suggests two different sources.

A limited soil investigation in the vicinity of the wells with NAPL near the pad was carried out to determine the lateral extent of NAPL. The examination of sixteen Geoprobe™ soil borings delineated one small area around MW-13/MW-3 and another around MW-6. The lateral extent of NAPL appears to be very limited, without much migration.

6.1.2.4 Extent of Impacts and Potential for Migration

Soil Pathway

The migration pathway available to site soils is through mechanical soil movement and fugitive dust generation, either from the surface or if subsurface soils are exposed through excavation/construction activities. The direct contact exposure pathway is unlikely to be completed for West Yard site workers because there were no exceedences by surface soils and exceedences by the subsurface were limited to four locations, mostly at depths from 16 feet to 26 feet bgs.

The inhalation pathway for site workers at the West Yard may potentially be complete for site soils. Exceedences of the particulate soil inhalation criteria occurred for manganese, but these may not indicate an unacceptable risk because site workers do not spend much time in the West Yard and soil samples location was biased toward areas of suspected historical waste management activities.

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Groundwater Pathway

The lateral pattern of detections of organics in groundwater was sporadic, indicating there is no plume onsite. The migration pathway for groundwater is via the southwesterly groundwater flow. The concentrations of organics also decreased or were not detected downgradient, which supports the contention that organics are not migrating.

The potential for exposure is limited to dermal contact by workers because the groundwater is not used as a potable water source onsite. A survey of public water supply wells in the vicinity of the West Yard did not identify any public supply wells downgradient of the source. The exposure pathway of contact with site groundwater is limited to drilling and excavation/construction activities that reach the water table, unlikely to occur at the site. The risk from contact with groundwater is low because the exceedences of Generic Groundwater Contact Criteria were only for PCBs in two locations. The risk from inhalation is also acceptable due to the low concentrations of VOCs in groundwater.

There is no evidence that the NAPL found in the vicinity of MW-3/MW-13 and MW-6 is migrating based on the small lateral extent of sheen in subsurface soils. The NAPL in MW-22 has not been delineated, but only was discovered recently, so it is unlikely to be widespread.

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6.2 CONCLUSIONS

The following conclusions were reached as a result of closure activities:

- The former hazardous waste storage pad was successfully cleaned and met closure requirements.
- Soils and groundwater underlying the storage pad most likely contain residuals of historical waste management activities at the West Yard.
- Soil samples showed only two exceedences of Part 201 soil screening criteria, one of direct contact criteria for lead and one of C_{sat} for xylenes.
- No groundwater samples exceeded Generic Groundwater Contact Criteria.

The following conclusions were reached as a result of the West Yard investigation:

- There were no exceedences of Generic Industrial Direct Contact Criteria, Soil/Water Partitioning GCC Criteria, or C_{sat} concentrations in West Yard surface soil samples. Nine surface soil samples exceeded Generic Particulate Soil Inhalation Criteria for manganese.
- In West Yard subsurface soil samples, five samples exceeded Generic Industrial Direct Contact for three compounds (one for PCBs, one for antimony and three for lead), one sample that exceeded one C_{sat} concentration (for butyl benzyl phthalate), and no samples exceeded the Soil/Water Partitioning GCC Criteria. The exceedences mostly occurred at depths greater than 16 feet. Seven subsurface samples exceeded the Generic Particulate Soil Inhalation Criteria for manganese.
- Groundwater flow is generally to the southwest, and is predominantly horizontal due to the presence of a very low permeability clay and silt layer which apparently controls flow.
- The very low permeability layer underlies the saturated sand/peat unit to a depth of 100 feet. Vertical hydraulic conductivities measured in this low permeability layer ranged from 1.21E-08 cm/sec to 1.33E-07 cm/sec.
- Limited and sporadic detections of organics in groundwater, all below Generic Groundwater Contact Criteria except for PCBs in samples from two wells, indicate these constituents do not represent a significant environmental or health threat and given the time period in which releases occurred, are not migrating significantly.
- Inorganics in groundwater are present on the site, but not in exceedence of Generic Groundwater Contact Criteria.
- Two very small areas of NAPL (motor oil with diesel, gas, and fuel oil) were detected in the vicinity of MW-3/MW-13 and MW-6, respectively near the storage pad. NAPL was also observed near a historical waste disposal area. No significant NAPL migration was indicated.

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SECTION 7

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APPENDIX A

BORING LOGS

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Depth (ft)	Sample Location	Sample Number	USCS Symbol	DESCRIPTION OF SUBSURFACE MATERIALS
0		1		Medium gravel FILL with some black fine foundry sand
		2		
		3		grades with more foundry sand, moist
		4		
5		5		grades to all black foundry sand, no gravel
10		6		
15		7		
20		8		Light brown fine SAND, loose, moist

Boring terminated st 20.5 feet on 7/25/88.
Hole dry.

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Job No.
00299-164-14

CPC
Pontiac, Michigan

BACKGROUND
SOIL BORING 1

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Depth (Feet)	Sample Location	Sample Number	USCS Symbol	DESCRIPTION OF SUBSURFACE MATERIALS
0		1		Black fine foundry sand, loose, dry
		2		
		3		with some fine to medium gravel
		4		
5		5		
10		6		
15		7		with some thin gray sand seams
20		8		

Boring terminated st 20.5 feet on 7/25/88.
Hole dry.

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Job No.
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CPC
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BACKGROUND
SOIL BORING 2

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Depth (Feet)	Sample Location	Sample Number	USCS Symbol	DESCRIPTION OF SUBSURFACE MATERIALS
0		1		Black fine foundry sand, loose, dry
		2		
		3		
		4		
5		5		
10		6		
15		7		Light brown silty fine SAND, loose to medium dense, moist
20		8		

Boring terminated st 20.5 feet on 7/25/88.
Hole dry.

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Dames & Moore Job No. 00299-164-14	CPC Pontiac, Michigan	BACKGROUND SOIL BORING 3

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Depth (Feet)	Sample Location	Sample Number	USCS Symbol	DESCRIPTION OF SUBSURFACE MATERIALS
0		1		Black fine foundry sand, loose, dry
		2		
		3		with medium to large slag fragments
		4		
5		5		
10				
15				
20				

Auger refusal on three separate attempts; boring terminated st 5.0 feet on 7/25/88. Hole dry.

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Job No.
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CPC
Pontiac, Michigan

BACKGROUND
SOIL BORING 4

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Depth (Feet)	Sample Location	Sample Number	USCS Symbol	DESCRIPTION OF SUBSURFACE MATERIALS
0				Concrete
		1		Light brown fine SAND, with a trace of silt, medium dense, moist
		2		Black fine foundry sand, loose, dry
		3		Light tan fine SAND, with a trace of silt, moist
		4		Black fine foundry sand, with seams of clayey fill
5		5		Light brown fine SAND, with a trace of silt, medium dense, moist
10		6		Green brown silty fine SAND, loose, moist
		7		Gray brown SILT, medium dense, very moist
15				Gray brown silty CLAY, with silt seams, saturated, very soft
20		8		Brown fine to medium SAND, saturated, loose

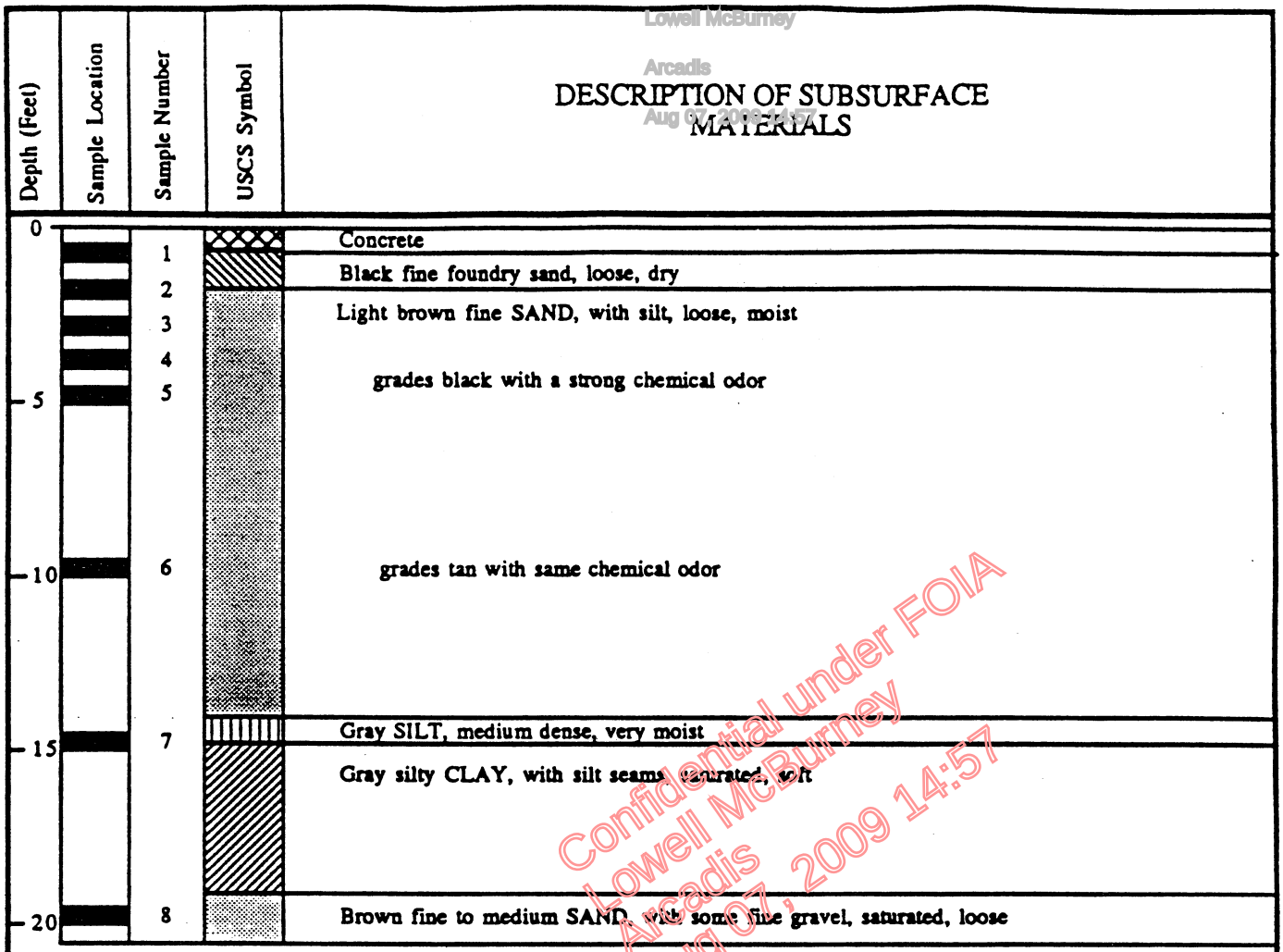
Boring terminated at 20.5 feet on 7/26/88.

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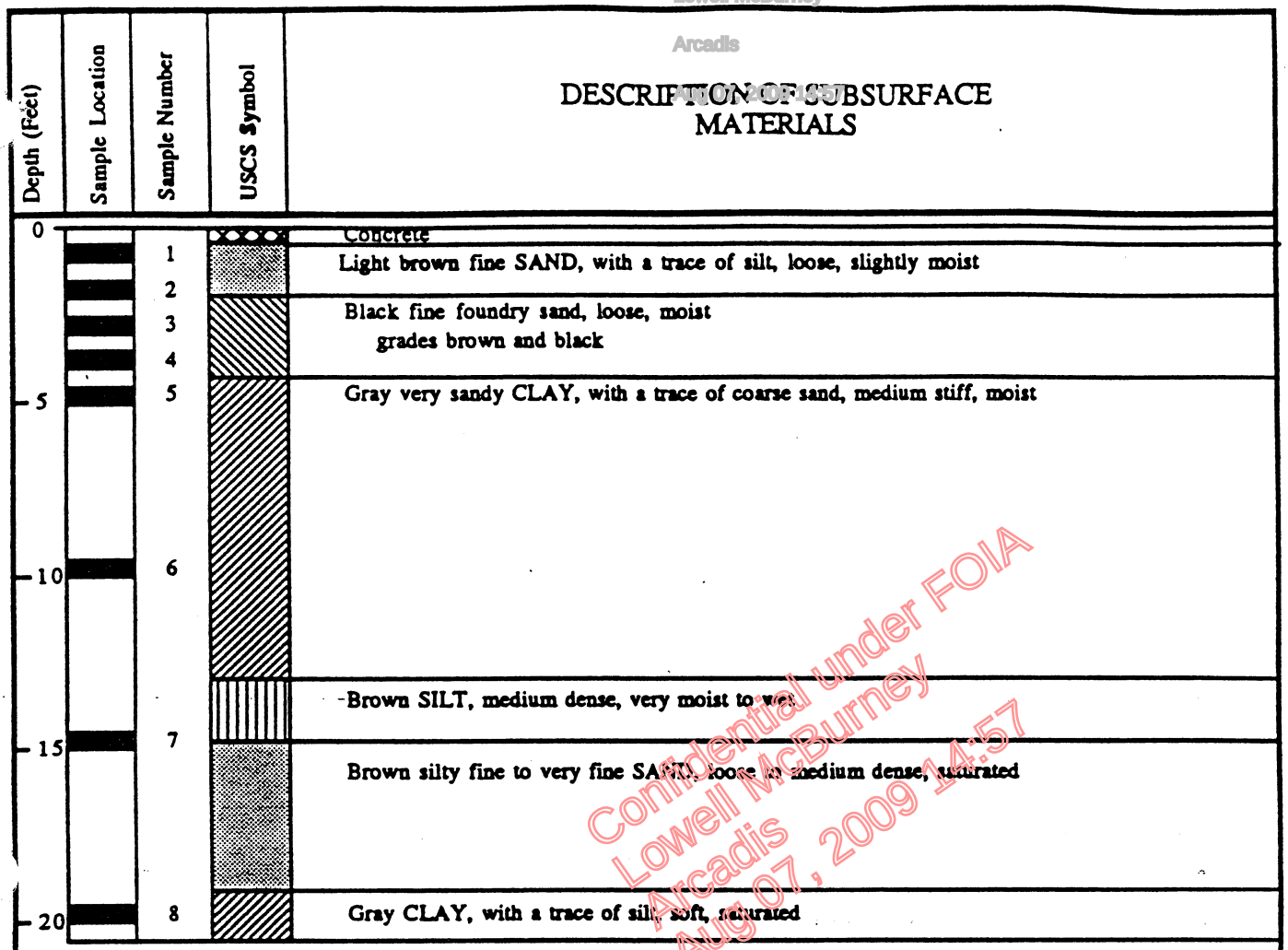
Boring terminated st 20.5 feet on 7/26/88.

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Boring terminated st 20.5 feet on 7/27/88.

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DESCRIPTION OF SUBSURFACE MATERIALS

Depth (Feet)	Sample Location	Sample Number	USCS Symbol	
0				Concrete
		1		Light brown fine SAND, with a trace of silt, loose, slightly moist
		2		Black fine foundry sand, loose, moist
		3		Gray clayey SAND, dense, moist
		4		
5		5		
10		6		
				Gray CLAY, with a trace of silt, medium stiff, wet
15		7		
20		8		Brown fine to medium SAND, with some fine gravel, loose, saturated

Boring terminated at 20.5 feet on 12/27/88.

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Dames & Moore Job No. 00299-164-14	CPC Pontiac, Michigan	STORAGE PAD SOIL BORING 4

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Depth (Feet)	Sample Location	Sample Number	USCS Symbol	DESCRIPTION OF SUBSURFACE MATERIALS
0		1		Concrete
				Light brown fine SAND, with a trace of silt, loose, slightly moist
		2		Black fine foundry sand, loose, moist
		3		
		4		
5		5		
10		6		Gray green clayey SAND, dense, moist
				Gray sandy CLAY, with a trace of silt, medium stiff
15		7		Gray brown SILT, medium dense, moist
				Gray CLAY, with a trace of silt, medium [illegible], moist
20		8		

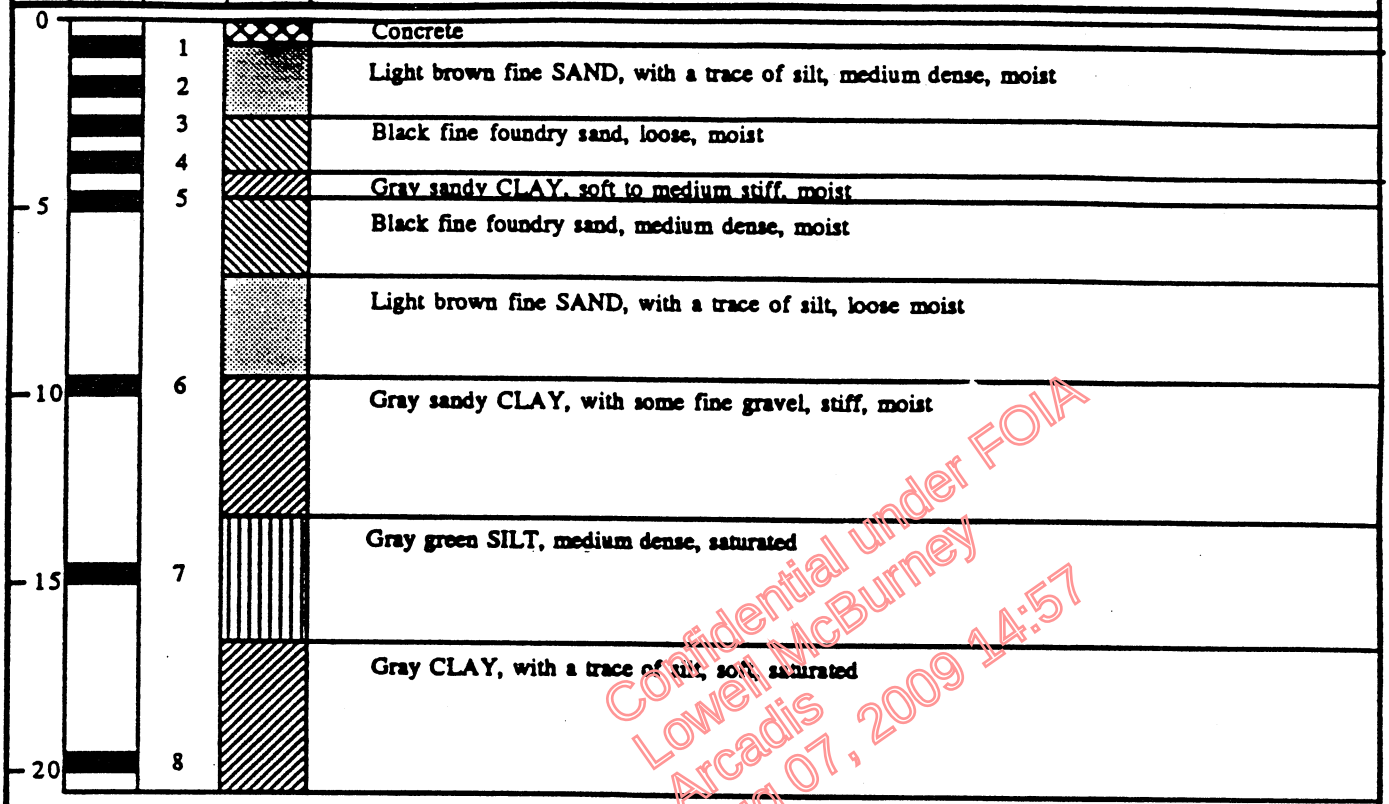
Boring terminated at 20.5 feet on 7/28/88.

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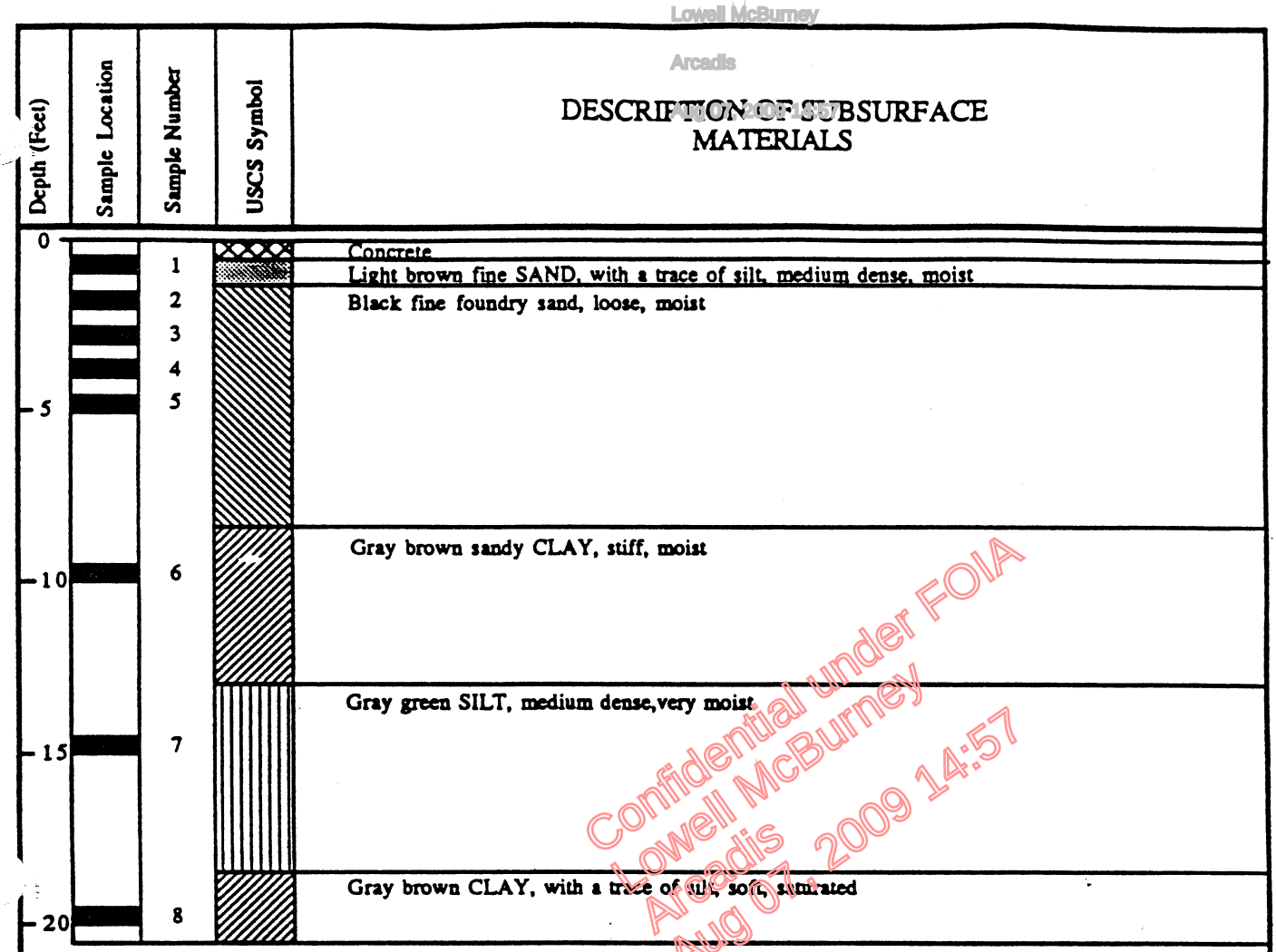
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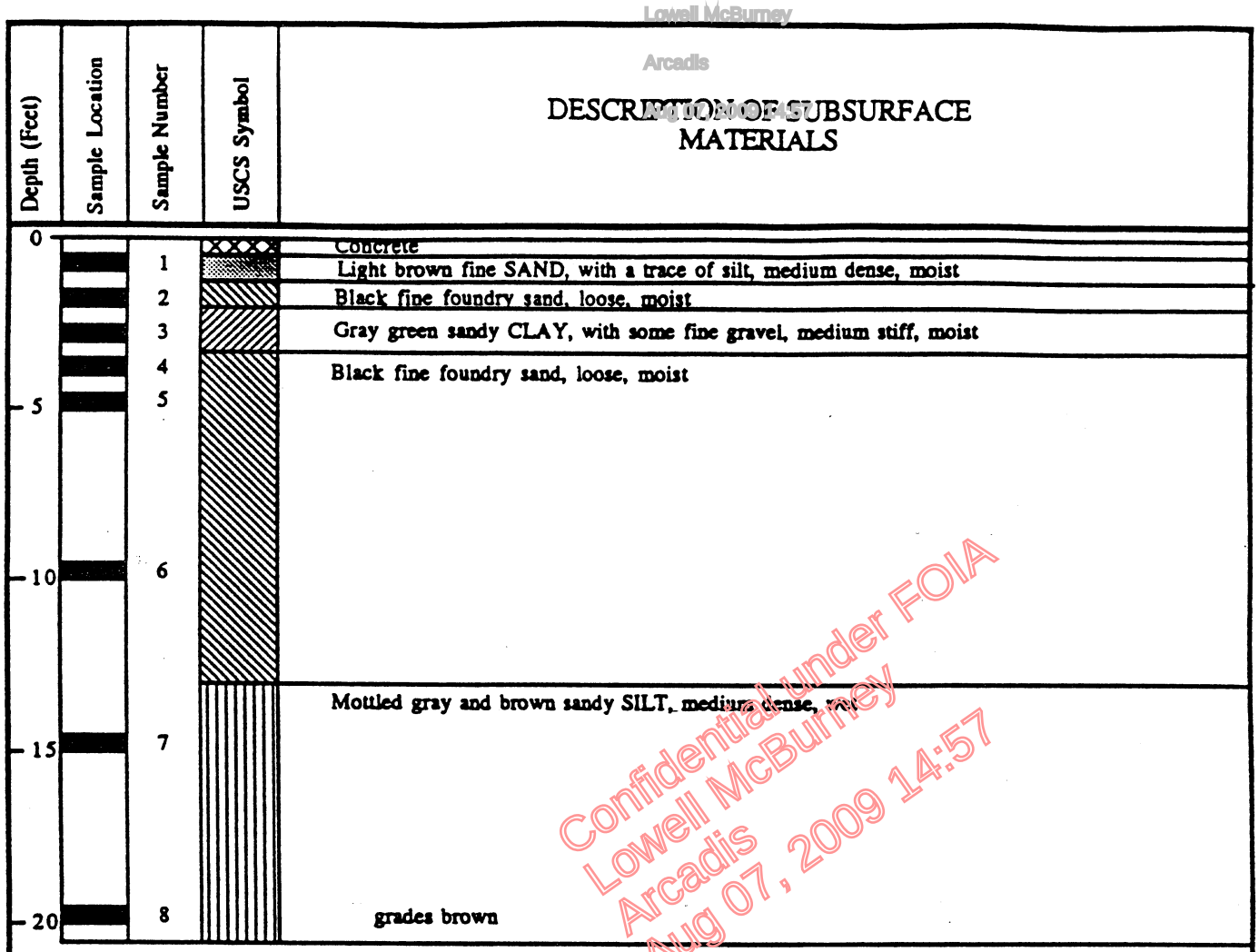
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Boring terminated st 20.5 feet on 7/29/88.

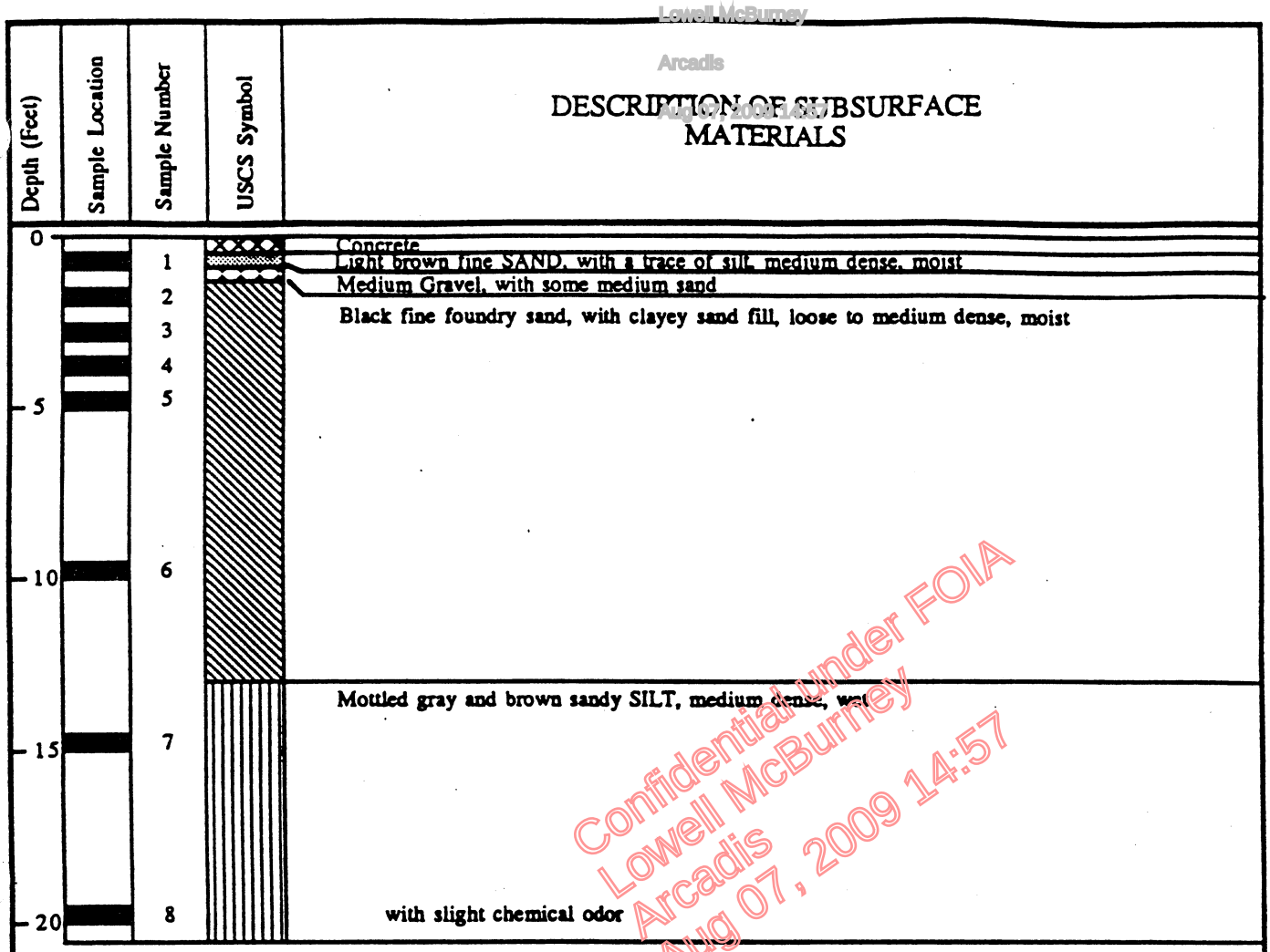
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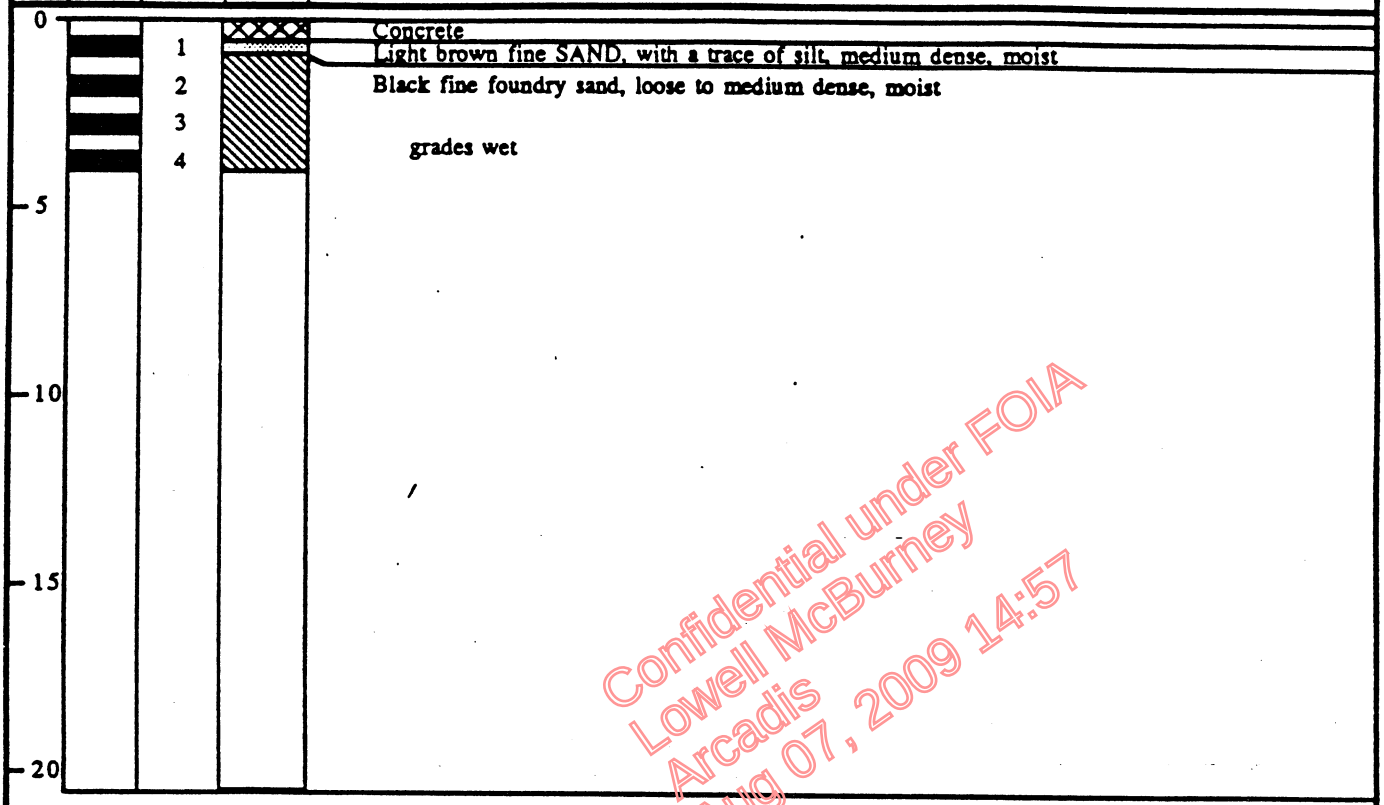
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Boring terminated st 4.5 feet on 7/29/88 due to the same type of obstruction encountered in background boring 4.

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Depth (Feet)	Sample Location	Sample Number	USCS Symbol	DESCRIPTION OF SUBSURFACE MATERIALS
0				Concrete
		1		Light brown fine SAND, with a trace of silt, medium dense, moist
		2		Black fine foundry sand, loose, moist
		3		
		4		
5		5		
				void encountered at approimately 9.5 feet, cause unknown
10				
		6		Mottled gray and brown sandy SILT, medium dense, wet
15		7		grades dark green with an oily sheen
				Gray silty CLAY, very soft, wet
20		8		

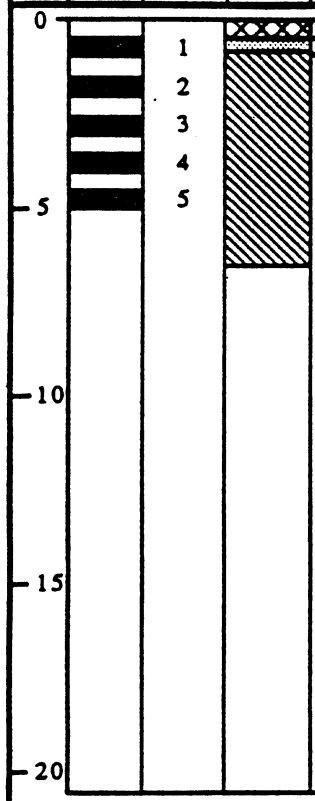
Boring terminated st 20.5 feet on 7/28/88.

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DESCRIPTION OF SUBSURFACE MATERIALS

Concrete

Light brown fine SAND, with a trace of silt, medium dense, moist

Black fine foundry sand, loose to medium dense, moist

grades clayey with a sweet chemical odor

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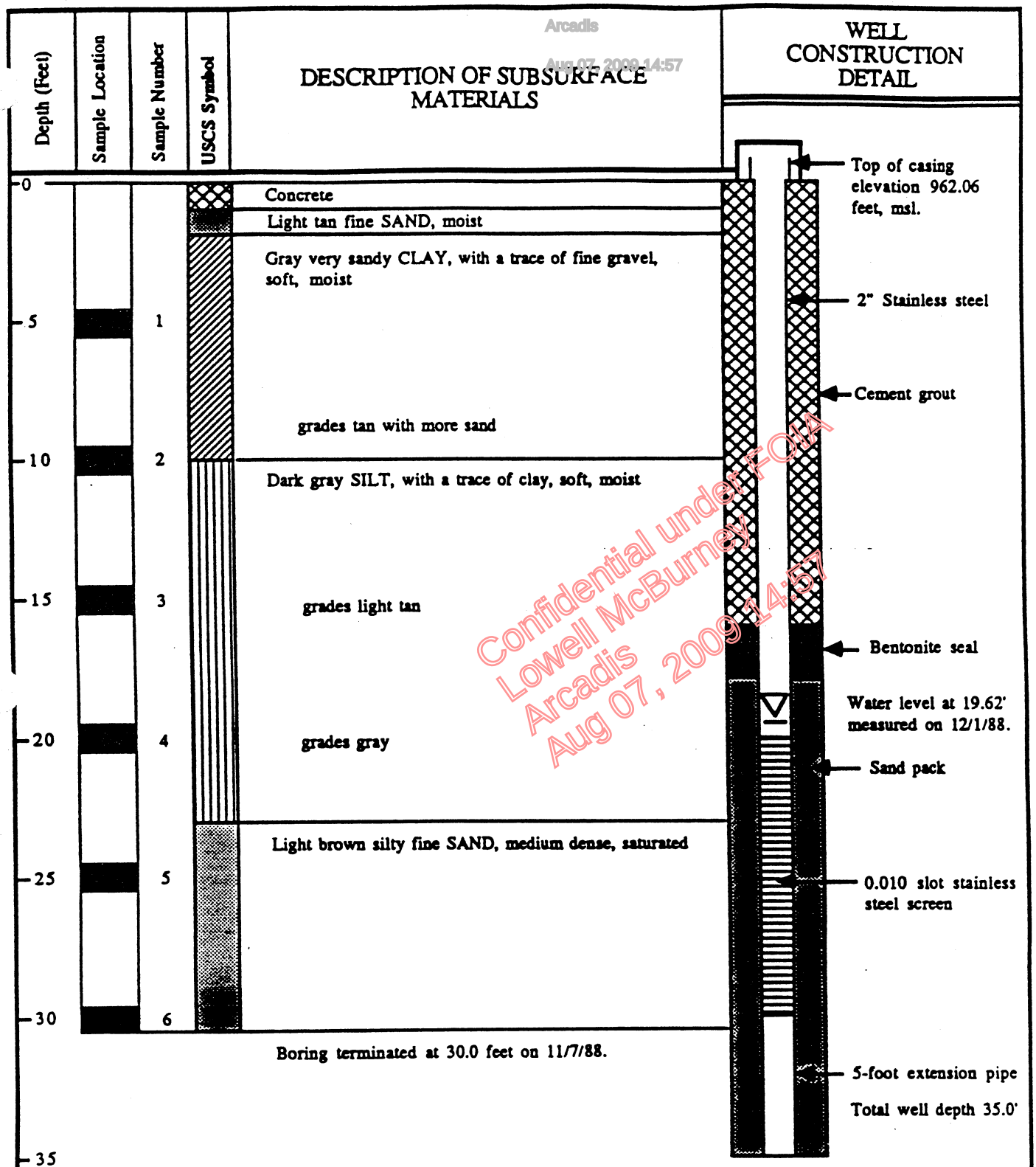
Boring terminated st 6.5 feet on 7/29/88 due to the same type of obstruction encountered in background boring 4.

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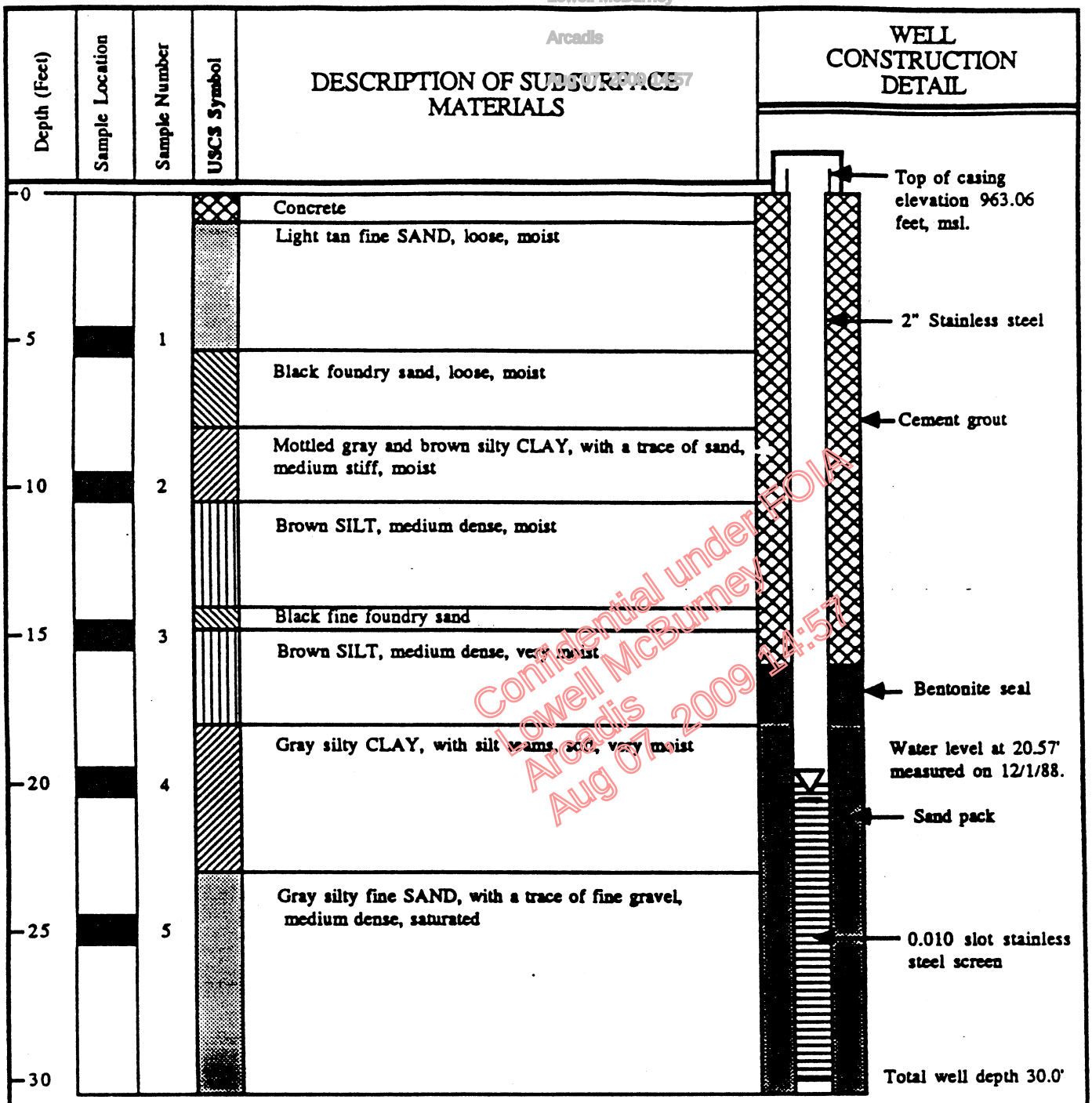
SOIL BORING LOG AND WELL CONSTRUCTION DIAGRAM

B-19

MONITORING WELL MW-1

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Boring terminated at 30.0 feet on 11/9/88.

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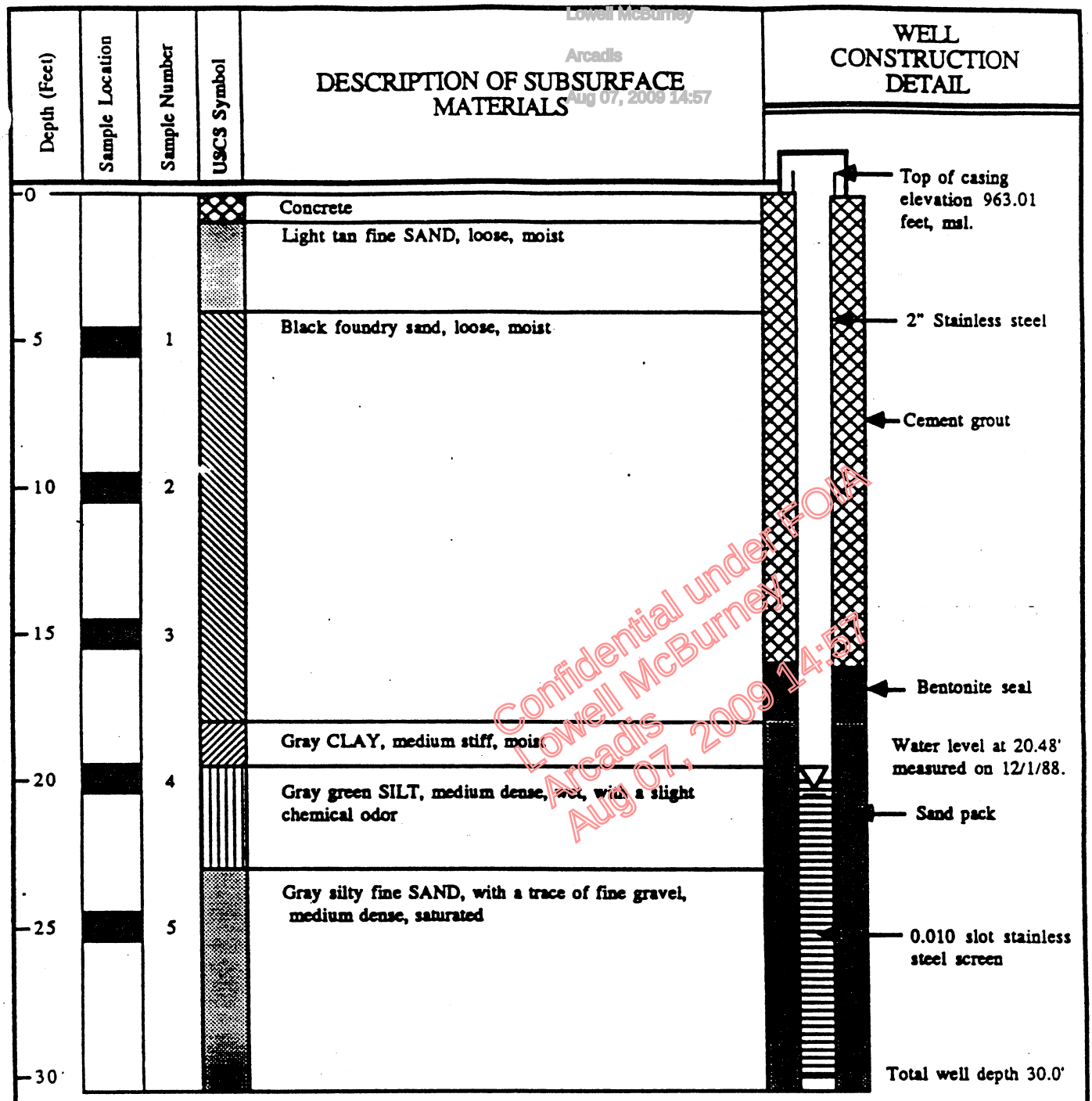
Job No. 00299-164-14

SOIL BORING LOG AND WELL CONSTRUCTION DIAGRAM

MONITORING WELL MW-2

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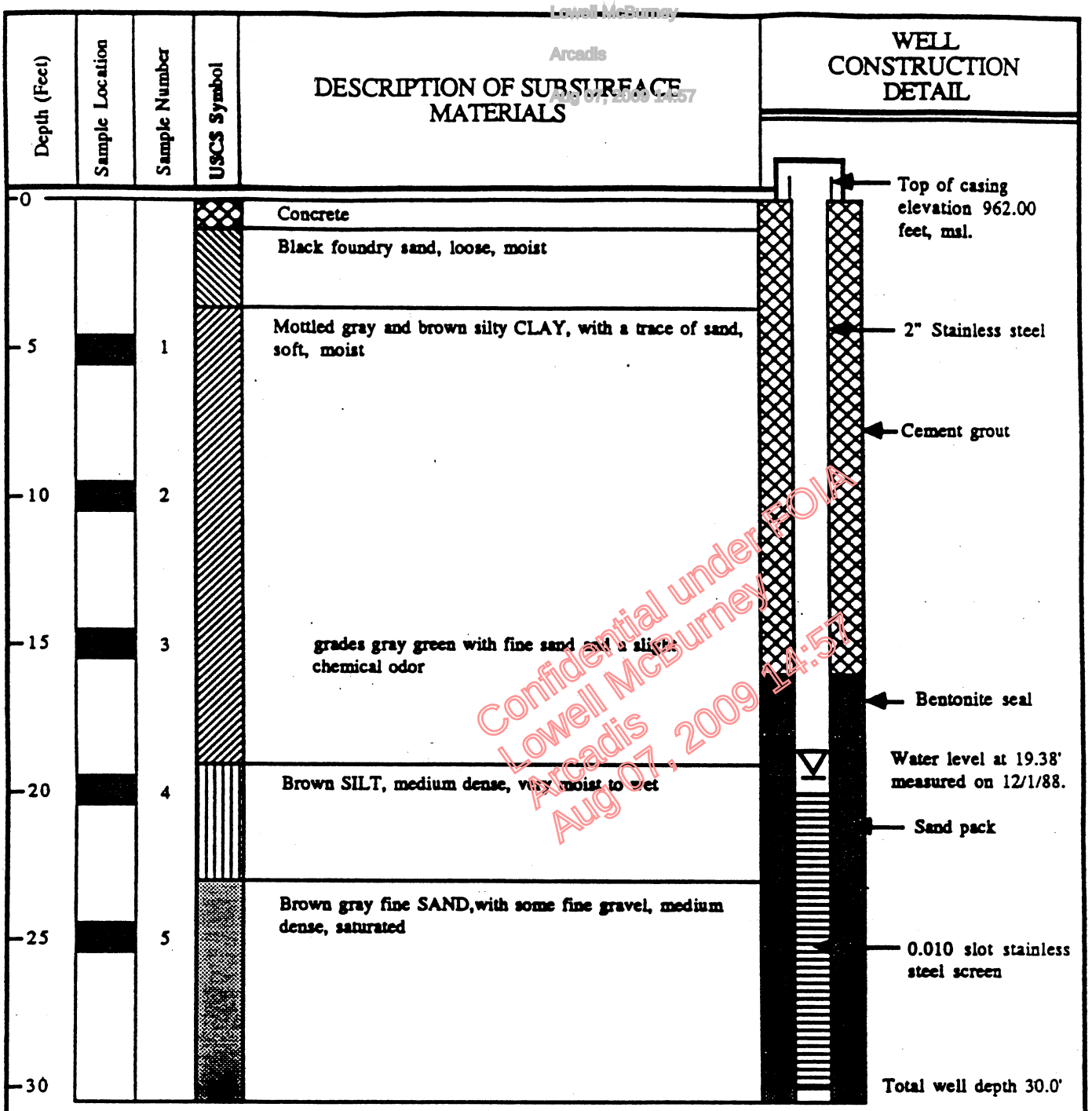


Boring terminated at 30.0 feet on 11/10/88.

Dames & Moore Job No. 00299-164-14	SOIL BORING LOG AND WELL CONSTRUCTION DIAGRAM	MONITORING WELL MW-3

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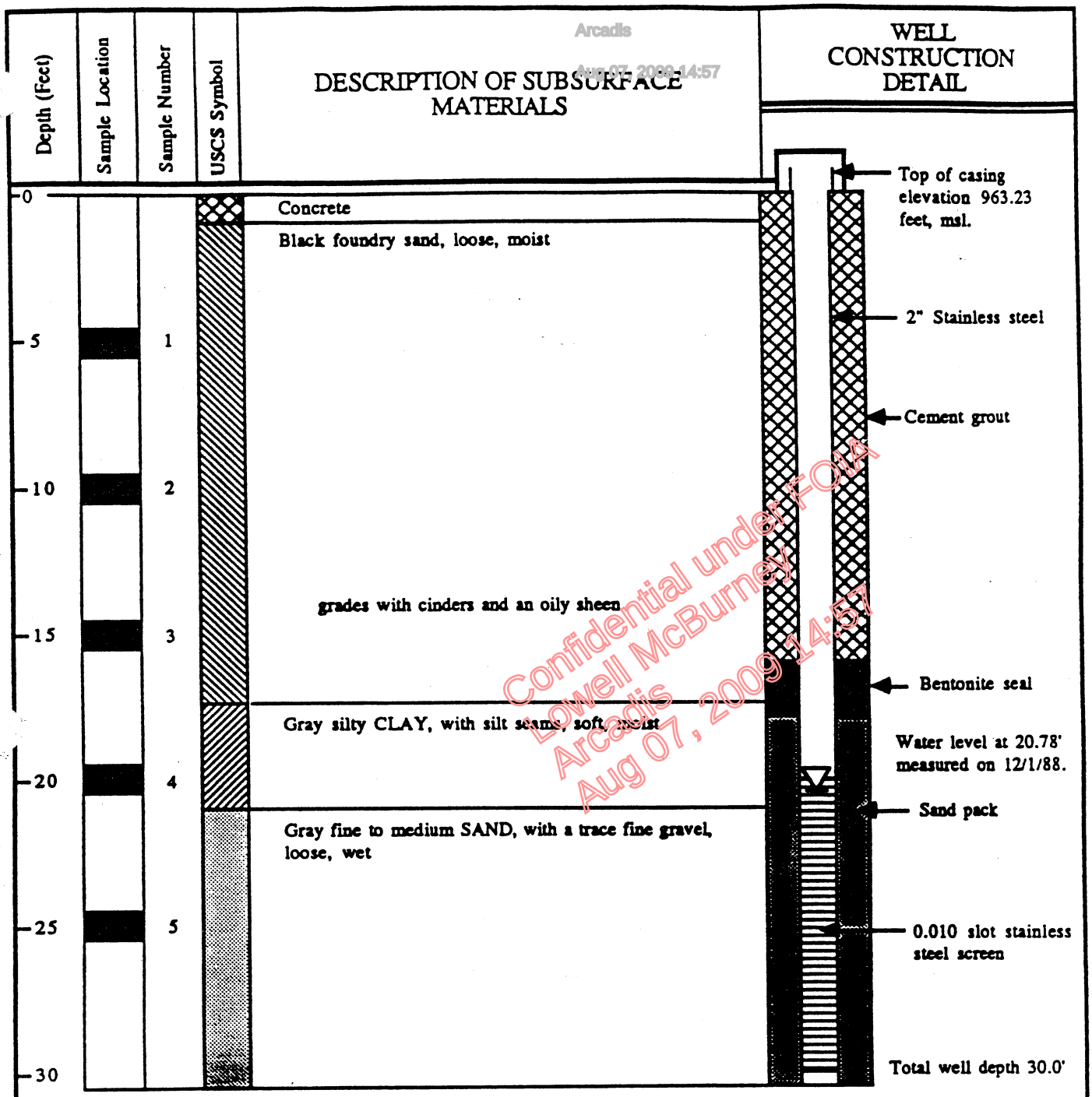
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Dames & Moore Job No. 00299-164-14	SOIL BORING LOG AND WELL CONSTRUCTION DIAGRAM	MONITORING WELL MW-4

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Boring terminated at 30.0 feet on 11/29/88.

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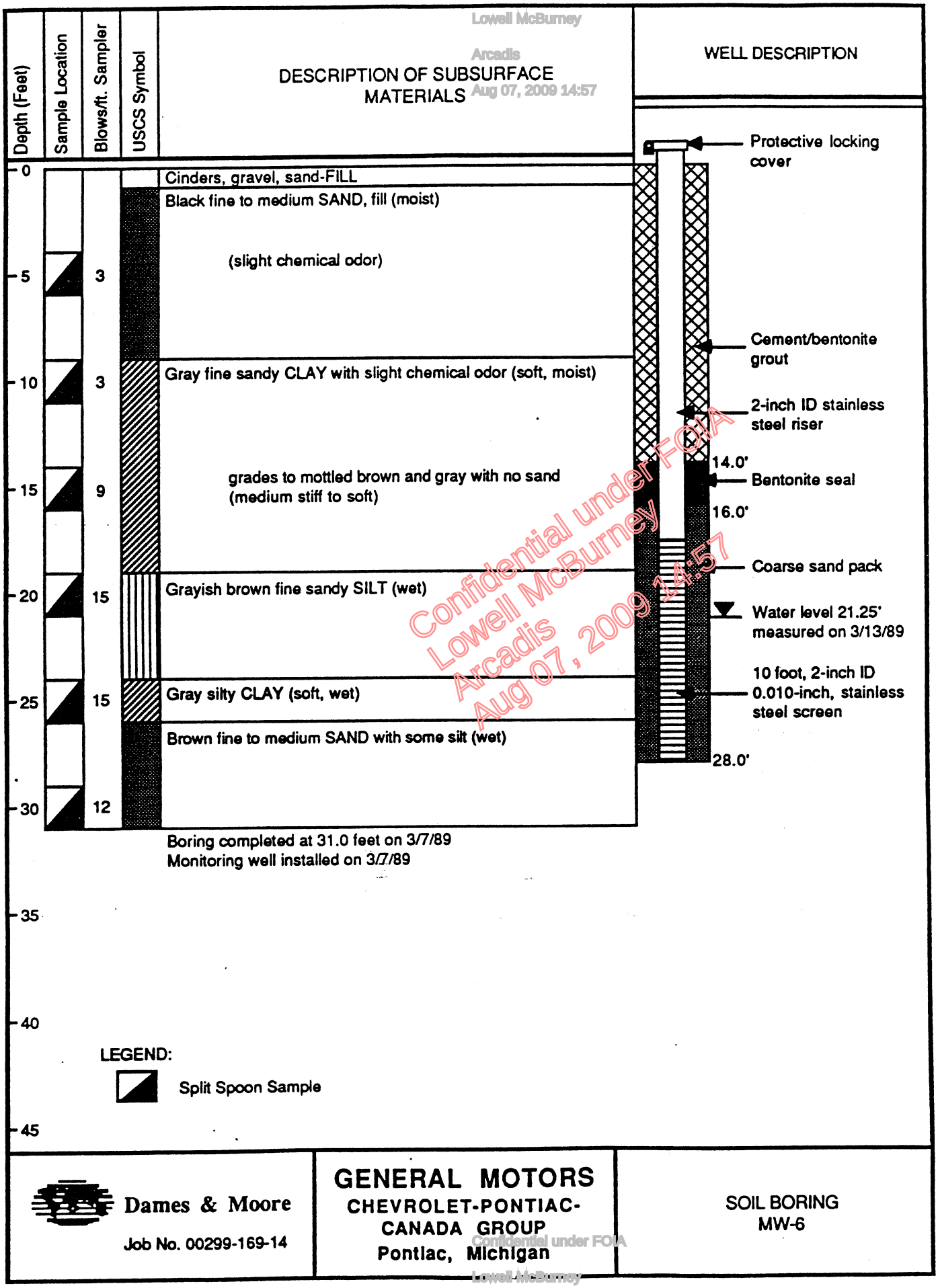
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SOIL BORING LOG AND WELL CONSTRUCTION DIAGRAM

MONITORING WELL MW-5

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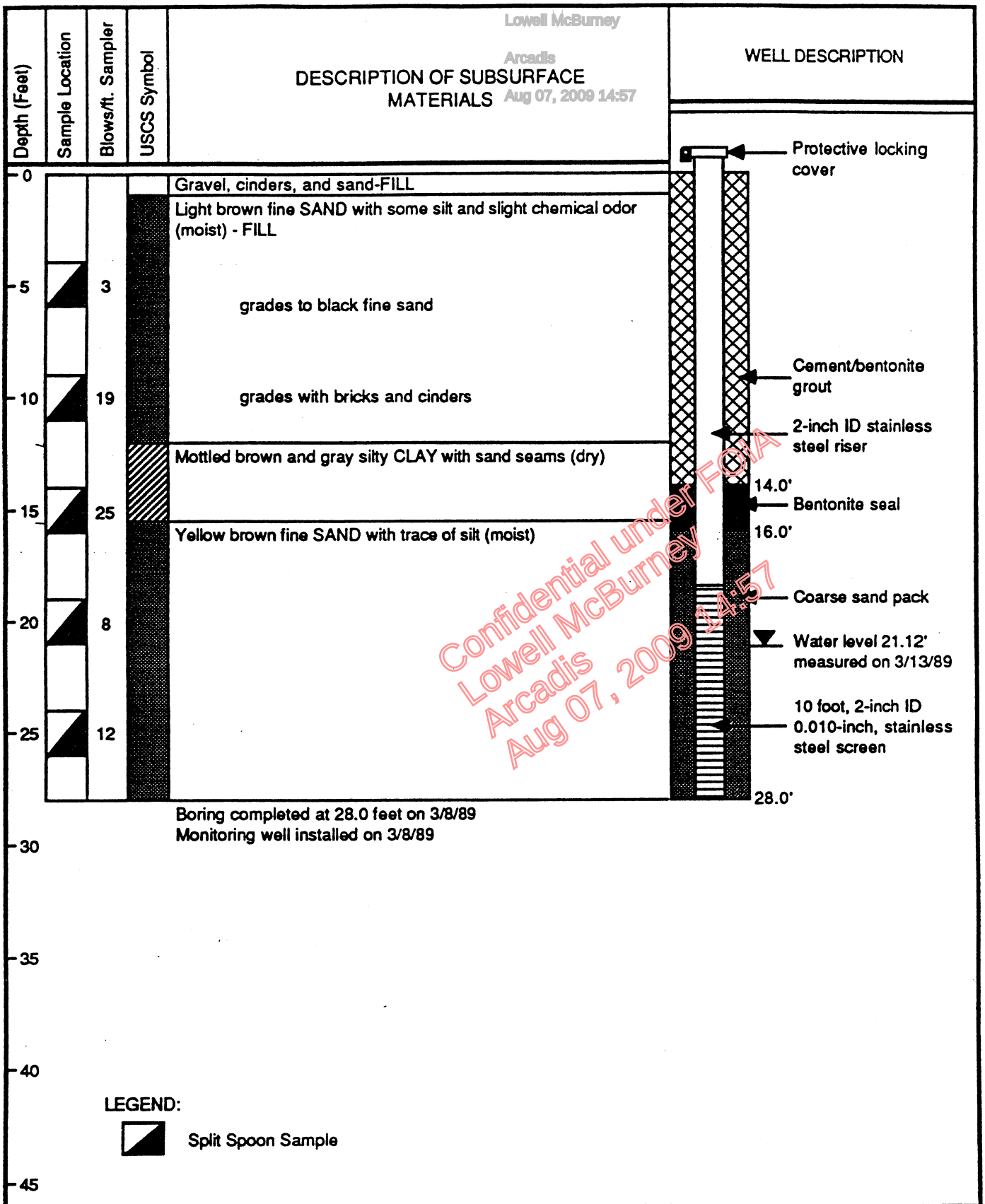
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GENERAL MOTORS
CHEVROLET-PONTIAC-CANADA GROUP
Pontiac, Michigan

SOIL BORING
MW-6

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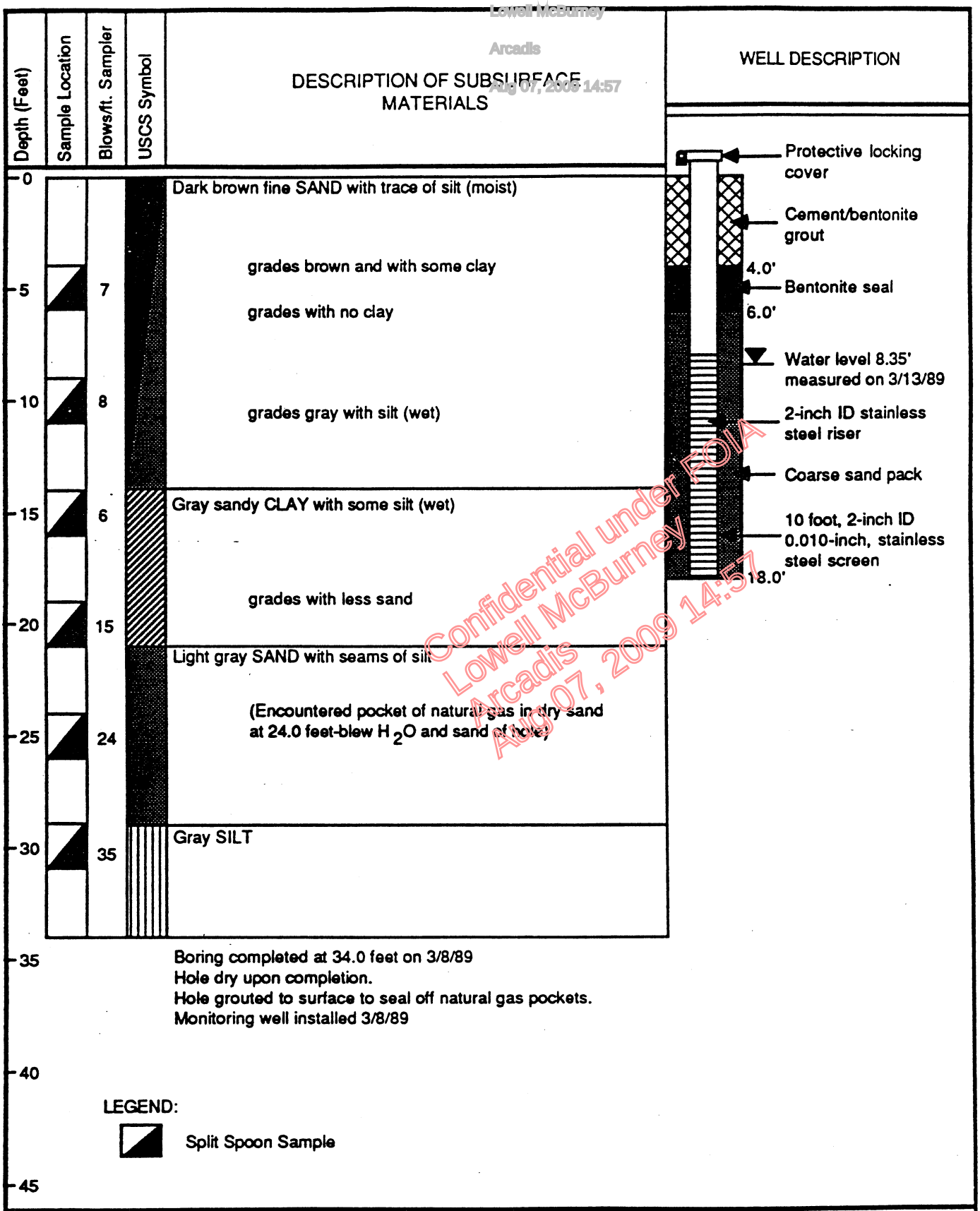
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GENERAL MOTORS
CHEVROLET-PONTIAC-CANADA GROUP
Pontiac, Michigan

SOIL BORING
MW-7

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Job No. 00299-169-14

GENERAL MOTORS
CHEVROLET-PONTIAC-CANADA GROUP
Pontiac, Michigan

SOIL BORING
MW-8

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C.P.C. Pontiac

Boring No. MW-13 DRILLING LOG

Pontiac, Mi. Project Number 0400009897

te Drilled 8-23-91 Total Depth 15' Boring Diameter (inches) 6.25"

O.C Elevation N.A. Initial Water Depth N.A. Static/24 hr. 0.00

reen Diameter (inches) 2.0 Length 10' Slot Size (inches) .010

sing Diameter (inches) 2.0 Length 7.5' Type SCH 40 PVC

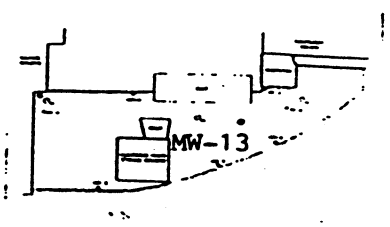
illing Company C.T.I. Driller(s) J. Springstead & E. Near

illing Method Hollow Steam Auger Sampling Method Split Spoon

gged By Tom Peters & Kevin Stites Sketched By Jeff Bachus

All other measurements in feet

Sketch Map



Notes

See site map for further details.

Depth (ft)	Well Construction	Notes	Sample No.	Blow Count	Recovery (in.)	PID/FID (ppm)	Graphic Log	Description/Soil Classification (Color, Texture, Structure)
		3.5" riser						Concrete
0		roadbox						
1		concrete	SS1	13 10 9 8	24"	180		Black, dry, SAND, with silt combination, medium density, with a strong hydrocarbon odor.
2		bentonite						
		casing	SS2	3 6 8 11	24"	190		Black, moist, SILT, with some clay, dark stained, stiff in density.
5			SS3	7 3 4 3	24"	75		Black and Tan, moist, SAND, loose in density.
6								
7			SS4	2 3 4 1	24"	95		Black and Tan, dry, SAND, medium grain, hydrocarbon odor.
8								
9			SS5	2 2 2 2	24"	50		Black stained, moist, fine SAND, very loose in density.
0		screen						
1			SS6	3 4 3 2	24"	50		Brown to Black, moist, SAND, loose in density.
2								
3		sand pack	SS7	1 2 5 2	24"	30		Brown, very moist, CLAY, medium stiff in density.
4								End of boring at 15.0 feet.
5								
6								
7								
8								
9								
0								
1								
2								
3								

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DRILLING LOG

Boring No. MW-14

Project C.P.C. Pontiac

Location Pontiac, Mi. Project Number 0400009897

Date Drilled 8-23-91 Total Depth 13' Boring Diameter (inches) 6.25"

T.O.C Elevation _____ Initial Water Depth N.A. Static/24 hr. _____

Screen Diameter (inches) 2.0 Length 10' Slot Size (inches) .010

Casing Diameter (inches) 2.0 Length 6.0 Type SCH 40 PVC

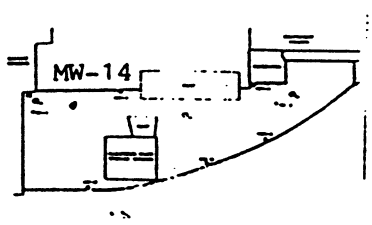
Drilling Company C.T.I. Driller(s) J. Springstead & R. Near

Drilling Method Hollow Stem Auger Sampling Method Split Spoon

Logged By Tom Peters & Kevin Stites Sketched By Jeff Bachus

All other measurements in feet

Sketch Map



Notes

Depth (ft)	Well Construction	Notes	Sample No.	Blow Count	Recovery (in.)	PID/FID (ppm)	Graphic Log	Description/Soil Classification (Color, Texture, Structure)
		3.0" riser						
0		roadbox						Concrete
1		concrete	SS1	2 5 11 8	24"	350		Black and Tan, moist, SAND
2		bentonite	SS2	4 4 4 4	24"	360		Black and Tan, moist, SAND
5		casing	SS3	2 2 1 1	24"	600		Black and Tan, moist, SAND
7			SS4	3 3 2 2	24"	90		Grey, wet, CLAY
9			SS5	2 8 5 5	24"	180		Tan, wet, silty SAND
10		screen						
11			SS6	2 4 6 6	24"	75		Grey, CLAY, very plastic
12								
13		sand pack						End of boring at 13 feet

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DRILLING LOG

Project CPC PONTIAC Boring No. RW-1

Location PONTIAC, MI Project Number 040009897

Date Drilled 5-1-90 Total Depth 20' Boring Diameter (inches) 14.0"

T.O.C Elevation 960.79 Initial Water Depth N/A Static/24 hr 19.55'

Screen Diameter (inches) 6.0" Length 15.0' Slot Size (inches) 0.020

Casing Diameter (inches) 6.0" Length 7.0' Type STAINLESS STEEL

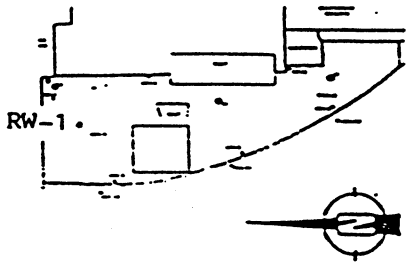
Drilling Company FOX DRILLING Driller(s) WILLIE HOLOMAN

Drilling Method HOLLOW STEM AUGERS Sampling Method SPLIT SPOON

Logged By TODD FOURNEY Sketched By TODD FOURNEY

All other measurements in feet

Sketch Map



Notes

Well Construction	Notes	Sample No.	Blow Count	Recovery (in.)	PID/FID (ppm)	Graphic Log	Description/Soil Classification (Color, Texture, Structure)
	stand pipe to 2'						
	concrete						CONCRETE
	casing						
	bentonite						Gravel, Asphalt, and Foundry Sand (fill). and SILTY CLAY
	screen	1	6 6 7 14	20	0		Brown and Green, wet to moist, fine grained SAND.
	sand pack	2	5 5 7 8	22	91.0		Brown and Green, wet, SILTY SAND with some clay.
		3	4 6 9 12	24	90.0		Brown, wet, CLAYEY SILT with some sand.
		4	5 7 8 9	22	0		Brown, wet, fine to medium grained SAND.
							End of Boring = 20.0'

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DRILLING LOG

ct C.P.C.–Pontiac Boring No. RW–1A

ation Pontiac, Mich. Project Number 040009897

Date Drilled 8–27–91 Total Depth 14' Boring Diameter (inches) 12

T.O.C Elevation 961.03 Initial Water Depth N.D. Static/24 hr. N.D.

Screen Diameter (inches) 6 Length 10' Slot Size (inches) 0.020

Casing Diameter (inches) 6 Length 6' Type Stainless

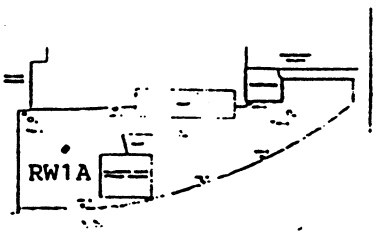
Drilling Company C.T.I. Driller(s) Rick Near + Rick Kroll

Drilling Method Hollow Steam Auger Sampling Method Split Spoon

Logged By Ed Edverding Sketched By Jeff Bachus

All other measurements in feet

Sketch Map



Notes: See site map for further details.

Depth (ft)	Well Construction	Notes	Sample No.	Blow Count	Recovery (in.)	PID/FID (ppm)	Graphic Log	Description/Soil Classification (Color, Texture, Structure)
		2" above grd.						Concrete
0–1		concrete	SS1	5 16 35 32	18"	90		Black, damp, SAND, medium gravel with light brown sand, very dense, trace of metal shavings, slight odor.
1–2		bentonite						
2–3		casing	SS2	2 3 4 5	9"	40		Brown to yellow, moist, CLAY, with trace of coarse and fine sand, medium stiff in density.
4–5			SS3	3 3 5 5	10"	40		Light brown and yellow, moist, CLAY, with trace of coarse sand, stiff in density.
6–7			SS4	2 2 2 4	12"	4		Light brown and green, wet, SAND with a trace of clay and trace of medium sand, very loose in density.
8–9			SS5	2 3 5 7	20"	>1000		Light brown and green, wet SILT, with a trace of medium sand, stiff in density, with slight odor.
10–11		screen	SS6	NA	22"	850		Same as above
12–13		sand pack	SS7	7 5 6 8	22"	200		Light brown, wet, CLAY, and SILT, with a trace of medium fine sand, medium density, with slight odor.
14								End of boring at 14 feet
15–25								

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DRILLING LOG

Project CPC PONTIAC — Boring No. MW-9

Location PONTIAC, MI — Project Number 040009897

Date Drilled 4-30-90 — Total Depth 20' — Boring Diameter (inches) 8.0"

T.O.C Elevation 961.51 — Initial Water Depth N/A — Static/24 hr 15.04'

Screen Diameter (inches) 2.0" — Length 15.0' — Slot Size (inches) 0.020

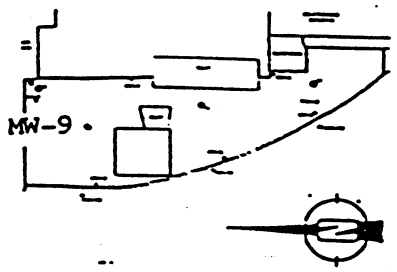
Casing Diameter (inches) 2.0" — Length 7.0' — Type PVC

Drilling Company FOX DRILLING — Driller(s) WILLIE HOLOMAN

Drilling Method HOLLOW STEM AUGERS — Sampling Method SPLIT SPOON

Logged By TODD FOURNEY — Sketched By TODD FOURNEY

Sketch Map



Notes

All other measurements in feet

Well Construction	Notes	Sample No.	Blow Count	Recovery (In.)	PID/FID (ppm)	Graphic Log	Description/Soil Classification (Color, Texture, Structure)
	stand pipe to 2'						
	concrete						CONCRETE
	bentonite						
	casing	1	5, 28, 31, 21	15	10		Black, moist, FOUNDRY SAND with some gravel. (fill)
		2	9, 5, 5, 6	18	0		
		3	5, 6, 7, 7	18	0		Brown, moist, SILTY CLAY.
		4	3, 3, 4, 4	20	0		
	screen	5	3, 4, 5, 6	22	0		Gray, moist, fine grained SAND.
		6	7, 8, 9, 10	24	0		Brown and Gray, wet, fine grained SAND.
		7	4, 5, 6, 7	24	2.0		Brown, moist, SILTY CLAY
		8	4, 4, 5, 5	22	0		
		9	4, 6, 7, 7	24	0		Brown, wet, SILTY SAND with some clay.
	sand pack	10	4, 7, 9, 9	24	0		Brown, wet, medium to coarse grained SAND.
							Brown and Gray, moist, CLAY.
							End of Boring = 21.0'

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DRILLING LOG

Project CPC PONTIAC Boring No. MW-10

Location PONTIAC, MI Project Number 0100098?

Date Drilled 5-2-90 Total Depth 20' Boring Diameter (inches) 8.0"

T.O.C Elevation 963.28 Initial Water Depth N/A Static/24 hr 17.51'

Screen Diameter (inches) 2.0" Length 15.0' Slot Size (inches) 0.020

Casing Diameter (inches) 2.0" Length 7.0' Type PVC

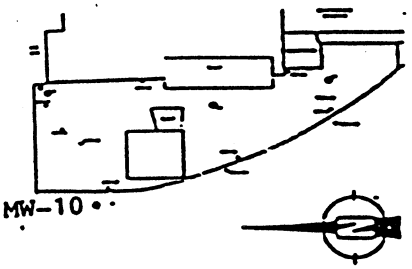
Drilling Company FOX DRILLING Driller(s) WILLIE HOLOMAN

Drilling Method HOLLOW STEM AUGERS Sampling Method SPLIT SPOON

Logged By TODD FOURNEY Sketched By TODD FOURNEY

All other measurements in feet

Sketch Map



Notes

Well Construction	Notes	Sample No.	Blow Count	Recovery (in.)	HNu/PID (ppm)	Graphic Log	Description, Soil Classification (Color, Texture, Structure)
	stand pipe to 2'						
	concrete						
	casing						
	bentonite						
							Gravel, Asphalt, and Foundry Sand (fill).
		1	5 9 12 14	20	0		
							Brown, moist, SILTY CLAY with glass and rock fragments.
		2	4 5 5 5	22	0		
	screen						Brown, moist, SAND with some clay.
	sand pack	3	6 9 11 12	24	0		
							Brown, wet, fine grained SAND.
		4	2 4 [illegible]	24	0		Brown, wet, SILTY SAND with some clay.
							End of Boring = 22.0'

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DRILLING LOG

Project CPC PONTIAC Boring No. MW-11

Location PONTIAC, MI Project Number 040009897

Date Drilled 5-1-90 Total Depth 20' Boring Diameter (inches) 8.0"

T.O.C Elevation 963.43 Initial Water Depth N/A Static/24 hr 18.30'

Screen Diameter (inches) 2.0" Length 15.0' Slot Size (inches) 0.020

Casing Diameter (inches) 2.0" Length 7.0' Type PVC

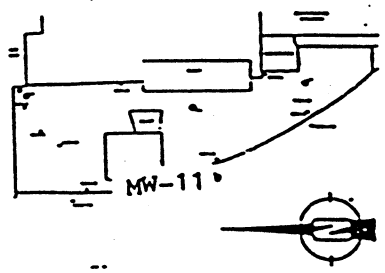
Drilling Company FOX DRILLING Driller(s) WILLIE HOLOMAN

Drilling Method HOLLOW STEM AUGERS Sampling Method SPLIT SPOON

Logged By TODD FOURNEY Sketched By TODD FOURNEY

All other measurements in feet

Sketch Map



Notes

Well Construction	Notes	Sample No.	Blow Count	Recovery (in.)	PID/FID (ppm)	Graphic Log	Description/Soil Classification (Color, Texture, Structure)
	stand pipe to 2'						
	concrete						CONCRETE
	casing						
	bentonite						Gravel, Asphalt, and Foundry Sand (fill).
		1	7 4 5 5	20	0		Black, moist, FOUNDRY SAND with some gravel. (fill)
	screen						
	sand pack	2	1 2 2 2	22	0		Brown, wet, SILTY CLAY.
		3	6 9 9 12	24	0		Brown and Gray, moist to wet, fine grained SAND.
							Brown, wet, CLAY with some silt.
		4	6 9 10 12	22	0		Brown, moist, fine to medium grained SAND.
							End of Boring = 22.0'

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DRILLING LOG

Boring No. MW-12

ject CPC PONTIAC

cation PONTIAC, MI Project Number 04J009897

Date Drilled 5-1-90 Total Depth 20' Boring Diameter (inches) 8.0"

T.O.C Elevation 963.77 Initial Water Depth N/A Static/24 hr 15.99'

Screen Diameter (inches) 2.0" Length 15.0' Slot Size (inches) 0.020

Casing Diameter (inches) 2.0" Length 7.0' Type PVC

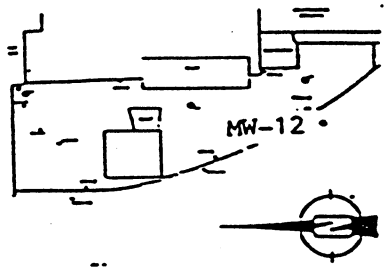
Drilling Company FOX DRILLING Driller(s) WILLIE HOLOMAN

Drilling Method HOLLOW STEM AUGERS Sampling Method SPLIT SPOON

Logged By TODD FOURNEY Sketched By TODD FOURNEY

All other measurements in feet

Sketch Map



Notes

Well Construction	Notes	Sample No.	Blow Count	Recovery (in.)	PID/FID (ppm)	Graphic Log	Description/Soil Classification (Color, Texture, Structure)
	stand pipe to 2'						
	concrete						CONCRETE
	casing						
	bentonite						
							(Gravel, Asphalt, and Foundry Sand (fill).
		1	22 10 23 40	20	3.0		
							Black, moist, FOUNDRY SAND with some gravel. (fill)
	screen						
		2	4 6 8 8	22	32.0		
	sand pack						Black and Brown, moist, FOUNDRY SAND (fill).
		3	6 8 8 10	24	5.0		
							Black and gray, moist to wet, SANDY CLAY.
							Brown, wet, fine grained SAND.
							End of Boring = 22.0'

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DRILLING LOG

Project CPC PONTIAC Boring No. SV-1

Location PONTIAC, MI Project Number 040009897

Date Drilled 3-14-90 Total Depth 22' Boring Diameter (inches) 8.0"

T.O.C Elevation N/A Initial Water Depth N/A Static/24 hr. N/A

Screen Diameter (inches) 2.0" Length 20.0' Slot Size (inches) 0.020

Casing Diameter (inches) 2.0" Length 4.0' Type PVC

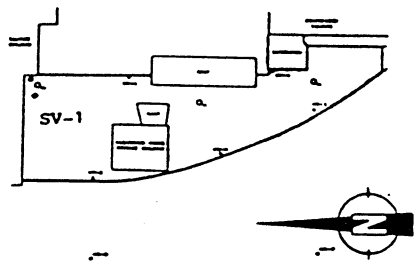
Drilling Company CTI DRILLING Driller(s)

Drilling Method HOLLOW STEM AUGERS Sampling Method SPLIT SPOON

Logged By TODD FOURNEY Sketched By TODD FOURNEY

All other measurements in feet

Sketch Map



Notes

Well Construction	Notes	Sample No.	Blow Count	Recovery (In.)	PID/FID (ppm)	Graphic Log	Description/Soil Classification (Color, Texture, Structure)
stand pipe to 2'							
concrete							ASPHALT
bentonite							
casing							Black, moist, SILTY CLAY.
		1		4.0	1.0		
screen							Black and gray, moist, SILT with some clay.
		2		10.0	1.0		
sand pack							Gray, moist, SILTY SAND.
		3		12.0	0.0		
		4		12.0	0.0		Gray, wet, CLAYEY SAND.
							End of boring = 22.0'

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22

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DRILLING LOG

Project CPC PONTIAC

Boring No. SV-2

Location PONTIAC, MI

Project Number 040009897

Date Drilled 3-14-90 Total Depth 22' Boring Diameter (inches) 8.0"

T.O.C Elevation N/A Initial Water Depth N/A Static/24 hr. N/A

Screen Diameter (inches) 2.0" Length 20.0' Slot Size (inches) 0.020

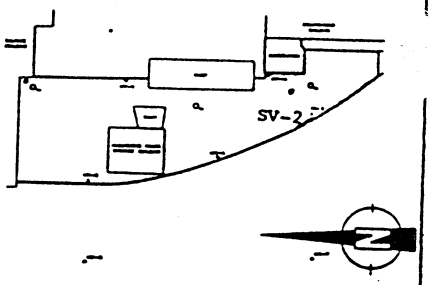
Casing Diameter (inches) 2.0" Length 4.0' Type PVC

Drilling Company CTI DRILLING Driller(s)

Drilling Method HOLLOW STEM AUGERS Sampling Method SPLIT SPOON

Logged By TODD FOURNEY Sketched By TODD FOURNEY

Sketch Map



Notes

All other measurements in feet

Well Construction	Notes	Sample No.	Blow Count	Recovery (in.)	PID/FID (ppm)	Graphic Log	Description/Soil Classification (Color, Texture, Structure)
stand pipe to 2'							
concrete							ASPHALT
bentonite							
casing							Boulders, wire, pieces of steel, etc. (fill)
		1		0.0			
screen							Black, moist, SILTY SANDY CLAY.
		2		10.0	2.0		
sand pack							Black, moist, SILTY SANDY CLAY.
		3		12.0	1.0		
		4		14.0	0.0		Black, wet, SILTY SANDY CLAY
							End of boring = 22.0'

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PARSONS ENGINEERING-SCIENCE
DRILLING RECORD

BORING NO. MW-16

Sheet 1 of 1

Contractor: Carlo Environmental Tech.
Driller: Paul Libby
Inspector: J.S. Poulsen
Rig Type: CME 95
Method: 4.25-inch HSA

PROJECT NAME General Motors - West Yard
PROJECT NUMBER 727249.00
Location:

Weather Partly cloudy, 26 deg F.
Date/Time Start December 20, 1005. / 1515
Date/Time Finish December 20, 1995. / 1545

423652.11 northing
13411700.55 easting
952.59 TOC elev.
950.05 GS elev.

GROUNDWATER OBSERVATIONS			
Date	13-Feb-95		
From	TOC		
Depth	7.83		

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	COMMENTS
						4-inch Steel Protective Casing
		0				
				HA		Cement/Bentonite Grout
		1		HA		
				HA		Bentonite Seal (1.5-2.5 ft.)
		2		HA		
				HA		Fine Sand
		3		HA		
				HA		
		4		HA	light brown sand and gravel FILL (damp)	Sand Pack (3-10 ft.)
0			80	3		
		5		6		
				6		2-inch ID 0.010 Slot Stainless Steel Screen (3.5-8.5 ft.)
		6		7	6 ft.	
0			75	5		
		7		7	medium gray medium SAND (wet)	
				8	little fines	
		8		9		
0			100	3		
		9		6	light gray medium SAND	
				8	trace gravel , fines	2-inch ID PVC Sump (8.5-10.5 ft.)
		10		9		
0			100	5		
		11		6		
					BORING TERMINATED AT 11 FEET.	
		12				
		13				
		14				
		15				
		16				
		17				

STANDARD PENETRATION
SS = SPLIT SPOON
A = AUGER CUTTINGS

SUMMARY: Sample GMWXSBMW16(5.7') / 1545 TCL/TAL

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PARSONS ENGINEERING-SCIENCE
DRILLING RECORD

BORING NO. DW-16

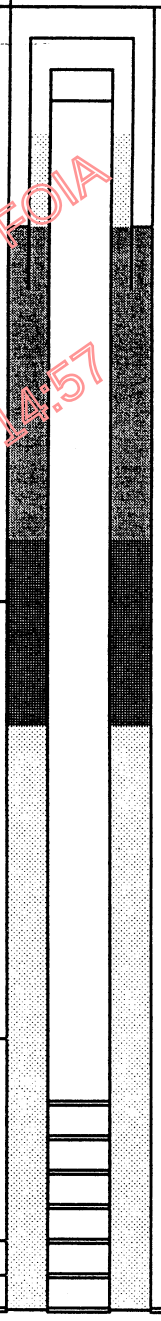
Sheet 1 of 2

Contractor:	Carlo Environmental Tech.
Driller:	Paul Libby
Inspector:	J.S. Poulsen
Rig Type:	CME 95
Method:	4.25-inch HSA
PROJECT NAME	General Motors - West Yard
PROJECT NUMBER	727249.00
Location:	
Weather	high overcast, calm, 38deg F
Date/Time Start	December 15, 1995 / 0800
Date/Time Finish	December 15, 1995 / 1200

423648.95 northing
13411701.05 easting
964.67 Toc Elev.
952.38 GS elev.

GROUNDWATER OBSERVATIONS			
Date	02/13/96		
Time	TOC		
Depth	7.72		

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	
		0				
				HA		
		1		HA		
				HA		
		2		HA		
				HA		
		3		HA		
				HA		
		4		HA	light brown sand and gravel FILL (damp)	
0			80	3		
		5		6		
				6		
		6		7		6 ft.
0			75	5		
		7		7	medium gray medium SAND (wet)	
				8	little fines	
		8		9		
0			100	3		
		9		6	light gray medium SAND	
				8	trace gravel , fines	
		10		9		
0			100	5		
		11		6		
				8		
		12		10		
0			100	1		
		13		4		13 ft.
				8		
		14		6		
0			100	4	light grey SILT (wet)	
		15		5	trace fine sand	
				8		
		16		4		16 ft.
0			100	4	coarse SAND/GRAVEL	16.5 ft.
		17		12	red/grey CLAY, some silt, sand	17.0 ft.



4-inch ID Steel Protective Casing

Cement/Bentonite Grout (0-5 ft.

2-inch ID PVC Riser (+2.5-14 ft.)

BENTONITE SEAL (5-8 feet)

NATURAL SAND PACK (flowing sand) (8-19 ft)

2-INCH ID STAINLESS STEEL SCREEN 0.010 SLOT (14-19 FT.)

STANDARD PENETRATION
SS = SPLIT SPOON
A = AUGER CUTTINGS

SUMMARY: Sample: GMWYSSDW(0-6") / 0830

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PARSONS ENGINEERING-SCIENCE
DRILLING RECORD

BORING NO. DW-16

Sheet 2 of 2

Location:

Contractor: Carlo Environmental Tech.
Driller: Paul Libby
Inspector: J.S. Poulsen
Rig Type: CME 95
Method: 4.25-inch HSA

PROJECT NAME General Motors - West Yard
PROJECT NUMBER 727249.00

Weather high overcast, calm, 38deg F
Date/Time Start December 15, 1996 / 0800
Date/Time Finish December 15, 1996 / 1200

GROUNDWATER OBSERVATIONS

Date				
Time				
Depth				

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	COMMENTS
				14	gray fine SAND (wet)	
		18		8	little silt, trace 1/4" gravel 18 ft.	
0			100	3		
		19		4	light gray CLAY (damp)	NATURAL SAND PACK (flowing sand) (8-19 ft)
				11	some silt, little fine sand, firm	
		20		8	trace fine rounded gravel	
0			100	1		
		21		3		
				5		
		22		6		
					BORING TERMINATED AT 22 FEET.	
		23				
		24				
		25				
		26				
		27				
		28				
		29				
		30				
		31				
		32				
		33				
		34				
		35				
		36				
		37				

STANDARD PENETRATION
SS = SPLIT SPOON
A = AUGER CUTTINGS

SUMMARY:

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PARSONS ENGINEERING-SCIENCE
DRILLING RECORD

BORING NO. MW-17

Sheet 1 of 1

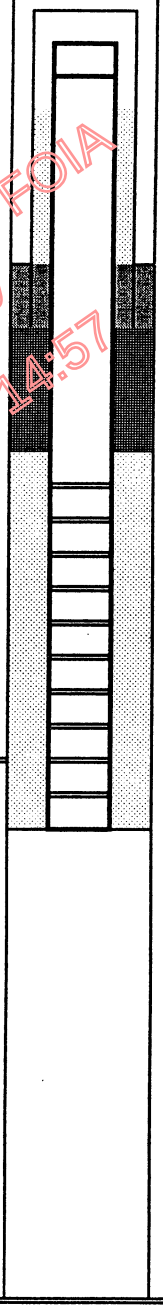
Contractor:	Carlo Environmental Tech.
Driller:	Paul Libby
Inspector:	J.S. Poulsen
Rig Type:	CME 95
Method:	4.25-inch HSA
PROJECT NAME	General Motors - West Yard
PROJECT NUMBER	727249.00
Location:	
Weather	Overcast, 36deg F. calm
Date/Time Start	December 12, 1995 / 1600
Date/Time Finish	December 20, 1995 / 1630

423308.58 northing
13411868.17 easting
948.55 TOC elev.
946.16 GS elev.

GROUNDWATER OBSERVATIONS			
Date	02/13/96		
Time	TOC		
Depth	7.45		

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL
		0			
0			100	HA	
		1		HA	FILL
				HA	black fine/medium sand and cobbles
		2		HA	tight packed
0			100	HA	
		3		HA	
				HA	
		4		HA	
0			80	4	
		5		4	
				4	
		6		6	
0			75	3	
		7		8	
				13	
		8			BORING TERMINATED AT 7.5 FEET/
		9			
		10			
		11			
		12			
		13			
		14			
		15			
		16			

(wet)



4" Steel Protective Casing

Cement/Bentonite Grout (0-1 ft.)

Bentonite Seal (1-3 ft.)

Sand Pack (3-8.5 ft.)

2-inch ID Stainless Steel Screen 0.010 Slot (3.5-8.5 ft.)

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STANDARD PENETRATION
SS = SPLIT SPOON
A = AUGER CUTTINGS

SUMMARY: Sample: GMWYSBMW17 (6-8') / 1620 TCL/TAL

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DRILLING RECORD

BORING NO. DW-17

Sheet 1 of 1

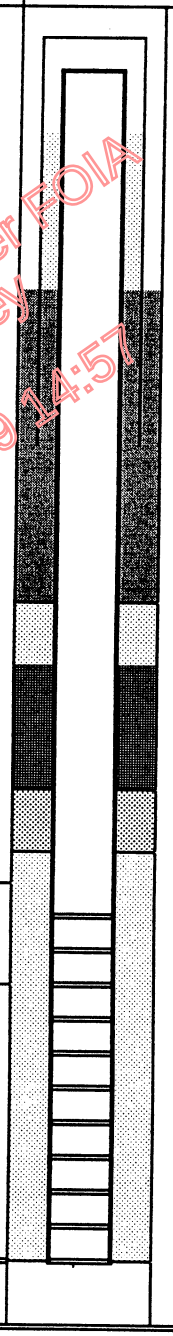
Contractor:	Carlo Environmental Tech.
Driller:	Paul Libby
Inspector:	J.S. Poulsen
Rig Type:	CME 95
Method:	4.25-inch HSA
PROJECT NAME	General Motors - West Yard
PROJECT NUMBER	727249.00
Location:	
Weather	overcast, mod winds, 30deg F.
Date/Time Start	December 14, 1995. / 1400
Date/Time Finish	December 14, 1995. / 1525

423312.16 northing
13411867.94 easting
948.64 TOC elev.
946.16 GS elev.

GROUNDWATER OBSERVATIONS

Date	02/13/96		
Time	TOC		
Depth	7.67		

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	COMMENTS
		0				
0			100	HA		
		1		HA	FILL	
				HA	black fine/medium sand and cobbles	
				HA	tight packed	
		2		HA		
0			100	HA		
		3		HA		
				HA		
		4		HA		
0			80	4		
		5		4	(wet)	
				4		
		6		6		
0			75	3		
		7		8		
				13		
		8		15	(moist)	
0			80	6		
		9		4		
				3	9.5 ft.	
		10		3	dark brown PEAT (moist)	
0			100	1	fine white rootlets throughout	
		11		1	11 ft.	
				2		
		12		2	light pink/white MARL (wet)	
0			100	1	very fine, pasty	
		13		0	trace organic debris	
				1		
		14		4		
0			100	3		
		15		2		
					BORING TERMINATED AT 15 FEET.	
		16				



4" Steel Protective Casing

2-inch ID PVC Riser (+2.5-10 ft.)

Cement/Bentonite Grout (0-5 ft.)

Fine Sand (5-6 ft.)

Bentonite Seal (6-8 ft.)

Fine Sand (8-9 ft.)

Sand Pack (9-15 ft.)

2-inch ID Stainless Steel Screen 0.010 Slot (10-15 ft.)

STANDARD PENETRATION
SS = SPLIT SPOON
A = AUGER CUTTINGS

SUMMARY:

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DRILLING RECORD

BORING NO. MW-18

Sheet 1 of 2

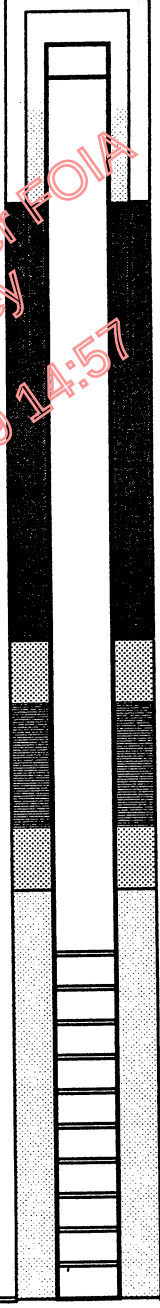
Contractor:	Carlo Environmental Tech.
Driller:	Paul Libby
Inspector:	J.S. Poulsen
Rig Type:	CME 95
Method:	4.25-inch HSA
PROJECT NAME	General Motors - West Yard
PROJECT NUMBER	727249.00
Location:	
Weather	Overcast, PPTN. 32deg F.
Date/Time Start	December 13, 1995. / 1535
Date/Time Finish	December 14, 1995. / 1310

423276.8 northing
13412205.3 easting
957.78 TOC elev.
955.27 GS elev.

GROUNDWATER OBSERVATIONS

Date	02/13/96		
Time	TOC		
Depth	16.40		

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	COMMENTS
						4" Steel Protective Casing
		0				
0				HA	0-9 inches reinforced (CONCRETE)	
		1		HA		
				HA	black medium sand FILL (dry)	
		2		HA	little fines	Cement/ Bentonite Grout (0-7 feet)
0				HA		
		3		HA		
				HA		
		4		HA		
0			50	3	brown/black stained sand FILL	2-inch ID PVC Riser (+2.5-12 ft.)
		5		3		
		6		1		
0			60	1		
		7		2		
				2		Fine Sand (7-8 ft.)
		8		2		
0			100	5	red/black stained sand FILL (dry)	
		9		7	powdery, no odor	Bentonite Seal (8-10 ft.)
				8		
		10		10		
0			70	5		Fine Sand (10-11 ft.)
		11		4		
				4		
		12		3		Sand Pack (11-17 ft.)
0			75	2		
		13		2		
				1		
		14		1		
0			50	46	light yellow/brown medium sand FILL	2-INCH ID Stainless Steel Screen 0.010 Slot (12-17 ft.)
		15		11	(wet)	
				5		
		16		8	black sand FILL	
0			100	6	little gray sand , some fines	
		17		5		



STANDARD PENETRATION
SS = SPLIT SPOON
A = AUGER CUTTINGS

SUMMARY:
Samples ID: GMWYSSMW18, (0-6") /1630 : TLC/TAL
Samples ID: GMWYSBMW18, (16-18')/1300:TCL/TAL

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DRILLING RECORD

BORING NO. MW-18

Sheet 2 of 2

Location:

Contractor: Carlo Environmental Tech.
Driller: Paul Libby
Inspector: J.S. Poulsen
Rig Type: CME 95
Method: 4.25-inch HSA

PROJECT NAME General Motors - West Yard
PROJECT NUMBER 727249.00

Weather Overcast, PPTN. 32deg F.
Date/Time Start December 13, 1995. / 1535
Date/Time Finish December 14, 1995./ 1310

GROUNDWATER OBSERVATIONS

Date				
Time				
Depth				

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	COMMENTS
				5		
		18		5	black sand FILL	
0			100	WOH	little gray sand , some fines	
		19		0	19 ft.	
				1	brown/black PEAT and gray CLAY	
		20		0		
					BORING TERMINATED AT 20 FEET	
		21				
		22				
		23				
		24				
		25				
		26				
		27				
		28				
		29				
		30				
		31				
		32				
		33				
		34				
		35				
		36				
		37				

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PARSONS ENGINEERING-SCIENCE
DRILLING RECORD

BORING NO. DW-18

Sheet 1 of 2

Contractor:	Carlo Environmental Tech.
Driller:	Paul Libby
Inspector:	J.S. Poulsen
Rig Type:	CME 95
Method:	4.25-inch HSA
PROJECT NAME	General Motors - West Yard
PROJECT NUMBER	727249.00
Location:	
Weather	Overcast, PPTN, 32 deg F.
Date/Time Start	December 10 , 1995. / 1100
Date/Time Finish	December 20, 1995. / 1430

423276.32 northing
13412201.45 easting
957.69 TOC elev.
955.27 GS elev.

GROUNDWATER OBSERVATIONS

Date	02/13/96		
Time	TOC		
Depth	17.40		

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL
		0			
0				HA	0-9" Concrete
		1		HA	
				HA	
		2		HA	black medium sand FILL (dry)
0				HA	little fines
		3		HA	
				HA	
		4		HA	
0			50	3	brown/black stained FILL
		5		3	
				1	
		6		1	
0			60	1	
		7		2	
				2	
		8		2	
0			100	5	red/black stained sand FILL (dry)
		9		7	
				8	
		10		10	
0			70	5	
		11		4	
				4	
		12		3	
0			75	2	
		13		2	
				1	
		14		1	
0			50	46	light yellow/brown medium sand FILL
		15		11	
				5	(wet)
0		16		8	black sand FILL
			100	6	little gray sand, some fines
		17		5	

COMMENTS

4" Steel Protective Casing

Cement/ Bentonite Grout (0-27 ft.)

2-inch ID PVC Riser (+2.5-32 ft.)

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PARSONS ENGINEERING-SCIENCE
DRILLING RECORD

BORING NO. DW-18

Sheet 2 of 2

Contractor:	Carlo Environmental Tech.
Driller:	Paul Libby
Inspector:	J.S. Poulsen
Rig Type:	CME 95
Method:	4.25-inch HSA
PROJECT NAME	General Motors - West Yard
PROJECT NUMBER	727249.00
Location:	
Weather	Overcast, PPTN, 32 deg F.
Date/Time Start	December 10 , 1995. / 1100
Date/Time Finish	December 20, 1995. / 1430

423276.8 northing
13412205.3 easting
957.78 GS. elev.
955.27 TOC elev.

GROUNDWATER OBSERVATIONS

Date				
Time				
Depth				

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	COMMENTS
				5		
		18		5		
0			100	WOH	black sand FILL	Cement/Bentonite Grout (0-27 ft.)
		19		0	little gray sand, some fines 19 ft.	
				1		
		20		0	brown/black PEAT and gray CLAY	
0			100	3		
		21		3	(damp)	
				4	21.5 ft.	
		22		5		
0			100	2		
		23		2	light gray MARL (damp)	
				2	some silt	
		24		2	rootlets,shell fragments, soft	
0			100	1		
		25		1		
				1		
		26		3		
0			100	1		
		27		1		
				1		Fine Sand (27-28 ft.)
		28		1		
0			100	1		
		29		0	29 ft.	Bentonite Seal (28-30 ft.)
				3		
		30		4		
0			100	3	pink/gray fine-medium SAND (wet)	Fine Sand (30-31 ft.)
		31		4	little silt	
				5		
		32		6	silt grading out with depth	
0			100	3		Sand Pack (31-37 ft.)
		33		3		
				3		
		34		4	medium gray fine-medium SAND	
0			100	1	trace silt, 1" angular gravel	
		35		3	[flowing]	2-inch ID 0.010 slot Stainless Steel Screen (32-37 ft.)
				2		
		36		4	36 ft.	
0			100	3	light -medium gray CLAY	
		37		4	little silt, trace gravel (damp)	
				6		
		38		7	BORING TERMINATED AT 38 FEET.	

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PARSONS ENGINEERING-SCIENCE
DRILLING RECORD

BORING NO. MW-19

Sheet 1 of 2

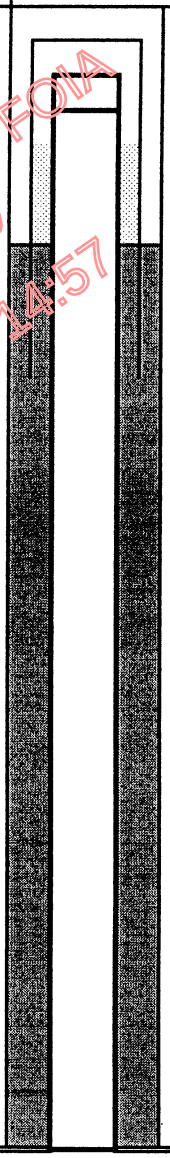
Contractor:	Carlo Environmental Tech.
Driller:	Paul Libby
Inspector:	J.S. Poulsen
Rig Type:	CME 95
Method:	4.25-inch HSA
PROJECT NAME	General Motors - West Yard
PROJECT NUMBER	727249.00
Location:	
Weather	Clear, windy , 28 deg F.
Date/Time Start	December 18, 1995. / 1140
Date/Time Finish	December 18, 1995./ 1400

423311.29 northing
13412318.49 easting
971.01 TOC elev.
968.42 GS elev.

GROUNDWATER OBSERVATIONS

Date	02/13/96		
Time	TOC		
Depth	28.31		

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	COMMENTS
		0				
		1		HA	dark brown/black stained fine-medium sand FILL	
				HA	little debris, cinders (dry)	
		2		HA	trace fines, gravel	
				HA		
		3		HA		
				HA		
		4		HA		
15			100	23		
		5		25		
				67		
		6		REF		
140			100	12	light brown medium sand FILL (moist)	
		7		25		
				18		
		8		12	black soft fine sand FILL (dry)	
15			100	2	trace ash	
		9		10	odor	
				15		
		10		9		
32			100	11	(damp)	
		11		17		
				10		
		12		6		
13.5			75	1		
		13		2		
				2		



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STANDARD PENETRATION

SS = SPLIT SPOON

A = AUGER CUTTINGS

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PARSONS ENGINEERING-SCIENCE
DRILLING RECORD

BORING NO. MW-19

Sheet 2 of 2

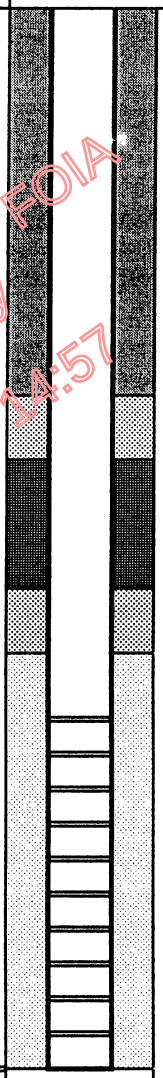
Location:

Contractor:	Carlo Environmental Tech.
Driller:	Paul Libby
Inspector:	J.S. Poulsen
Rig Type:	CME 95
Method:	4.25-inch HSA
PROJECT NAME	General Motors - West Yard
PROJECT NUMBER	727249.00
Weather	Clear, windy , 28 deg F.
Date/Time Start	December 18, 1995. / 1140
Date/Time Finish	December 18, 1995./ 1400

GROUNDWATER OBSERVATIONS

Date				
Time				
Depth				

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	
		14		7		
8			75	1		
		15		1		
				1	black soft fine sand FILL	
		16		2	trace ash	
1			100	2	odor	
		17		2		
				2		
		18		3		
0			100	2		
		19		3		
				5		
		20		4		
0			100	1		
		21		1		
				1		
		22		1		
0			100	2	black fine-medium sand FILL	(moist)
		23		3	trace fines, debris	
				2		
		24		2		
0			100	2		(wet)
		25		3		
				4		
		26		5		
0			100	5		
		27		4		
				3		
		28		3		
0			100	1		
		29		2		



COMMENTS

- Cement/Bentonite Grout (0-19 ft.)
- Fine Sand (19-20 ft.)
- Bentonite Seal (20-22 ft.)
- Fine Sand (22-23 ft.)
- Sand Pack (23-29 ft.)
- 2-inch ID Stainless Steel Screen (24-29 ft.)

STANDARD PENETRATION
SS = SPLIT SPOON
A = AUGER CUTTINGS

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PARSONS ENGINEERING-SCIENCE
DRILLING RECORD

BORING NO. DW-19

Sheet 1 of 3

Contractor:	Carlo Environmental Tech.
Driller:	Paul Libby
Inspector:	J.S. Poulsen
Rig Type:	CME 95
Method:	4.25-inch HSA
PROJECT NAME	General Motors - West Yard
PROJECT NUMBER	727249.00
Location:	
Weather	high overcast, calm, 36deg F
Date/Time Start	December 15, 1996 . /1430
Date/Time Finish	December 15, 1995. / 1515

423310.57 northing
13412524.11 easting
970.77 TOC elev.
968.42 GS elev.

GROUNDWATER OBSERVATIONS

Date				
Time				
Depth				

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL		COMMENTS
							Steel Protective Casing
		0					
		1		HA	dark brown/black stained fine-medium sand FILL		
				HA	little debris, cinders	(dry)	
		2		HA	trace fines, gravel		
				HA			
				HA			
		1		HA	dark brown/black stained fine-medium sand FILL		Cement/Bentonite Grout (0-29 ft.)
				HA	little debris, cinders	(dry)	
		2		HA	trace fines, gravel		
				HA			
		3		HA			
				HA			
		4		HA			
15			100	23			
		5		25			
				67			
		6		REF			
140			100	12	light brown medium sand FILL	(moist)	2-Inch ID PVC Riser (+2.5 - 34 ft.)
		7		25			
				18			
		8		12	black soft fine sand FILL	(dry)	
15			100	2	trace ash		
		9		10	odor		
				15			
		10		9			
32			100	11		(damp)	
		11		17			
				10			
		12		6			
13.5			75	1			
		13		2			
				2			

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STANDARD PENETRATION
SS = SPLIT SPOON
A = AUGER CUTTINGS

SUMMARY: GMWYSBDW19 [illegible]

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PARSONS ENGINEERING-SCIENCE
DRILLING RECORD

BORING NO. DW-19

Sheet 2 of 3

Contractor: Carlo Environmental Tech.
Driller: Paul Libby
Inspector: J.S. Poulsen
Rig Type: CME 95
Method: 4.25-inch HSA

PROJECT NAME General Motors - West Yard
PROJECT NUMBER 727249.00
Location:

Weather high overcast, calm, 36deg F
Date/Time Start December 15, 1996 . /1430
Date/Time Finish December 15, 1995. / 1515

GROUNDWATER OBSERVATIONS				
Date				
Time				
Depth				

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	COMMENTS
		14		7		
8			75	1	black soft fine sand FILL	
		15		1	trace ash	
				1	odor (dry)	
		16		2		
1			100	2		
		17		2		
				2		
		18		3		Cement/Bentonite Grout (0-29 ft.)
0			100	2		
		19		3		
				5		
		20		4		
0			100	1		
		21		1		
				1		
		22		1		
0			100	2	black fine-medium sand FILL (moist)	
		23		3	trace fines, debris	
				2		2-Inch ID PVC Riser (+2.5 - 34 ft.)
		24		2		
0			100	2	(wet)	
		25		3		
				4		
		26		5		
0			100	5		
		27		4		
				3		
		28		3		
0			100	1		
		29		2		
				3	29.5 ft.	Fine Sand (29-30 ft.
		30		4		
0			100	1	gray organic SILT	Bentonite Seal (30-32 ft.)
		31		1	some clay, trace sand	
				3	firm, rootlets	
		32		7	32 ft.	
0			100	WOH		Fine Sand (32-33 ft.)
		33		WOH		

STANDARD PENETRATION
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PARSONS ENGINEERING-SCIENCE
DRILLING RECORD

BORING NO. DW-19

Sheet 3 of 3

Contractor: Carlo Environmental Tech.
Driller: Paul Libby
Inspector: J.S. Poulsen
Rig Type: CME 95
Method: 4.25-inch HSA

PROJECT NAME General Motors - West Yard
PROJECT NUMBER 727249.00
Location:

Weather high overcast, calm, 36deg F
Date/Time Start December 15, 1996 . /1430
Date/Time Finish December 15, 1995. / 1515

GROUNDWATER OBSERVATIONS

Date				
Time				
Depth				

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	COMMENTS
				2		
		34		3	interbedded medium brown medium SAND and PEAT	
0			100	1	organic debris, trace fine gravel 34.5	Sand Pask
		35		0		(33-40 ft.)
				1	medium gray SILT and MARL	
		36		2	shell fragments, root debris (wet)	
0			100	WOH	trace fine sand, clay	
		37		1		2-inch ID
				1		Stainless Steel
		38		1		0.010 Slot Screen
0			100	1	38.5	(34-39 ft.)
		39		4	medium gray CLAY	
				4	some silt, trace fine gravel (moist)	
		40		7		
					BORING TERMINATED AT 40 FEET	
		41				
		42				
		43				
		44				
		45				
		46				
		47				
		48				
		49				
		50				

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SUMMARY: Sample: GMWYSB[illegible] (38-38'), 1510

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PARSONS ENGINEERING-SCIENCE
DRILLING RECORD

BORING NO. MW-20

Sheet 1 of 2

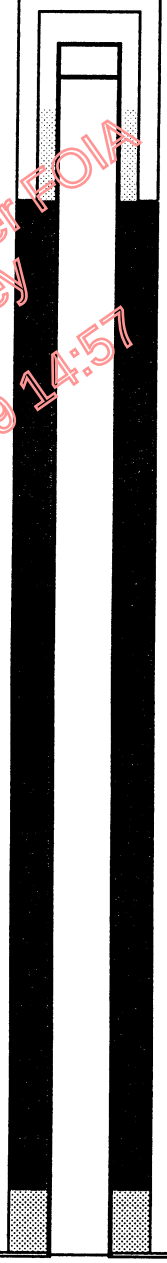
Contractor:	Carlo Environmental Tech.
Driller:	Paul Libby
Inspector:	J.S. Poulsen
Rig Type:	CME 95
Method:	4.25-inch HSA
PROJECT NAME	General Motors - West Yard
PROJECT NUMBER	727249.00
Location:	
Weather	Overcast, mod.winds, 27deg F
Date/Time Start	December 20, 1995. / 1130
Date/Time Finish	December 20, 1995. / 1305

423472.58 northing
13412216.34 easting
971.20 TOC elev.
968.73 GS elev.

GROUNDWATER OBSERVATIONS

Date				
Time				
Depth				

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	COMMENTS
						4" Steel Protective Casing
		0				
0			50	8	gravel, brown/black medium sand FILL (dry)	
		1		6		
				8		
		2		6		
0			100	4	mottled black/red sand FILL	Cement/ Bentonite Grout (0-16 ft.)
		3		8	trace gravel	
				9	slight odor	
		4		9		
15			75	2	(damp)	2-inch ID PVC Riser (+2.5-21 ft.)
		5		9		
				8		
		6		9	firmly packed fines FILL	
9			80	1	oily odor	
		7		2		
				2		
		8		2		
43			50	1	black silt, sand FILL (moist)	
		9		2	little debris	
				2	odor	
		10		2		
0			10	4		
		11		5		
				4		
		12		4		
0			10	1		
		13		3		
				3		
		14		3		
0			25	3	medium black sand FILL (moist)	
		15		3	little fines	
				3	odor	
		16		3	metal debris	
0			50	3		Fine Sand (16-17 ft.)
		17		3		



STANDARD PENETRATION
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SUMMARY: Sample: GMWYSBMW20 (23-25") / 1305 TCL/TAL

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DRILLING RECORD

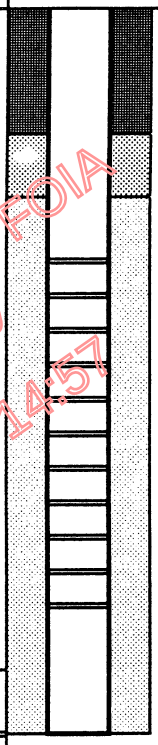
BORING NO. MW-20

Sheet 2 of 2

Contractor:	Carlo Environmental Tech.
Driller:	Paul Libby
Inspector:	J.S. Poulsen
Rig Type:	CME 95
Method:	4.25-inch HSA
PROJECT NAME	General Motors - West Yard
PROJECT NUMBER	727249.00
Location:	
Weather	Overcast, mod.winds, 27deg F
Date/Time Start	December 20, 1995. / 1130
Date/Time Finish	December 20, 1995. / 1305

GROUNDWATER OBSERVATIONS				
Date				
Time				
Depth				

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	COMMENTS
				4		
		18		7	medium black sand FILL (moist)	Bentonite Seal (15-23 ft.) 17-19
0			50	3	little fines	
		19		2	odor	
				2	metal debris	Fine Sand (23-28 ft.) 19-20
		20		4		
0 —			100	1		
-		21		2		
				2		2-inch ID Stainless Steel 0.010 slot Screen (21-26 ft.)
		22		2		
21			50	1		
		23		3		
				2		
		24		4		Sand Pack (20-28 ft.)
2			100	5		
		25		4	(wet)	
				4		
		26		5		
0			100	1		
		27		2	27 ft.	2-inch ID PVC Sump (26-28 ft.)
				4		
		28		6	tan/olive gray SILT and SAND	
					BORING TERMINATED AT 28 FEET.	
		29				
		30				
		31				
		32				
		33				
		34				
		35				
		36				
		37				



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PARSONS ENGINEERING-SCIENCE
DRILLING RECORD

BORING NO. DW-20

Sheet 1 of 3

Contractor:	Carlo Environmental Tech.
Driller:	Paul Libby
Inspector:	J.S. Poulsen
Rig Type:	CME 95
Method:	4.25-inch HSA
PROJECT NAME	General Motors - West Yard
PROJECT NUMBER	727249.00
Location:	
Weather	Overcast, mod.winds, 27deg F
Date/Time Start	December 18, 1995. / 4405
Date/Time Finish	December 19, 1995. / 0835

423473.03 northing
1341212.83 easting
970.03 TOC
968.73 GS

GROUNDWATER OBSERVATIONS

Date				
Time				
Depth				

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	COMMENTS
						4" Steel Protective Casing
		0				
0			50	8	gravel, brown/black medium sand FILL	
		1		6	(dry)	
				8		
		2		6		Cement/ Bentonite Grout (0-32 feet)
0			100	4	mottled black/red sand FILL	
		3		8	trace gravel	
				9	slight odor	
		4		9		
15			75	2	(damp)	2-inch ID PVC Riser (+2.5-37 ft.)
		5		9		
				8		
		6		9	firmly packed fines FILL	
9			80	1	oily odor	
		7		2		
				2		
		8		2		
43			50	1	black silt, sand FILL (moist)	
		9		2	little debris	
				2	odor	
		10		2		
0			10	4		
		11		5		
				4		
		12		4		
0			10	1		
		13		3		
				3		
		14		3		
0			25	3	medium black sand FILL (moist)	
		15		3	little fines	
				3	odor	
		16		3	metal debris	
0			50	3		
		17		3		

STANDARD PENETRATION
SS = SPLIT SPOON
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SUMMARY: Sample: GMWYSSMW20 (0-6") / 1420 TCL/TAL

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PARSONS ENGINEERING-SCIENCE
DRILLING RECORD

BORING NO. DW-20

Sheet 2 of 3

Location:

Contractor: Carlo Environmental Tech.
Driller: Paul Libby
Inspector: J.S. Poulsen
Rig Type: CME 95
Method: 4.25-inch HSA

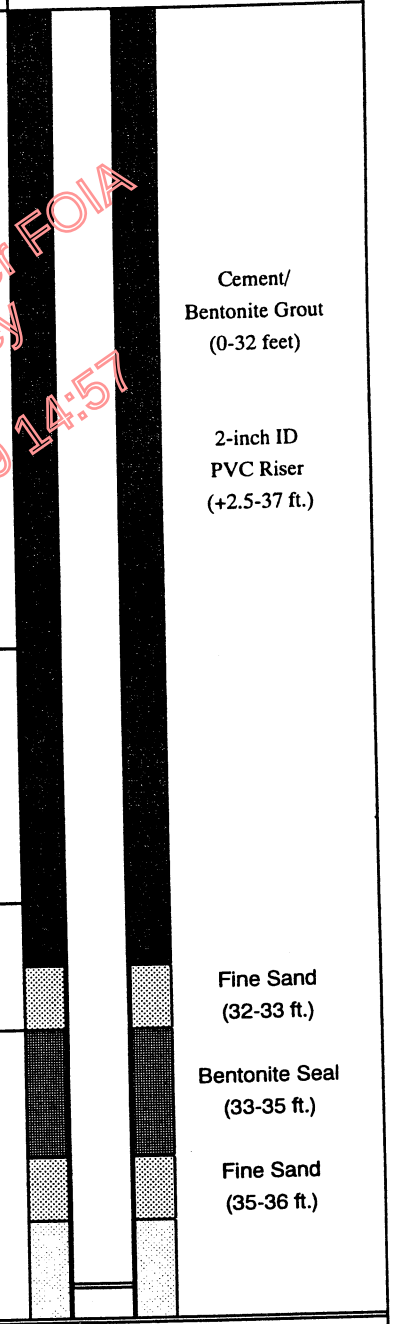
PROJECT NAME General Motors - West Yard
PROJECT NUMBER 727249.00

Weather Overcast, mod.winds, 27deg F
Date/Time Start December 18, 1995. / 4405
Date/Time Finish December 19, 1995. / 0835

GROUNDWATER OBSERVATIONS

Date				
Time				
Depth				

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	COMMENTS
				4		
		18		7	medium black sand FILL (moist)	
0			50	3	little fines	
		19		2	odor	
				2	metal debris	
		20		4		
0			100	1		
		21		2		
				2		
		22		2		
21			50	1		
		23		3		
				2		
		24		4		
2			100	5		
		25		4	(wet)	
				4		
		26		5		
0			100	1		
		27		2	27 ft.	
				4		
		28		6	tan/olive gray SILT and SAND	
0			80	4	grading into fine-medium sand (wet)	
		29		5	little fines	
				8	odor	
		30		7		
0			80	1		
		31		3	31 ft.	
				5		
		32		7	light gray SILT (wet)	
0			80	2	little fine sand	
		33		5	trace sheen 33 ft.	
				4		
		34		5		
0			100	3	medium gray fine-medium SAND	
		35		8	trace-little fines (wet)	
				12	trace fine rounded gravel	
		36		18	soft	
0			100	1		
		37		2		
				2		



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SS = SPLIT SPOON
A = AUGER CUTTINGS

SUMMARY:

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PARSONS ENGINEERING-SCIENCE
DRILLING RECORD

BORING NO. DW-20

Sheet 3 of 3

Contractor:	Carlo Environmental Tech.
Driller:	Paul Libby
Inspector:	J.S. Poulsen
Rig Type:	CME 95
Method:	4.25-inch HSA
PROJECT NAME	General Motors - West Yard
PROJECT NUMBER	727249.00
Location:	
Weather	Overcast, mod.winds, 27deg F
Date/Time Start	December 18, 1995. / 4405
Date/Time Finish	December 19, 1995. / 0835

GROUNDWATER OBSERVATIONS				
Date				
Time				
Depth				

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	COMMENTS
		38				
				1	light-medium gray fine-medium SAND (wet)	Sand Pack
		39		1	cluen	(36-44 ft.)
				1		
		40		1		2-inch ID
				4		Stainless Steel
		41		4		Screen
				5	41.5 ft	(37-42 ft.)
		42		7	medium gray CLAY, little silt (damp)	
					BORING TERMINATED AT 42 FEET	
		43				2-inch ID
						PVC Sump
		44				(42-44 ft.)
		45				
		46				
		47				
		48				
		49				
		50				
		51				
		52				
		53				
		54				
		55				
		56				
		57				

STANDARD PENETRATION
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SUMMARY: Sample: GMWYSBDW20(40-42')0835 Appendix IX

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PARSONS ENGINEERING-SCIENCE
DRILLING RECORD

BORING NO. DW-21

Sheet 1 of 2

Contractor:	Carlo Environmental Tech.
Driller:	Paul Libby
Inspector:	J.S. Poulsen
Rig Type:	CME 95
Method:	4.25-inch HSA
PROJECT NAME	General Motors - West Yard
PROJECT NUMBER	727249.00
Location:	
Weather	clear/windy 28deg F.
Date/Time Start	December 19, 1995 / 1200
Date/Time Finish	December 19, 1995 / 1330

424048.50 northing
13412634.77 easting
968.21 TOC elev.
966.02 GS elev.

GROUNDWATER OBSERVATIONS

Date	02/13/96		
Time	TOC		
Depth	19.86		

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	COMMENTS
						4" Steel Protective Casing
		0				
0			50	2	silt, sand FILL	
		1		5	(dry)	
				8		
		2		7		Cement/ Bentonite Grout (0-26 feet)
0			75	4	silt/sand FILL	
		3		4	little clay,trace gravel (damp)	
				3		
		4		4	4 ft.	
0			100	1	olive/tan gray SILT (moist)	2-inch PVC Riser (+2.5-14 ft.)
		5		1	little fine sand	
				3	trace gravel	
		6		3		
0			80	1		
		7		1		
				1		
		8		2		
0			75	1		
		9		1		
				1	(wet)	Fine Sand (9-10ft.)
		10		1		
0			80	1		Bentonite Seal (10-12 ft.)
		11		1		
				1		
		12		3		
0			80	1		Fine Sand (12-13 ft.)
		13		1	13 ft.	
				2	medium gray CLAY (moist)	
		14		2	some silt	
0			0	2	trace fine sand	
		15		1		
				4		Sand Pack (13-22 ft.)
		16		11	16 ft.	
0			80	14	coarse SAND and GRAVEL	
		17		11	trace cobbles, sheen	

STANDARD PENETRATION
SS = SPLIT SPOON
A = AUGER CUTTINGS

SUMMARY: GMWYSSMW21(0-6")/1215 TCL/TAL
GMWYSBDW21(18-20')/1252 TCL/TAL

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PARSONS ENGINEERING-SCIENCE
DRILLING RECORD

BORING NO. DW-21

Sheet 2 of 2

Location:

Contractor: Carlo Environmental Tech.
Driller: Paul Libby
Inspector: J.S. Poulsen
Rig Type: CME 95
Method: 4.25-inch HSA

PROJECT NAME General Motors - West Yard
PROJECT NUMBER 727249.00

Weather clear/windy 28deg F.
Date/Time Start December 19, 1996. / 1200
Date/Time Finish December 19, 1996. / 1330

GROUNDWATER OBSERVATIONS

Date				
Time				
Depth				

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	COMMENTS
						2-Inch ID Stainless Steel Screen 0.010 Slot (14-19 ft.)
		18				
					coarse SAND and GRAVEL	
		19			19 ft.	
		20			medium gray CLAY (damp)	
					little silt	
		21			trace 1/4" rounded gravel	
		22				
					BORING TERMINATED AT 22 FEET	
		23				
		24				
		25				
		26				
		27				
		28				
		29				
		30				
		31				
		32				
		33				
		34				
		35				
		36				
		37				
		38				

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STANDARD PENETRATION
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A = AUGER CUTTINGS

SUMMARY: ~~GMWYSBD~~ [illegible] ~~Appendix IX~~

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PARSONS ENGINEERING-SCIENCE
DRILLING RECORD

BORING NO. MW-22

Sheet 1 of 2

Contractor:	Carlo Environmental Tech.
Driller:	Paul Libby
Inspector:	J.S. Poulsen
Rig Type:	CME 95
Method:	4.25-inch HSA
PROJECT NAME	General Motors - West Yard
PROJECT NUMBER	727249.00
Location:	
Weather	Overcast, 15deg F
Date/Time Start	December 12, 1996. / 1230
Date/Time Finish	December 12, 1996. / 1645

423666.59 northing
13412423.69 easting
970.37 TOC elev.
967.98 GS elev.

GROUNDWATER OBSERVATIONS			
Date	02/13/96		
	TOC		
Depth	24.40		

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	COMMENTS
						4" Steel Protective Casing
		0				
				HA	black /orange/red medium sand FILL (damp)	
		1		HA		
				HA		
		2		HA		Cement/ Bentonite Grout (0-13 feet)
				HA		
		3		HA		
				HA		
		4		HA		
35			100	17		
		5		15		
				7	firm gray silt FILL (moist)	
		6		4	little black staining,	
56			10	6	oily odor, sheen, sticky	
		7		6	little lime like material	2-in PVC Riser (+2.5-19ft.)
				8		
		8		6		
55			100	4		
		9		3		
				2	medium-light brown wood debris FILL	
		10		3	(saw dust)	
45			100	4	odor. trace sheen	
		11		5		
				2		
		12		3		
56			100	1		
		13		6		Fine Sand (13-14 ft.)
				2		
		14		6		
43			75	5		Bentonite Seal (14-16 ft.)
		15		1		
				5		
		16		9		Fine Sand (16-17 ft.)
21			20	1	loose, black, sand and silt FILL (wet)	
		17		0	strong odor	

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STANDARD PENETRATION
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A = AUGER CUTTINGS

SUMMARY:
Sample: GMWYSSMW22 (0-6") / 1055
Sample: GMWYSBMW22 (16-18') /1305

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Contractor:	Carlo Environmental Tech.				**PARSONS ENGINEERING-SCIENCE DRILLING RECORD**	**BORING NO.**	MW-22
Driller:	Paul Libby						
Inspector:	J.S. Poulsen				PROJECT NAME General Motors - West Yard	Sheet 2 of 2	
Rig Type:	CME 95				PROJECT NUMBER 727249.00	Location:	
Method:	4.25-inch HSA						
GROUNDWATER	OBSERVATIONS				Weather Overcast, 15deg F		
Date					Date/Time Start December 12, 1996. / 1230		
Time							
Depth					Date/Time Finish December 12, 1996. / 1645		

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	COMMENTS
				2		
		18		3		Sand Pack
0			100	1	black stained sand and gravel FILL (wet)	(17-27 ft.)
		19		0	slight sheen, odor	
				1		
		20		0		
0			50	1	black stained medium-fine sand/silt FILL	
		21		3	trace sheen, odor	2-INCH ID
				3		Stainless Steel
		22		3		Screen
0			25	2		0.010 Slot
		23		4		(19-24 ft.)
				2		
		24		9		
0			25	7	light-medium gray FILL	
		25		11	silt/sand/gravel	2-inch ID
				15	debris	PVC Sump
		26		21	26 ft.	(24-26')
0			100	7		
		27		9	light gray medium SAND	
				12	little interbedded silt	
		28		15	trace coarse (1") angular gravel	
0			100	4	no odor	
		29		9		
				11		Bentonite Seal
		30		9		(27-38) ft.
0			100	1	light gray medium SAND (wet)	
		31		2		
				4		
		32		6		
0			100	4		
		33		10	33 ft.	
				14		
		34		16	light gray Silt and fine SAND	
0			100	4	firm	
		35		5	35 ft.	
				4		
		36		6	firm CLAY	
0			25	3	some silt	
		37		5	trace fine angular gravel (damp)	
				6		
		38		9		
					BORING TERMINATED AT 38 FEET.	

STANDARD PENETRATION
SS = SPLIT SPOON
A = AUGER CUTTINGS

SUMMARY: GMWYGWMW22 (20ft) / 1350 TCL VOC
GMWYGWMW22 (30ft.) / 1555 TCL VOC

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PARSONS ENGINEERING-SCIENCE
DRILLING RECORD

BORING NO. DW-22

Sheet 1 of 2

Contractor:	Carlo Environmental Tech.
Driller:	Paul Libby
Inspector:	J.S. Poulsen
Rig Type:	CME 95
Method:	4.25-inch HSA
PROJECT NAME	General Motors - West Yard
PROJECT NUMBER	727249.00
Location:	
Weather	Clear,windy, 28deg F.
Date/Time Start	DECEMBER 19, 1996. / 1430
Date/Time Finish	DECEMBER 19, 1996. / 1530

423670.56 northing
13412423.04 easting
970.31 TOC elev.
967.98 GS elev.

GROUNDWATER OBSERVATIONS

Date	02/13/96		
Time	TOC		
Depth	24.40		

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	COMMENTS
						4" Steel Protective Casing
		0				
				HA	black /orange/red medium sand FILL (damp)	
		1		HA		
				HA		
		2		HA		
				HA		Cement/ Bentonite Grout (0-26 feet)
		3		HA		
				HA		
		4		HA		
35			100	17		
		5		15		
				7	firm gray silt FILL (moist)	
		6		4	little black staining,	
56			10	6	oily odor, sheen, sticky	2-inch ID PVC Riser (+2.5-31 ft.)
		7		6	little lime like material	
				8		
		8		6		
55			100	4		
		9		3		
				2	medium-light brown wood debris FILL	
		10		3	(saw dust)	
45			100	4	odor. trace sheen	
		11		5		
				2		
		12		3		
56			100	1		
		13		6		
				2		
		14		6		
43			75	5		
		15		1		
				5		
		16		9		
21			20	1	loose, black, sand and silt FILL (wet)	
		17		0	strong odor	

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STANDARD PENETRATION
SS = SPLIT SPOON
A = AUGER CUTTINGS

SUMMARY:

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PARSONS ENGINEERING-SCIENCE
DRILLING RECORD

BORING NO. DW-22

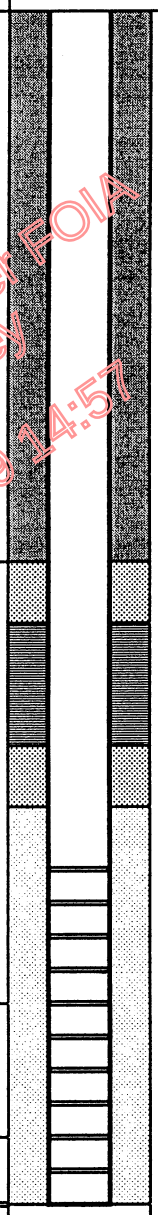
Sheet 2 of 2

Contractor:	Carlo Environmental Tech.
Driller:	Paul Libby
Inspector:	J.S. Poulsen
Rig Type:	CME 95
Method:	4.25-inch HSA
PROJECT NAME	General Motors - West Yard
PROJECT NUMBER	727249.00
Location:	
Weather	Clear,windy, 28deg F.
Date/Time Start	DECEMBER 19, 1996. / 1430
Date/Time Finish	DECEMBER 19, 1996. / 1530

GROUNDWATER OBSERVATIONS

Date				
Time				
Depth				

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	
				2		
		18		3		
0			100	1	black stained sand and gravel FILL	(wet)
		19		0	slight sheen, odor	
				1		
		20		0		
0			50	1	black stained medium-fine sand/silt FILL	
		21		3	trace sheen, odor	
				3		
		22		3		
0			25	2		
		23		4		
				2		
		24		9		
0			25	7	light-medium gray FILL	
		25		11	silt/sand/gravel	
				15	debris	
		26		21		26 ft.
0			100	7		
		27		9	light gray medium SAND	
				12	little interbedded silt	
		28		15	trace coarse (1") angular gravel	
0			100	4	no odor	
		29		9		
				11		
		30		9		
0			100	1	light gray medium SAND	(wet)
		31		2		
				4		
		32		6		
0			100	4		
		33		10		33 ft.
				14		
		34		16	light gray SILT and fine SAND	(wet)
0			100	4	firm	
		35		5		35 ft.
				4	firm CLAY	
		36		6	some silt, trace fine angular gravel	(damp)
					BORING TERMINATED AT 36 FEET.	
		37				
		38				



Cement/ Bentonite Grout (0-26 feet)

Fine Sand (26-27 ft.)

Bentonite Seal (27-29 ft.)

Fine Sand (29-30 ft.)

Sand Pack (30-36 ft.)

2-Inch ID Stainless Steel Screen 0.010 Slot (31-36 ft.)

STANDARD PENETRATION
SS = SPLIT SPOON
A = AUGER CUTTINGS

SUMMARY: GMWYSBDW22 (22-34.5) / 1145 / Appendix IX

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PARSONS ENGINEERING SCIENCE, INC.
DRILLING RECORD

BORING/ WELL NO. MW23 **Sheet** 1 **of** 1

Location Description: GMWY

PROJECT NAME: GENERAL MOTORS – WEST YARD
PROJECT NO. 730627.01000

Contractor: Paul Libby
Driller: Paul Libby
Inspector: B. Reeser
Rig Type: CME–95, 4.25" HSA

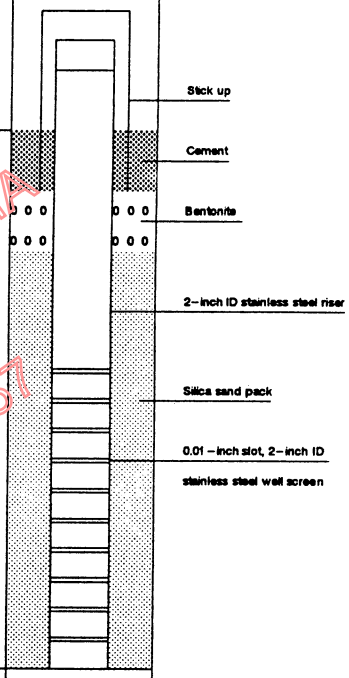
Weather: Cloudy, 60 degrees F.
Date/Time Start: September 23, 1996
Date/Time Finish: September 23, 1996

Location Plan

GROUNDWATER OBSERVATIONS				
Water Level				
Date				
Time				
Meas. From				

Sample Depth	Sample I.D.	SPT	% Rec.	PID (ppm)	FIELD IDENTIFICATION OF MATERIAL
+2					
+1					
0		A			
		A		NA	0–9" Concrete
1		A		NA	
		A		NA	9"–3.5 feet, sand Fill, fine to coarse, tan
2		A		NA	
		A		NA	
3		A		NA	
		A		NA	
4		A		NA	3.5'–4 feet, sand Fill, fine, black
		15	100	NA	
5		12		NA	same as above, wet at 5.5 feet
		14		NA	
6		11		NA	5.8'– 6 feet, glass–like waste
		A		NA	
7		A		NA	
		A		NA	
8		A		NA	
		A		NA	
9		A		NA	
					Boring terminated at 9 feet

SCHEMATIC



COMMENTS

COMMENTS:

SAMPLING METHOD
SS = SPLIT SPOON
A = AUGER CUTTINGS
C = CORED

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PARSONS ENGINEERING-SCIENCE
DRILLING RECORD

BORING NO. GT-1

Sheet 1 of 5

Contractor:	Carlo Environmental Tech.
Driller:	Paul Libby
Inspector:	B.E. Reeser
Rig Type:	CME 95
Method:	4.25-inch HSA
PROJECT NAME	General Motors - West Yard
PROJECT NUMBER	727249.00
Location:	
Weather	Cloudy, 36deg F.
Date/Time Start	December 5, 1995. / 0850
Date/Time Finish	December 7, 1995. / 0947

423884.12 northing
13411694.26 easting
954.20 GS elev.

GROUNDWATER OBSERVATIONS				
Date				
Time				
Depth				

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	COMMENTS
		1			fine/medium sand FILL	
					(moist)	
		2				
		3				
		4				
			0			
		5				
		6			6 ft..	
4			50	1	CLAY, some silt, trace brown peat	
		7		2		
				5		
		8		8	8 ft.	
7			60	1		Boring grouted to the surface
		9		2	mottled tan/gray SILT	
				4		
		10		4		
13			95	3	10.5 ft.	
		11		3		
				3	mottled gray/tan CLAY	
		12		5	some silt, trace fines gray sand	
6			80	2	trace silt	
		13		5		
				6		
		14		6	14 ft.	
7			100	6		
		15		6	gray fine-coarse SAND (wet)	
				6	trace fine gravel	
		16		6	trace silt	
3			100	1		
		17		4		
				7		
		18		10		
4			100	1		
		19		3		
				8		
		20		6		
7			95	2		

STANDARD PENETRATION
SS = SPLIT SPOON
A = AUGER CUTTINGS

SUMMARY:

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PARSONS ENGINEERING-SCIENCE
DRILLING RECORD

BORING NO. GT-1

Sheet 2 of 5

Location:

Contractor: Carlo Environmental Tech.
Driller: Paul Libby
Inspector: B.E. Reeser
Rig Type: CME 95
Method: 4.25-inch HSA

PROJECT NAME General Motors - West Yard
PROJECT NUMBER 727249.00

Weather Cloudy, 36deg F.
Date/Time Start December 5, 1995. / 0850
Date/Time Finish December 7, 1995. / 0947

GROUNDWATER OBSERVATIONS

Date				
Time				
Depth				

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	COMMENTS
				4		
		22		5	grey fine-coarse SAND (wet)	
3			100	1	trace silt	
		23		2		
				4		
		24		7		
5			100	2	grey fine-soarse SAND	
		25		3	trace silt and fine gravel	
				4		
		26		5	26 ft.	
9			100	1	gray CLAY	
		27		2	some fine-medium sand (moist)	
				3	little silt	
		28		5	trace fine gravel	
			100			
		29			Shelby Tube ID: GMWYSBGT01, 28-30 ft./	
						Boring grouted to the surface
		30				
8			100	4		
		31		5		
				6		
		32		6		
11			80	4		
		33		6		
				6	tan CLAY	
		34		8	some fine-medium sand	
14			100	4	little olive silt	
		35		6	trace fine rounded gravel	
				6		
		36		8		
10			100	4		
		37		6		
				6		
		38		8		
9			80	3		
		39		4		
				6		
		40		7		
8			100	4		
		41		7		
				8		

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STANDARD PENETRATION
SS = SPLIT SPOON
A = AUGER CUTTINGS

SUMMARY: Shelby Tube ID: GMWYSBGT01, 28-30 ft./

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PARSONS ENGINEERING-SCIENCE
DRILLING RECORD

BORING NO. GT-1

Sheet 3 of 5

Location:

Contractor: Carlo Environmental Tech.
Driller: Paul Libby
Inspector: B.E. Reeser
Rig Type: CME 95
Method: 4.25-inch HSA

PROJECT NAME: General Motors - West Yard
PROJECT NUMBER: 727249.00

Weather: Cloudy, 36deg F.
Date/Time Start: December 5, 1995. / 0850
Date/Time Finish: December 7, 1995. / 0947

GROUNDWATER OBSERVATIONS

Date				
Time				
Depth				

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	COMMENTS
		42		10	tan CLAY	
8			100	2	some fine-medium sand (moist)	
		43		4	little olive silt	
				5	trace fine rounded gravel	
		44		7		
12			100	3		
		45		4		
				6		
		46		6		
11			100	3		
		47		3		
				5		
		48		7		
11			100	2		
		49		7		
				10		
		50		12		Boring grouted to the surface
0			80	7	gray CLAY	
		51		7	some fine-coarse sand	
				7	trace fine rounded gravel	
		52		12		
0			50	1		
		53		1		
				4		
		54		5	54 ft.	
0			50	7		
		55		7	gray fine-coarse SAND	
				7	trace silt	
		56		7		
0			50	1		
		57		7	some silt	
				10		
		58		13	little clay	
0			50	1		
		59		1		
				7		
		60		10		
0			50	1		
		61		8	61 ft.	
				7		

STANDARD PENETRATION
SS = SPLIT SPOON
A = AUGER CUTTINGS

SUMMARY:

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PARSONS ENGINEERING-SCIENCE
DRILLING RECORD

BORING NO. GT-1

Contractor: Carlo Environmental Tech.
Driller: Paul Libby
Inspector: B.E. Reeser
Rig Type: CME 95
Method: 4.25-inch HSA

PROJECT NAME: General Motors - West Yard
PROJECT NUMBER: 727249.00

Sheet 4 of 5
Location:

Weather: Cloudy, 36deg F.
Date/Time Start: December 5, 1995. / 0850
Date/Time Finish: December 7, 1995. / 0947

GROUNDWATER OBSERVATIONS				
Date				
Time				
Depth				

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	COMMENTS
				7		
		62		3	gray CLAY (wet)	
			0	5	some fine-coarse sand	
		63		5	some silt	
				5		
		64		5		
0			50	1		
		65		4	65 ft.	
				8	gray fine-coarse SAND	
		66		9	66 ft.	
0			50	2	gray CLAY, some fine-coarse sand, some silt	
		67		7	67 ft.	
				5		
		68		4	gray fine-coarse SAND (wet)	
0			50	1	trace fine-medium coarse rounded gravel	
		69		9		
				9		Boring grouted to the surface
		70		11		
0			50	4		
		71		7		
				10		
		72		2		
0			100	7		
		73		10		
				42		
		74		48		
0			100	20		
		75		24		
				29	some bedded clay	
		76		56		
2			100	7		
		77		89		
				103		
		78		75	gray fine-medium SAND	
1			100	26	some silt	
		79		42	trace gravel	
				44		
		80		50		
2			100	27		
		81		25		
				26		

STANDARD PENETRATION
SS = SPLIT SPOON
A = AUGER CUTTINGS

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PARSONS ENGINEERING-SCIENCE
DRILLING RECORD

BORING NO. GT-1

Contractor: Carlo Environmental Tech.
Driller: Paul Libby
Inspector: B.E. Reeser
Rig Type: CME 95
Method: 4.25-inch HSA

PROJECT NAME General Motors - West Yard
PROJECT NUMBER 727249.00

Sheet 5 of 5
Location:

Weather Cloudy, 36deg F.
Date/Time Start December 5, 1995. / 0850
Date/Time Finish December 7, 1995. / 0947

GROUNDWATER OBSERVATIONS				
Date				
Time				
Depth				

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	COMMENTS
		82		35	gray fine-medium SAND	
1			100	9	some silt (wet)	
		83		15	trace gravel	
				27		
		84		35		
2			100	24	(moist)	
		85		70		Boring grouted to the surface
				103		
		86		166		
2			100	40		
		87		70		
				130		
		88		135		
1			80	45		
		89		90		
				275	89.5 ft.	
		90		125		
1			80	10	gray	
		91		20	1 ft. thick interbedded CLAY and fine-coarse SAND	
				80	some silt	
		92		350		
0			100	12		
		93		40		
				29		
		94		32		
2			100	25		
		95		33		
				50	95.5 ft.	
		96		86		
2			100	17	gray CLAY	
		97		35	some silt	
				48	little fine-coarse sand	
		98		80		
3			100	20		
		99		40		
				63		
		100		70		
					Boring terminated at 100 feet.	
		101				

STANDARD PENETRATION
SS = SPLIT SPOON
A = AUGER CUTTINGS

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PARSONS ENGINEERING-SCIENCE
DRILLING RECORD

BORING NO. GT-2

Contractor: Carlo Environmental Tech.
Driller: Paul Libby
Inspector: J.S. Poulsen
Rig Type: CME 95
Method: 4.25-inch HSA

PROJECT NAME General Motors - West Yard
PROJECT NUMBER 727249.00

Sheet 1 of 5
Location:

Weather Clear, windy, 30deg. F
Date/Time Start November 28, 1995. / 1430
Date/Time Finish December 1, 1995. / 1500

423303.40 northing
13411873.87 easting
946.16 GS elev.

GROUNDWATER OBSERVATIONS				
Date				
Time				
Depth				

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	COMMENTS
0			100	HA		
		1		HA	FILL	
				HA	black fine/medium sand and cobbles	
		2		HA	tight packed	
0			100	HA		
		3		HA		
				HA		
		4		HA		
0			80	4		
		5		4	(wet)	
				4		
		6		6		
0			75	3		
		7		8		
				13		
		8		15	(moist)	
0			80	6		Boring grouted to the surface
		9		4		
				3	9.5 ft.	
		10		3	dark brown PEAT	
0			100	1	fine white rootlets throughout (moist)	
		11		1	11 ft.	
				2		
		12		2	light pink/white MARL (wet)	
0			100	1	very fine, pasty	
		13		0	trace organic debris	
				1		
		14		0		
0			80	1		
		15		1		
				1	15.5 ft.	
		16		1		
0			80	3	light/medium gray CLAY (moist)	
		17		6	little silt, trace fine gravel	
				7		
		18		9		
0			100	4		
		19		4		
				8		
		20		11		
0			100	ST	SHELBY TUBE: GMWYGT02, 20-22 ft.,11-28-95/1545hrs	

STANDARD PENETRATION
SS = SPLIT SPOON
A = AUGER CUTTINGS

SUMMARY: SHELBY TUBE: GMWYGT02, 20-22 ft.,11-28-95/1545hrs

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PARSONS ENGINEERING-SCIENCE DRILLING RECORD

BORING NO. GT-2

Sheet 2 of 5

Contractor:	Carlo Environmental Tech.
Driller:	Paul Libby
Inspector:	J.S. Poulsen
Rig Type:	CME 95
Method:	4.25-inch HSA
PROJECT NAME	General Motors - West Yard
PROJECT NUMBER	727249.00
Location:	
Weather	Clear, windy, 30deg. F
Date/Time Start	November 28, 1995. / 1430
Date/Time Finish	December 1, 1995. / 1500

GROUNDWATER OBSERVATIONS

Date				
Time				
Depth				

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	COMMENTS
				ST	21.5 ft.	
		22		ST		
0			100	2	light brown fine/medium SAND (wet)	
		23		2	trace very fine gravel	
				3	[flowing sand]	
		24		4		
0			100	2		
		25		2		
				2		
		26		2	light gray/brown mottled fine SAND	
0			100	1	trace very fine sand	
		27		3		
				4		
		28		6		
0			100	8		
		29		5		
				5		Boring grouted to the surface
		30		8	light brown SAND	
0			100	2	little 1/4" gravel, some-little clay	
		31		4		
				8	light gray SILT and fine/medium SAND	
		32		11	trace clay, gravel	
0			100	5		
		33		9	light gray SAND, little silt, gravel(rounded)	
				7		
		34		9		
0			100	5	reddish/gray medium SAND (moist)	
		35		7	trace silt, clay, gravel	
				8		
		36		9	36 ft.	
0			100	4	light/medium gray CLAY (wet)	
		37		6	little fine sand, trace 1/8" gravel	
				7	stiff	
		38		9		
0			70	ST	SHELBY TUBE: GMWYGT02, 38-40 ft.,11-29-95/1000hrs.	
		39		ST		
				ST		
		40		ST		
0			100	6	light/medium gray CLAY	
		41		8	little fine sand, trace 1/4" rounded gravel	
				8		

STANDARD PENETRATION
SS = SPLIT SPOON
A = AUGER CUTTINGS

SUMMARY: SHELBY TUBE GMWYGT02, 38-40 ft.,11-29-95/1000hrs.

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PARSONS ENGINEERING-SCIENCE
DRILLING RECORD

BORING NO. GT-2

Contractor: Carlo Environmental Tech.
Driller: Paul Libby
Inspector: J.S. Poulsen
Rig Type: CME 95
Method: 4.25-inch HSA

PROJECT NAME: General Motors - West Yard
PROJECT NUMBER: 727249.00

Sheet 3 of 5
Location:

Weather: Clear, windy, 30deg. F
Date/Time Start: November 28, 1995. / 1430
Date/Time Finish: December 1, 1995. / 1500

GROUNDWATER OBSERVATIONS				
Date				
Time				
Depth				

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	COMMENTS
		42		9		
0			100	4	light/medium gray CLAY	
		43		5	little fine sand, trace 1/4" rounded gravel	
				6		
		44		6	44 ft.	
0			100	1	medium gray SILT (moist)	
		45		3	some wet sand in 1" thick lenses	
				3	trace fine gravel	
		46		4		
0			100	1	medium gray SILT	
		47		3	little-some clay, trace fine gravel	
				4	trace sand, soft	
		48		5		
0			100	3		
		49		3		
				5		
		50		5	50 ft.	Boring grouted to the surface
0			100	3	medium gray CLAY	
		51		3	some silt (damp)	
				3	trace sand and fine gravel	
		52		3	firm	
0			100	WOH		
		53		3		
				5		
		54		5	increasing clay with depth	
0			100	1		
		55		2		
				4		
		56		5		
0			100	3		
		57		5		
				8		
		58		11		
0			100	2		
		59		3		
				5		
		60		6		
0			100	2	medium gray CLAY	
		61		2	little silt, trace sand and fine gravel	
				3	loose	

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STANDARD PENETRATION
SS = SPLIT SPOON
A = AUGER CUTTINGS

SUMMARY:

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PARSONS ENGINEERING-SCIENCE
DRILLING RECORD

BORING NO. GT-2

Sheet 4 of 5

Contractor:	Carlo Environmental Tech.
Driller:	Paul Libby
Inspector:	J.S. Poulsen
Rig Type:	CME 95
Method:	4.25-inch HSA
PROJECT NAME	General Motors - West Yard
PROJECT NUMBER	727249.00
Location:	
Weather	Clear, windy, 30deg. F
Date/Time Start	November 28, 1995. / 1430
Date/Time Finish	December 1, 1995. / 1500

GROUNDWATER OBSERVATIONS

Date				
Time				
Depth				

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	COMMENTS
		62			medium gray CLAY	
0			100	2	little silt, trace sand and fine gravel	
		63		5	loose	
				7		
		64		9		
0			100	ST	SHELBY TUBE: GMWYGT02, 64-66 ft.,11-29-95/1510hrs.	
		65		ST		
				ST		
		66		ST		
0			100	3		
		67		4		
				6		
		68		8		
0			100	3	medium gray CLAY	
		69		4	some silt, trace fine sand and gravel	
				5	grading down into a clayey silt	Boring grouted to the surface
		70		6	loose	
0			100	3	70.5 ft.	
		71		3	fine/medium SAND and fine GRAVEL (1/4" rounded)	
				4	some silt (wet)	
		72		5	[flowing]	
0			100	4		
		73		5		
				5	coarse SAND and GRAVEL	
		74		7	semi-angular (1")	
0			80	4	trace silt, fine sand	
		75		7	75 ft.	
				11		
		76		35	medium/dark gray SILT (damp)	
0			100	24	little-some 1/4'-1/2" semi-angular gravel	
		77		38	hard parked, friable	
				36		
		78		42		
0			100	19		
		79		37		
				38		
		80		46		
0			100	6		
		81		23		
				41		

STANDARD PENETRATION
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A = AUGER CUTTINGS

SUMMARY: SHELBY TUBE: GMWYGT02, 64-66 ft.,11-29-95/1510hrs.

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PARSONS ENGINEERING-SCIENCE
DRILLING RECORD

BORING NO. GT-2

Sheet 5 of 5

Location:

Contractor: Carlo Environmental Tech.
Driller: Paul Libby
Inspector: J.S. Poulsen
Rig Type: CME 95
Method: 4.25-inch HSA

PROJECT NAME General Motors West Yard
PROJECT NUMBER 727249.00

Weather Clear, windy, 30deg. F
Date/Time Start November 28, 1995. / 1430
Date/Time Finish December 1, 1995. / 1500

GROUNDWATER OBSERVATIONS

Date				
Time				
Depth				

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	COMMENTS
		82		64		
0			100	3	medium/dark gray SILT (damp)	
		83		35	little-some 1/4'1/2" semi-angular gravel	
				61	hard packed, friable	
		84		113		
0			100	34	84.5 ft.	
		85		35		Boring grouted to the surface
				55	light gray/brown medium SAND [flowing] (wet)	
		86		69	trace 1/2" gravel, silt 86 ft.	
0			50	10		
		87		50	hard packed SILT (damp)	
				100/.2	little medium gravel (sub-angular)	
		88		REF.	(trace rock chips)	
				REF		
		89		REF	auger refusal @89 ft. 84 ft	
					Boring terminated and 89 feet	
		90				

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PARSONS ENGINEERING-SCIENCE
DRILLING RECORD

BORING NO. GT-3

Sheet 1 of 5

Contractor: Carlo Environmental Tech.
Driller: Paul Libby
Inspector: J.S. Poulsen
Rig Type: CME 95
Method: 4.25-inch HSA

PROJECT NAME General Motors - West Yard
PROJECT NUMBER 727249.00
Location:

Weather Clear to Overcast, snow, 35 deg. F
Date/Time Start December 4, 1995. / 1016
Date/Time Finish December 5, 1995. / 1530

423316.09 northing
13412493.63 easting
967.81 GS elev.

GROUNDWATER OBSERVATIONS

Date				
Time				
Depth				

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	COMMENTS
				HA		
		1		HA	dark brown/black stained fine-medium sand FILL	
				HA	little debris, cinders (dry)	
		2		HA	trace fines, gravel	
				HA		
		3		HA		
				HA		
		4		HA		
15			100	23		
		5		25		
				67		
		6		REF		
140			100	12	light brown medium sand FILL (moist)	
		7		25		
				18		
		8		12	black soft fine sand FILL (dry)	
15			100	2	trace ash	Boring grouted to the surface
		9		10	odor	
				15		
		10		9		
32			100	11	(damp)	
		11		17		
				10		
		12		6		
13.5			75	1		
		13		2		
				2		
		14		7		
8			75	1		
		15		1		
				1		
		16		2	black soft fine sand FILL	
1			100	2	trace ash	
		17		2	odor	
				2		
		18		3		
0			100	2		
		19		3		
				5		
		20		4		
0			100	1		

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PARSONS ENGINEERING-SCIENCE
DRILLING RECORD

BORING NO. GT-3

Sheet 2 of 5

Contractor: Carlo Environmental Tech.
Driller: Paul Libby
Inspector: J.S. Poulsen
Rig Type: CME 95
Method: 4.25-inch HSA

PROJECT NAME General Motors - West Yard
PROJECT NUMBER 727249.00
Location:

Weather Clear to Overcast, snow, 35 deg. F
Date/Time Start December 4, 1995. / 1016
Date/Time Finish December 5, 1995. / 1530

GROUNDWATER OBSERVATIONS

Date				
Time				
Depth				

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	COMMENTS
		21		1		
				1		
		22		1		
0			100	2	black fine-medium sand FILL (moist)	
		23		3	trace fines, debris	
				2		
		24		2		
0			100	2	(wet)	
		25		3		
				4		
		26		7		
0			100	2		
		27		3		
				3		
		28		3		
0			100	1		
		29		2		
				3	29.5 ft	
		30		4		
0			100	1	gray organic SILT (moist)	
		31		1	some clay, trace sand	
				3	firm, rootlets	
		32		7	32 ft.	
0			100	WOH		
		33		WOH	interlayered medium brown medium SAND and PEAT	
				2	organic debris, trace fine gravel	
		34		3		
0			100	1	34.5 ft.	
		35		0		
				1	medium gray silt MARL (wet)	
		36		2	shell fragments, root debris	
0			100	1	trace fine sand, clay	
		37		1		
				1		
		38		1		
0			75	3	38.5 ft.	
		39		2		
				4	pink /gray CLAY (moist)	
		40		5	some silt, trace 1/8" rounded gravel	
				ST		

Boring grouted to the surface

STANDARD PENETRATION
SS = SPLIT SPOON
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SUMMARY:

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PARSONS ENGINEERING-SCIENCE
DRILLING RECORD

BORING NO. GT-3

Sheet 3 of 5

Location:

Contractor: Carlo Environmental Tech.
Driller: Paul Libby
Inspector: J.S. Poulsen
Rig Type: CME 95
Method: 4.25-inch HSA

PROJECT NAME: General Motors - West Yard
PROJECT NUMBER: 727249.00

Weather: Clear to Overcast, snow, 35 deg. F
Date/Time Start: December 4, 1995. / 1016
Date/Time Finish: December 5, 1995. / 1530

GROUNDWATER OBSERVATIONS				
Date				
Time				
Depth				

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	COMMENTS
				ST		
		41		ST	Shelby Tube ID: GMWYGT03, 40-42 ft./1405 hrs	
				ST		
		42		ST		
0			100	4	pink /gray CLAY	
		43		7	some silt, trace 1/8" rounded gravel 43 ft.	
				9		
		44		12	gray medium SAND and GRAVEL [flowing] (wet)	
0			100	1	little silt	
		45		1		
				2		
		46		3	interbedded olive fine SAND and SILT	
0			50	1	trace fine gravel	
		47		1		
				1		
		48		3		
0			100	2		Boring grouted to the surface
		49		4		
				4	gray coarse SAND and GRAVEL	
		50		3	little silt	
0			100	2		
		51		3		
				3	51.5 ft.	
		52		3		
0			100	WOH	light/medium gray SILT (moist)	
		53		WOH	little fine sand	
				4	trace fine gravel, soft	
		54		4	54 ft.	
0			100	3		
		55		3	medium gray CLAY (damp)	
				4	little silt, trace 1/4" gravel, firm	
		56		4		
0			100	ST	Shelby Tube ID: GMWYGT03, 56-58ft. /1630hrs	
		57		ST		
				ST		
		58		ST		
0			100	2		
		59		7		
				9		
		60		7		
0			75	3		

STANDARD PENETRATION
SS = SPLIT SPOON
A = AUGER CUTTINGS

SUMMARY:
Shelby Tube ID: GMWYGT03, 40-42 ft./1405 hrs
Shelby Tube ID: GMWYGT03, 56-58ft. /1630hrs

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PARSONS ENGINEERING-SCIENCE
DRILLING RECORD

BORING NO. GT-3

Sheet 4 of 5

Contractor: Carlo Environmental Tech.
Driller: Paul Libby
Inspector: J.S. Poulsen
Rig Type: CME 95
Method: 4.25-inch HSA

PROJECT NAME: General Motors - West Yard
PROJECT NUMBER: 727249.00
Location:

Weather: Clear to Overcast, snow, 35 deg. F
Date/Time Start: December 4, 1995. / 1016
Date/Time Finish: December 5, 1995. / 1530

GROUNDWATER OBSERVATIONS				
Date				
Time				
Depth				

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	COMMENTS
		61		4	medium gray CLAY (damp)	
				4	little silt	
		62		4	trace 1/9" gravel, sand	
0			100	5	firm	
		63		9		
				10		
		64		11		
0			100	3		
		65		4		
				4		
		66		6		
0			100	5		
		67		8		
				12		
		68		13	68 ft.	
0			100	5	medium gray SILT	Boring grouted to the surface
		69		8	some medium sand and 1/4-1/2" gravel (moist)	
				9	trace fines	
		70		11	70 ft.	
0			100	3		
		71		4	gray medium SAND and coarse (1/4-1") GRAVEL	
				6	[flowing] (wet)	
		72		4		
0			100	5		
		73		5	73 ft.	
				7	medium/dark gray SILT	
		74		8	little semiangular gravel, sand 74 ft.	
0			100	3		
		75		6	medium gray CLAY	
				7	some silt, little fine/medium sand	
		76		9	trace 1/4" gravel	
0			100	4	firm	
		77		6		
				8		
		78		9		
0			100	ST	Shelby Tube ID: GMWYGT03, 78-80 ft. / 1035hrs.	
		79		ST		
				ST		
		80		ST		
0			100	11		

STANDARD PENETRATION
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SUMMARY: Shelby Tube ID: GMWYGT03, 78-80 ft. / 1035

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PARSONS ENGINEERING-SCIENCE
DRILLING RECORD

BORING NO. GT-3

Sheet 5 of 5

Contractor: Carlo Environmental Tech.
Driller: Paul Libby
Inspector: J.S. Poulsen
Rig Type: CME 95
Method: 4.25-inch HSA

PROJECT NAME: General Motors - West Yard
PROJECT NUMBER: 727249.00
Location:

Weather: Clear to Overcast, snow, 35 deg. F
Date/Time Start: December 4, 1995. / 1016
Date/Time Finish: December 5, 1995. / 1530

GROUNDWATER OBSERVATIONS

Date				
Time				
Depth				

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	COMMENTS
		81		13	medium gray CLAY	
				16	some silt, little fine/medium sand (moist)	
		82		16	trace 1/4" rounded gravel	
0			100	8	firm	
		83		10		
				13		
		84		15		Boring grouted to the surface
0			100	3		
		85		4		
				7		
		86		8		
0			100	2		
		87		6		
				6		
		88		8		
0			100	3		
		89		4	89 ft.	
				4		
		90		5	gray medium/coarse SAND (wet)	
0			100	6	little 1/4" -1/2" rounded gravel	
		91		3	trace silt	
				9	[flowing]	
		92		11		
0			100	11		
		93		12		
				6		
		94		7		
0			100	3		
		95		3		
				3		
		96		3		
0			100	4		
		97		7		
				9		
		98		10		
0			80	71		
		99		90	99 ft.	
				154	hard packed SILT, SAND, GRAVEL	
		100		180/3"	friable (damp)	
					Boring Terminated at 100 feet.	

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SS = SPLIT SPOON
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PARSONS ENGINEERING-SCIENCE
DRILLING RECORD

BORING NO. GT-4

Sheet 1 of 5

Contractor:	Carlo Environmental Tech.
Driller:	Paul Libby
Inspector:	J.S. Poulsen
Rig Type:	CME 95
Method:	4.25-inch HSA
PROJECT NAME	General Motors - West Yard
PROJECT NUMBER	727249.00
Location:	
Weather	Clear, Windy, 30deg. F.
Date/Time Start	December 4, 1995. / 1100
Date/Time Finish	December 8, 1995./ 1210

423927.80 northing
134122.32.07 easting
963.03 GS elev.

GROUNDWATER OBSERVATIONS

Date				
Time				
Depth				

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	COMMENTS
				HA		
		1		HA	CONCRETE (dry)	
				HA	fine-coarse SAND	
		2		HA	trace fine-coarse gravel	
				HA	brick	
		3		HA		10" ID Steel casing set to 25'
				HA	oily	
		4		HA		
110			95	9	fine black sand FILL (moist)	
		5		21	trace fine gravel	
				42		
		6		22		
316			90	9		
		7		11		
				9		
		8		16		
226			5	5		Boring grouted to the surface
		9		6		
				2		
		10		2		
39			5	1	tan clay FILL	
		11		1	(damp)	
				1	sand FILL	
		12		1	debris	
82			10	1	oily (wet)	
		13		1		
				2		
		14		5		
43			50	1		
		15		1	(moist)	
				3		
		16		3		
39			20	1		
		17		3	17 ft.	
				3	dark brown PEAT, SILT, CLAY 17.5 ft.	
		18		3	olive green/gray CLAY	
11			50	1	trace silt, fine sand (moist)	
		19		1		
				1		
		20		2		
13			95	1		

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A = AUGER CUTTINGS

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PARSONS ENGINEERING-SCIENCE
DRILLING RECORD

BORING NO. GT-4

Sheet 2 of 5

Location:

Contractor:	Carlo Environmental Tech.
Driller:	Paul Libby
Inspector:	J.S. Poulsen
Rig Type:	CME 95
Method:	4.25-inch HSA
PROJECT NAME	General Motors - West Yard
PROJECT NUMBER	727249.00
Weather	Clear, Windy, 30deg. F.
Date/Time Start	December 4, 1995. / 1100
Date/Time Finish	December 8, 1995./ 1210

GROUNDWATER OBSERVATIONS

Date				
Time				
Depth				

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	
				6		
		22		9		
-			1	ST	Shelby Tube ID:GMWYSBGT04, 22-24 ft.	
		23		ST		
				ST		
		24		ST		
8			95	-	olive green/gray CLAY	(moist)
		25		-	trace silt, fine sand, gravel	
				-		
		26		-		
8			100	3		
		27		6		
				10		
		28		13		
6			90	3		
		29		5		
				11		
		30		12		
5			90	4		
		31		7		
				9		
		32		13		
0			100	3	red-gray CLAY	(damp)
		33		6	little silt	
				8	trace 1/4" rounded gravel	
		34		10	stiff	
0			100	3		
		35		6		35 ft.
				3		
		36		4	gray/brown medium/coarse SAND	(wet)
0			100	3	trace 1/4-1" angular gravel	
		37		4		37 ft.
				5		
		38		5	medium-dark gray CLAY	(wet)
0			100	1	some silt	
		39		4	trace sand , gravel	
				5	soft	
		40		5		
			80	ST	Shelby Tube ID: GMWYSBGT04, 40-42ft./ 0930hrs.	
		41		ST		
				ST		

COMMENTS

Boring grouted to the surface

STANDARD PENETRATION
SS = SPLIT SPOON
A = AUGER CUTTINGS

SUMMARY:
Shelby Tube ID:GMWYSBGT04, 22-24 ft.
Shelby Tube ID: GMWYSBGT04, 40-42ft./ 0930hrs.

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PARSONS ENGINEERING-SCIENCE
DRILLING RECORD

BORING NO. GT-4

Contractor: Carlo Environmental Tech.
Driller: Paul Libby
Inspector: J.S. Poulsen
Rig Type: CME 95
Method: 4.25-inch HSA

PROJECT NAME: General Motors - West Yard
PROJECT NUMBER: 727249.00

Sheet 3 of 5
Location:

Weather: Clear, Windy, 30deg. F.
Date/Time Start: December 4, 1995. / 1100
Date/Time Finish: December 8, 1995./ 1210

GROUNDWATER OBSERVATIONS				
Date				
Time				
Depth				

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	COMMENTS
				ST		
		42		ST		
0			100	4	medium-dark gray CLAY (moist)	
		43		5	some silt	
				6	trace sand , gravel	
		44		8	soft	
0			100	4		
		45		4		
				6		
		46		4	46 ft.	
0			100	WOR	gray SILT (wet)	
		47		3	little clay,sand/gravel, soft 47 ft.	
				10	(wet)	
		48		8	medium SAND, trace gravel, fines 48 ft.	
0			100	2		
		49		3	medium gray SILT (wet)	
				5	little sand, trace gravel, soft	
		50		5	50 ft.	
0			75	3	medium/coarse SAND	
		51		3	little fine gravel, trace silt (wet)	
				3		
		52		3		
0			100	4		
		53		3	53 ft.	
				5	gray SILT, little clay (dry)	
		54		5	trace fine gravel, hard packed, friable 54 ft.	
0			100	7		
		55		8	medium gray CLAY (damp)	
				10	some silt	
		56		12	trace fine sand, 1/4" gravel	
0			100	9	stiff	
		57		13		
				15		
		58		18		
0			100	4	medium gray packed CLAY	
		59		10	little silt	
				14	trace gravel, hard	
		60		19	60 ft.	
0			100	18	gray SILT (moist)	
		61		43	some clay, little angular gravel	
				57	occasional medium sand lens (wet)	

Boring grouted to the surface

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STANDARD PENETRATION
SS = SPLIT SPOON
A = AUGER CUTTINGS

SUMMARY:

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PARSONS ENGINEERING-SCIENCE
DRILLING RECORD

BORING NO. GT-4

Sheet 4 of 5

Location:

Contractor: Carlo Environmental Tech.
Driller: Paul Libby
Inspector: J.S. Poulsen
Rig Type: CME 95
Method: 4.25-inch HSA

PROJECT NAME General Motors - West Yard
PROJECT NUMBER 727249.00

Weather Clear, Windy, 30deg. F.
Date/Time Start December 4, 1995. / 1100
Date/Time Finish December 8, 1995./ 1210

GROUNDWATER OBSERVATIONS				
Date				
Time				
Depth				

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	COMMENTS
					gray SILT (moist)	
		62		74	some clay, little angular gravel	
0			100	28	occasional medium sand lens 62.5 ft.	
		63		31		
				36	medium-coarse SAND (wet)	
		64		42	trace 1/2-2" subangular gravel	
0			100	4	[flowing]	
		65		11		
				26		
		66		29		
0			100	8		
		67		20		
				28		
		68		35		
0			100	13	medium-coarse SAND (wet)	
		69		28	trace 1/2-2" subangular gravel, trace silt	
				42	[flowing]	
		70		37		
0			75	9		
		71		23		
				26		
		72		28		
0			100	4		
		73		8	73 ft.	
				17		
		74		20	medium gray CLAY (moist)	
0			100	13	little silt, trace 1/4" gravel	
		75		24		
				21		
		76		14		
0			60	9		
		77		18		
				25		
		78		39		
0			100	10		
		79		31	79 ft.	
				36	medium gray SILT	
		80		43	some fine-medium sand (moist)	
0			100	14	trace clay, gravel	
		81		22		
				38		

Boring grouted to the surface

STANDARD PENETRATION
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A = AUGER CUTTINGS

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PARSONS ENGINEERING-SCIENCE
DRILLING RECORD

BORING NO. GT-4

Contractor: Carlo Environmental Tech.
Driller: Paul Libby
Inspector: J.S. Poulsen
Rig Type: CME 95
Method: 4.25-inch HSA

PROJECT NAME: General Motors - West Yard
PROJECT NUMBER: 727249.00

Sheet 5 of 5
Location:

Weather: Clear, Windy, 30deg. F.
Date/Time Start: December 4, 1995. / 1100
Date/Time Finish: December 8, 1995./ 1210

GROUNDWATER OBSERVATIONS

Date				
Time				
Depth				

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	COMMENTS
		82		25	gray SILT	
0			100	41	some fine/medium sand (damp)	
		83		32	trace 1/4-1/2" angular gravel	
				57	stiff, friable	
		84		29		
0			100	9		
		85		13		Boring grouted to the surface
				17		
		86		26		
0			50	35	medium gray SILT	
		87		24	little fine rounded gravel (damp)	
				100/.5"	dense, friable	
		88		REF	trace clay, coarse gravel	
0			30	97		
		89		200/3"		
				REF		
		90		REF		
0			10	131		
		91		130/2"		
				REF		
		92		REF		
0			10	163		
		93		185/1"		
				REF		
		94		REF		
					Terminate Boring at 94 feet.	
		95				
		96				

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PARSONS ENGINEERING-SCIENCE
DRILLING RECORD

BORING NO. WD-1

Sheet 1 of 2

Contractor:	Carlo Environmental Tech.
Driller:	Paul Libby
Inspector:	B.E.Reeser
Rig Type:	CME 95
Method:	4.25-inch HSA
PROJECT NAME	General Motors - West Yard
PROJECT NUMBER	727249.00
Location:	
Weather	Cloudy, 27deg F>
Date/Time Start	December 18, 1995. / 0850
Date/Time Finish	December 18, 1995. / 1115

423795.92 northing
13412482.82 easting
966.89 GS elev.

GROUNDWATER OBSERVATIONS				
Date				
Time				
Depth				

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL		COMMENTS
				HA			
		1		HA	black clay FILL	(moist0	
				HA	little fine-coarse sand		
		2		HA	trace gravel, silt		
10				HA			
		3		HA			
				HA			
		4		HA			
0			100	29			
		5		27			
				21			
		6		21			
0			90	11	black/brown fine sand FILL	(damp)	
		7		9	little silt, trace gravel, debris		
				8			
		8		7			
0			50	2			Boring grouted to the surface
		9		2			
				2			
		10		4			
0			100	2			
		11		2			
				2			
		12		4			
0			10	3			
		13		4			
				4			
		14		5			
0			50	1			
		15		3			
				2			
		16		4	black/brown fine sand FILL	(damp)	
0			90	2	little silt, trace gravel, debris		
		17		4			
				5			
		18		5		18 ft.	
-			100	2	MARL	18.5 ft.	
		19		2			
				2	brown CLAY	(moist)	
		20		1	little silt and fine snad		
0			90	4			

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PARSONS ENGINEERING-SCIENCE
DRILLING RECORD

BORING NO. WD-1

Sheet 2 of 2

Contractor:	Carlo Environmental Tech.
Driller:	Paul Libby
Inspector:	B.E.Reeser
Rig Type:	CME 95
Method:	4.25-inch HSA
PROJECT NAME	General Motors - West Yard
PROJECT NUMBER	727249.00
Location:	
Weather	Cloudy, 27deg F>
Date/Time Start	December 18, 1995. / 0850
Date/Time Finish	December 18, 1995. / 1115

GROUNDWATER OBSERVATIONS

Date				
Time				
Depth				

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	COMMENTS
				5		
		22		7	brown CLAY (moist)	
0			50	2	little silt and fine snad	
		23		4		
				16		
		24		13		
0			100	8		
		25		10		
				15	interbedded brown mottled stiff CLAY	
		26		22	occasional fine-medium brown sand stringer	
0			80	8		
		27		13	(dry-damp)	
				11		
		28		6		
0			100	5		
		29		6		
				9		
		30		14		
0			100	13		
		31		10		
				10		
		32		8		
0			80	5		
		33		5		
				5		
		34		7		
0			100	5		
		35		7		
				11		
		36		13	36 ft	
					BORING TERMINATED AT 36 FEET.	
		37				
		38				
		39				
		40				
		41				



Boring grouted to the surface

STANDARD PENETRATION

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PARSONS ENGINEERING-SCIENCE
DRILLING RECORD

BORING NO. WD-2

Sheet 1 of 2

Contractor: Carlo Environmental Tech.
Driller: Paul Libby
Inspector: J.S. Poulsen
Rig Type: CME 95
Method: 4.25-inch HSA

PROJECT NAME General Motors - West Yard
PROJECT NUMBER 727249.00

Location:

Weather Cloudy, 27 deg F.

Date/Time Start December 18, 1995. / 1420

Date/Time Finish December 19, 1995. / 0909

42550.49 northing
13412420.91 easting
968.54 GS elev.

GROUNDWATER OBSERVATIONS

Date				
Time				
Depth				

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	COMMENTS
				HA	0-6" concrete	
		1		HA		
				HA		
		2		HA		
				HA		
		3		HA		
				HA		
		4		HA		
0			50	26	black /brown fine-medium sand FILL	
		5		22	little fines (dry)	
				19	debris	
		6		18		
0			80	9		
		7		13		
				15		
		8		12		
0			100	9		Boring grouted to the surface
		9		27		
				37		
		10		32		
0			100	13		
		11		30		
				24		
		12		20		
0			30	2		
		13		2		
				3		
		14		4		
0			100	4		
		15		5	black /brown fine-medium sand FILL	
				8	little fines	
		16		8	debris	
0			50	2	(moist)	
		17		2		
				3		
		18		1		
0			5	4		
		19		32		
				28		
		20		19		
0			100	4		

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PARSONS ENGINEERING-SCIENCE
DRILLING RECORD

BORING NO. WD-2

Sheet 2 of 2

Contractor:	Carlo Environmental Tech.
Driller:	Paul Libby
Inspector:	J.S. Poulsen
Rig Type:	CME 95
Method:	4.25-inch HSA
PROJECT NAME	General Motors - West Yard
PROJECT NUMBER	727249.00
Location:	
Weather	Cloudy, 27 deg F.
Date/Time Start	December 18, 1995. / 1420
Date/Time Finish	December 19, 1995. / 0909

GROUNDWATER OBSERVATIONS				
Date				
Time				
Depth				

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	COMMENTS
				10		
		22		6		
-			0	3		
		23		2	black /brown fine-medium sand FILL	
				3	little fines	
		24		4	debris (wet)	
0			100	1		
		25		4	sheen	
				5		
		26		6		
0			50	2		
		27		2		
				5		
		28		6		
0			100	4		
		29		7		
				2		
		30		9	30 ft.	Boring grouted to the surface
0			100	9	fine-coarse GRAVEL	
		31		6	little fine-medium sand, trace silt 31 ft.	
				10		
		32		17	gray SILT	
0			50	5	some clay, fine sand (damp)	
		33		6		
				7		
		34		8	34 ft.	
0			20	1		
		35		7	gray CLAY	
				9	some fine-medium sand and silt (damp)	
		36		12	trace gravel	
0			100	3		
		37		4		
				6		
		38		8		
					BORING TERMINATED AT 38 FEET.	
		39				
		40				
		41				

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PARSONS ENGINEERING-SCIENCE
DRILLING RECORD

BORING NO. WD-3

Sheet 1 of 2

Contractor:	Carlo Environmental Tech.
Driller:	Paul Libby
Inspector:	J.S. Poulsen
Rig Type:	CME 95
Method:	4.25-inch HSA
PROJECT NAME	General Motors - West Yard
PROJECT NUMBER	727249.00
Location:	
Weather	cloudy, 25deg F.
Date/Time Start	December 19, 1995. / 1310
Date/Time Finish	December 19, 1995. / 1618

423534.62 northing
13412638.05 easting
969.03 GS elev.

GROUNDWATER OBSERVATIONS

Date				
Time				
Depth				

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	COMMENTS
				HA		
		1		HA	0-6" concrete	
				HA	(dry)	
		2		HA	black fine-coarse sand FILL	
				HA		
		3		HA		
				HA	debris	
		4		HA		
0			100	8		
		5		7		
				6		
		6		8		
0			90	21		
		7		29		
				30		
		8		23		
0			50	7		Boring grouted to the surface
		9		8		
				12		
		10		12		
0			100	1		
		11		6		
				8		
		12		9		
0			60	4		
		13		3		
				3		
		14		4		
0			0	21	black fine-coarse sand FILL (dry)	
		15		44	some fines, debris (brick)	
				51		
		16		34		
0			0	8		
		17		5		
				4		
		18		4		
0			5	1		
		19		3		
				6		
		20		5		
0			100	5		

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STANDARD PENETRATION
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PARSONS ENGINEERING-SCIENCE
DRILLING RECORD

BORING NO. WD-3

Sheet 2 of 2

Contractor: Carlo Environmental Tech.
Driller: Paul Libby
Inspector: J.S. Poulsen
Rig Type: CME 95
Method: 4.25-inch HSA

PROJECT NAME General Motors - West Yard
PROJECT NUMBER 727249.00
Location:

Weather cloudy, 25deg F.
Date/Time Start December 19, 1995. / 1310
Date/Time Finish December 19, 1995. / 1618

GROUNDWATER OBSERVATIONS

Date				
Time				
Depth				

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	COMMENTS
				12		
		22		8		
0			50	6		
		23		4	black fine-coarse sand FILL (damp)	
				5	some fines, debris (brick)	
		24		5		
0			100	8		
		25		11		
				9		
		26		7	26 ft.	
0			50	1	green.black CLAY (damp)	
		27		2	some fine-medium sand	
				9	rootlets	
		28		6	28 ft.	
0			100	2		
		29		3	tan/green fine-medium SAND	
				5	trace silt and clay	Boring grouted to the surface
		30		10		
0			90	8	(wet)	
		31		16		
				22		
		32		8		
0			100	7		
		33		7		
				10		
		34		12		
0			100	18		
		35		19	35 ft.	
				18		
		36		3	gray CLAY (moist)	
0			50	6	some fine-medium sand	
		37		9	trace silt, fine gravel	
				12		
		38		14		
					BORING TERMINATED AT 38 FEET.	
		39				
		40				
		41				

STANDARD PENETRATION
SS = SPLIT SPOON
A = AUGER CUTTINGS

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PARSONS ENGINEERING-SCIENCE
DRILLING RECORD

BORING NO. SB-1

Sheet 1 of 2

Contractor:	Carlo Environmental Tech.
Driller:	Paul Libby
Inspector:	Brian Reeser
Rig Type:	CME 95
Method:	4.25-inch HSA
PROJECT NAME	General Motors - West Yard
PROJECT NUMBER	727249.00
Location:	
Weather	Partially cloudy, 15deg F.
Date/Time Start	December 12, 1995. / 0905
Date/Time Finish	December 12, 1996. / 1255

423693.88 northing
13411757.76 easting
961.64 GS elev.

GROUNDWATER OBSERVATIONS

Date				
Time				
Depth				

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	COMMENTS
0		1	100	HA	black sand and gravel FILL (dry)	
				HA	trace debris	
		2		HA		
			100	HA		
		3		HA		
				HA		
		4		HA		
4			100	12	tan fine SAND (damp)	
		5		53	trace clay and silt	
				20		
		6		13		
10			100	4	some clay stringers	
		7		16		
				20		
		8		22		
5			100	13		Boring grouted to the surface
		9		13		
				13		
		10		11		
3			100	2	trace clay and silt	
		11		16		
				34		
		12		12		
6			100	14	some tan/white mottled clay	
		13		12		
				17		
		14		16	14 ft.	
23			80	7		
		15		10	tan fine-coarse SAND (dry)	
				9	trace fine gravel	
		16		11		
70			90	8		
		17		12	gray fine-medium SAND (wet)	
				17	little silt	
		18		23		
10			100	11		
		19		12		
				13		
		20		15		
				8		

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PARSONS ENGINEERING-SCIENCE
DRILLING RECORD

BORING NO. SB-1

Sheet 2 of 2

Contractor: Carlo Environmental Tech.
Driller: Paul Libby
Inspector: Brian Reeser
Rig Type: CME 95
Method: 4.25-inch HSA

PROJECT NAME General Motors - West Yard
PROJECT NUMBER 727249.00
Location:

Weather Partially cloudy, 15deg F.
Date/Time Start December 12, 1995. / 0905
Date/Time Finish December 12, 1996. / 1255

GROUNDWATER OBSERVATIONS

Date				
Time				
Depth				

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	COMMENTS
				9		
		22		15	gray fine-medium SAND (wet)	
				3	little silt	
		23		6		
				12		
		24		28		
				10		
		25		24		
				40		
		26		25	26 ft	
				4		
		27		6	gray CLAY	
				8	some fine-coarse sand	
		28		9	trace fines and gravel	
				1		
		29		6		
				12		
		30		13		
					BORING TERMINATED AT 30 FEET	Boring grouted to the surface
		31				
		32				
		33				
		34				
		35				
		36				
		37				
		38				
		39				
		40				
		41				

STANDARD PENETRATION
SS = SPLIT SPOON
A = AUGER CUTTINGS

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PARSONS ENGINEERING-SCIENCE
DRILLING RECORD

BORING NO. SB-2

Sheet 1 of 1

Location:

Contractor: Carlo Environmental Tech.
Driller: Paul Libby
Inspector: B.E. Reeser
Rig Type: CME 95
Method: 4.25-inch HSA

PROJECT NAME General Motors - West Yard
PROJECT NUMBER 727249.00

Weather light rain, 35deg F.
Date/Time Start December 14, 1995. / 0915
Date/Time Finish December 14, 1996. / 1026

GROUNDWATER OBSERVATIONS

Date				
Time				
Depth				

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	COMMENTS
0				HA		
		1		HA	0-8" Concrete	
				HA		
		2		HA		
0				HA	black silt, sand, organics	
		3		HA		
				HA		
		4		HA		
0			40	2	tan/grey clay FILL (moist)	
		5		5	some sand	
				3		
		6		1		
0			10	2	wood debris	
		7		7		
				8		
		8		7		
2			10	2		
		9		2	9 ft.	
				2		
		10		1	brown/tan CLAY	
2			20	2	some fine-medium sand	
		11		5	trace gravel	
				7	(moist)	
		12		10		
2			30	5		
		13		10		
				14		
		14		15		
4			50	9		
		15		11		
				15		
		16		17		
8			80	26	(dry)	
		17		28		
				26		
		18		25		
					BORING TERMINATED AT 18 FEET.	
		19				
		20				

Boring grouted to the surface

STANDARD PENETRATION
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A = AUGER CUTTINGS

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PARSONS ENGINEERING-SCIENCE
DRILLING RECORD

BORING NO. SB-3

Sheet 1 of 2

Contractor:	Carlo Environmental Tech.
Driller:	Paul Libby
Inspector:	J.S. Poulsen
Rig Type:	CME 95
Method:	4.25-inch HSA
PROJECT NAME	General Motors - West Yard
PROJECT NUMBER	727249.00
Location:	
Weather	Cloudy, 35 deg F.
Date/Time Start	December 14, 1995. / 1215
Date/Time Finish	December 14, 1995. / 1500

423587.97 northing
13411883.84 easting
963.48 GS elev.

GROUNDWATER OBSERVATIONS

Date				
Time				
Depth				

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	COMMENTS
0				HA		
		1		HA	black fine-coarse sand FILL (damp)	
				HA	debris	
		2		HA		
				HA		
		3		HA		
				HA		
		4		HA		
5			80	3		
		5		3		
				4		
		6		3		
26			80	6	(moist)	
		7		7		
				9		
		8		6	black fine-coarse sand FILL	
29			80	4	debris	Boring grouted to the surface
		9		3		
				4		
		10		3	10 ft.	
29			80	2		
		11		4	green/gray CLAY (dry)	
				9	some fine-medium sand, silt	
		12		9		
44			100	6		
		13		5	13 ft.	
				6		
		14		6	tan fine-medium SAND (wet)	
30			100	9	black staining	
		15		7	some silt	
				7		
		16		6		
45			70	3		
		17		6		
				6		
		18		8		
25			60	1		
		19		3		
				6		
		20		8		
3			80	1		

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SUMMARY: Sample: GMWYSSSB3(0-6") / 1245 TCL/TAL

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PARSONS ENGINEERING-SCIENCE
DRILLING RECORD

BORING NO. SB-3

Sheet 2 of 2

Location:

Contractor:	Carlo Environmental Tech.
Driller:	Paul Libby
Inspector:	J.S. Poulsen
Rig Type:	CME 95
Method:	4.25-inch HSA

PROJECT NAME: General Motors - West Yard

PROJECT NUMBER: 727249.00

Weather: Cloudy, 35 deg F.

Date/Time Start: December 14, 1995. / 1215

Date/Time Finish: December 14, 1995. / 1500

GROUNDWATER OBSERVATIONS				
Date				
Time				
Depth				

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	COMMENTS
				3		
		22		4	light gray fine-coarse SAND (wet)	
4			80	1	some silt	
		23		1	trace gravel	
				1		
		24		3		
8			100	1		
		25		3	25 ft.	
				4		Boring grouted to the surface
		26		5	gray CLAY (damp)	
11			100	2	some fine-medium sand	
		27		3	little silt	
				5		
		28		7		
					BORING TERMINATED AT 28 FEET.	
		29				
		30				
		31				
		32				
		33				
		34				
		35				
		36				
		37				
		38				
		39				
		40				
		41				

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PARSONS ENGINEERING-SCIENCE
DRILLING RECORD

BORING NO. SB-4

Sheet 1 of 2

Contractor: Carlo Environmental Tech.
Driller: Paul Libby
Inspector: J.S. Poulsen
Rig Type: CME 95
Method: 4.25-inch HSA

PROJECT NAME General Motors - West Yard
PROJECT NUMBER 727249.00
Location:

Weather Cloudy, 30deg F.
Date/Time Start December 15, 1996./ 1130
Date/Time Finish December 15, 1996./ 1254

423570.88 northing
13411933.46 easting
966.34 GS elev.

GROUNDWATER OBSERVATIONS

Date				
Time				
Depth				

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	COMMENTS
0				HA		
		1		HA	black, fine-coarse gravel and sand FILL (dry)	
				HA		
		2		HA		
2				HA		
		3		HA		
				HA		
		4		HA		
11			80	5	black/brown fine-coarse sand FILL	
		5		5	trace gravel , debris	
				4		
		6		5		
35			60	7		
		7		7	(damp)	
				7		
		8		6		
20			50	2		Boring grouted to the surface
		9		2		
				2		
		10		1		
0			60	2		
		11		3		
				2		
		12		3		
			0	3		
		13		4		
		14		54		
0			100	2		
		15		2		
				3		
		16		3		
3			100	3	(moist)	
		17		3	17 ft.	
				3	white chalky MARL 17.5 ft.	
		18		2		
0			80	1	gray CLAY	
		19		2	some fine-medium SAND (dry)	
				3	little silt	
		20		4		
0			100	8		

STANDARD PENETRATION
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PARSONS ENGINEERING-SCIENCE
DRILLING RECORD

BORING NO. SB-4

Sheet 2 of 2

Contractor:	Carlo Environmental Tech.
Driller:	Paul Libby
Inspector:	J.S. Poulsen
Rig Type:	CME 95
Method:	4.25-inch HSA
PROJECT NAME	General Motors - West Yard
PROJECT NUMBER	727249.00
Location:	
Weather	Cloudy, 30deg F.
Date/Time Start	December 15, 1996./ 1130
Date/Time Finish	December 15, 1996./ 1254

GROUNDWATER OBSERVATIONS

Date				
Time				
Depth				

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	COMMENTS
				11		
		22		14	green/gray CLAY (damp)	
0			100	4	some fine-medium SAND	
		23		7	trace silt	
				9		
		24		11		
					BORING TERMINATED AT 24 FEET.	
		25				
		26				
		27				
		28				
		29				
		30				
		31				
		32				
		33				
		34				
		35				
		36				
		37				
		38				
		39				
		40				
		41				

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PARSONS ENGINEERING-SCIENCE
DRILLING RECORD

BORING NO. SB-5

Sheet 1 of 2

Contractor:	Carlo Environmental Tech.
Driller:	Paul Libby
Inspector:	B.E. Reeser
Rig Type:	CME 95
Method:	4.25-inch HSA
PROJECT NAME	General Motors - West Yard
PROJECT NUMBER	727249.00
Location:	
Weather	Cloudy, 20 deg F.
Date/Time Start	December 12, 1995.
Date/Time Finish	December 13, 1995.

GROUNDWATER OBSERVATIONS

Date				
Time				
Depth				

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	COMMENTS
			100			
		1			0-8" concrete	
20						
		2				
					black fine-medium sand FILL (dry)	
		3			some fines, clay, debris	
		4				
370			100	9	(moist)	
		5		15		
				22		
		6		23	oily	
301				9		
		7		18		
				10		
		8		6		
			0	7		Boring grouted to the surface
-		9		8		
				7		
		10		8	black fine-medium sand FILL	
-			0	6	some fines, clay, debris	
		11		8		
				7		
		12		5		
55			100	3		
		13		4		
				3	13.5 ft.	
		14		3		
60			100	4	green/gray fine-medium SAND (wet)	
		15		7	some silt	
				9	rootlets	
		16		14	trace silt	
19			100	7		
		17		14		
				17		
		18		15		
44			100	4		
		19		8		
				11		
		20		12		
78			100	9		

STANDARD PENETRATION

SS = SPLIT SPOON

A = AUGER CUTTINGS

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PARSONS ENGINEERING-SCIENCE
DRILLING RECORD

BORING NO. SB-5

Sheet # of 2

Location:

Contractor: Carlo Environmental Tech.
Driller: Paul Libby
Inspector: B.E. Reeser
Rig Type: CME 95
Method: 4.25-inch HSA

PROJECT NAME General Motors - West Yard
PROJECT NUMBER 727249.00

Weather Cloudy, 20 deg F.
Date/Time Start December 12, 1995.
Date/Time Finish December 13, 1995.

GROUNDWATER OBSERVATIONS

Date				
Time				
Depth				

Photovac Reading	Sample I.D.	Sample Depth	Percent Recovery	SPT	FIELD IDENTIFICATION OF MATERIAL	COMMENTS
				9	green/gray fine-medium SAND	
		21		8	some silt 21 ft.	
				11		
		22		12	gray SILT	
22			80	9	little-some fine sand (wet)	
		23		10		
				12		
		24		13	24 ft.	
42			100	6		
		25		7	gray fine-medium SAND (moist-	
				10	little silt wet)	
		26		12		
15			100	2		
		27		12		
				20		
		28		23		
8			100	4		
		29		6		
				9		
		30		12		
54			10	6	gray fine-medium SAND	
		31		10	little silt (wet)	
				14		
		32		19		
34			10	3		
		33		5		
				5		
		34		9		
0			10	6		
		35		6		
				6		
		36		6	36 ft.	
0			4	3		
		37		5	gray CLAY	
				8	some fine-medium sand and silt	
		38		10		
0			4	8		
		39		12		
				16		
		40		16		
					BORING TERMINATED AT 40 FEET.	

Boring grouted to the surface

STANDARD PENETRATION
SS = SPLIT SPOON
A = AUGER CUTTINGS

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PARSONS ENGINEERING SCIENCE, INC.
DRILLING RECORD

BORING/ WELL NO. SB6 **Sheet** 1 **of** 1

Contractor: Fibertec
Driller:
Inspector: B. Reeser
Rig Type: Geoprobe, 4' sampler

PROJECT NAME: GENERAL MOTORS – WEST YARD
PROJECT NO. 730627.0100

Location Description: GMWY

GROUNDWATER OBSERVATIONS				
Water Level				
Date				
Time				
Meas. From				

Weather: Light snow, 30 degrees F.
Date/Time Start: February 14, 1996
Date/Time Finish: February 14, 1996

Location Plan

Sample Depth	Moisture Content	SPT	% Rec.	PID (ppm)	FIELD IDENTIFICATION OF MATERIAL	SCHEMATIC	COMMENTS
0							
	Dry	G	80	NA	0–6–inches, Concrete.		
1		G		NA	6"–1.5 feet, Clay, some fine–coarse sand,		
		G		NA	trace fine gravel, tan to gray.		
2		G		NA	1.5–3.5 feet, Sand, fine to coarse, some clay,		borehole backfilled with
		G		NA	mottled tan and gray.		soil cuttings
3		G		NA			
	Damp	G		NA			
4		G		NA	3.5–4 feet, fine Sand, black.		
		G	30	NA			
5		G		NA	4–8 feet Slough from above.		
	Damp	G		NA			
6		G		NA			
		G		NA			
7		G		NA			
		G		NA			
8		G		NA			
	Dry	G	80	NA	8–10 feet, Sand, fine to medium with silt, black.		
9		G		NA			
		G		NA			
10	Wet/	G		NA			
	Moist	G		NA	10–11 feet, white Marl, fine sand and silt, trace clay,		
11	Wet	G		NA	grayish black.		
		G		NA	11–12 feet, Silt, some clay and fine sand, gray,		
12		G		NA	rapid dilatency.		
	Wet	G	90	NA	12–14 feet, Silt, gray, rapid dilatency, oil sheen.		
13		G		NA			
		G		NA			
14		G		NA			
		G		NA	14–16 feet, Silt, tan, rapid dilatency, oil sheen		
15		G		NA			
		G		NA			
16		G		NA			
	Wet	G	90	NA	16–17 feet, fine–medium Sand, gray		
17		G		NA			
		G		NA	17–20 feet, fine–medium Sand, tan		
18		G		NA			
		G		NA			
19		G		NA			
		G		NA			
20		G		NA			
					Boring terminated at 20 feet.		

SAMPLING METHOD
SS = SPLIT SPOON
A = AUGER CUTTINGS
G = GEOPROBE

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PARSONS ENGINEERING SCIENCE, INC.
DRILLING RECORD

BORING/ WELL NO. SB7 Sheet 1 of 1

Contractor: Fibertec
Driller:
Inspector: B. Reeser
Rig Type: Geoprobe, 2" X 4' sampler

PROJECT NAME: GENERAL MOTORS – WEST YARD
PROJECT NO. 730627.0100

Location Description: GMWY

GROUNDWATER OBSERVATIONS				
Water Level				
Date				
Time				
Meas. From				

Weather: Light snow, 30 degrees F.

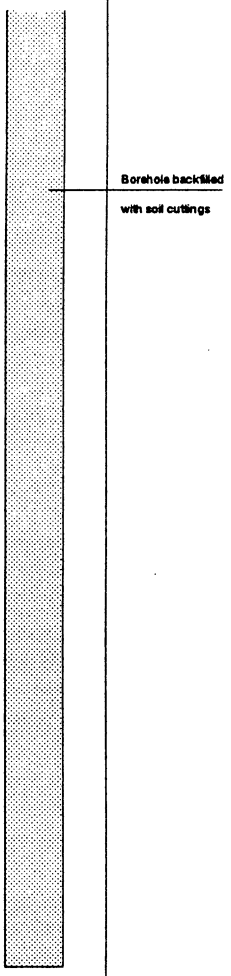
Date/Time Start: February 14, 1996

Date/Time Finish: February 14, 1996

Location Plan

Sample Depth	Moisture Content	SPT	% Rec.	PID (ppm)	FIELD IDENTIFICATION OF MATERIAL
0					
	Dry	G	80	NA	0–2 inches, Concrete. 2" –1 foot, fine to coarse Sand, some clay
1		G		NA	trace fine to coares gravel, tan/brown.
		G		NA	1–2 feet, fine –medium sand, tan.
2		G		NA	
		G		NA	2–2.5 feet, Clay, some fine sand, tan.
3		G		NA	
		G		NA	2.5–7.8 feet, fine to medium Sand, tan.
4		G		NA	
	Dry	G	60	NA	
5		G		NA	
		G		NA	
6		G		NA	
		G		NA	
7		G		NA	
		G		NA	
8		G		NA	7.8–8 feet, fine – med. sand, trace clay and gravel, iron.
	Moist	G	60	NA	
9		G		NA	8–12 feet, fine to medium Sand, gray.
		G		NA	
10		G		NA	
		G		NA	
11		G		NA	
		G		NA	
12		G		NA	
	Wet	G	100	NA	12–13 feet, fine Sand, black, oily.
13		G		NA	
	Dry	G		NA	13–15.5 feet, tan Clay.
14		G		NA	
		G		NA	
15		G		NA	
	Moist	G		NA	
16		G		NA	15.5–16 feet, mixed clay, sand, and fine gravel, tan.
					Boring terminated at 16 feet.

SCHEMATIC



COMMENTS

SAMPLING METHOD
SS = SPLIT SPOON
A = AUGER CUTTINGS
G = GEOPROBE

COMMENTS:

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Contractor: Fibertec
Driller:
Inspector: B. Reeser
Rig Type: Geoprobe, 2" X 4' sampler

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DRILLING RECORD

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PROJECT NAME: GENERAL MOTORS – WEST YARD
PROJECT NO. 730627.01000

BORING/ WELL NO. SB8 **Sheet** 1 **of** 1
Location Description: GMWY

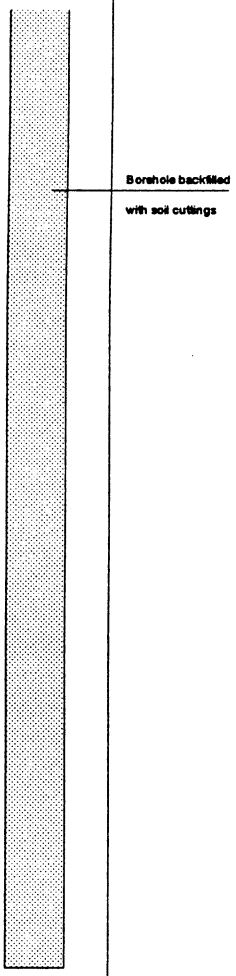
Location Plan

GROUNDWATER OBSERVATIONS				
Water Level				
Date				
Time				
Meas. From				

Weather: Light snow, 30 degrees F.
Date/Time Start: February 14, 1996
Date/Time Finish: February 14, 1996

Sample Depth	Moisture Content	SPT	% Rec.	PID (ppm)	FIELD IDENTIFICATION OF MATERIAL
0					
	Dry	G	100	NA	0–2 inches, Concrete. 2" –1–foot fine to medium Sand, gray
1		G		NA	
		G		NA	.1–2 feet, gray silt.
2		G		NA	
		G		NA	2–2.5 feet, Clay, gray.
3		G		NA	
		G		NA	2.5–4 feet, Clay, some silt, black.
4		G		NA	
		G	80	NA	4–6 feet, Clay, some silt, gray.
5		G		NA	
	Dry	G		NA	
6		G		NA	
	Dry	G		NA	6–8 feet, fine to medium Sand, iron
7		G		NA	
		G		NA	
8		G		NA	
	Wet	G	50	NA	8–9 feet, fine to coarse Sand, gray.
9		G		NA	
		G		NA	9–10 feet, fine to coarse Sand, some silt, trace glass, black.
10		G		NA	
		G		NA	10–12 feet, Sand, fine to medium, some silt, gray.
11		G		NA	
		G		NA	
12		G		NA	
	Moist	G	80	NA	12–13 feet, fine to medium Sand, mottled tan/gray, oily.
13		G		NA	
		G		NA	13–16 feet, fine sand, some silt, mottled tan/gray.
14		G		NA	
		G		NA	
15		G		NA	
		G		NA	
16		G		NA	
					Boring terminated at 16 feet.

SCHEMATIC



COMMENTS

SAMPLING METHOD
SS = SPLIT SPOON
A = AUGER CUTTINGS
G = GEOPROBE

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Contractor: Fibertec
Driller:
Inspector: B. Reeser
Rig Type: Geoprobe, 2" X 4' sampler

PARSONS ENGINEERING SCIENCE, INC.
DRILLING RECORD

BORING/ WELL NO. SB9 **Sheet** 1 **of** 1

PROJECT NAME: GENERAL MOTORS – WEST YARD
PROJECT NO. 730627.01000

Location Description: GMWY

Location Plan

GROUNDWATER OBSERVATIONS				
Water Level				
Date				
Time				
Meas. From				

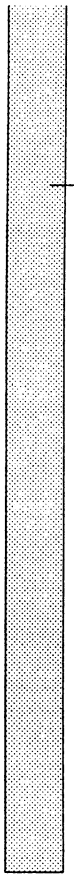
Weather: Cloudy, 30 degrees F.

Date/Time Start: February 14, 1996

Date/Time Finish: February 14, 1996

Sample Depth	Moisture Content	SPT	% Rec.	PID (ppm)	FIELD IDENTIFICATION OF MATERIAL
0					
	Moist	G	40	NA	0–2 inches, Concrete.
1		G		NA	
		G		NA	2" to 4 feet, Sand, fine to coarse, trace fine gravel, tan.
2		G		NA	
		G		NA	
3		G		NA	
		G		NA	
4		G		NA	
		G	50	NA	4 to 9 feet, as above, Sand, fine to coarse, trace fine gravel, tan.
5		G		NA	
	Moist	G		NA	
6		G		NA	
		G		NA	
7		G		NA	
		G		NA	
8		G		NA	
		G	50	NA	8 to 9 feet, as above, Sand, fine to coarse, trace fine gravel, tan.
9		G		NA	
	Moist	G		NA	9–11 feet, Clay, some fine to medium Sand, gray.
10		G		NA	
		G		NA	
11		G		NA	
		G		NA	11–12 feet, fine Sand, black.
12		G		NA	
	Moist/	G	50	NA	12–12.5 feet, fine–medium sand, tan.
13	Wet	G		NA	12.5–13.5 feet, fine Sand, black.
		G		NA	
14		G		NA	13.5–14 feet, Clay, gray.
		G		NA	14–14.5 feet, concrete, refusal.
					Boring terminated at 14.5 feet.

SCHEMATIC



COMMENTS

SAMPLING METHOD
SS = SPLIT SPOON
A = AUGER CUTTINGS
G = Geoprobe

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Contractor: Fibertec
Driller:
Inspector: B. Reeser
Rig Type: Geoprobe, 2" X 4' sampler

PARSONS ENGINEERING SCIENCE, INC.
DRILLING RECORD

BORING/ WELL NO. SB10 **Sheet** 1 **of** 1

PROJECT NAME: GENERAL MOTORS – WEST YARD
PROJECT NO. 730627.01000

Location Description: GMWY

Location Plan

GROUNDWATER OBSERVATIONS				
Water Level				
Date				
Time				
Meas. From				

Weather: Cloudy, 30 degrees F.

Date/Time Start: February 14, 1996

Date/Time Finish: February 14, 1996

Sample Depth	Moisture Content	SPT	% Rec.	PID (ppm)	FIELD IDENTIFICATION OF MATERIAL	SCHEMATIC	COMMENTS
0							
	Dry	G	80	NA	0–6 inches, Concrete.		
1		G		NA	6"–3 feet fine–medium sand, brown.		
	Moist	G		NA			
2		G		NA			
		G		NA			
3		G		NA			
		G		NA	3–5 feet, fine Sand, black.		
4		G		NA			
		G	80	NA			
5	Moist	G		NA			
	Damp	G		NA	5–7 feet, Clay, some silt, black.		
6		G		NA			
		G		NA			
7		G		NA			
		G		NA	7–8 feet, Clay, some silt and fine sand, trace rubber and glass, black.		
8		G		NA			
	Wet	G	20	NA	8–12 feet, fine Sand, black, oily sheen.		
9		G		NA			
		G		NA			
10		G		NA			
		G		NA			
11		G		NA			
		G		NA			
12		G		NA			
		G	0	NA	No recovery.		
13		G		NA			
		G		NA			
14		G		NA			
		G		NA			
15		G		NA			
	Moist	G		NA			
16		G		NA			
					Boring terminated at 16 feet.		

Borehole backfilled with soil cuttings and bentonite chips

SAMPLING METHOD
SS = SPLIT SPOON
A = AUGER CUTTINGS
G = GEOPROBE

COMMENTS:

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PARSONS ENGINEERING SCIENCE, INC.
DRILLING RECORD

BORING/ WELL NO. SB11 **Sheet** 1 **of** 1

Contractor: Fibertec
Driller:
Inspector: B. Reeser
Rig Type: Geoprobe, 4' sampler

PROJECT NAME: GENERAL MOTORS – WEST YARD
PROJECT NO. 730627.01000

Location Description: GMWY

GROUNDWATER OBSERVATIONS				
Water Level				
Date				
Time				
Meas. From				

Weather: Cloudy, 30 degrees F.
Date/Time Start: February 14, 1996
Date/Time Finish: February 14, 1996

Location Plan

Sample Depth	Moisture Content	SPT	% Rec.	PID (ppm)	FIELD IDENTIFICATION OF MATERIAL	SCHEMATIC	COMMENTS
0							
	Dry	G	90	NA	0–4 feet, coarse Sand, fine Gravel, and slag, brown to red.		
1		G		NA			
		G		NA			
2		G		NA			
		G		NA			
3		G		NA			
		G		NA			
4		G		NA			
	Dry	G	60	NA			borehole backfilled with
5		G		NA	4–6 feet Slag, black.		soil cuttings
		G		NA			
6		G		NA			
		G		NA			
7		G		NA	6–8 feet, fine to medium Sand, mottled black and reddish tan.		
	Damp	G		NA			
8		G		NA			
		G	50	NA			
9		G		NA	8–12 feet, fine black Sand.		
	Dry	G		NA			
10		G		NA			
		G		NA			
11		G		NA			
		G		NA			
12		G		NA			
	Dry	G	90	NA			
13		G		NA	12–15 feet, fine to coarse Sand, trace fine gravel,		
		G		NA	trace brick and glass, brown.		
14		G		NA			
		G		NA			
15		G		NA			
	Moist/	G		NA			
16	Wet	G		NA	15–20 feet, fine black Sand.		
		G	100	NA	16–17 feet, fine–medium Sand, gray		
17		G		NA			
		G		NA	17–19.6 feet, fine–medium Sand, tan		
18		G		NA			
		G		NA			
19		G		NA			
		G		NA			
20		G		NA	19.6–20 feet, white Marl.		
					Boring terminated at 20 feet.		

COMMENTS:

SAMPLING METHOD
SS = SPLIT SPOON
A = AUGER CUTTINGS
G = GEOPROBE

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PARSONS ENGINEERING SCIENCE, INC.
DRILLING RECORD

BORING/ WELL NO. SB12 **Sheet** 1 **of** 2

Contractor: Fibertec
Driller:
Inspector: B. Reeser
Rig Type: Geoprobe, 4' sampler

PROJECT NAME: GENERAL MOTORS – WEST YARD
PROJECT NO. 730627.01000

Location Description: GMWY

GROUNDWATER OBSERVATIONS				
Water Level				
Date				
Time				
Meas. From				

Weather: Light snow, 30 degrees F.
Date/Time Start: February 14, 1996
Date/Time Finish: February 14, 1996

Location Plan

Sample Depth	Moisture Content	SPT	% Rec.	PID (ppm)	FIELD IDENTIFICATION OF MATERIAL
0					
	Dry	G	80	NA	0–2 feet, coarse Sand and fine Gravel, tan.
1		G		NA	
		G		NA	
2		G		NA	
		G		NA	2–5 feet, fine to medium Sand, brown.
3		G		NA	
		G		NA	
4		G		NA	
		G	100	NA	
5		G		NA	
	Moist	G		NA	5–8 feet. fine to medium Sand, brown.
6		G		NA	
		G		NA	
7		G		NA	
		G		NA	
8		G		NA	
		G	90	NA	
9		G		NA	8–12 feet, fine to coarse Sand and fine gravel, little silt,
	Dry/	G		NA	trace wood, nails, and rubber.
10	Moist	G		NA	
		G		NA	
11		G		NA	
		G		NA	
12		G		NA	
	Dry	G	90	NA	
13		G		NA	12–14 feet. wood, brick, and concrete.
		G		NA	
14		G		NA	
	Damp	G		NA	
15		G		NA	14–20 feet, fine Sand, some silt, black.
		G		NA	
16		G		NA	
		G	20	NA	
17		G		NA	
		G		NA	
18		G		NA	
		G		NA	
19		G		NA	
		G		NA	
20		G		NA	
		G		NA	

SCHEMATIC: borehole backfilled with soil cuttings

COMMENTS:

SAMPLING METHOD
SS = SPLIT SPOON
A = AUGER CUTTINGS
G = GEOPROBE

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PARSONS ENGINEERING SCIENCE, INC.
DRILLING RECORD

BORING/ WELL NO. SB12 **Sheet** 2 **of** 2

Contractor: Fibertec
Driller:
Inspector: B. Reeser
Rig Type: Geoprobe, 4' sampler

PROJECT NAME: GENERAL MOTORS – WEST YARD
PROJECT NO. 730627.01000

Location Description: GMWY

GROUNDWATER OBSERVATIONS				
Water Level				
Date				
Time				
Meas. From				

Weather: Light snow, 30 degrees F.

Date/Time Start: February 14, 1996

Date/Time Finish: February 14, 1996

Location Plan

Sample Depth	Moisture Content	SPT	% Rec.	PID (ppm)	FIELD IDENTIFICATION OF MATERIAL	SCHEMATIC	COMMENTS
20		G					
	Moist/	G	100	NA	20–22 feet, fine–medium Sand, some silt, black.		
21	Wet	G		NA			
		G		NA			
22		G		NA			boring backfilled with soil cuttings
		G		NA	22–24 feet, fine–medium Sand, some silt, tan.		
23		G		NA			
		G		NA			
24		G		NA			
					Boring terminated at 24 feet.		

SAMPLING METHOD
SS = SPLIT SPOON
A = AUGER CUTTINGS
G = GEOPROBE

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PARSONS ENGINEERING SCIENCE, INC.
DRILLING RECORD

BORING/ WELL NO. SB13 **Sheet** 1 **of** 1

Contractor: Fibertec
Driller:
Inspector: B. Reeser
Rig Type: Geoprobe, 4' sampler

PROJECT NAME: GENERAL MOTORS – WEST YARD
PROJECT NO. 730627.01000

Location Description: GMWY

GROUNDWATER OBSERVATIONS				
Water Level				
Date				
Time				
Meas. From				

Weather: Cloudy, 15 degrees F.
Date/Time Start: February 15, 1996
Date/Time Finish: February 15, 1996

Location Plan

Sample Depth	Moisture Content	SPT	% Rec.	PID (ppm)	FIELD IDENTIFICATION OF MATERIAL	SCHEMATIC	COMMENTS
0							
	Dry	G	95	NA	0–2 feet, fine to medium Sand, tan.		
1		G		NA			
		G		NA			
2		G		NA			
	Damp	G		NA	2–4 feet, fine to medium Sand, black.		
3		G		NA			
		G		NA			
4		G		NA			borehole backfilled with soil cuttings
	Damp/	G	100	NA	4–12 feet, Clay, some fine to coarse sand, tan.		
5	Moist	G		NA			
		G		NA			
6		G		NA			
		G		NA			
7		G		NA			
		G		NA			
8		G		NA			
		G	100	NA			
9		G		NA			
		G		NA			
10		G		NA			
		G		NA			
11		G		NA			
		G		NA			
12		G		NA			
	Moist	G	100	NA	12–15 feet, Clay, some silt and fine sand, mottled tan and gray.		
13		G		NA			
		G		NA			
14		G		NA			
		G		NA			
15		G		NA			
	Dry	G		NA	15–16 feet, Silt, mottled tan and gray.		
16		G		NA			
	Wet	G	100	NA			
17		G		NA	16–18 feet, Silt, tan, oil sheen.		
		G		NA			
18		G		NA			
	Wet	G		NA			
19		G		NA	18–20 feet, Silt, gray.		
		G		NA			
20		G		NA			
					Boring terminated at 20 feet.		

SAMPLING METHOD
SS = SPLIT SPOON
A = AUGER CUTTINGS
G = GEOPROBE

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PARSONS ENGINEERING SCIENCE, INC.
DRILLING RECORD

BORING/ WELL NO. SB14 **Sheet** 1 **of** 1

Contractor: Fibertec
Driller:
Inspector: B. Reeser
Rig Type: Geoprobe, 2" X 4' sampler

PROJECT NAME: GENERAL MOTORS – WEST YARD
PROJECT NO. 730627.01000

Location Description: GMWY

Location Plan

GROUNDWATER OBSERVATIONS				
Water Level				
Date				
Time				
Meas. From				

Weather: Cloudy, 15 degrees F.
Date/Time Start: February 15, 1996
Date/Time Finish: February 15, 1996

Sample Depth	Moisture Content	SPT	% Rec.	PID (ppm)	FIELD IDENTIFICATION OF MATERIAL	SCHEMATIC	COMMENTS
0							
	Dry	G	50	NA	0–4 feet, coarse Sand and fine Gravel.		
1		G		NA			
		G		NA			
2		G		NA			
		G		NA			
3		G		NA			Borehole backfilled with soil cuttings
		G		NA			
4		G		NA			
	Damp/	G	50	NA			
5	Moist	G		NA	4–8 feet, Clay, some fine to coarse sand, tan.		
		G		NA			
6		G		NA			
		G		NA			
7		G		NA			
		G		NA			
8		G		NA			
	Damp	G	80	NA	8–10 feet, fine to medium Sand, tan.		
9		G		NA			
		G		NA			
10		G		NA			
		G		NA	10–11 feet, Clay, some fine sand, trace silt, tan.		
11		G		NA			
	Dry	G		NA	11–12 feet, Silt, some fine sand, black.		
12		G		NA			
	Moist	G	100	NA	12–13 feet, Clay, some fine sand, tan.		
13		G		NA			
		G		NA			
14		G		NA	13–16 feet, Silt, tan.		
	Wet	G		NA			
15		G		NA			
		G		NA			
16		G		NA			
					Boring terminated at 16 feet.		

SAMPLING METHOD
SS = SPLIT SPOON
A = AUGER CUTTINGS
G = GEOPROBE

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Contractor: Fibertec
Driller:
Inspector: B. Reeser
Rig Type: Geoprobe, 2" X 4' sampler

PARSONS ENGINEERING SCIENCE, INC.
DRILLING RECORD

PROJECT NAME: GENERAL MOTORS – WEST YARD
PROJECT NO. 730627.01000

BORING/ WELL NO. SB15 **Sheet** 1 **of** 1
Location Description: GMWY

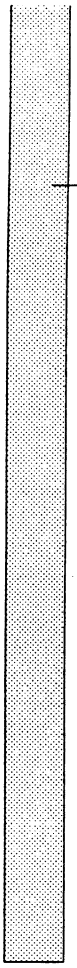
GROUNDWATER OBSERVATIONS				
Water Level				
Date				
Time				
Meas. From				

Weather: Cloudy, 15 degrees F.
Date/Time Start: February 15, 1996
Date/Time Finish: February 15, 1996

Location Plan

Sample Depth	Moisture Content	SPT	% Rec.	PID (ppm)	FIELD IDENTIFICATION OF MATERIAL
0					
	Dry	G	100	NA	0–1 feet, coarse Sand, and fine Gravel.
1		G		NA	
		G		NA	1–2 feet, fine to coarse Sand, tan.
2		G		NA	
		G		NA	2–3 feet, fine Sand, some silt, black.
3		G		NA	
		G		NA	3–6.5 feet, fine to medium Sand, gray.
4		G		NA	
		G	60	NA	
5		G		NA	
		G		NA	
6		G		NA	
	Wet	G		NA	
7		G		NA	6.5–8 feet, Clay, some fine sand, tan.
	Damp	G		NA	
8		G		NA	
	Moist	G	80	NA	8–10 feet. Clay, some fine sand, gray.
9		G		NA	
		G		NA	
10		G		NA	
		G		NA	10–13 feet, fine Sand, trace clay and silt, tan.
11		G		NA	
		G		NA	
12		G		NA	
		G	100	NA	
13		G		NA	
	Wet	G		NA	13–16 feet, Silt, trace fine sand, tan.
14		G		NA	
		G		NA	
15		G		NA	
		G		NA	
16		G		NA	
					Boring terminated at 16 feet.

SCHEMATIC



COMMENTS

SAMPLING METHOD
SS = SPLIT SPOON
A = AUGER CUTTINGS
G = GEOPROBE

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Contractor: Fibertec
Driller:
Inspector: B. Reeser
Rig Type: Geoprobe, 4' sampler

PARSONS ENGINEERING SCIENCE, INC.
DRILLING RECORD

BORING/ WELL NO. SB16 Sheet 1 of 1

PROJECT NAME: GENERAL MOTORS – WEST YARD
PROJECT NO. 730627.01.002

Location Description: GMWY

GROUNDWATER OBSERVATIONS				
Water Level				
Date				
Time				
Meas. From				

Weather: Cloudy, 15 degrees F.
Date/Time Start: February 15, 1996
Date/Time Finish: February 15, 1996

Location Plan

Sample Depth	Moisture Content	SPT	% Rec.	PID (ppm)	FIELD IDENTIFICATION OF MATERIAL	SCHEMATIC	COMMENTS
0							
	Dry	G	100	NA	0–2 feet, Slag, reddish brown.		
1		G		NA			
		G		NA			
2		G		NA			
		G		NA	2–4 feet. fine to coarse sand, trace silt and clay,		
3		G		NA	mottled tan and gray.		
		G		NA			
4		G		NA			
		G	100	NA			
5		G		NA	4–7 feet, Clay, little fine sand, mottled tan and gray.		
		G		NA			
6		G		NA			
		G		NA			
7		G		NA			
		G		NA	7–8 feet, fine Sand, black.		
8		G		NA			
		G	90	NA	8–9 feet, Clay, some silt and fine sand, tan.		
9		G		NA			
		G		NA	9–11 feet, Silt, tan.		
10		G		NA			
	Wet	G		NA			
11		G		NA			
	Moist/	G		NA			
12	Wet	G		NA	11–14 feet, Clay, some silt and fine sand, tan.		
		G	50	NA			
13		G		NA			
		G		NA			
14		G		NA			
	Dry	G		NA			
15		G		NA	14–18 feet, Clay, some silt, trace wood material, black.		
		G		NA			
16		G		NA			
	Wet	G	50	NA			
17		G		NA			
		G		NA			
18		G		NA			
		G		NA			
19	Wet/	G		NA	18–20 feet, Silt, some fine sand, trace clay and fine gravel, gray.		
	Moist	G		NA			
20		G		NA			
					Boring terminated at 20 feet.		

boring backfilled with soil cuttings

SAMPLING METHOD
SS = SPLIT SPOON
A = AUGER CUTTINGS
G = GEOPROBE

COMMENTS:

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Contractor: Fibertec
Driller:
Inspector: B. Reeser
Rig Type: Geoprobe, 2" X 4' sampler

PARSONS ENGINEERING SCIENCE, INC.
DRILLING RECORD

BORING/ WELL NO. SB17 **Sheet** 1 **of** 1

PROJECT NAME: GENERAL MOTORS – WEST YARD
PROJECT NO. 730627.01000

Location Description: GMWY

GROUNDWATER OBSERVATIONS				
Water Level				
Date				
Time				
Meas. From				

Weather: Flurries, 15 degrees F.
Date/Time Start: February 15, 1996
Date/Time Finish: February 15, 1996

Location Plan

Sample Depth	Moisture Content	SPT	% Rec.	PID (ppm)	FIELD IDENTIFICATION OF MATERIAL
0					
	Dry	G	100	NA	
1		G		NA	0–3 feet, coarse sand and fine gravel.
		G		NA	
2		G		NA	
		G		NA	
3		G		NA	
		G		NA	
4		G		NA	3–7 feet, fine to medium Sand, tan.
		G	90	NA	
5		G		NA	
		G		NA	
6		G		NA	
		G		NA	
7		G		NA	
	Moist/	G		NA	
8	Wet	G		NA	7–15 feet, Sand, some silt, black.
		G	100	NA	Oil sheen at 8 feet.
9		G		NA	
		G		NA	
10		G		NA	
		G		NA	
11		G		NA	
		G		NA	
12		G		NA	
	Wet	G	100	NA	
13		G		NA	
		G		NA	
14		G		NA	
		G		NA	
15		G		NA	
	Dry	G		NA	15–16 feet, Silt, tan.
16		G		NA	
					Boring terminated at 16 feet.

SCHEMATIC

Borehole backfilled with soil cuttings and bentonite chips

COMMENTS

SAMPLING METHOD
SS = SPLIT SPOON
A = AUGER CUTTINGS
G = GEOPROBE

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Contractor: Fibertec
Driller:
Inspector: B. Reeser
Rig Type: Geoprobe, 4' sampler

PARSONS ENGINEERING SCIENCE, INC.
DRILLING RECORD

BORING/ WELL NO. SB18 **Sheet** 1 **of** 1

PROJECT NAME: GENERAL MOTORS – WEST YARD
PROJECT NO. 730627.01000

Location Description: GMWY

Weather: Flurries, 15 degrees F.

Date/Time Start: February 15, 1996

Date/Time Finish: February 15, 1996

Location Plan

GROUNDWATER OBSERVATIONS

Water Level				
Date				
Time				
Meas. From				

Sample Depth	Moisture Content	SPT	% Rec.	PID (ppm)	FIELD IDENTIFICATION OF MATERIAL	SCHEMATIC	COMMENTS
0							
	Dry	G	100	NA	0–3 feet, coarse Sand and fine gravel.		
1		G		NA			
		G		NA			
2		G		NA			
		G		NA			
3		G		NA			
		G		NA			
4		G		NA	3–15 feet, fine Sand, some silt, black.		borehole backfilled with soil cuttings and bentonite chips
		G	100	NA			
5		G		NA			
	Damp	G		NA			
6		G		NA			
		G		NA			
7		G		NA			
		G		NA			
8		G		NA			
		G	100	NA			
9		G		NA			
		G		NA			
10		G		NA			
		G		NA			
11		G		NA			
		G		NA			
12		G		NA			
		G	100	NA			
13		G		NA			
		G		NA			
14		G		NA			
		G		NA			
15		G		NA			
	Moist/	G		NA			
16	Wet	G		NA	15–18 feet, Silt, mottled tan and gray.		
		G		NA	16–18 feet, oil sheen.		
17		G		NA			
		G		NA			
18		G		NA			
		G		NA			
19	Wet/	G		NA	18–20 feet, fine–medium Sand, gray, oil sheen.		
	Moist	G		NA			
20		G		NA			
					Boring terminated at 20 feet.		

SAMPLING METHOD
SS = SPLIT SPOON
A = AUGER CUTTINGS
G = GEOPROBE

COMMENTS:

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Contractor: Fibertec
Driller:
Inspector: B. Reeser
Rig Type: Geoprobe, 4' sampler

PARSONS ENGINEERING SCIENCE, INC.
DRILLING RECORD

BORING/ WELL NO. SB19 **Sheet** 1 **of** 1
Location Description: GMWY

PROJECT NAME: GENERAL MOTORS – WEST YARD
PROJECT NO. 730627.01000

GROUNDWATER OBSERVATIONS				
Water Level				
Date				
Time				
Meas. From				

Weather: Clear, 10 degrees F.
Date/Time Start: February 16, 1996
Date/Time Finish: February 16, 1996

Location Plan

Sample Depth	Moisture Content	SPT	% Rec.	PID (ppm)	FIELD IDENTIFICATION OF MATERIAL	SCHEMATIC	COMMENTS
0							
	Dry	G	100	NA	0–2 feet, coarse Sand and fine Gravel.		
1		G		NA			
		G		NA			
2		G		NA			
		G		NA	2–3 feet, Slag, brown.		
3		G		NA			
		G		NA			
4		G		NA	4–8 feet, Clay, some fine sand, gray.		borehole backfilled with soil cuttings
	Moist	G	50	NA			
5		G		NA			
		G		NA			
6		G		NA			
		G		NA			
7		G		NA			
		G		NA			
8		G		NA			
		G	100	NA	8–11 feet, Clay, some fine sand, trace silt, tan.		
9		G		NA			
		G		NA			
10		G		NA			
		G		NA			
11		G		NA			
		G		NA	11–12 feet, fine Sand, trace clay and silt, tan.		
12		G		NA			
		G	90	NA			
13		G		NA	12–14' Clay, some fine sand, trace silt, tan.		
		G		NA			
14		G		NA			
	Dry	G		NA	14–15 feet, Clay, some silt, trace fine sand, trace roots, black.		
15		G		NA			
		G		NA	15–16 feet, Clay, some fine sand, trace silt, gray.		
16		G		NA			
	Wet	G		NA			
17		G		NA	16–19 feet, Silt, gray.		
		G		NA			
18		G		NA			
		G		NA			
19		G		NA			
	Damp	G		NA	19–20 Clay, some silt, gray.		
20		G		NA			
					Boring terminated at 20 feet.		

SAMPLING METHOD
SS = SPLIT SPOON
A = AUGER CUTTINGS
G = GEOPROBE

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Contractor: Fibertec
Driller:
Inspector: B. Reeser
Rig Type: Geoprobe, 4' sampler

PARSONS ENGINEERING SCIENCE, INC.
DRILLING RECORD

BORING/ WELL NO. SB20 **Sheet** 1 **of** 1

PROJECT NAME: GENERAL MOTORS – WEST YARD
PROJECT NO. 730627.01000

Location Description: GMWY

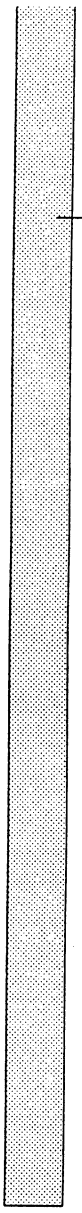
Weather: Clear, 10 degrees F.
Date/Time Start: February 16, 1996
Date/Time Finish: February 16, 1996

Location Plan

GROUNDWATER OBSERVATIONS				
Water Level				
Date				
Time				
Meas. From				

Sample Depth	Moisture Content	SPT	% Rec.	PID (ppm)	FIELD IDENTIFICATION OF MATERIAL
0					
	Dry	G	100	NA	0–1 feet, fine to coarse Sand and Clay, mottled tan and brown.
1		G		NA	
		G		NA	
2		G		NA	1–4 feet, Slag, brown.
		G		NA	
3		G		NA	
		G		NA	
4		G		NA	
	Damp	G	80	NA	
5		G		NA	4–7.5 feet, fine Sand, tan.
		G		NA	
6		G		NA	
		G		NA	
7		G		NA	
		G		NA	7.5–8 feet, fine Sand, little clay, tan.
8		G		NA	
		G	100	NA	8–10 feet, fine to medium Sand, tan
9		G		NA	
		G		NA	
10		G		NA	
		G		NA	10–12 feet, fine Sand, some silt, tan.
11	Wet	G		NA	
		G		NA	
12		G		NA	
	Dry	G	100	NA	12–13' Clay, some fine sand, mottled tan and gray.
13		G		NA	
		G		NA	13–14 feet, fine to medium Sand, gray.
14	Moist	G		NA	
		G		NA	14–15 feet, Clay, some silt, mottled tan and gray.
15		G		NA	
	Moist	G		NA	15–16 feet, Silt, some clay, tan.
16		G		NA	
		G	100	NA	
17	Wet	G		NA	16–20 feet, fine to coarse Sand, gray.
		G		NA	
18		G		NA	
		G		NA	
19		G		NA	
		G		NA	
20		G		NA	
					Boring terminated at 20 feet.

SCHEMATIC



COMMENTS

SAMPLING METHOD
SS = SPLIT SPOON
A = AUGER CUTTINGS
G = GEOPROBE

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Contractor: Fibertec
Driller:
Inspector: B. Reeser
Rig Type: Geoprobe, 4' sampler

PARSONS ENGINEERING SCIENCE, INC.

DRILLING LOG

BORING/ WELL NO. SB21 **Sheet** 1 **of** 1

Location Description: GMWY

PROJECT NAME: GENERAL MOTORS – WEST YARD
PROJECT NO. 730627.01000

Weather: Clear, 10 degrees F.
Date/Time Start: February 16, 1996
Date/Time Finish: February 16, 1996

Location Plan

GROUNDWATER OBSERVATIONS				
Water Level				
Date				
Time				
Meas. From				

Sample Depth	Moisture Content	SPT	% Rec.	PID (ppm)	FIELD IDENTIFICATION OF MATERIAL	SCHEMATIC	COMMENTS
0							
	Dry	G	100	NA	0–14 inches, Concrete.		
1		G		NA			
		G		NA	14–inches to 3 feet, fine to coarse sand, some fine gravel, brown.		
2		G		NA			
		G		NA			
3		G		NA			
		G		NA	3–5 feet, fine Sand, some silt, black.		
4		G		NA			
		G	100	NA			
5		G		NA			
		G		NA	5–6 feet. Clay, some silt and fine sand, black.		
6		G		NA			
		G		NA	6–6.5 feet, Concrete.		
7		G		NA	6.5–7 feet, Clay, gray.		
	Moist	G		NA	7–8 feet, brown Slag and Clay, some fine sand, tan.		
8		G		NA			
		G	50	NA			
9		G		NA	8–11 feet, Gravel and Slag, black.		
		G		NA			
10		G		NA			
	Wet	G		NA			
11		G		NA			
	Dry	G		NA	11–12 feet, fine Sand, tan.		
12		G		NA			
	Wet	G	50	NA	12–13 feet, fine to coarse Sand, black.		
13		G		NA			
		G		NA	13–16 feet, fine to coarse Sand, gray.		
14	Moist	G		NA			
		G		NA			
15		G		NA			
		G		NA			
16		G		NA			
					Boring terminated at 16 feet.		

borehole backfilled with soil cuttings

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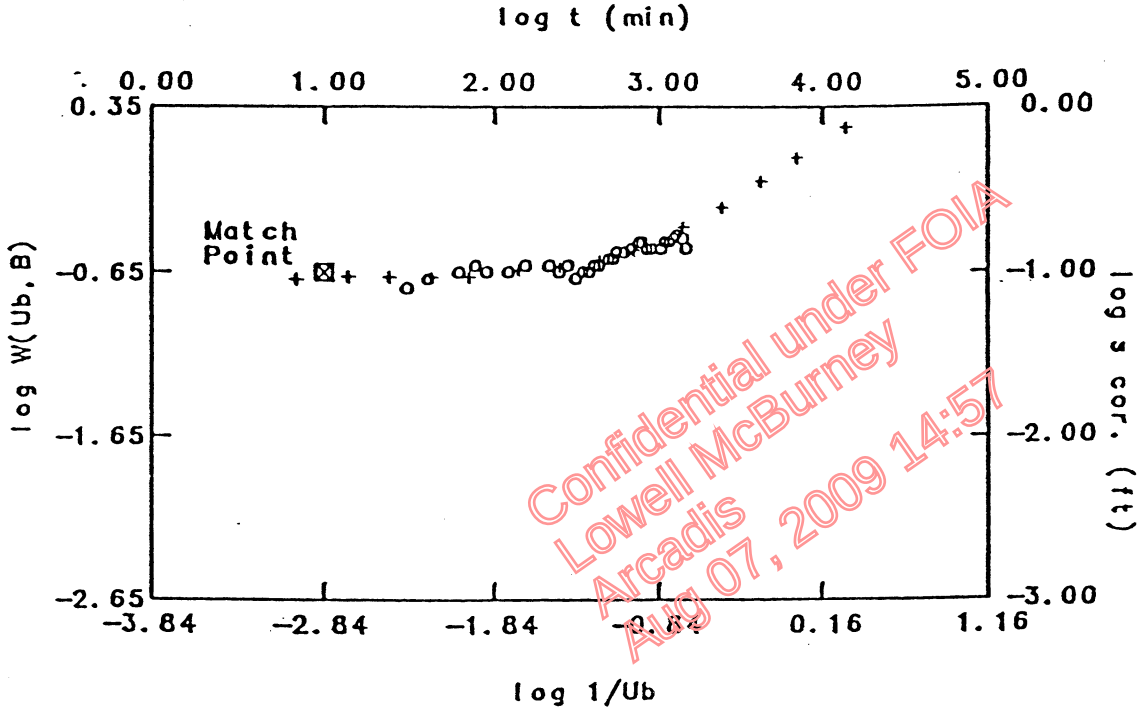
SAMPLING METHOD
SS = SPLIT SPOON
A = AUGER CUTTINGS
G = GEOPROBE

COMMENTS:

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o – Data
\+ – Type Curve
Unconf. Delayed: beta = 1.50

MATCH POINT		SOLUTION	
t	= 1.000E+0001	Transmissivity	= 3.206E+0002 gpd/ft
s	= 1.000E–0001	Hydraulic. Cond.	= 2.137E+0001 gpd/sq ft
1/Ub	= 1.445E–0003	Specific Yield	= 4.715E–0001
W(Ub,B)	= 2.239E–0002		

WELL INFORMATION	
WELL IDENTIFICATION	: SV–1
DATE OF AQUIFER TEST	: 5/8/90
AQUIFER THICKNESS (b)	: 1.500E+0001 ft
DISCHARGE RATE (Q)	: 1.250E+0000 gpm
PUMPING WELL RADIUS (r)	: 5.000E–0001 ft
DISTANCE OF OBS. WELL FROM PUMPING WELL (d)	: 2.090E+0001 ft

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Data for Pump Test

Well Name: SV-1 Date of Test: 5/8/90
Aquifer Thickness (b): 15.000 ft
Pumped Well Discharge(Q) = 1.250 gpm
Radius of Pumping Well = 0.500 ft
Distance of Observation Well from Pumping Well = 20.900 ft

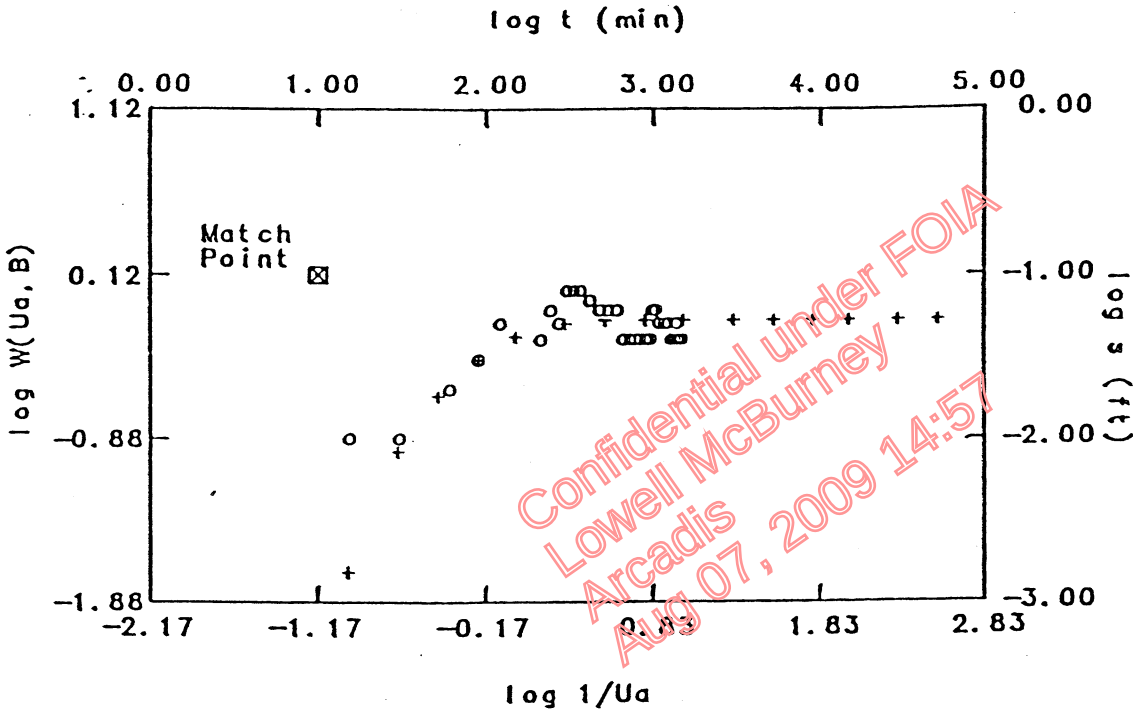
Entry No.	Time(t) (min)	Drawdown(s) (ft)	t / d^2 (min/sq ft)
1	0.000	0.000	
2	30.000	0.080	6.868E-0002
3	40.000	0.090	9.157E-0002
4	60.000	0.100	1.374E-0001
5	75.000	0.110	1.717E-0001
6	90.000	0.100	2.060E-0001
7	120.000	0.100	2.747E-0001
8	150.000	0.100	3.434E-0001
9	210.000	0.110	4.809E-0001
10	240.000	0.100	5.494E-0001
11	270.000	0.110	6.181E-0001
12	300.000	0.090	6.868E-0001
13	330.000	0.100	7.555E-0001
14	360.000	0.100	8.242E-0001
15	390.000	0.110	8.928E-0001
16	420.000	0.110	9.615E-0001
17	480.000	0.120	1.099E+0000
18	510.000	0.120	1.168E+0000
19	540.000	0.130	1.236E+0000
20	600.000	0.130	1.374E+0000
21	660.000	0.140	1.511E+0000
22	735.000	0.150	1.683E+0000
23	780.000	0.150	1.786E+0000
24	840.000	0.140	1.923E+0000
25	900.000	0.140	2.060E+0000
26	1020.000	0.140	2.335E+0000
27	1080.000	0.150	2.472E+0000
28	1140.000	0.150	2.610E+0000
29	1215.000	0.160	2.782E+0000
30	1260.000	0.170	2.885E+0000
31	1380.000	0.160	3.159E+0000
32	1440.000	0.140	3.297E+0000

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CPC-PONTIAC MW-10



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o - Data
+ - Type Curve
Unconf. Elastic: beta = 0.40

MATCH POINT			SOLUTION		
t	=	1.000E+0001	Transmissivity	=	1.888E+0003 gpd/ft
s	=	1.000E-0001	Hydraulic. Cond.	=	1.259E+0002 gpd/sq ft
1/Ua	=	6.761E-0002	Storativity	=	5.916E-0003
W(Ua,B)	=	1.318E-0001			

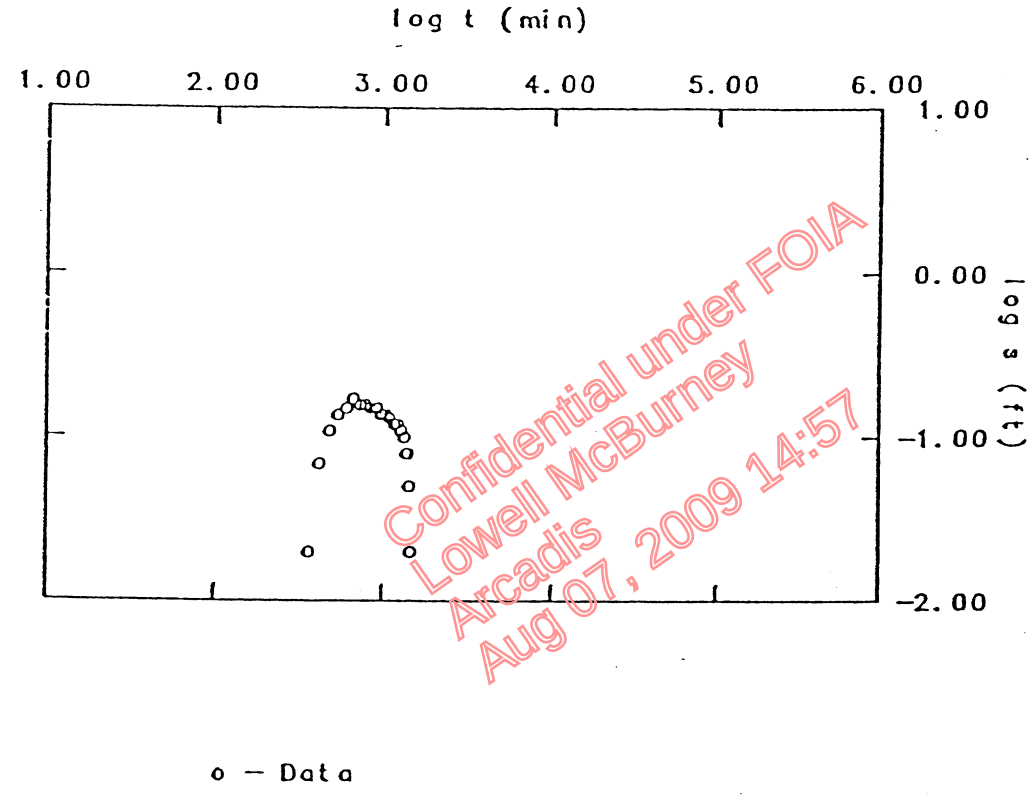
WELL INFORMATION		
WELL IDENTIFICATION	:	MW-10
DATE OF AQUIFER TEST	:	5/8/90
AQUIFER THICKNESS (b)	:	1.500E+0001 ft
DISCHARGE RATE (Q)	:	1.250E+0000 gpm
PUMPING WELL RADIUS (r)	:	5.000E-0001 ft
DISTANCE OF OBS. WELL FROM PUMPING WELL (d)	:	6.620E+0001 ft

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CPC-PONTIAC MW-9



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WELL INFORMATION		
WELL IDENTIFICATION	:	MW-9
DATE OF AQUIFER TEST	:	5/8/90
AQUIFER THICKNESS (b)	:	1.500E+0001 ft
DISCHARGE RATE (Q)	:	1.250E+0000 gpm
PUMPING WELL RADIUS (r)	:	5.000E-0001 ft
DISTANCE OF OBS. WELL FROM PUMPING WELL (d)	:	2.230E+0001 ft

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Data for Pump Test

Well Name: MW-6 Date of Test: 5/8/90
Aquifer Thickness (b): 15.000 ft
Pumped Well Discharge(Q) = 1.250 gpm
Radius of Pumping Well = 0.500 ft
Distance of Observation Well from Pumping Well = 129.000 ft

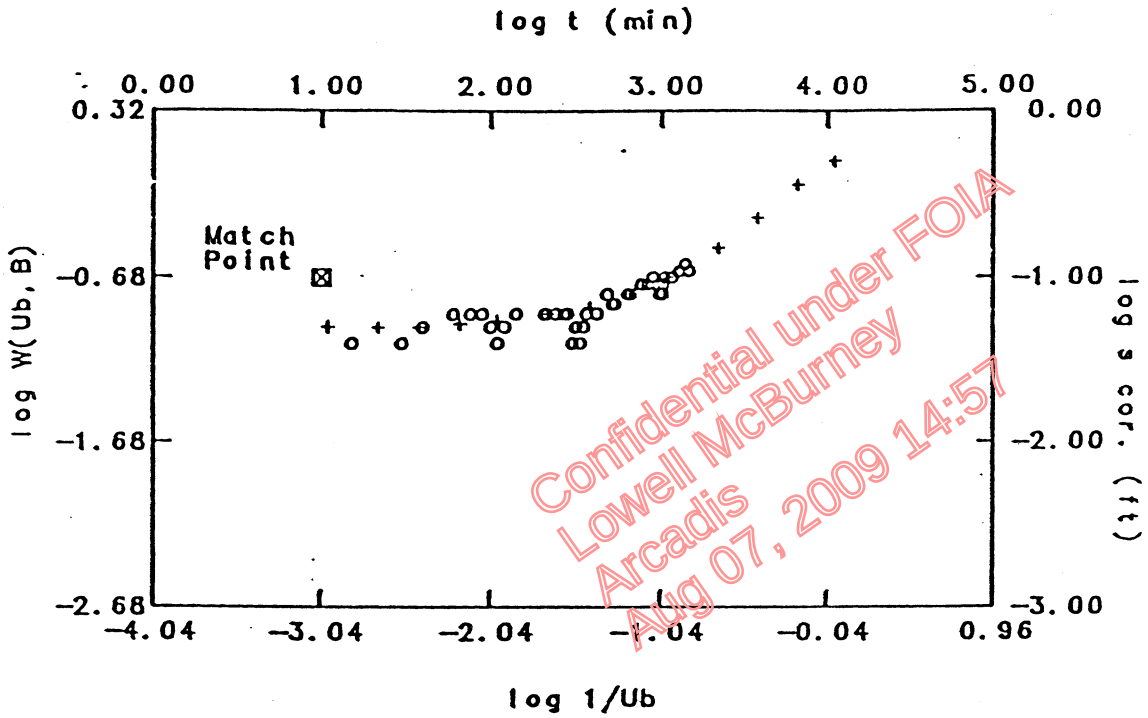
Entry No.	Time(t) (min)	Drawdown(s) (ft)	t / d^2 (min/sq ft)
1	0.000	0.000	
2	15.000	0.010	9.014E-0004
3	30.000	0.010	1.803E-0003
4	60.000	0.010	3.606E-0003
5	90.000	0.000	5.408E-0003
6	120.000	0.010	7.211E-0003
7	210.000	0.010	1.262E-0002
8	240.000	0.010	1.442E-0002
9	270.000	0.010	1.622E-0002
10	300.000	0.010	1.803E-0002
11	330.000	0.010	1.983E-0002
12	360.000	0.010	2.163E-0002
13	420.000	0.000	2.524E-0002
14	480.000	0.010	2.884E-0002
15	540.000	0.010	3.245E-0002
16	600.000	0.010	3.606E-0002
17	660.000	0.010	3.966E-0002
18	720.000	0.010	4.327E-0002
19	780.000	0.010	4.687E-0002
20	840.000	0.000	5.048E-0002
21	900.000	0.000	5.408E-0002
22	915.000	0.000	5.498E-0002
23	945.000	0.000	5.679E-0002
24	975.000	0.000	5.859E-0002
25	1020.000	0.000	6.129E-0002
26	1080.000	0.000	6.490E-0002
27	1140.000	0.000	6.851E-0002
28	1200.000	0.000	7.211E-0002
29	1260.000	0.000	7.572E-0002
30	1320.000	0.000	7.932E-0002
31	1350.000	0.000	8.112E-0002
32	1300.000	0.000	7.812E-0002
33	1410.000	0.000	8.473E-0002
34	1440.000	0.000	8.653E-0002

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CPC-PONTIAC MW-2



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o - Data
+ - Type Curve
Unconf. Delayed: beta = 2.50

MATCH POINT		SOLUTION	
t	= 1.000E+0001	Transmissivity	= 2.992E+0002 gpd/ft
s	= 1.000E-0001	Hydraulic. Cond.	= 1.995E+0001 gpd/sq ft
1/Ub	= 9.120E-0004	Specific Yield	= 7.849E-0002
W(Ub,B)	= 2.089E-0002		

WELL INFORMATION

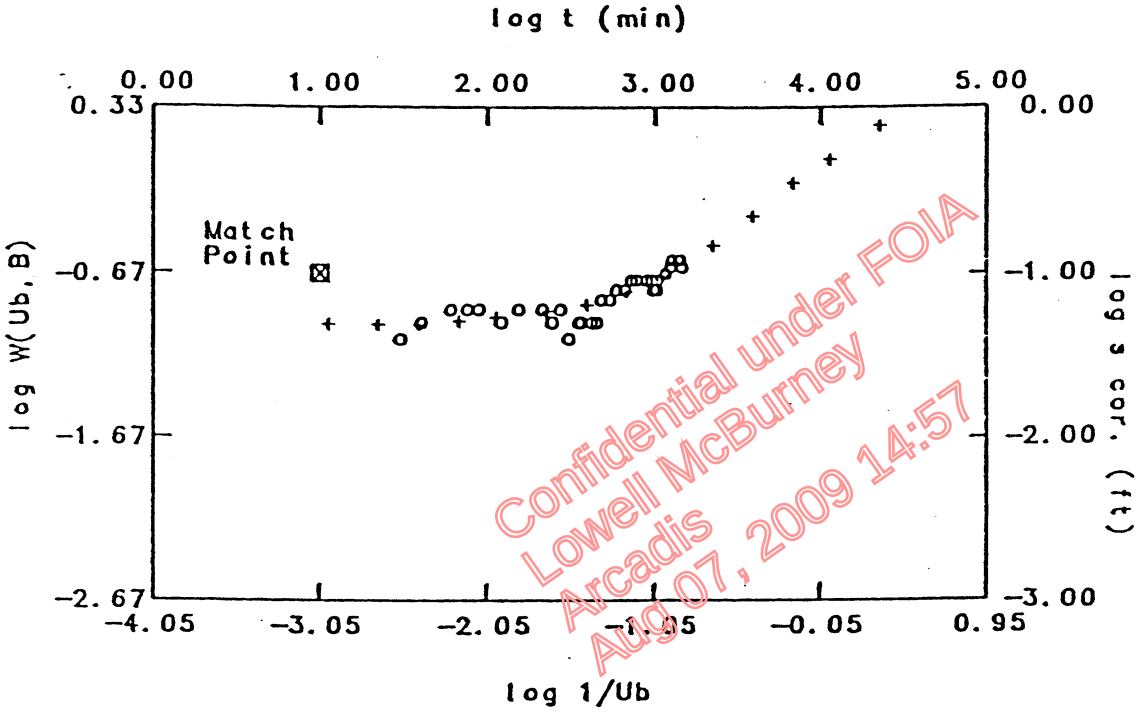
WELL IDENTIFICATION	: MW-2
DATE OF AQUIFER TEST	: 5/8/90
AQUIFER THICKNESS (b)	: 1.500E+0001 ft
DISCHARGE RATE (Q)	: 1.250E+0000 gpm
PUMPING WELL RADIUS (r)	: 5.000E-0001 ft
DISTANCE OF OBS. WELL FROM PUMPING WELL (d)	: 9.230E+0001 ft

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CPC–PONTIAC MW–1



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o – Data
+ – Type Curve
Unconf. Delayed: beta = 2.50

MATCH POINT		SOLUTION	
t	= 1.000E+0001	Transmissivity	= 3.062E+0002 gpd/ft
s	= 1.000E–0001	Hydraulic. Cond.	= 2.041E+0001 gpd/sq ft
1/Ub	= 8.913E–0004	Specific Yield	= 5.523E–0002
W(Ub,B)	= 2.138E–0002		

WELL INFORMATION	
WELL IDENTIFICATION	: MW–1
DATE OF AQUIFER TEST	: 5/8/90
AQUIFER THICKNESS (b)	: 1.500E+0001 ft
DISCHARGE RATE (Q)	: 1.250E+0000 gpm
PUMPING WELL RADIUS (r)	: 5.000E–0001 ft
DISTANCE OF OBS. WELL FROM PUMPING WELL (d)	: 7.600E+0001 ft

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SLUG TEST
PROJECT NAME: CPC PONTIAC
PROJECT NUMBER: 4000-9897-02

DATE OF TEST: 3-13-90
WELL NUMBER: MW-3
INITIAL WATER DEPTH OR LEVEL: 20.23 FT
CASING DIAMETER: (d) .16667 FT INTAKE DIAMETER: (D) .58333 FT
LENGTH OF SCREEN: (L) 10 FT

ELAPSED TIME	WATER LEVEL	RECOVERY	HEAD RATIO
MIN	FT	FT	H/HO
0.25	25.78	5.55	1.0000
0.50	25.27	5.04	0.9081
0.75	25.02	4.79	0.8631
1.00	24.78	4.55	0.8198
1.50	24.37	4.14	0.7459
2.00	24.10	3.87	0.6973
2.50	23.73	3.50	0.6306
3.00	23.37	3.14	0.5658
3.50	22.98	2.75	0.4955
4.00	22.57	2.34	0.4216
4.50	22.05	1.82	0.3279
5.00	21.74	1.51	0.2721
6.00	21.05	0.82	0.1477
7.00	20.37	0.14	0.0252
8.00	20.35	0.12	0.0216
9.00	20.33	0.10	0.0180
10.00	20.32	0.09	0.0162
11.00	20.32	0.09	0.0162
12.00	20.31	0.08	0.0144
13.00	20.31	0.08	0.0144
14.00	20.31	0.08	0.0144
15.00	20.30	0.07	0.0126
20.00	20.30	0.07	0.0126
25.00	20.30	0.07	0.0126
30.00	20.28	0.05	0.0090
45.00	20.25	0.02	0.0036
60.00	20.23	0.00	0.0000

THE VALUE OF TIME (T) AT H/HO = 4.259844

F = PI * L/ ln((L/D) + SQRT(1 +(L/D)^2)
F = 8.885632 FT

K = (PI * d^2/4)/(F * T)
K = 5.763979E-04 FT/MIN
= 0.0005764
K = 2.881989E-04 CM/S
= 0.0002882
K = 6.205884 U.S. GAL./DAY/FT^2
= 6.2

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SITE: GENERAL MOTORS, PONTIAC MI., WEST YARD
WELL: DW-20, INJECTION
TIME OF SLUG INJ/WITH = 15:25:48 MILITARY TIME
STATIC WATER LEVEL = 25.32 FEET BELOW MEASURING POINT
TREND = (- = rising) FEET PER MINUTE
NO. OF DTW READINGS = 163
INJECTION/WITHDRAWAL (1/2): 1

DATE	TIME (24 HOUR)	DTW (FT)	t (MINS)	t (DAYS)	RESIDUAL IH/DD (FT)	CORRECTED IH/DD (FT)
01/18/93	15:25:55	24.76	0.12	0.000	0.56	0.56
01/18/93	15:25:55	24.66	0.12	0.000	0.66	0.66
01/18/93	15:25:56	24.63	0.13	0.000	0.69	0.69
01/18/93	15:25:56	24.53	0.13	0.000	0.79	0.79
01/18/93	15:25:56	24.42	0.13	0.000	0.90	0.90
01/18/93	15:25:56	24.34	0.14	0.000	0.98	0.98
01/18/93	15:25:56	24.45	0.14	0.000	0.87	0.87
01/18/93	15:25:57	24.41	0.14	0.000	0.91	0.91
01/18/93	15:25:57	24.51	0.15	0.000	0.81	0.81
01/18/93	15:25:57	24.52	0.15	0.000	0.80	0.80
01/18/93	15:25:57	24.53	0.15	0.000	0.79	0.79
01/18/93	15:25:57	24.50	0.16	0.000	0.82	0.82
01/18/93	15:25:58	24.43	0.16	0.000	0.89	0.89
01/18/93	15:25:58	24.38	0.16	0.000	0.94	0.94
01/18/93	15:25:58	24.52	0.17	0.000	0.80	0.80
01/18/93	15:25:58	24.74	0.17	0.000	0.58	0.58
01/18/93	15:25:58	24.60	0.17	0.000	0.72	0.72
01/18/93	15:25:59	24.83	0.18	0.000	0.49	0.49
01/18/93	15:25:59	24.97	0.18	0.000	0.35	0.35
01/18/93	15:25:59	24.85	0.18	0.000	0.47	0.47
01/18/93	15:25:59	24.80	0.19	0.000	0.52	0.52
01/18/93	15:25:59	24.97	0.19	0.000	0.35	0.35
01/18/93	15:26:00	24.83	0.19	0.000	0.49	0.49
01/18/93	15:26:00	24.68	0.20	0.000	0.64	0.64
01/18/93	15:26:00	25.12	0.20	0.000	0.20	0.20
01/18/93	15:26:00	24.93	0.20	0.000	0.39	0.39
01/18/93	15:26:00	25.04	0.21	0.000	0.28	0.28
01/18/93	15:26:01	25.01	0.21	0.000	0.31	0.31
01/18/93	15:26:01	24.99	0.21	0.000	0.33	0.33
01/18/93	15:26:01	25.02	0.22	0.000	0.30	0.30
01/18/93	15:26:01	25.00	0.22	0.000	0.32	0.32
01/18/93	15:26:01	25.04	0.22	0.000	0.28	0.28
01/18/93	15:26:02	25.04	0.23	0.000	0.28	0.28
01/18/93	15:26:02	25.05	0.23	0.000	0.27	0.27
01/18/93	15:26:02	25.06	0.23	0.000	0.26	0.26
01/18/93	15:26:02	25.07	0.24	0.000	0.25	0.25
01/18/93	15:26:02	25.08	0.24	0.000	0.24	0.24

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SITE: GENERAL MOTORS, PONTIAC MI., WEST YARD
WELL: DW-20, INJECTION
TIME OF SLUG INJ/WITH = 15:25:48 MILITARY TIME
STATIC WATER LEVEL = 25.32 FEET BELOW MEASURING POINT
TREND = (- = rising) FEET PER MINUTE
NO. OF DTW READINGS = 163
INJECTION/WITHDRAWAL (1/2): 1

DATE	TIME (24 HOUR)	DTW (FT)	t (MINS)	t (DAYS)	RESIDUAL IH/DD (FT)	CORRECTED IH/DD (FT)
01/18/93	15:26:03	25.09	0.24	0.000	0.23	0.23
01/18/93	15:26:03	25.10	0.25	0.000	0.22	0.22
01/18/93	15:26:03	25.11	0.25	0.000	0.21	0.21
01/18/93	15:26:03	25.12	0.25	0.000	0.20	0.20
01/18/93	15:26:03	25.12	0.26	0.000	0.20	0.20
01/18/93	15:26:04	25.13	0.26	0.000	0.19	0.19
01/18/93	15:26:04	25.14	0.26	0.000	0.18	0.18
01/18/93	15:26:04	25.14	0.27	0.000	0.18	0.18
01/18/93	15:26:04	25.15	0.27	0.000	0.17	0.17
01/18/93	15:26:04	25.15	0.27	0.000	0.17	0.17
01/18/93	15:26:05	25.16	0.28	0.000	0.16	0.16
01/18/93	15:26:05	25.16	0.28	0.000	0.16	0.16
01/18/93	15:26:05	25.16	0.28	0.000	0.16	0.16
01/18/93	15:26:05	25.17	0.29	0.000	0.15	0.15
01/18/93	15:26:05	25.18	0.29	0.000	0.14	0.14
01/18/93	15:26:06	25.18	0.29	0.000	0.14	0.14
01/18/93	15:26:06	25.18	0.30	0.000	0.14	0.14
01/18/93	15:26:06	25.19	0.30	0.000	0.13	0.13
01/18/93	15:26:06	25.19	0.30	0.000	0.13	0.13
01/18/93	15:26:06	25.19	0.31	0.000	0.13	0.13
01/18/93	15:26:07	25.19	0.31	0.000	0.13	0.13
01/18/93	15:26:07	25.19	0.31	0.000	0.13	0.13
01/18/93	15:26:07	25.20	0.32	0.000	0.12	0.12
01/18/93	15:26:07	25.20	0.32	0.000	0.12	0.12
01/18/93	15:26:07	25.20	0.32	0.000	0.12	0.12
01/18/93	15:26:08	25.21	0.33	0.000	0.11	0.11
01/18/93	15:26:08	25.21	0.33	0.000	0.11	0.11
01/18/93	15:26:08	25.21	0.33	0.000	0.11	0.11
01/18/93	15:26:09	25.21	0.35	0.000	0.11	0.11
01/18/93	15:26:10	25.22	0.37	0.000	0.10	0.10
01/18/93	15:26:11	25.23	0.38	0.000	0.09	0.09
01/18/93	15:26:12	25.23	0.40	0.000	0.09	0.09
01/18/93	15:26:13	25.24	0.42	0.000	0.08	0.08
01/18/93	15:26:14	25.24	0.43	0.000	0.08	0.08
01/18/93	15:26:15	25.25	0.45	0.000	0.07	0.07
01/18/93	15:26:16	25.24	0.47	0.000	0.08	0.08
01/18/93	15:26:17	25.24	0.48	0.000	0.08	0.08

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SITE: GENERAL MOTORS, PONTIAC MI., WEST YARD
WELL: DW-20, INJECTION
TIME OF SLUG INJ/WITH = 15:25:48 MILITARY TIME
STATIC WATER LEVEL = 25.32 FEET BELOW MEASURING POINT
TREND = (- = rising) FEET PER MINUTE
NO. OF DTW READINGS = 163
INJECTION/WITHDRAWAL (1/2): 1

DATE	TIME (24 HOUR)	DTW (FT)	t (MINS)	t (DAYS)	RESIDUAL IH/DD (FT)	CORRECTED IH/DD (FT)
01/18/93	15:26:18	25.25	0.50	0.000	0.07	0.07
01/18/93	15:26:19	25.25	0.52	0.000	0.07	0.07
01/18/93	15:26:20	25.25	0.53	0.000	0.07	0.07
01/18/93	15:26:21	25.25	0.55	0.000	0.07	0.07
01/18/93	15:26:22	25.19	0.57	0.000	0.13	0.13
01/18/93	15:26:23	25.18	0.58	0.000	0.14	0.14
01/18/93	15:26:24	25.21	0.60	0.000	0.11	0.11
01/18/93	15:26:25	25.30	0.62	0.000	0.02	0.02
01/18/93	15:26:26	25.29	0.63	0.000	0.03	0.03
01/18/93	15:26:27	25.29	0.65	0.000	0.03	0.03
01/18/93	15:26:28	25.28	0.67	0.000	0.04	0.04
01/18/93	15:26:29	25.27	0.68	0.000	0.05	0.05
01/18/93	15:26:30	25.28	0.70	0.000	0.04	0.04
01/18/93	15:26:31	25.27	0.72	0.000	0.05	0.05
01/18/93	15:26:32	25.27	0.73	0.001	0.05	0.05
01/18/93	15:26:33	25.26	0.75	0.001	0.06	0.06
01/18/93	15:26:34	25.27	0.77	0.001	0.05	0.05
01/18/93	15:26:35	25.20	0.78	0.001	0.12	0.12
01/18/93	15:26:36	25.26	0.80	0.001	0.06	0.06
01/18/93	15:26:37	25.30	0.82	0.001	0.02	0.02
01/18/93	15:26:38	25.28	0.83	0.001	0.04	0.04
01/18/93	15:26:39	25.27	0.85	0.001	0.05	0.05
01/18/93	15:26:40	25.27	0.87	0.001	0.05	0.05
01/18/93	15:26:41	25.28	0.88	0.001	0.04	0.04
01/18/93	15:26:42	25.28	0.90	0.001	0.04	0.04
01/18/93	15:26:43	25.28	0.92	0.001	0.04	0.04
01/18/93	15:26:44	25.27	0.93	0.001	0.05	0.05
01/18/93	15:26:45	25.27	0.95	0.001	0.05	0.05
01/18/93	15:26:46	25.27	0.97	0.001	0.05	0.05
01/18/93	15:26:47	25.28	0.98	0.001	0.04	0.04
01/18/93	15:26:48	25.27	1.00	0.001	0.05	0.05
01/18/93	15:27:00	25.27	1.20	0.001	0.05	0.05
01/18/93	15:27:12	25.27	1.40	0.001	0.05	0.05
01/18/93	15:27:24	25.28	1.60	0.001	0.04	0.04
01/18/93	15:27:36	25.27	1.80	0.001	0.05	0.05
01/18/93	15:27:48	25.28	2.00	0.001	0.04	0.04
01/18/93	15:28:00	25.27	2.20	0.002	0.05	0.05

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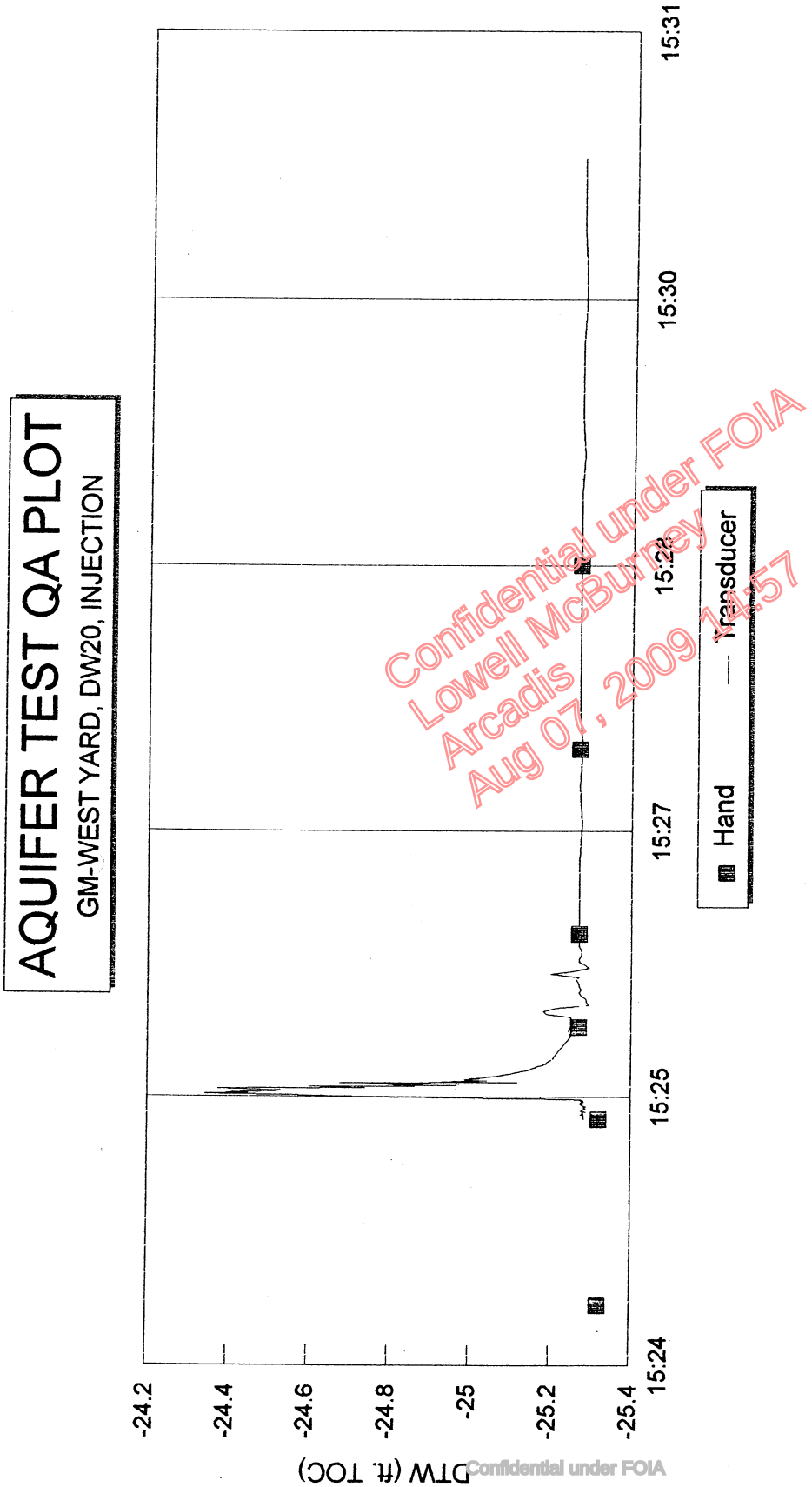
SITE: GENERAL MOTORS, PONTIAC MI., WEST YARD
WELL: DW-20, INJECTION
TIME OF SLUG INJ/WITH = 15:25:48 MILITARY TIME
STATIC WATER LEVEL = 25.32 FEET BELOW MEASURING POINT
TREND = (- = rising) FEET PER MINUTE
NO. OF DTW READINGS = 163
INJECTION/WITHDRAWAL (1/2): 1

DATE	TIME (24 HOUR)	DTW (FT)	t (MINS)	t (DAYS)	RESIDUAL IH/DD (FT)	CORRECTED IH/DD (FT)
01/18/93	15:28:12	25.27	2.40	0.002	0.05	0.05
01/18/93	15:28:24	25.27	2.60	0.002	0.05	0.05
01/18/93	15:28:36	25.27	2.80	0.002	0.05	0.05
01/18/93	15:28:48	25.27	3.00	0.002	0.05	0.05
01/18/93	15:29:00	25.27	3.20	0.002	0.05	0.05
01/18/93	15:29:12	25.27	3.40	0.002	0.05	0.05
01/18/93	15:29:24	25.28	3.60	0.003	0.04	0.04
01/18/93	15:29:36	25.27	3.80	0.003	0.05	0.05
01/18/93	15:29:48	25.27	4.00	0.003	0.05	0.05
01/18/93	15:30:00	25.27	4.20	0.003	0.05	0.05
01/18/93	15:30:12	25.28	4.40	0.003	0.04	0.04
01/18/93	15:30:24	25.28	4.60	0.003	0.04	0.04
01/18/93	15:30:36	25.27	4.80	0.003	0.05	0.05
01/18/93	15:30:48	25.27	5.00	0.003	0.05	0.05
01/18/93	15:31:00	25.27	5.20	0.004	0.05	0.05

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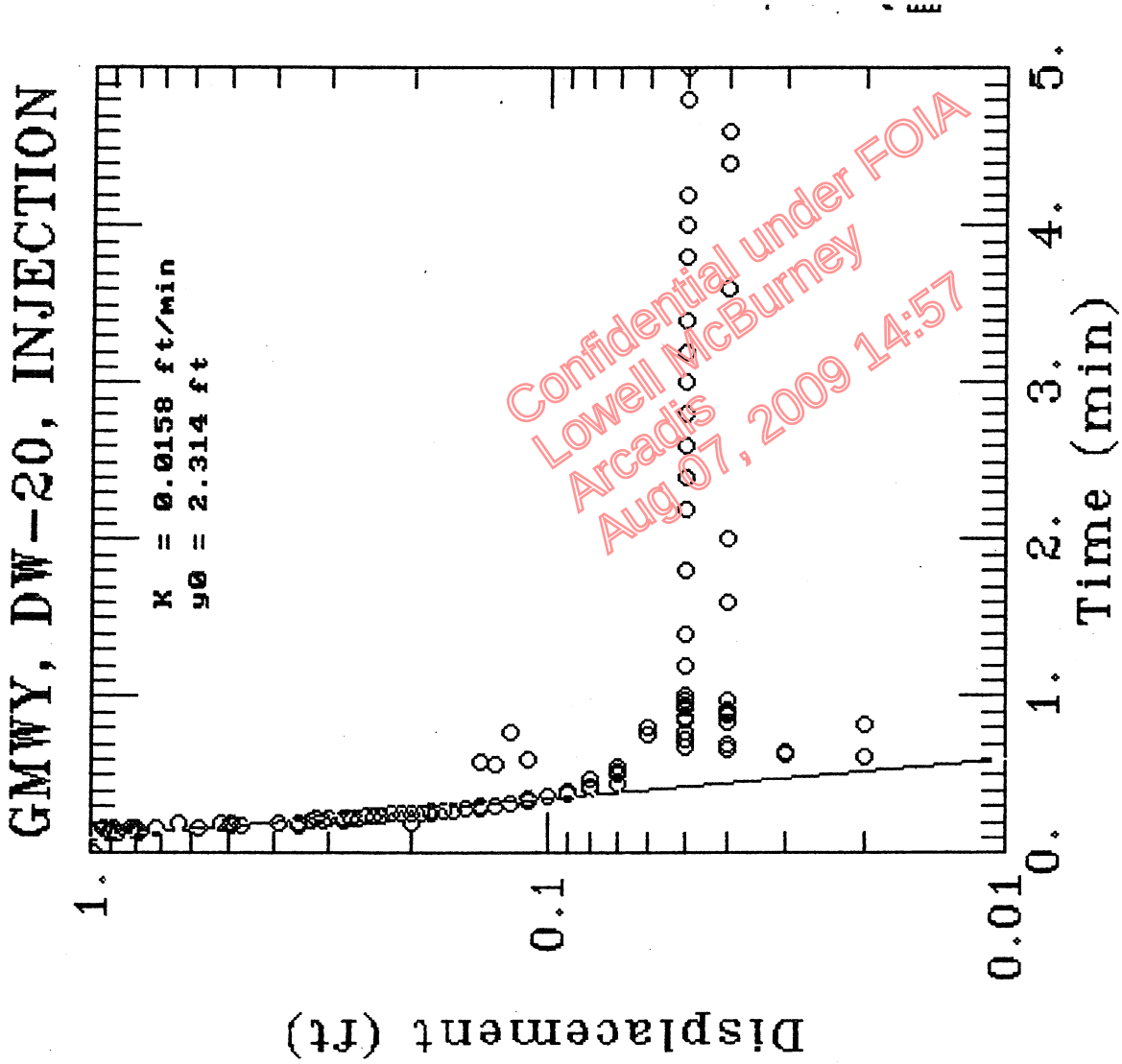
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SITE: GENERAL MOTORS, PONTIAC MI., WEST YARD
WELL: DW-20, WITHDRAWAL
TIME OF SLUG INJ/WITH = 15:35:42 MILITARY TIME
STATIC WATER LEVEL = 25.27 FEET BELOW MEASURING POINT
TREND = (- = rising) FEET PER MINUTE
NO. OF DTW READINGS = 163
INJECTION/WITHDRAWAL (1/2): 2

DATE	TIME (24 HOUR)	DTW (FT)	t (MINS)	t (DAYS)	RESIDUAL IH/DD (FT)	CORRECTED IH/DD (FT)
01/18/93	15:34:42	25.27	-1.00	-0.001	0.00	0.00
01/18/93	15:35:42	25.33	0.00	0.000	0.06	0.06
01/18/93	15:35:42	25.48	0.00	0.000	0.21	0.21
01/18/93	15:35:42	25.41	0.01	0.000	0.14	0.14
01/18/93	15:35:43	25.28	0.01	0.000	0.01	0.01
01/18/93	15:35:43	25.29	0.01	0.000	0.02	0.02
01/18/93	15:35:43	25.15	0.02	0.000	-0.12	-0.12
01/18/93	15:35:43	25.47	0.02	0.000	0.20	0.20
01/18/93	15:35:43	25.24	0.02	0.000	-0.03	-0.03
01/18/93	15:35:44	25.53	0.03	0.000	0.26	0.26
01/18/93	15:35:44	25.39	0.03	0.000	0.12	0.12
01/18/93	15:35:44	25.37	0.03	0.000	0.10	0.10
01/18/93	15:35:44	25.74	0.04	0.000	0.47	0.47
01/18/93	15:35:44	25.75	0.04	0.000	0.47	0.47
01/18/93	15:35:45	25.66	0.04	0.000	0.39	0.39
01/18/93	15:35:45	25.97	0.05	0.000	0.70	0.70
01/18/93	15:35:45	26.03	0.05	0.000	0.76	0.76
01/18/93	15:35:45	26.13	0.05	0.000	0.86	0.86
01/18/93	15:35:45	26.21	0.06	0.000	0.93	0.93
01/18/93	15:35:46	26.27	0.06	0.000	1.00	1.00
01/18/93	15:35:46	26.26	0.06	0.000	0.98	0.98
01/18/93	15:35:46	26.21	0.07	0.000	0.93	0.93
01/18/93	15:35:46	26.14	0.07	0.000	0.86	0.86
01/18/93	15:35:46	26.08	0.07	0.000	0.81	0.81
01/18/93	15:35:47	26.02	0.08	0.000	0.75	0.75
01/18/93	15:35:47	25.95	0.08	0.000	0.68	0.68
01/18/93	15:35:47	25.91	0.08	0.000	0.64	0.64
01/18/93	15:35:47	25.87	0.09	0.000	0.59	0.59
01/18/93	15:35:47	25.83	0.09	0.000	0.56	0.56
01/18/93	15:35:48	25.79	0.09	0.000	0.52	0.52
01/18/93	15:35:48	25.76	0.10	0.000	0.49	0.49
01/18/93	15:35:48	25.73	0.10	0.000	0.46	0.46
01/18/93	15:35:48	25.70	0.10	0.000	0.43	0.43
01/18/93	15:35:48	25.68	0.11	0.000	0.40	0.40
01/18/93	15:35:49	25.66	0.11	0.000	0.39	0.39
01/18/93	15:35:49	25.63	0.11	0.000	0.36	0.36
01/18/93	15:35:49	25.61	0.12	0.000	0.34	0.34

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SITE: GENERAL MOTORS, PONTIAC MI., WEST YARD
WELL: DW-20, WITHDRAWAL
TIME OF SLUG INJ/WITH = 15:35:42 MILITARY TIME
STATIC WATER LEVEL = 25.27 FEET BELOW MEASURING POINT
TREND = (- = rising) FEET PER MINUTE
NO. OF DTW READINGS = 163
INJECTION/WITHDRAWAL (1/2): 2

DATE	TIME (24 HOUR)	DTW (FT)	t (MINS)	t (DAYS)	RESIDUAL IH/DD (FT)	CORRECTED IH/DD (FT)
01/18/93	15:35:49	25.59	0.12	0.000	0.32	0.32
01/18/93	15:35:49	25.58	0.12	0.000	0.30	0.30
01/18/93	15:35:50	25.56	0.13	0.000	0.29	0.29
01/18/93	15:35:50	25.55	0.13	0.000	0.28	0.28
01/18/93	15:35:50	25.53	0.13	0.000	0.26	0.26
01/18/93	15:35:50	25.52	0.14	0.000	0.25	0.25
01/18/93	15:35:50	25.51	0.14	0.000	0.23	0.23
01/18/93	15:35:51	25.49	0.14	0.000	0.22	0.22
01/18/93	15:35:51	25.49	0.15	0.000	0.22	0.22
01/18/93	15:35:51	25.47	0.15	0.000	0.20	0.20
01/18/93	15:35:51	25.47	0.15	0.000	0.20	0.20
01/18/93	15:35:51	25.46	0.16	0.000	0.18	0.18
01/18/93	15:35:52	25.45	0.16	0.000	0.18	0.18
01/18/93	15:35:52	25.44	0.16	0.000	0.17	0.17
01/18/93	15:35:52	25.43	0.17	0.000	0.16	0.16
01/18/93	15:35:52	25.42	0.17	0.000	0.15	0.15
01/18/93	15:35:52	25.42	0.17	0.000	0.15	0.15
01/18/93	15:35:53	25.41	0.18	0.000	0.14	0.14
01/18/93	15:35:53	25.40	0.18	0.000	0.13	0.13
01/18/93	15:35:53	25.40	0.18	0.000	0.13	0.13
01/18/93	15:35:53	25.40	0.19	0.000	0.13	0.13
01/18/93	15:35:53	25.39	0.19	0.000	0.12	0.12
01/18/93	15:35:54	25.39	0.19	0.000	0.12	0.12
01/18/93	15:35:54	25.39	0.20	0.000	0.12	0.12
01/18/93	15:35:54	25.39	0.20	0.000	0.12	0.12
01/18/93	15:35:54	25.38	0.20	0.000	0.11	0.11
01/18/93	15:35:54	25.38	0.21	0.000	0.11	0.11
01/18/93	15:35:55	25.37	0.21	0.000	0.10	0.10
01/18/93	15:35:55	25.36	0.21	0.000	0.09	0.09
01/18/93	15:35:55	25.36	0.22	0.000	0.09	0.09
01/18/93	15:35:55	25.36	0.22	0.000	0.09	0.09
01/18/93	15:35:55	25.35	0.22	0.000	0.08	0.08
01/18/93	15:35:56	25.35	0.23	0.000	0.08	0.08
01/18/93	15:35:56	25.35	0.23	0.000	0.08	0.08
01/18/93	15:35:56	25.35	0.23	0.000	0.08	0.08
01/18/93	15:35:56	25.35	0.24	0.000	0.08	0.08
01/18/93	15:35:56	25.34	0.24	0.000	0.07	0.07

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SITE: GENERAL MOTORS, PONTIAC MI., WEST YARD
WELL: DW-20, WITHDRAWAL
TIME OF SLUG INJ/WITH = 15:35:42 MILITARY TIME
STATIC WATER LEVEL = 25.27 FEET BELOW MEASURING POINT
TREND = (- = rising) FEET PER MINUTE
NO. OF DTW READINGS = 163
INJECTION/WITHDRAWAL (1/2): 2

DATE	TIME (24 HOUR)	DTW (FT)	t (MINS)	t (DAYS)	RESIDUAL IH/DD (FT)	CORRECTED IH/DD (FT)
01/18/93	15:35:57	25.34	0.24	0.000	0.07	0.07
01/18/93	15:35:57	25.34	0.25	0.000	0.07	0.07
01/18/93	15:35:57	25.34	0.25	0.000	0.07	0.07
01/18/93	15:35:57	25.34	0.25	0.000	0.06	0.06
01/18/93	15:35:57	25.34	0.26	0.000	0.06	0.06
01/18/93	15:35:58	25.34	0.26	0.000	0.06	0.06
01/18/93	15:35:58	25.34	0.26	0.000	0.06	0.06
01/18/93	15:35:58	25.33	0.27	0.000	0.06	0.06
01/18/93	15:35:58	25.33	0.27	0.000	0.06	0.06
01/18/93	15:35:58	25.33	0.27	0.000	0.06	0.06
01/18/93	15:35:59	25.33	0.28	0.000	0.06	0.06
01/18/93	15:35:59	25.33	0.28	0.000	0.06	0.06
01/18/93	15:35:59	25.32	0.28	0.000	0.05	0.05
01/18/93	15:35:59	25.32	0.29	0.000	0.05	0.05
01/18/93	15:35:59	25.32	0.29	0.000	0.05	0.05
01/18/93	15:36:00	25.32	0.29	0.000	0.05	0.05
01/18/93	15:36:00	25.32	0.30	0.000	0.05	0.05
01/18/93	15:36:00	25.32	0.30	0.000	0.05	0.05
01/18/93	15:36:00	25.32	0.30	0.000	0.05	0.05
01/18/93	15:36:00	25.32	0.31	0.000	0.05	0.05
01/18/93	15:36:01	25.32	0.31	0.000	0.05	0.05
01/18/93	15:36:01	25.32	0.31	0.000	0.05	0.05
01/18/93	15:36:01	25.32	0.32	0.000	0.05	0.05
01/18/93	15:36:01	25.32	0.32	0.000	0.05	0.05
01/18/93	15:36:01	25.32	0.32	0.000	0.05	0.05
01/18/93	15:36:02	25.32	0.33	0.000	0.05	0.05
01/18/93	15:36:02	25.31	0.33	0.000	0.04	0.04
01/18/93	15:36:02	25.31	0.33	0.000	0.04	0.04
01/18/93	15:36:03	25.30	0.35	0.000	0.03	0.03
01/18/93	15:36:04	25.30	0.37	0.000	0.03	0.03
01/18/93	15:36:05	25.30	0.38	0.000	0.03	0.03
01/18/93	15:36:06	25.30	0.40	0.000	0.03	0.03
01/18/93	15:36:07	25.30	0.42	0.000	0.03	0.03
01/18/93	15:36:08	25.29	0.43	0.000	0.02	0.02
01/18/93	15:36:09	25.29	0.45	0.000	0.02	0.02
01/18/93	15:36:10	25.29	0.47	0.000	0.02	0.02
01/18/93	15:36:11	25.25	0.48	0.000	-0.02	-0.02

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SITE: GENERAL MOTORS, PONTIAC MI., WEST YARD
WELL: DW-20, WITHDRAWAL
TIME OF SLUG INJ/WITH = 15:35:42 MILITARY TIME
STATIC WATER LEVEL = 25.27 FEET BELOW MEASURING POINT
TREND = (- = rising) FEET PER MINUTE
NO. OF DTW READINGS = 163
INJECTION/WITHDRAWAL (1/2): 2

DATE	TIME (24 HOUR)	DTW (FT)	t (MINS)	t (DAYS)	RESIDUAL IH/DD (FT)	CORRECTED IH/DD (FT)
01/18/93	15:36:12	25.27	0.50	0.000	-0.00	-0.00
01/18/93	15:36:13	25.29	0.52	0.000	0.02	0.02
01/18/93	15:36:14	25.30	0.53	0.000	0.03	0.03
01/18/93	15:36:15	25.30	0.55	0.000	0.03	0.03
01/18/93	15:36:16	25.30	0.57	0.000	0.03	0.03
01/18/93	15:36:17	25.29	0.58	0.000	0.02	0.02
01/18/93	15:36:18	25.29	0.60	0.000	0.02	0.02
01/18/93	15:36:19	25.29	0.62	0.000	0.02	0.02
01/18/93	15:36:20	25.29	0.63	0.000	0.02	0.02
01/18/93	15:36:21	25.29	0.65	0.000	0.01	0.01
01/18/93	15:36:22	25.28	0.67	0.000	0.01	0.01
01/18/93	15:36:23	25.28	0.68	0.000	0.01	0.01
01/18/93	15:36:24	25.29	0.70	0.000	0.01	0.01
01/18/93	15:36:25	25.29	0.72	0.000	0.01	0.01
01/18/93	15:36:26	25.28	0.73	0.001	0.01	0.01
01/18/93	15:36:27	25.28	0.75	0.001	0.01	0.01
01/18/93	15:36:28	25.28	0.77	0.001	0.01	0.01
01/18/93	15:36:29	25.28	0.78	0.001	0.01	0.01
01/18/93	15:36:30	25.28	0.80	0.001	0.01	0.01
01/18/93	15:36:31	25.28	0.82	0.001	0.01	0.01
01/18/93	15:36:32	25.28	0.83	0.001	0.01	0.01
01/18/93	15:36:33	25.28	0.85	0.001	0.01	0.01
01/18/93	15:36:34	25.28	0.87	0.001	0.01	0.01
01/18/93	15:36:35	25.28	0.88	0.001	0.01	0.01
01/18/93	15:36:36	25.28	0.90	0.001	0.01	0.01
01/18/93	15:36:37	25.28	0.92	0.001	0.01	0.01
01/18/93	15:36:38	25.28	0.93	0.001	0.01	0.01
01/18/93	15:36:39	25.28	0.95	0.001	0.01	0.01
01/18/93	15:36:40	25.28	0.97	0.001	0.01	0.01
01/18/93	15:36:41	25.28	0.98	0.001	0.01	0.01
01/18/93	15:36:42	25.28	1.00	0.001	0.01	0.01
01/18/93	15:36:54	25.29	1.20	0.001	0.01	0.01
01/18/93	15:37:06	25.27	1.40	0.001	0.00	0.00
01/18/93	15:37:18	25.27	1.60	0.001	0.00	0.00
01/18/93	15:37:30	25.27	1.80	0.001	0.00	0.00
01/18/93	15:37:42	25.27	2.00	0.001	0.00	0.00
01/18/93	15:37:54	25.27	2.20	0.002	0.00	0.00

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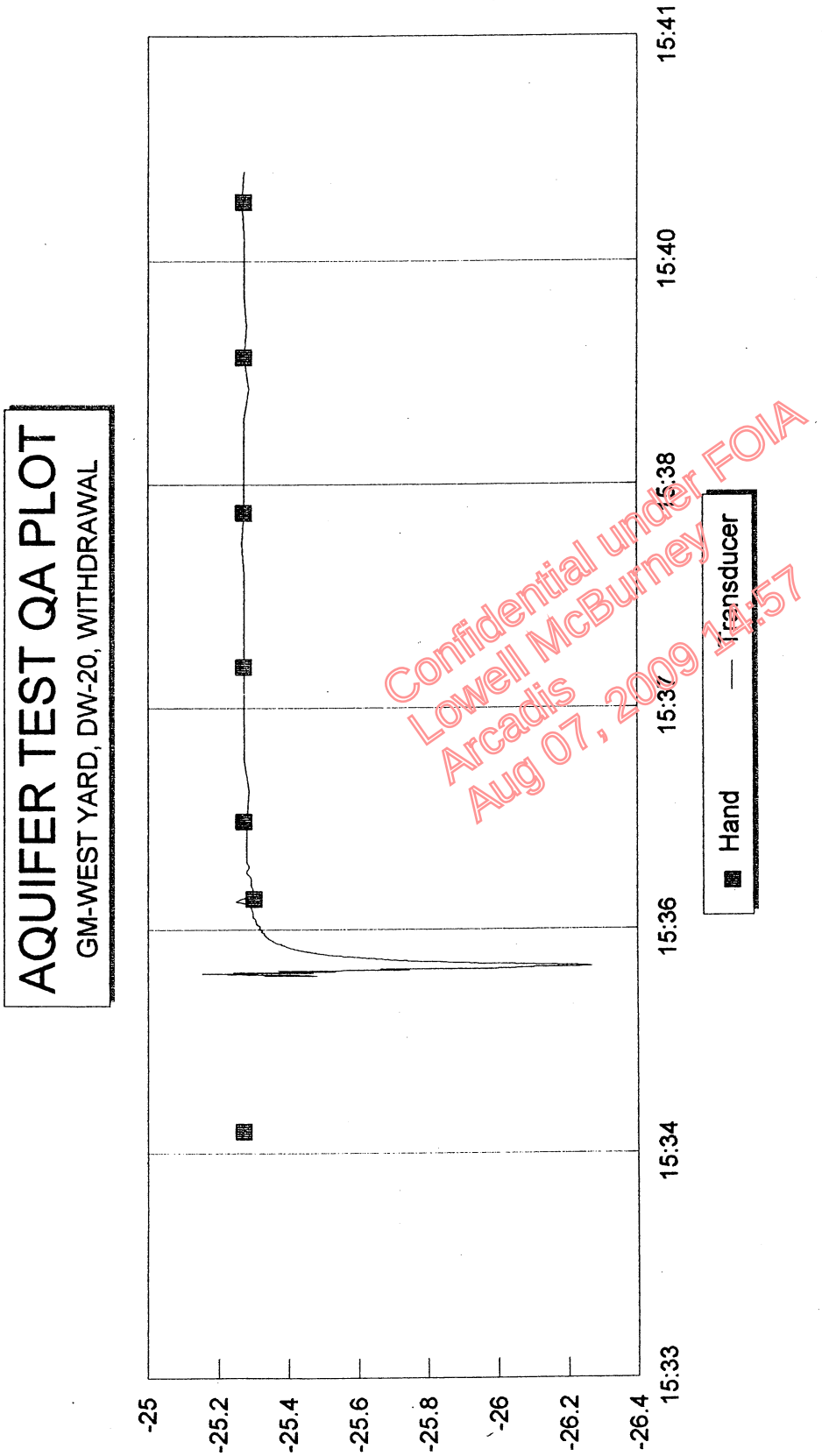
SITE: GENERAL MOTORS, PONTIAC MI., WEST YARD
WELL: DW-20, WITHDRAWAL
TIME OF SLUG INJ/WITH = 15:35:42 MILITARY TIME
STATIC WATER LEVEL = 25.27 FEET BELOW MEASURING POINT
TREND = (- = rising) FEET PER MINUTE
NO. OF DTW READINGS = 163
INJECTION/WITHDRAWAL (1/2): 2

DATE	TIME (24 HOUR)	DTW (FT)	t (MINS)	t (DAYS)	RESIDUAL IH/DD (FT)	CORRECTED IH/DD (FT)
01/18/93	15:38:06	25.27	2.40	0.002	0.00	0.00
01/18/93	15:38:18	25.27	2.60	0.002	0.00	0.00
01/18/93	15:38:30	25.27	2.80	0.002	-0.00	-0.00
01/18/93	15:38:42	25.27	3.00	0.002	0.00	0.00
01/18/93	15:38:54	25.27	3.20	0.002	0.00	0.00
01/18/93	15:39:06	25.27	3.40	0.002	0.00	0.00
01/18/93	15:39:18	25.27	3.60	0.003	0.00	0.00
01/18/93	15:39:30	25.29	3.80	0.003	0.01	0.01
01/18/93	15:39:42	25.27	4.00	0.003	0.00	0.00
01/18/93	15:39:54	25.28	4.20	0.003	0.01	0.01
01/18/93	15:40:06	25.27	4.40	0.003	0.00	0.00
01/18/93	15:40:18	25.27	4.60	0.003	0.00	0.00
01/18/93	15:40:30	25.27	4.80	0.003	0.00	0.00
01/18/93	15:40:42	25.27	5.00	0.003	-0.00	-0.00
01/18/93	15:40:54	25.27	5.20	0.004	0.00	0.00

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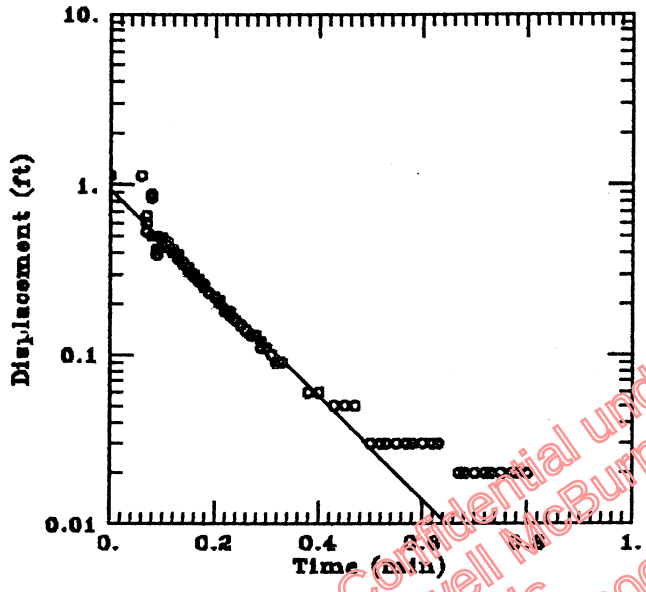


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GMWY, DW-18, INJECTION



DATA SET:
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02/01/96

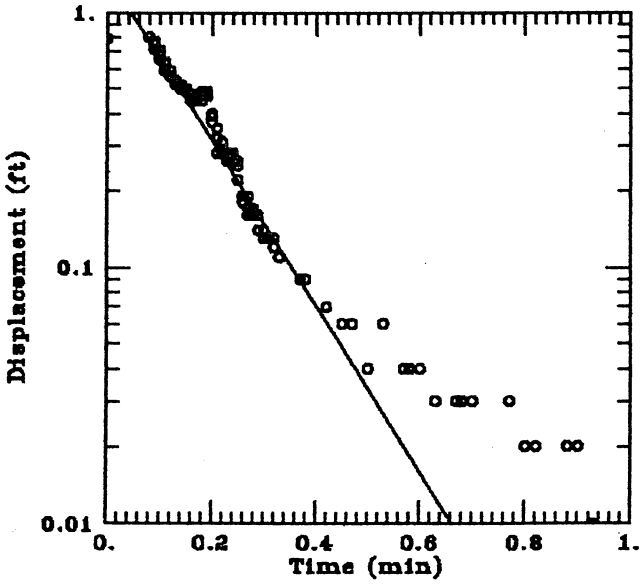
AQUIFER TYP
Unconfined
SOLUTION ME
Bouwer-Rice

ESTIMATED P
K = 0.01236 ft
y0 = 0.9315 ft

TEST DATA:
H0 = 1.13 ft
rc = 0.08 ft
rw = 0.33 ft
L = 5. ft
b = 21.2 ft
H = 21.2 ft

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GMWY, DW18, WITHDRAWAL



DATA SET:
C:\GMWY\PRT\AQT
02/01/96

AQUIFER TYP
Unconfined
SOLUTION ME
Bouwer-Rice

ESTIMATED P
K = 0.01318 ft
y0 = 1.419 ft

TEST DATA:
H0 = 0.79 ft
rc = 0.08 ft
rw = 0.33 ft
L = 5. ft
b = 21.2 ft
H = 21.2 ft

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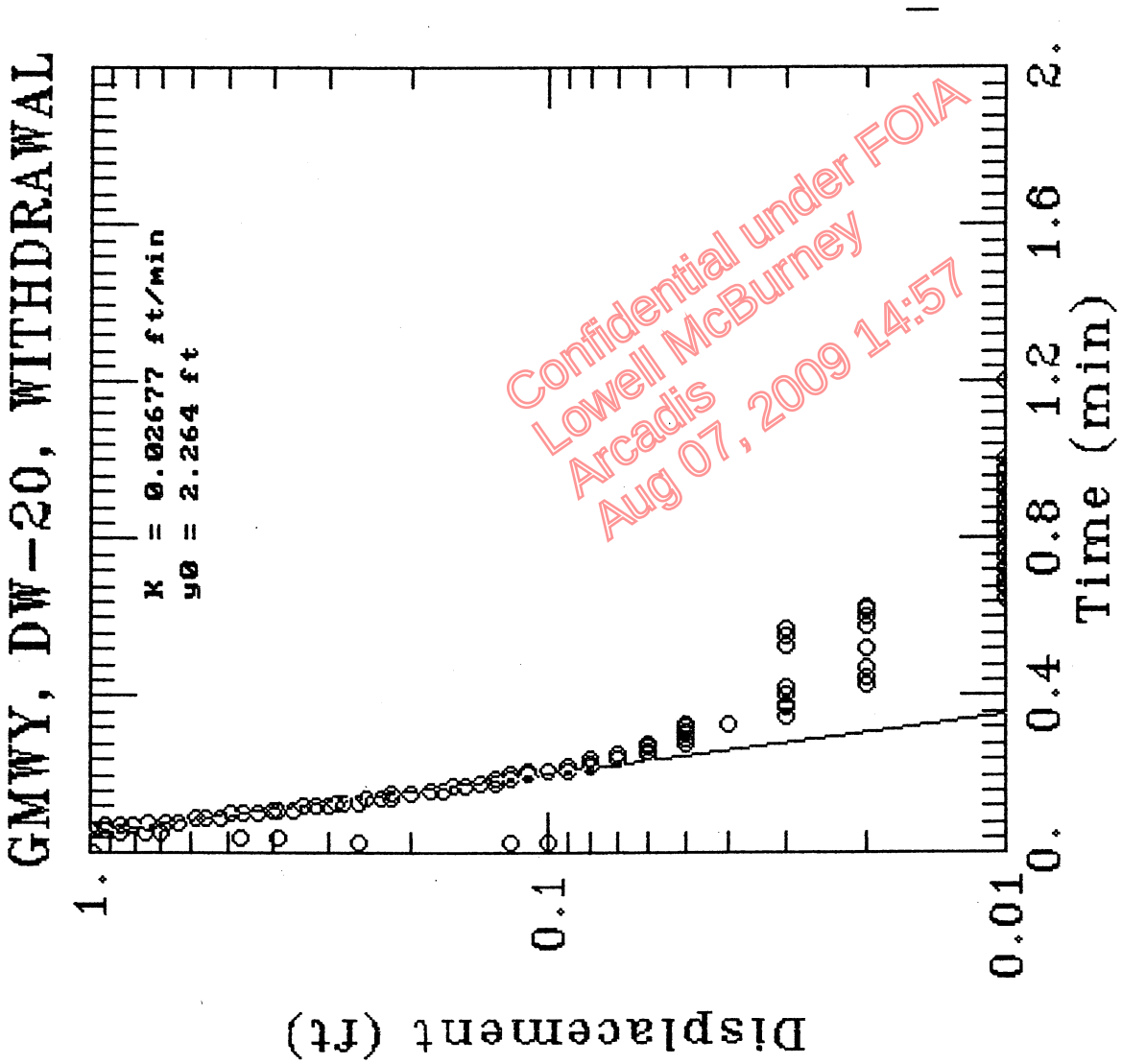
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SITE: GENERAL MOTORS, PONTIAC MI. WEST YARD
WELL: DW-18, INJECTION
TIME OF SLUG INJ/WITH = 12:56:05 MILITARY TIME
STATIC WATER LEVEL = 17.14 FEET BELOW MEASURING POINT
TREND = (- = rising) FEET PER MINUTE
NO. OF DTW READINGS = 158
INJECTION/WITHDRAWAL (1/2): 1

DATE	TIME (24 HOUR)	DTW (FT)	t (MINS)	t (DAYS)	RESIDUAL IH/DD (FT)	CORRECTED IH/DD (FT)
01/18/93	12:55:05	17.14	-1.00	-0.001	0.00	0.00
01/18/93	12:56:05	17.17	0.00	0.000	-0.03	-0.03
01/18/93	12:56:05	17.17	0.00	0.000	-0.03	-0.03
01/18/93	12:56:05	17.15	0.01	0.000	-0.01	-0.01
01/18/93	12:56:06	17.15	0.01	0.000	-0.01	-0.01
01/18/93	12:56:06	17.15	0.01	0.000	-0.01	-0.01
01/18/93	12:56:06	17.01	0.02	0.000	0.13	0.13
01/18/93	12:56:06	16.99	0.02	0.000	0.15	0.15
01/18/93	12:56:06	16.89	0.02	0.000	0.25	0.25
01/18/93	12:56:07	16.71	0.03	0.000	0.43	0.43
01/18/93	12:56:07	16.67	0.03	0.000	0.47	0.47
01/18/93	12:56:07	16.51	0.03	0.000	0.63	0.63
01/18/93	12:56:07	16.61	0.04	0.000	0.53	0.53
01/18/93	12:56:07	16.30	0.04	0.000	0.84	0.84
01/18/93	12:56:08	15.75	0.04	0.000	1.39	1.39
01/18/93	12:56:08	16.43	0.05	0.000	0.71	0.71
01/18/93	12:56:08	16.61	0.05	0.000	0.53	0.53
01/18/93	12:56:08	16.48	0.05	0.000	0.66	0.66
01/18/93	12:56:08	16.24	0.06	0.000	0.90	0.90
01/18/93	12:56:09	16.13	0.06	0.000	1.01	1.01
01/18/93	12:56:09	16.01	0.06	0.000	1.13	1.13
01/18/93	12:56:09	16.61	0.07	0.000	0.53	0.53
01/18/93	12:56:09	16.54	0.07	0.000	0.60	0.60
01/18/93	12:56:09	16.48	0.07	0.000	0.66	0.66
01/18/93	12:56:10	16.30	0.08	0.000	0.84	0.84
01/18/93	12:56:10	16.26	0.08	0.000	0.88	0.88
01/18/93	12:56:10	16.64	0.08	0.000	0.50	0.50
01/18/93	12:56:10	16.75	0.09	0.000	0.39	0.39
01/18/93	12:56:10	16.72	0.09	0.000	0.42	0.42
01/18/93	12:56:11	16.64	0.09	0.000	0.50	0.50
01/18/93	12:56:11	16.71	0.10	0.000	0.43	0.43
01/18/93	12:56:11	16.65	0.10	0.000	0.49	0.49
01/18/93	12:56:11	16.66	0.10	0.000	0.48	0.48
01/18/93	12:56:11	16.68	0.11	0.000	0.46	0.46
01/18/93	12:56:12	16.69	0.11	0.000	0.45	0.45
01/18/93	12:56:12	16.70	0.11	0.000	0.44	0.44
01/18/93	12:56:12	16.72	0.12	0.000	0.42	0.42

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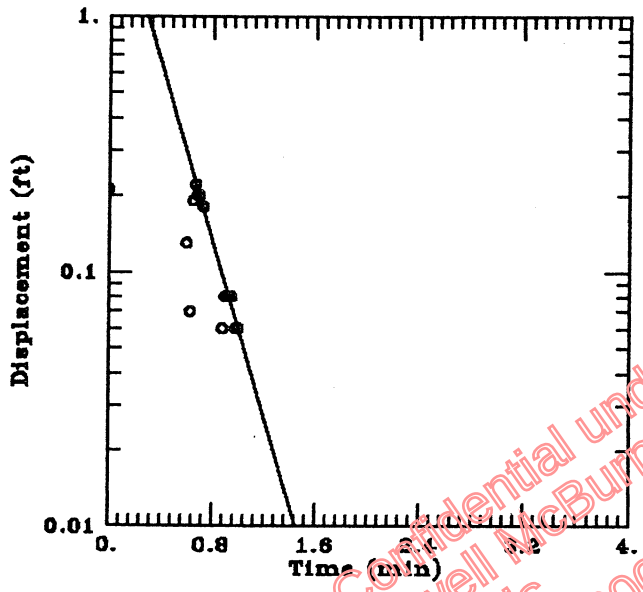


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GMWY, DW-22, INJECTION



DATA SET:
C:\GMWY\PRT\AQT
02/01/96

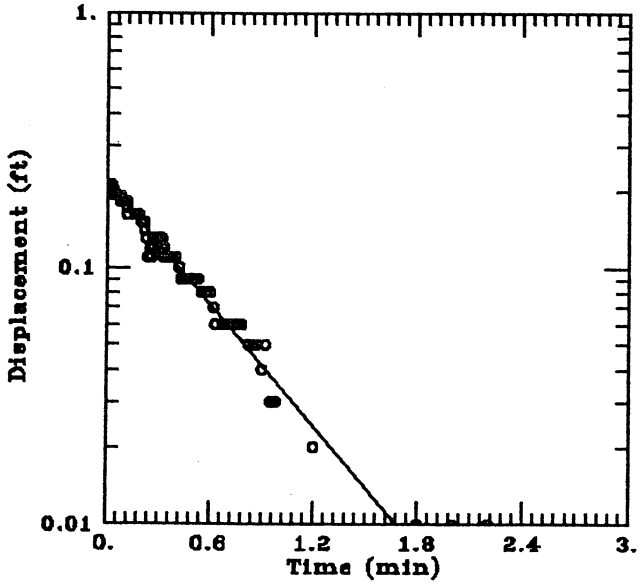
AQUIFER TYP
Unconfined
SOLUTION ME
Bouwer-Rice

ESTIMATED P
K = 0.006292 f
y0 = 3.235 ft

TEST DATA:
H0 = 0.21 ft
rc = 0.08 ft
rw = 0.33 ft
L = 5. ft
b = 12.01 ft
H = 12.01 ft

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GMWY, DW-22, WITHDRAWAL



DATA SET:
C:\GMWY\PRT\AQT
02/01/96

AQUIFER TYP
Unconfined
SOLUTION ME
Bouwer-Rice

ESTIMATED P
K = 0.002879 f
y0 = 0.2134 ft

TEST DATA:
H0 = 0.21 ft
rc = 0.08 ft
rw = 0.33 ft
L = 5. ft
b = 12.01 ft
H = 12.01 ft

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SITE: GENERAL MOTORS, PONTIAC MI., WEST YARD
WELL: DW-22, INJECTION
TIME OF SLUG INJ/WITH = 16:48:01 MILITARY TIME
STATIC WATER LEVEL = 23.92 FEET BELOW MEASURING POINT
TREND = (- = rising) FEET PER MINUTE
NO. OF DTW READINGS = 162
INJECTION/WITHDRAWAL (1/2): 1

DATE	TIME (24 HOUR)	DTW (FT)	t (MINS)	t (DAYS)	RESIDUAL IH/DD (FT)	CORRECTED IH/DD (FT)
01/18/93	16:47:01	23.92	-1.00	-0.001	0.00	0.00
01/18/93	16:48:01	23.93	0.00	0.000	-0.01	-0.01
01/18/93	16:48:01	23.93	0.00	0.000	-0.01	-0.01
01/18/93	16:48:01	23.93	0.01	0.000	-0.01	-0.01
01/18/93	16:48:02	23.93	0.01	0.000	-0.01	-0.01
01/18/93	16:48:02	23.93	0.01	0.000	-0.01	-0.01
01/18/93	16:48:02	23.93	0.02	0.000	-0.01	-0.01
01/18/93	16:48:02	23.93	0.02	0.000	-0.01	-0.01
01/18/93	16:48:02	23.93	0.02	0.000	-0.01	-0.01
01/18/93	16:48:03	23.93	0.03	0.000	-0.01	-0.01
01/18/93	16:48:03	23.93	0.03	0.000	-0.01	-0.01
01/18/93	16:48:03	23.93	0.03	0.000	-0.01	-0.01
01/18/93	16:48:03	23.93	0.04	0.000	-0.01	-0.01
01/18/93	16:48:03	23.93	0.04	0.000	-0.01	-0.01
01/18/93	16:48:04	23.93	0.04	0.000	-0.01	-0.01
01/18/93	16:48:04	23.93	0.05	0.000	-0.01	-0.01
01/18/93	16:48:04	23.93	0.05	0.000	-0.01	-0.01
01/18/93	16:48:04	23.93	0.05	0.000	-0.01	-0.01
01/18/93	16:48:04	23.93	0.06	0.000	-0.01	-0.01
01/18/93	16:48:05	23.93	0.06	0.000	-0.01	-0.01
01/18/93	16:48:05	23.93	0.06	0.000	-0.01	-0.01
01/18/93	16:48:05	23.93	0.07	0.000	-0.01	-0.01
01/18/93	16:48:05	23.93	0.07	0.000	-0.01	-0.01
01/18/93	16:48:05	23.93	0.07	0.000	-0.01	-0.01
01/18/93	16:48:06	23.93	0.08	0.000	-0.01	-0.01
01/18/93	16:48:06	23.93	0.08	0.000	-0.01	-0.01
01/18/93	16:48:06	23.93	0.08	0.000	-0.01	-0.01
01/18/93	16:48:06	23.93	0.09	0.000	-0.01	-0.01
01/18/93	16:48:06	23.93	0.09	0.000	-0.01	-0.01
01/18/93	16:48:07	23.93	0.09	0.000	-0.01	-0.01
01/18/93	16:48:07	23.93	0.10	0.000	-0.01	-0.01
01/18/93	16:48:07	23.93	0.10	0.000	-0.01	-0.01
01/18/93	16:48:07	23.93	0.10	0.000	-0.01	-0.01
01/18/93	16:48:07	23.93	0.11	0.000	-0.01	-0.01
01/18/93	16:48:08	23.93	0.11	0.000	-0.01	-0.01
01/18/93	16:48:08	23.93	0.11	0.000	-0.01	-0.01
01/18/93	16:48:08	23.93	0.12	0.000	-0.01	-0.01

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SITE: GENERAL MOTORS, PONTIAC MI., WEST YARD
WELL: DW-22, INJECTION
TIME OF SLUG INJ/WITH = 16:48:01 MILITARY TIME
STATIC WATER LEVEL = 23.92 FEET BELOW MEASURING POINT
TREND = (- = rising) FEET PER MINUTE
NO. OF DTW READINGS = 162
INJECTION/WITHDRAWAL (1/2): 1

DATE	TIME (24 HOUR)	DTW (FT)	t (MINS)	t (DAYS)	RESIDUAL IH/DD (FT)	CORRECTED IH/DD (FT)
01/18/93	16:48:08	23.93	0.12	0.000	-0.01	-0.01
01/18/93	16:48:08	23.93	0.12	0.000	-0.01	-0.01
01/18/93	16:48:09	23.93	0.13	0.000	-0.01	-0.01
01/18/93	16:48:09	23.93	0.13	0.000	-0.01	-0.01
01/18/93	16:48:09	23.93	0.13	0.000	-0.01	-0.01
01/18/93	16:48:09	23.93	0.14	0.000	-0.01	-0.01
01/18/93	16:48:09	23.93	0.14	0.000	-0.01	-0.01
01/18/93	16:48:10	23.93	0.14	0.000	-0.01	-0.01
01/18/93	16:48:10	23.93	0.15	0.000	-0.01	-0.01
01/18/93	16:48:10	23.93	0.15	0.000	-0.01	-0.01
01/18/93	16:48:10	23.93	0.15	0.000	-0.01	-0.01
01/18/93	16:48:10	23.93	0.15	0.000	-0.01	-0.01
01/18/93	16:48:11	23.93	0.16	0.000	-0.01	-0.01
01/18/93	16:48:11	23.93	0.16	0.000	-0.01	-0.01
01/18/93	16:48:11	23.93	0.17	0.000	-0.01	-0.01
01/18/93	16:48:11	23.93	0.17	0.000	-0.01	-0.01
01/18/93	16:48:11	23.93	0.17	0.000	-0.01	-0.01
01/18/93	16:48:12	23.93	0.18	0.000	-0.01	-0.01
01/18/93	16:48:12	23.93	0.18	0.000	-0.01	-0.01
01/18/93	16:48:12	23.93	0.18	0.000	-0.01	-0.01
01/18/93	16:48:12	23.93	0.19	0.000	-0.01	-0.01
01/18/93	16:48:12	23.93	0.19	0.000	-0.01	-0.01
01/18/93	16:48:13	23.93	0.19	0.000	-0.01	-0.01
01/18/93	16:48:13	23.93	0.20	0.000	-0.01	-0.01
01/18/93	16:48:13	23.93	0.20	0.000	-0.01	-0.01
01/18/93	16:48:13	23.93	0.20	0.000	-0.01	-0.01
01/18/93	16:48:13	23.93	0.21	0.000	-0.01	-0.01
01/18/93	16:48:14	23.93	0.21	0.000	-0.01	-0.01
01/18/93	16:48:14	23.93	0.21	0.000	-0.01	-0.01
01/18/93	16:48:14	23.93	0.22	0.000	-0.01	-0.01
01/18/93	16:48:14	23.93	0.22	0.000	-0.01	-0.01
01/18/93	16:48:14	23.93	0.22	0.000	-0.01	-0.01
01/18/93	16:48:15	23.93	0.23	0.000	-0.01	-0.01
01/18/93	16:48:15	23.93	0.23	0.000	-0.01	-0.01
01/18/93	16:48:15	23.93	0.23	0.000	-0.01	-0.01
01/18/93	16:48:15	23.93	0.24	0.000	-0.01	-0.01
01/18/93	16:48:15	23.93	0.24	0.000	-0.01	-0.01

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SITE: GENERAL MOTORS, PONTIAC MI., WEST YARD
WELL: DW-22, INJECTION
TIME OF SLUG INJ/WITH = 16:48:01 MILITARY TIME
STATIC WATER LEVEL = 23.92 FEET BELOW MEASURING POINT
TREND = (- = rising) FEET PER MINUTE
NO. OF DTW READINGS = 162
INJECTION/WITHDRAWAL (1/2): 1

DATE	TIME (24 HOUR)	DTW (FT)	t (MINS)	t (DAYS)	RESIDUAL IH/DD (FT)	CORRECTED IH/DD (FT)
01/18/93	16:48:16	23.93	0.24	0.000	-0.01	-0.01
01/18/93	16:48:16	23.93	0.25	0.000	-0.01	-0.01
01/18/93	16:48:16	23.93	0.25	0.000	-0.01	-0.01
01/18/93	16:48:16	23.93	0.25	0.000	-0.01	-0.01
01/18/93	16:48:16	23.93	0.26	0.000	-0.01	-0.01
01/18/93	16:48:17	23.93	0.26	0.000	-0.01	-0.01
01/18/93	16:48:17	23.93	0.26	0.000	-0.01	-0.01
01/18/93	16:48:17	23.93	0.27	0.000	-0.01	-0.01
01/18/93	16:48:17	23.93	0.27	0.000	-0.01	-0.01
01/18/93	16:48:17	23.93	0.27	0.000	-0.01	-0.01
01/18/93	16:48:18	23.93	0.28	0.000	-0.01	-0.01
01/18/93	16:48:18	23.93	0.28	0.000	-0.01	-0.01
01/18/93	16:48:18	23.93	0.28	0.000	-0.01	-0.01
01/18/93	16:48:18	23.93	0.29	0.000	-0.01	-0.01
01/18/93	16:48:18	23.93	0.29	0.000	-0.01	-0.01
01/18/93	16:48:19	23.93	0.29	0.000	-0.01	-0.01
01/18/93	16:48:19	23.93	0.30	0.000	-0.01	-0.01
01/18/93	16:48:19	23.93	0.30	0.000	-0.01	-0.01
01/18/93	16:48:19	23.93	0.30	0.000	-0.01	-0.01
01/18/93	16:48:19	23.93	0.31	0.000	-0.01	-0.01
01/18/93	16:48:20	23.93	0.31	0.000	-0.01	-0.01
01/18/93	16:48:20	23.93	0.31	0.000	-0.01	-0.01
01/18/93	16:48:20	23.93	0.32	0.000	-0.01	-0.01
01/18/93	16:48:20	23.93	0.32	0.000	-0.01	-0.01
01/18/93	16:48:20	23.93	0.32	0.000	-0.01	-0.01
01/18/93	16:48:21	23.93	0.33	0.000	-0.01	-0.01
01/18/93	16:48:21	23.93	0.33	0.000	-0.01	-0.01
01/18/93	16:48:21	23.93	0.33	0.000	-0.01	-0.01
01/18/93	16:48:22	23.93	0.35	0.000	-0.01	-0.01
01/18/93	16:48:23	23.93	0.37	0.000	-0.01	-0.01
01/18/93	16:48:24	23.93	0.38	0.000	-0.01	-0.01
01/18/93	16:48:25	23.93	0.40	0.000	-0.01	-0.01
01/18/93	16:48:26	23.93	0.42	0.000	-0.01	-0.01
01/18/93	16:48:27	23.93	0.43	0.000	-0.01	-0.01
01/18/93	16:48:28	23.93	0.45	0.000	-0.01	-0.01
01/18/93	16:48:29	23.93	0.47	0.000	-0.01	-0.01
01/18/93	16:48:30	23.93	0.48	0.000	-0.01	-0.01

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SITE: GENERAL MOTORS, PONTIAC MI., WEST YARD
WELL: DW-22, INJECTION
TIME OF SLUG INJ/WITH = 16:48:01 MILITARY TIME
STATIC WATER LEVEL = 23.92 FEET BELOW MEASURING POINT
TREND = (- = rising) FEET PER MINUTE
NO. OF DTW READINGS = 162
INJECTION/WITHDRAWAL (1/2): 1

DATE	TIME (24 HOUR)	DTW (FT)	t (MINS)	t (DAYS)	RESIDUAL IH/DD (FT)	CORRECTED IH/DD (FT)
01/18/93	16:48:31	23.93	0.50	0.000	-0.01	-0.01
01/18/93	16:48:32	23.93	0.52	0.000	-0.01	-0.01
01/18/93	16:48:33	23.93	0.53	0.000	-0.01	-0.01
01/18/93	16:48:34	23.92	0.55	0.000	0.00	0.00
01/18/93	16:48:35	23.92	0.57	0.000	0.00	0.00
01/18/93	16:48:36	23.88	0.58	0.000	0.04	0.04
01/18/93	16:48:37	23.79	0.60	0.000	0.13	0.13
01/18/93	16:48:38	23.80	0.62	0.000	0.12	0.12
01/18/93	16:48:39	23.85	0.63	0.000	0.07	0.07
01/18/93	16:48:40	23.73	0.65	0.000	0.19	0.19
01/18/93	16:48:41	23.71	0.67	0.000	0.22	0.22
01/18/93	16:48:42	23.72	0.68	0.000	0.20	0.20
01/18/93	16:48:43	23.72	0.70	0.000	0.20	0.20
01/18/93	16:48:44	23.73	0.72	0.000	0.19	0.19
01/18/93	16:48:45	23.74	0.73	0.001	0.18	0.18
01/18/93	16:48:46	23.57	0.75	0.001	0.35	0.35
01/18/93	16:48:47	23.49	0.77	0.001	0.43	0.43
01/18/93	16:48:48	23.64	0.78	0.001	0.28	0.28
01/18/93	16:48:49	23.53	0.80	0.001	0.39	0.39
01/18/93	16:48:50	23.59	0.82	0.001	0.33	0.33
01/18/93	16:48:51	23.62	0.83	0.001	0.30	0.30
01/18/93	16:48:52	24.00	0.85	0.001	-0.08	-0.08
01/18/93	16:48:53	23.79	0.87	0.001	0.13	0.13
01/18/93	16:48:54	23.86	0.88	0.001	0.06	0.06
01/18/93	16:48:55	23.84	0.90	0.001	0.08	0.08
01/18/93	16:48:56	23.84	0.92	0.001	0.08	0.08
01/18/93	16:48:57	23.84	0.93	0.001	0.08	0.08
01/18/93	16:48:58	23.84	0.95	0.001	0.08	0.08
01/18/93	16:48:59	23.85	0.97	0.001	0.07	0.07
01/18/93	16:49:00	23.86	0.98	0.001	0.06	0.06
01/18/93	16:49:01	23.86	1.00	0.001	0.06	0.06
01/18/93	16:49:13	23.90	1.20	0.001	0.02	0.02
01/18/93	16:49:25	23.91	1.40	0.001	0.01	0.01
01/18/93	16:49:37	23.91	1.60	0.001	0.01	0.01
01/18/93	16:49:49	23.91	1.80	0.001	0.01	0.01
01/18/93	16:50:01	23.92	2.00	0.001	0.00	0.00
01/18/93	16:50:13	23.91	2.20	0.002	0.01	0.01

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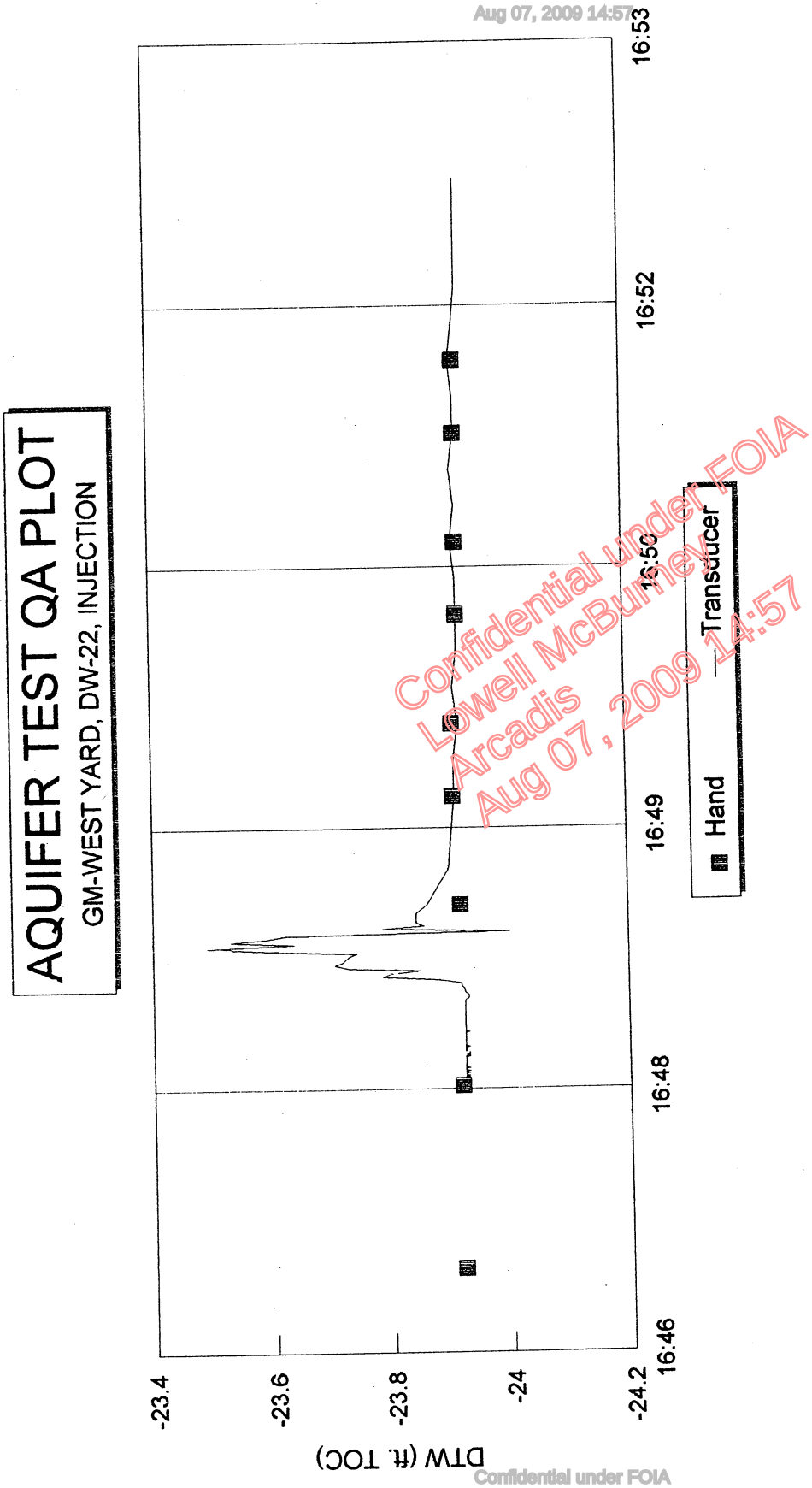
SITE: GENERAL MOTORS, PONTIAC MI., WEST YARD
WELL: DW-22, INJECTION
TIME OF SLUG INJ/WITH = 16:48:01 MILITARY TIME
STATIC WATER LEVEL = 23.92 FEET BELOW MEASURING POINT
TREND = (- = rising) FEET PER MINUTE
NO. OF DTW READINGS = 162
INJECTION/WITHDRAWAL (1/2): 1

DATE	TIME (24 HOUR)	DTW (FT)	t (MINS)	t (DAYS)	RESIDUAL IH/DD (FT)	CORRECTED IH/DD (FT)
01/18/93	16:50:25	23.92	2.40	0.002	0.00	0.00
01/18/93	16:50:37	23.92	2.60	0.002	0.00	0.00
01/18/93	16:50:49	23.92	2.80	0.002	0.00	0.00
01/18/93	16:51:01	23.91	3.00	0.002	0.01	0.01
01/18/93	16:51:13	23.92	3.20	0.002	0.00	0.00
01/18/93	16:51:25	23.91	3.40	0.002	0.01	0.01
01/18/93	16:51:37	23.92	3.60	0.003	0.00	0.00
01/18/93	16:51:49	23.92	3.80	0.003	0.00	0.00
01/18/93	16:52:01	23.91	4.00	0.003	0.01	0.01
01/18/93	16:52:13	23.92	4.20	0.003	0.00	0.00
01/18/93	16:52:25	23.93	4.40	0.003	-0.01	-0.01
01/18/93	16:52:37	23.93	4.60	0.003	-0.01	-0.01
01/18/93	16:52:49	23.93	4.80	0.003	-0.01	-0.01
01/18/93	16:53:01	23.93	5.00	0.003	-0.01	-0.01

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SITE: GENERAL MOTORS, PONTIAC MI., WEST YARD
WELL: DW-22, WITHDRAWAL
TIME OF SLUG INJ/WITH = 16:56:01 MILITARY TIME
STATIC WATER LEVEL = 23.92 FEET BELOW MEASURING POINT
TREND = (- = rising) FEET PER MINUTE
NO. OF DTW READINGS = 161
INJECTION/WITHDRAWAL (1/2): 2

DATE	TIME (24 HOUR)	DTW (FT)	t (MINS)	t (DAYS)	RESIDUAL IH/DD (FT)	CORRECTED IH/DD (FT)
01/18/93	16:55:01	23.92	-1.00	-0.001	0.00	0.00
01/18/93	16:56:01	23.97	0.00	0.000	0.05	0.05
01/18/93	16:56:01	24.06	0.00	0.000	0.14	0.14
01/18/93	16:56:01	24.03	0.01	0.000	0.11	0.11
01/18/93	16:56:02	24.18	0.01	0.000	0.26	0.26
01/18/93	16:56:02	24.12	0.01	0.000	0.20	0.20
01/18/93	16:56:02	24.13	0.02	0.000	0.21	0.21
01/18/93	16:56:02	24.13	0.02	0.000	0.21	0.21
01/18/93	16:56:02	24.13	0.02	0.000	0.21	0.21
01/18/93	16:56:03	24.13	0.03	0.000	0.21	0.21
01/18/93	16:56:03	24.12	0.03	0.000	0.20	0.20
01/18/93	16:56:03	24.13	0.03	0.000	0.21	0.21
01/18/93	16:56:03	24.12	0.04	0.000	0.20	0.20
01/18/93	16:56:03	24.12	0.04	0.000	0.20	0.20
01/18/93	16:56:04	24.12	0.04	0.000	0.19	0.19
01/18/93	16:56:04	24.12	0.05	0.000	0.19	0.19
01/18/93	16:56:04	24.12	0.05	0.000	0.19	0.19
01/18/93	16:56:04	24.12	0.05	0.000	0.19	0.19
01/18/93	16:56:04	24.11	0.06	0.000	0.19	0.19
01/18/93	16:56:05	24.12	0.06	0.000	0.19	0.19
01/18/93	16:56:05	24.11	0.06	0.000	0.19	0.19
01/18/93	16:56:05	24.11	0.07	0.000	0.19	0.19
01/18/93	16:56:05	24.12	0.07	0.000	0.19	0.19
01/18/93	16:56:05	24.11	0.07	0.000	0.19	0.19
01/18/93	16:56:06	24.11	0.08	0.000	0.19	0.19
01/18/93	16:56:06	24.10	0.08	0.000	0.18	0.18
01/18/93	16:56:06	24.10	0.08	0.000	0.18	0.18
01/18/93	16:56:06	24.10	0.09	0.000	0.18	0.18
01/18/93	16:56:06	24.10	0.09	0.000	0.18	0.18
01/18/93	16:56:07	24.10	0.09	0.000	0.18	0.18
01/18/93	16:56:07	24.10	0.10	0.000	0.18	0.18
01/18/93	16:56:07	24.10	0.10	0.000	0.18	0.18
01/18/93	16:56:07	24.10	0.10	0.000	0.18	0.18
01/18/93	16:56:07	24.10	0.11	0.000	0.18	0.18
01/18/93	16:56:08	24.09	0.11	0.000	0.17	0.17
01/18/93	16:56:08	24.10	0.11	0.000	0.18	0.18
01/18/93	16:56:08	24.10	0.12	0.000	0.18	0.18

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SITE: GENERAL MOTORS, PONTIAC MI., WEST YARD
WELL: DW-22, WITHDRAWAL
TIME OF SLUG INJ/WITH = 16:56:01 MILITARY TIME
STATIC WATER LEVEL = 23.92 FEET BELOW MEASURING POINT
TREND = (- = rising) FEET PER MINUTE
NO. OF DTW READINGS = 161
INJECTION/WITHDRAWAL (1/2): 2

DATE	TIME (24 HOUR)	DTW (FT)	t (MINS)	t (DAYS)	RESIDUAL IH/DD (FT)	CORRECTED IH/DD (FT)
01/18/93	16:56:08	24.09	0.12	0.000	0.17	0.17
01/18/93	16:56:08	24.08	0.12	0.000	0.16	0.16
01/18/93	16:56:09	23.98	0.13	0.000	0.06	0.06
01/18/93	16:56:09	24.01	0.13	0.000	0.09	0.09
01/18/93	16:56:09	24.00	0.13	0.000	0.08	0.08
01/18/93	16:56:09	24.00	0.14	0.000	0.08	0.08
01/18/93	16:56:09	23.98	0.14	0.000	0.06	0.06
01/18/93	16:56:10	23.98	0.14	0.000	0.06	0.06
01/18/93	16:56:10	24.01	0.15	0.000	0.09	0.09
01/18/93	16:56:10	24.01	0.15	0.000	0.09	0.09
01/18/93	16:56:10	24.03	0.15	0.000	0.11	0.11
01/18/93	16:56:10	24.07	0.15	0.000	0.15	0.15
01/18/93	16:56:11	24.08	0.16	0.000	0.16	0.16
01/18/93	16:56:11	24.08	0.16	0.000	0.16	0.16
01/18/93	16:56:11	24.09	0.17	0.000	0.17	0.17
01/18/93	16:56:11	24.08	0.17	0.000	0.16	0.16
01/18/93	16:56:11	24.08	0.17	0.000	0.16	0.16
01/18/93	16:56:12	24.08	0.18	0.000	0.16	0.16
01/18/93	16:56:12	24.08	0.18	0.000	0.16	0.16
01/18/93	16:56:12	24.08	0.18	0.000	0.16	0.16
01/18/93	16:56:12	24.08	0.19	0.000	0.16	0.16
01/18/93	16:56:12	24.08	0.19	0.000	0.16	0.16
01/18/93	16:56:13	24.08	0.19	0.000	0.16	0.16
01/18/93	16:56:13	24.07	0.20	0.000	0.15	0.15
01/18/93	16:56:13	24.08	0.20	0.000	0.16	0.16
01/18/93	16:56:13	24.07	0.20	0.000	0.15	0.15
01/18/93	16:56:13	24.07	0.21	0.000	0.15	0.15
01/18/93	16:56:14	24.07	0.21	0.000	0.15	0.15
01/18/93	16:56:14	24.07	0.21	0.000	0.15	0.15
01/18/93	16:56:14	24.07	0.22	0.000	0.15	0.15
01/18/93	16:56:14	24.07	0.22	0.000	0.15	0.15
01/18/93	16:56:14	24.06	0.22	0.000	0.14	0.14
01/18/93	16:56:15	24.05	0.23	0.000	0.13	0.13
01/18/93	16:56:15	24.05	0.23	0.000	0.13	0.13
01/18/93	16:56:15	24.05	0.23	0.000	0.13	0.13
01/18/93	16:56:15	24.03	0.24	0.000	0.11	0.11
01/18/93	16:56:15	24.03	0.24	0.000	0.11	0.11

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SITE: GENERAL MOTORS, PONTIAC MI., WEST YARD
WELL: DW-22, WITHDRAWAL
TIME OF SLUG INJ/WITH = 16:56:01 MILITARY TIME
STATIC WATER LEVEL = 23.92 FEET BELOW MEASURING POINT
TREND = (- = rising) FEET PER MINUTE
NO. OF DTW READINGS = 161
INJECTION/WITHDRAWAL (1/2): 2

DATE	TIME (24 HOUR)	DTW (FT)	t (MINS)	t (DAYS)	RESIDUAL IH/DD (FT)	CORRECTED IH/DD (FT)
01/18/93	16:56:16	24.03	0.24	0.000	0.11	0.11
01/18/93	16:56:16	24.04	0.25	0.000	0.12	0.12
01/18/93	16:56:16	24.04	0.25	0.000	0.12	0.12
01/18/93	16:56:16	24.03	0.25	0.000	0.11	0.11
01/18/93	16:56:16	24.03	0.26	0.000	0.11	0.11
01/18/93	16:56:17	24.04	0.26	0.000	0.12	0.12
01/18/93	16:56:17	24.05	0.26	0.000	0.13	0.13
01/18/93	16:56:17	24.04	0.27	0.000	0.12	0.12
01/18/93	16:56:17	24.05	0.27	0.000	0.13	0.13
01/18/93	16:56:17	24.05	0.27	0.000	0.13	0.13
01/18/93	16:56:18	24.05	0.28	0.000	0.13	0.13
01/18/93	16:56:18	24.05	0.28	0.000	0.13	0.13
01/18/93	16:56:18	24.05	0.28	0.000	0.13	0.13
01/18/93	16:56:18	24.05	0.29	0.000	0.13	0.13
01/18/93	16:56:18	24.05	0.29	0.000	0.13	0.13
01/18/93	16:56:19	24.05	0.29	0.000	0.13	0.13
01/18/93	16:56:19	24.05	0.30	0.000	0.13	0.13
01/18/93	16:56:19	24.05	0.30	0.000	0.13	0.13
01/18/93	16:56:19	24.05	0.30	0.000	0.13	0.13
01/18/93	16:56:19	24.05	0.31	0.000	0.13	0.13
01/18/93	16:56:20	24.05	0.31	0.000	0.13	0.13
01/18/93	16:56:20	24.05	0.31	0.000	0.13	0.13
01/18/93	16:56:20	24.05	0.32	0.000	0.13	0.13
01/18/93	16:56:20	24.05	0.32	0.000	0.13	0.13
01/18/93	16:56:20	24.04	0.32	0.000	0.12	0.12
01/18/93	16:56:21	24.04	0.33	0.000	0.12	0.12
01/18/93	16:56:21	24.04	0.33	0.000	0.12	0.12
01/18/93	16:56:21	24.03	0.33	0.000	0.11	0.11
01/18/93	16:56:22	24.03	0.35	0.000	0.11	0.11
01/18/93	16:56:23	24.03	0.37	0.000	0.11	0.11
01/18/93	16:56:24	24.03	0.38	0.000	0.11	0.11
01/18/93	16:56:25	24.03	0.40	0.000	0.11	0.11
01/18/93	16:56:26	24.02	0.42	0.000	0.10	0.10
01/18/93	16:56:27	24.01	0.43	0.000	0.09	0.09
01/18/93	16:56:28	24.01	0.45	0.000	0.09	0.09
01/18/93	16:56:29	24.01	0.47	0.000	0.09	0.09
01/18/93	16:56:30	24.01	0.48	0.000	0.09	0.09

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SITE: GENERAL MOTORS, PONTIAC MI., WEST YARD
WELL: DW-22, WITHDRAWAL
TIME OF SLUG INJ/WITH = 16:56:01 MILITARY TIME
STATIC WATER LEVEL = 23.92 FEET BELOW MEASURING POINT
TREND = (- = rising) FEET PER MINUTE
NO. OF DTW READINGS = 161
INJECTION/WITHDRAWAL (1/2): 2

DATE	TIME (24 HOUR)	DTW (FT)	t (MINS)	t (DAYS)	RESIDUAL IH/DD (FT)	CORRECTED IH/DD (FT)
01/18/93	16:56:31	24.01	0.50	0.000	0.09	0.09
01/18/93	16:56:32	24.01	0.52	0.000	0.09	0.09
01/18/93	16:56:33	24.01	0.53	0.000	0.09	0.09
01/18/93	16:56:34	24.00	0.55	0.000	0.08	0.08
01/18/93	16:56:35	24.00	0.57	0.000	0.08	0.08
01/18/93	16:56:36	24.00	0.58	0.000	0.08	0.08
01/18/93	16:56:37	24.00	0.60	0.000	0.08	0.08
01/18/93	16:56:38	23.99	0.62	0.000	0.07	0.07
01/18/93	16:56:39	23.98	0.63	0.000	0.06	0.06
01/18/93	16:56:40	23.99	0.65	0.000	0.07	0.07
01/18/93	16:56:41	23.98	0.67	0.000	0.06	0.06
01/18/93	16:56:42	23.98	0.68	0.000	0.06	0.06
01/18/93	16:56:43	23.98	0.70	0.000	0.06	0.06
01/18/93	16:56:44	23.98	0.72	0.000	0.06	0.06
01/18/93	16:56:45	23.98	0.73	0.001	0.06	0.06
01/18/93	16:56:46	23.98	0.75	0.001	0.06	0.06
01/18/93	16:56:47	23.98	0.77	0.001	0.06	0.06
01/18/93	16:56:48	23.98	0.78	0.001	0.06	0.06
01/18/93	16:56:49	23.97	0.80	0.001	0.05	0.05
01/18/93	16:56:50	23.97	0.82	0.001	0.05	0.05
01/18/93	16:56:51	23.96	0.83	0.001	0.04	0.04
01/18/93	16:56:52	23.97	0.85	0.001	0.05	0.05
01/18/93	16:56:53	23.97	0.87	0.001	0.05	0.05
01/18/93	16:56:54	23.96	0.88	0.001	0.04	0.04
01/18/93	16:56:55	23.96	0.90	0.001	0.04	0.04
01/18/93	16:56:56	23.97	0.92	0.001	0.05	0.05
01/18/93	16:56:57	23.96	0.93	0.001	0.04	0.04
01/18/93	16:56:58	23.95	0.95	0.001	0.03	0.03
01/18/93	16:56:59	23.95	0.97	0.001	0.03	0.03
01/18/93	16:57:00	23.95	0.98	0.001	0.03	0.03
01/18/93	16:57:01	23.95	1.00	0.001	0.02	0.02
01/18/93	16:57:13	23.95	1.20	0.001	0.02	0.02
01/18/93	16:57:25	23.93	1.40	0.001	0.01	0.01
01/18/93	16:57:49	23.93	1.80	0.001	0.01	0.01
01/18/93	16:58:01	23.93	2.00	0.001	0.01	0.01
01/18/93	16:58:13	23.93	2.20	0.002	0.01	0.01
01/18/93	16:58:25	23.92	2.40	0.002	0.00	0.00

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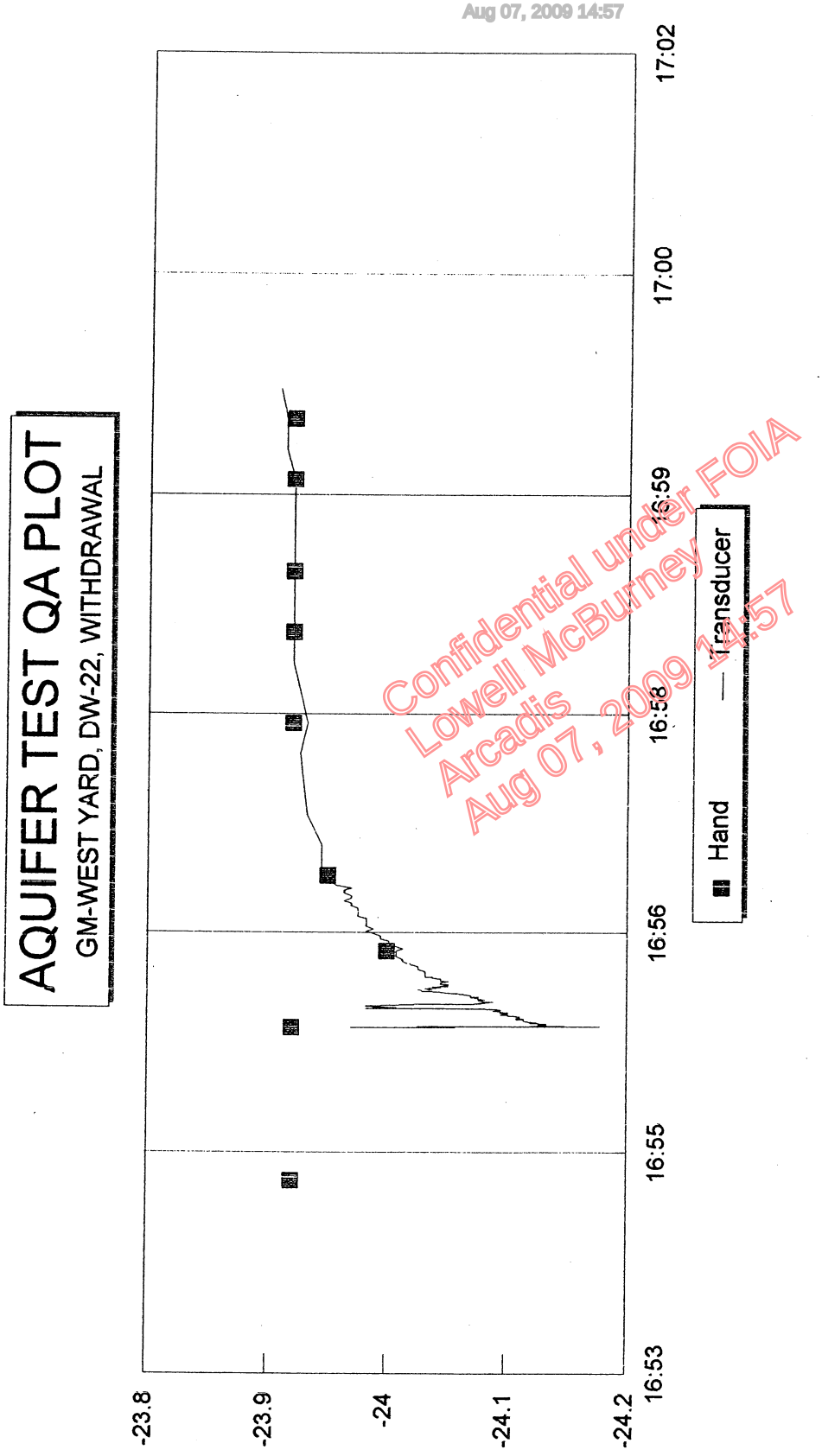
SITE: GENERAL MOTORS, PONTIAC MI., WEST YARD
WELL: DW-22, WITHDRAWAL
TIME OF SLUG INJ/WITH = 16:56:01 MILITARY TIME
STATIC WATER LEVEL = 23.92 FEET BELOW MEASURING POINT
TREND = (- = rising) FEET PER MINUTE
NO. OF DTW READINGS = 161
INJECTION/WITHDRAWAL (1/2): 2

DATE	TIME (24 HOUR)	DTW (FT)	t (MINS)	t (DAYS)	RESIDUAL IH/DD (FT)	CORRECTED IH/DD (FT)
01/18/93	16:58:37	23.92	2.60	0.002	0.00	0.00
01/18/93	16:58:49	23.92	2.80	0.002	0.00	0.00
01/18/93	16:59:01	23.92	3.00	0.002	0.00	0.00
01/18/93	16:59:13	23.92	3.20	0.002	0.00	0.00
01/18/93	16:59:37	23.92	3.60	0.003	0.00	0.00
01/18/93	16:59:49	23.91	3.80	0.003	-0.01	-0.01
01/18/93	17:00:01	23.91	4.00	0.003	-0.01	-0.01
01/18/93	17:00:13	23.91	4.20	0.003	-0.01	-0.01
01/18/93	17:00:25	23.91	4.40	0.003	-0.01	-0.01
01/18/93	17:00:37	23.91	4.60	0.003	-0.01	-0.01
01/18/93	17:00:49	23.91	4.80	0.003	-0.01	-0.01
01/18/93	17:01:01	24.50	5.00	0.003	0.58	0.58
01/18/93	17:01:13	27.25	5.20	0.004	3.33	3.33

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APPENDIX B.2

PARSONS ES TESTS 1996

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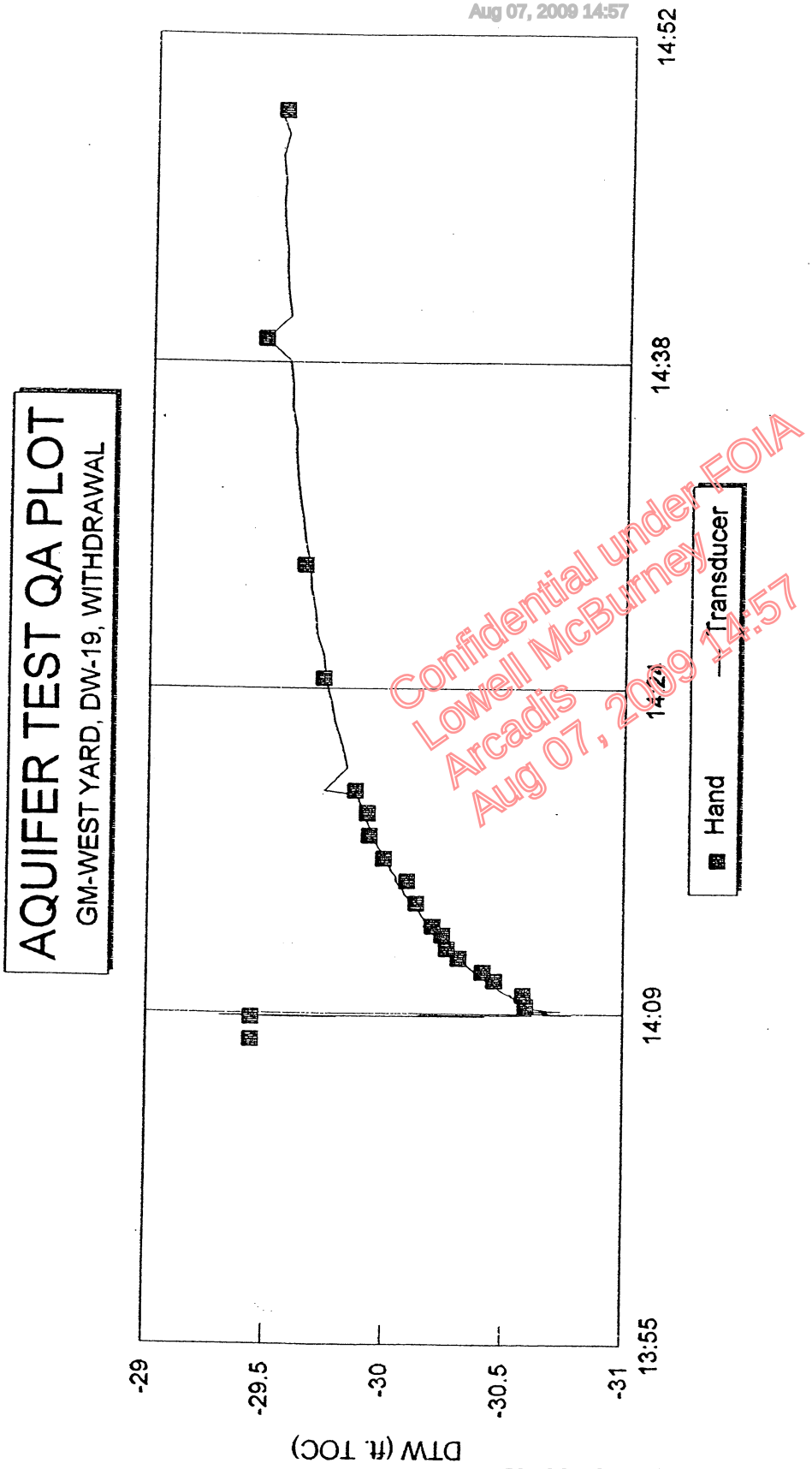
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SITE: GENERAL MOTORS, PONTIAC MI., WEST YARD
WELL: DW-20, INJECTION
TIME OF SLUG INJ/WITH = 15:25:48 MILITARY TIME
STATIC WATER LEVEL = 25.32 FEET BELOW MEASURING POINT
TREND = (- = rising) FEET PER MINUTE
NO. OF DTW READINGS = 163
INJECTION/WITHDRAWAL (1/2): 1

DATE	TIME (24 HOUR)	DTW (FT)	t (MINS)	t (DAYS)	RESIDUAL IH/DD (FT)	CORRECTED IH/DD (FT)
01/18/93	15:24:48	25.32	-1.00	-0.001	0.00	0.00
01/18/93	15:25:48	25.28	0.00	0.000	0.04	0.04
01/18/93	15:25:48	25.28	0.00	0.000	0.04	0.04
01/18/93	15:25:48	25.28	0.01	0.000	0.04	0.04
01/18/93	15:25:49	25.28	0.01	0.000	0.04	0.04
01/18/93	15:25:49	25.28	0.01	0.000	0.04	0.04
01/18/93	15:25:49	25.28	0.02	0.000	0.04	0.04
01/18/93	15:25:49	25.28	0.02	0.000	0.04	0.04
01/18/93	15:25:49	25.28	0.02	0.000	0.04	0.04
01/18/93	15:25:50	25.28	0.03	0.000	0.04	0.04
01/18/93	15:25:50	25.28	0.03	0.000	0.04	0.04
01/18/93	15:25:50	25.28	0.03	0.000	0.04	0.04
01/18/93	15:25:50	25.28	0.04	0.000	0.04	0.04
01/18/93	15:25:50	25.29	0.04	0.000	0.03	0.03
01/18/93	15:25:51	25.28	0.04	0.000	0.04	0.04
01/18/93	15:25:51	25.28	0.05	0.000	0.04	0.04
01/18/93	15:25:51	25.28	0.05	0.000	0.04	0.04
01/18/93	15:25:51	25.28	0.05	0.000	0.04	0.04
01/18/93	15:25:51	25.29	0.06	0.000	0.03	0.03
01/18/93	15:25:52	25.29	0.06	0.000	0.03	0.03
01/18/93	15:25:52	25.28	0.06	0.000	0.04	0.04
01/18/93	15:25:52	25.29	0.07	0.000	0.03	0.03
01/18/93	15:25:52	25.29	0.07	0.000	0.03	0.03
01/18/93	15:25:52	25.28	0.07	0.000	0.04	0.04
01/18/93	15:25:53	25.28	0.08	0.000	0.04	0.04
01/18/93	15:25:53	25.28	0.08	0.000	0.04	0.04
01/18/93	15:25:53	25.28	0.08	0.000	0.04	0.04
01/18/93	15:25:53	25.28	0.09	0.000	0.04	0.04
01/18/93	15:25:53	25.28	0.09	0.000	0.04	0.04
01/18/93	15:25:54	25.28	0.09	0.000	0.04	0.04
01/18/93	15:25:54	25.28	0.10	0.000	0.04	0.04
01/18/93	15:25:54	25.28	0.10	0.000	0.04	0.04
01/18/93	15:25:54	25.28	0.10	0.000	0.04	0.04
01/18/93	15:25:54	25.28	0.11	0.000	0.04	0.04
01/18/93	15:25:55	25.24	0.11	0.000	0.08	0.08
01/18/93	15:25:55	25.13	0.11	0.000	0.19	0.19
01/18/93	15:25:55	24.94	0.12	0.000	0.38	0.38

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SITE: GENERAL MOTORS, PONTIAC MI., WEST YARD
WELL: DW-19, WITHDRAWAL
TIME OF SLUG INJ/WITH = 14:09:27 MILITARY TIME
STATIC WATER LEVEL = 29.44 FEET BELOW MEASURING POINT
TREND = (- = rising) FEET PER MINUTE
NO. OF DTW READINGS = 217
INJECTION/WITHDRAWAL (1/2): 2

DATE	TIME (24 HOUR)	DTW (FT)	t (MINS)	t (DAYS)	RESIDUAL IH/DD (FT)	CORRECTED IH/DD (FT)
01/18/93	14:11:51	30.34	2.40	0.002	0.90	0.90
01/18/93	14:12:03	30.30	2.60	0.002	0.86	0.86
01/18/93	14:12:15	30.30	2.80	0.002	0.86	0.86
01/18/93	14:12:27	30.28	3.00	0.002	0.84	0.84
01/18/93	14:12:39	30.26	3.20	0.002	0.82	0.82
01/18/93	14:12:51	30.24	3.40	0.002	0.80	0.80
01/18/93	14:13:03	30.22	3.60	0.003	0.78	0.78
01/18/93	14:13:15	30.20	3.80	0.003	0.76	0.76
01/18/93	14:13:27	30.16	4.00	0.003	0.72	0.72
01/18/93	14:13:39	30.18	4.20	0.003	0.73	0.73
01/18/93	14:13:51	30.16	4.40	0.003	0.72	0.72
01/18/93	14:14:03	30.14	4.60	0.003	0.70	0.70
01/18/93	14:14:15	30.13	4.80	0.003	0.69	0.69
01/18/93	14:14:27	30.11	5.00	0.003	0.67	0.67
01/18/93	14:14:39	30.10	5.20	0.004	0.66	0.66
01/18/93	14:14:51	30.08	5.40	0.004	0.64	0.64
01/18/93	14:15:03	30.07	5.60	0.004	0.63	0.63
01/18/93	14:15:15	30.06	5.80	0.004	0.61	0.61
01/18/93	14:15:27	30.04	6.00	0.004	0.60	0.60
01/18/93	14:15:39	30.04	6.20	0.004	0.60	0.60
01/18/93	14:15:51	30.02	6.40	0.004	0.58	0.58
01/18/93	14:16:03	30.02	6.60	0.005	0.58	0.58
01/18/93	14:16:15	30.00	6.80	0.005	0.56	0.56
01/18/93	14:16:27	30.00	7.00	0.005	0.56	0.56
01/18/93	14:16:39	29.99	7.20	0.005	0.55	0.55
01/18/93	14:16:51	29.97	7.40	0.005	0.53	0.53
01/18/93	14:17:03	29.96	7.60	0.005	0.52	0.52
01/18/93	14:17:15	29.96	7.80	0.005	0.52	0.52
01/18/93	14:17:27	29.95	8.00	0.006	0.51	0.51
01/18/93	14:17:39	29.94	8.20	0.006	0.50	0.50
01/18/93	14:17:51	29.93	8.40	0.006	0.49	0.49
01/18/93	14:18:03	29.92	8.60	0.006	0.48	0.48
01/18/93	14:18:15	29.91	8.80	0.006	0.47	0.47
01/18/93	14:18:27	29.90	9.00	0.006	0.46	0.46
01/18/93	14:18:39	29.90	9.20	0.006	0.46	0.46
01/18/93	14:18:51	29.89	9.40	0.007	0.45	0.45
01/18/93	14:19:03	29.88	9.60	0.007	0.44	0.44

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SITE: GENERAL MOTORS, PONTIAC MI., WEST YARD
WELL: DW-19, WITHDRAWAL
TIME OF SLUG INJ/WITH = 14:09:27 MILITARY TIME
STATIC WATER LEVEL = 29.44 FEET BELOW MEASURING POINT
TREND = (- = rising) FEET PER MINUTE
NO. OF DTW READINGS = 217
INJECTION/WITHDRAWAL (1/2): 2

DATE	TIME (24 HOUR)	DTW (FT)	t (MINS)	t (DAYS)	RESIDUAL IH/DD (FT)	CORRECTED IH/DD (FT)
01/18/93	14:09:42	30.68	0.24	0.000	1.24	1.24
01/18/93	14:09:42	30.66	0.25	0.000	1.22	1.22
01/18/93	14:09:42	30.67	0.25	0.000	1.23	1.23
01/18/93	14:09:42	30.66	0.25	0.000	1.22	1.22
01/18/93	14:09:42	30.66	0.26	0.000	1.22	1.22
01/18/93	14:09:43	30.68	0.26	0.000	1.24	1.24
01/18/93	14:09:43	30.68	0.26	0.000	1.24	1.24
01/18/93	14:09:43	30.68	0.27	0.000	1.24	1.24
01/18/93	14:09:43	30.65	0.27	0.000	1.21	1.21
01/18/93	14:09:43	30.63	0.27	0.000	1.18	1.18
01/18/93	14:09:44	30.71	0.28	0.000	1.27	1.27
01/18/93	14:09:44	30.68	0.28	0.000	1.24	1.24
01/18/93	14:09:44	30.68	0.28	0.000	1.24	1.24
01/18/93	14:09:44	30.67	0.29	0.000	1.23	1.23
01/18/93	14:09:44	30.74	0.29	0.000	1.30	1.30
01/18/93	14:09:45	30.69	0.29	0.000	1.25	1.25
01/18/93	14:09:45	30.67	0.30	0.000	1.23	1.23
01/18/93	14:09:45	30.65	0.30	0.000	1.21	1.21
01/18/93	14:09:45	30.68	0.30	0.000	1.24	1.24
01/18/93	14:09:45	30.68	0.31	0.000	1.24	1.24
01/18/93	14:09:46	30.68	0.31	0.000	1.24	1.24
01/18/93	14:09:46	30.69	0.31	0.000	1.25	1.25
01/18/93	14:09:46	30.70	0.32	0.000	1.25	1.25
01/18/93	14:09:46	30.71	0.32	0.000	1.27	1.27
01/18/93	14:09:46	30.70	0.32	0.000	1.25	1.25
01/18/93	14:09:47	30.66	0.33	0.000	1.22	1.22
01/18/93	14:09:47	30.67	0.33	0.000	1.23	1.23
01/18/93	14:09:47	30.68	0.33	0.000	1.24	1.24
01/18/93	14:09:48	30.64	0.35	0.000	1.20	1.20
01/18/93	14:09:49	30.64	0.37	0.000	1.20	1.20
01/18/93	14:09:50	30.63	0.38	0.000	1.18	1.18
01/18/93	14:09:51	30.63	0.40	0.000	1.18	1.18
01/18/93	14:09:52	30.63	0.42	0.000	1.18	1.18
01/18/93	14:09:53	30.63	0.43	0.000	1.18	1.18
01/18/93	14:09:54	30.62	0.45	0.000	1.18	1.18
01/18/93	14:09:55	30.61	0.47	0.000	1.17	1.17
01/18/93	14:09:56	30.61	0.48	0.000	1.17	1.17

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SITE: GENERAL MOTORS, PONTIAC MI. WEST YARD
WELL: DW-19, WITHDRAWAL
TIME OF SLUG INJ/WITH = 14:09:27 MILITARY TIME
STATIC WATER LEVEL = 29.44 FEET BELOW MEASURING POINT
TREND = (- = rising) FEET PER MINUTE
NO. OF DTW READINGS = 217
INJECTION/WITHDRAWAL (1/2): 2

DATE	TIME (24 HOUR)	DTW (FT)	t (MINS)	t (DAYS)	RESIDUAL IH/DD (FT)	CORRECTED IH/DD (FT)
01/18/93	14:08:27	29.44	-1.00	-0.001	0.00	0.00
01/18/93	14:09:27	29.43	0.00	0.000	-0.01	-0.01
01/18/93	14:09:27	29.43	0.00	0.000	-0.01	-0.01
01/18/93	14:09:27	29.44	0.01	0.000	0.00	0.00
01/18/93	14:09:28	29.44	0.01	0.000	0.00	0.00
01/18/93	14:09:28	29.45	0.01	0.000	0.01	0.01
01/18/93	14:09:28	29.43	0.02	0.000	-0.01	-0.01
01/18/93	14:09:28	29.43	0.02	0.000	-0.01	-0.01
01/18/93	14:09:28	29.44	0.02	0.000	0.00	0.00
01/18/93	14:09:29	29.58	0.03	0.000	0.14	0.14
01/18/93	14:09:29	29.80	0.03	0.000	0.35	0.35
01/18/93	14:09:29	29.77	0.03	0.000	0.33	0.33
01/18/93	14:09:29	29.66	0.04	0.000	0.22	0.22
01/18/93	14:09:29	29.95	0.04	0.000	0.51	0.51
01/18/93	14:09:30	30.09	0.04	0.000	0.65	0.65
01/18/93	14:09:30	29.41	0.05	0.000	-0.03	-0.03
01/18/93	14:09:30	29.31	0.05	0.000	-0.13	-0.13
01/18/93	14:09:30	29.50	0.05	0.000	0.06	0.06
01/18/93	14:09:30	29.87	0.06	0.000	0.43	0.43
01/18/93	14:09:31	30.03	0.06	0.000	0.59	0.59
01/18/93	14:09:31	30.41	0.06	0.000	0.97	0.97
01/18/93	14:09:31	30.43	0.07	0.000	0.99	0.99
01/18/93	14:09:31	30.14	0.07	0.000	0.70	0.70
01/18/93	14:09:31	30.26	0.07	0.000	0.82	0.82
01/18/93	14:09:32	30.51	0.08	0.000	1.07	1.07
01/18/93	14:09:32	30.73	0.08	0.000	1.29	1.29
01/18/93	14:09:32	30.85	0.08	0.000	1.41	1.41
01/18/93	14:09:32	30.86	0.09	0.000	1.42	1.42
01/18/93	14:09:32	30.77	0.09	0.000	1.32	1.32
01/18/93	14:09:33	30.67	0.09	0.000	1.23	1.23
01/18/93	14:09:33	30.66	0.10	0.000	1.22	1.22
01/18/93	14:09:33	30.72	0.10	0.000	1.28	1.28
01/18/93	14:09:33	30.78	0.10	0.000	1.34	1.34
01/18/93	14:09:33	30.76	0.11	0.000	1.32	1.32
01/18/93	14:09:34	30.71	0.11	0.000	1.27	1.27
01/18/93	14:09:34	30.66	0.11	0.000	1.22	1.22
01/18/93	14:09:34	30.69	0.12	0.000	1.25	1.25

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SITE: GENERAL MOTORS, PONTIAC, MI., WEST YARD
WELL: DW-19, INJECTION
TIME OF SLUG INJ/WITH = 13:19:23 MILITARY TIME
STATIC WATER LEVEL = 29.51 FEET BELOW MEASURING POINT
TREND = (- = rising) FEET PER MINUTE
NO. OF DTW READINGS = 218
INJECTION/WITHDRAWAL (1/2): 1

DATE	TIME (24 HOUR)	DTW (FT)	t (MINS)	t (DAYS)	RESIDUAL IH/DD (FT)	CORRECTED IH/DD (FT)
01/18/93	13:29:11	29.08	9.80	0.007	0.43	0.43
01/18/93	13:29:23	29.08	10.00	0.007	0.43	0.43
01/18/93	13:30:23	29.12	11.00	0.008	0.39	0.39
01/18/93	13:31:23	29.14	12.00	0.008	0.37	0.37
01/18/93	13:32:23	29.18	13.00	0.009	0.33	0.33
01/18/93	13:33:23	29.21	14.00	0.010	0.30	0.30
01/18/93	13:34:23	29.23	15.00	0.010	0.28	0.28
01/18/93	13:35:23	29.21	16.00	0.011	0.30	0.30
01/18/93	13:36:23	29.27	17.00	0.012	0.24	0.24
01/18/93	13:37:23	29.29	18.00	0.012	0.22	0.22
01/18/93	13:38:23	29.30	19.00	0.013	0.21	0.21
01/18/93	13:39:23	29.32	20.00	0.014	0.19	0.19
01/18/93	13:40:23	29.33	21.00	0.015	0.18	0.18
01/18/93	13:41:23	29.34	22.00	0.015	0.17	0.17
01/18/93	13:42:23	29.35	23.00	0.016	0.16	0.16
01/18/93	13:43:23	29.36	24.00	0.017	0.15	0.15
01/18/93	13:44:23	29.37	25.00	0.017	0.15	0.15
01/18/93	13:45:23	29.38	26.00	0.018	0.13	0.13
01/18/93	13:46:23	29.38	27.00	0.019	0.13	0.13
01/18/93	13:47:23	29.39	28.00	0.019	0.12	0.12
01/18/93	13:48:23	29.39	29.00	0.020	0.12	0.12
01/18/93	13:49:23	29.38	30.00	0.021	0.13	0.13
01/18/93	13:50:23	29.40	31.00	0.022	0.11	0.11
01/18/93	13:51:23	29.41	32.00	0.022	0.10	0.10
01/18/93	13:52:23	29.38	33.00	0.023	0.13	0.13
01/18/93	13:53:23	29.42	34.00	0.024	0.09	0.09
01/18/93	13:54:23	29.42	35.00	0.024	0.09	0.09
01/18/93	13:55:23	29.45	36.00	0.025	0.06	0.06
01/18/93	13:56:23	29.43	37.00	0.026	0.08	0.08
01/18/93	13:57:23	29.45	38.00	0.026	0.06	0.06
01/18/93	13:58:23	29.45	39.00	0.027	0.06	0.06
01/18/93	13:59:23	29.45	40.00	0.028	0.06	0.06
01/18/93	14:00:23	29.45	41.00	0.028	0.06	0.06

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SITE: GENERAL MOTORS, PONTIAC, MI WEST YARD
WELL: DW-19, INJECTION
TIME OF SLUG INJ/WITH = 13:19:23 MILITARY TIME
STATIC WATER LEVEL = 29.51 FEET BELOW MEASURING POINT
TREND = (- = rising) FEET PER MINUTE
NO. OF DTW READINGS = 218
INJECTION/WITHDRAWAL (1/2): 1

DATE	TIME (24 HOUR)	DTW (FT)	t (MINS)	t (DAYS)	RESIDUAL IH/DD (FT)	CORRECTED IH/DD (FT)
01/18/93	13:19:53	28.36	0.50	0.000	1.15	1.15
01/18/93	13:19:54	28.36	0.52	0.000	1.15	1.15
01/18/93	13:19:55	28.37	0.53	0.000	1.14	1.14
01/18/93	13:19:56	28.37	0.55	0.000	1.14	1.14
01/18/93	13:19:57	28.37	0.57	0.000	1.14	1.14
01/18/93	13:19:58	28.38	0.58	0.000	1.14	1.14
01/18/93	13:19:59	28.38	0.60	0.000	1.14	1.14
01/18/93	13:20:00	28.30	0.62	0.000	1.21	1.21
01/18/93	13:20:01	28.41	0.63	0.000	1.10	1.10
01/18/93	13:20:02	28.35	0.65	0.000	1.16	1.16
01/18/93	13:20:03	28.38	0.67	0.000	1.14	1.14
01/18/93	13:20:04	28.40	0.68	0.000	1.11	1.11
01/18/93	13:20:05	28.40	0.70	0.000	1.11	1.11
01/18/93	13:20:06	28.40	0.72	0.000	1.11	1.11
01/18/93	13:20:07	28.39	0.73	0.001	1.12	1.12
01/18/93	13:20:08	28.36	0.75	0.001	1.15	1.15
01/18/93	13:20:09	28.42	0.77	0.001	1.09	1.09
01/18/93	13:20:10	28.41	0.78	0.001	1.10	1.10
01/18/93	13:20:11	28.40	0.80	0.001	1.11	1.11
01/18/93	13:20:12	28.42	0.82	0.001	1.09	1.09
01/18/93	13:20:13	28.41	0.83	0.001	1.10	1.10
01/18/93	13:20:14	28.42	0.85	0.001	1.09	1.09
01/18/93	13:20:15	28.42	0.87	0.001	1.09	1.09
01/18/93	13:20:16	28.42	0.88	0.001	1.09	1.09
01/18/93	13:20:17	28.43	0.90	0.001	1.08	1.08
01/18/93	13:20:18	28.43	0.92	0.001	1.08	1.08
01/18/93	13:20:19	28.43	0.93	0.001	1.08	1.08
01/18/93	13:20:20	28.43	0.95	0.001	1.08	1.08
01/18/93	13:20:21	28.43	0.97	0.001	1.08	1.08
01/18/93	13:20:22	28.43	0.98	0.001	1.08	1.08
01/18/93	13:20:23	28.45	1.00	0.001	1.07	1.07
01/18/93	13:20:35	28.48	1.20	0.001	1.03	1.03
01/18/93	13:20:47	28.51	1.40	0.001	1.00	1.00
01/18/93	13:20:59	28.53	1.60	0.001	0.98	0.98
01/18/93	13:21:11	28.55	1.80	0.001	0.96	0.96
01/18/93	13:21:23	28.59	2.00	0.001	0.92	0.92
01/18/93	13:21:35	28.59	2.20	0.002	0.92	0.92

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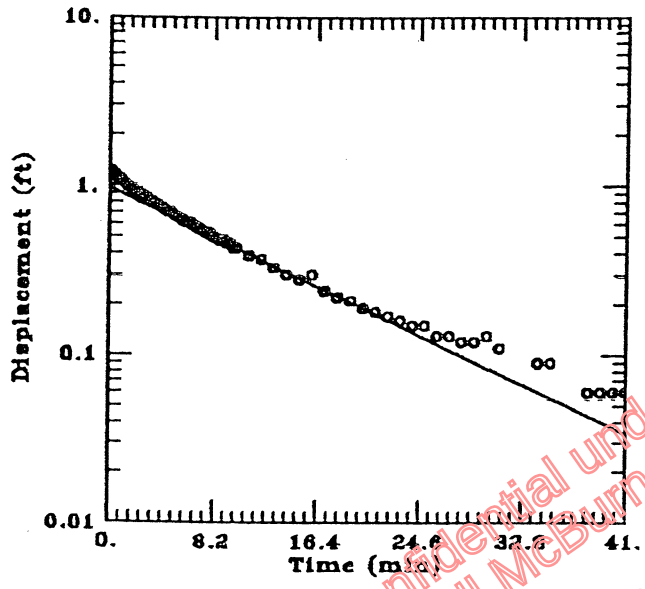
SITE: GENERAL MOTORS, PONTIAC, MI., WEST YARD
WELL: DW-19, INJECTION
TIME OF SLUG INJ/WITH = 13:19:23 MILITARY TIME
STATIC WATER LEVEL = 29.51 FEET BELOW MEASURING POINT
TREND = (- = rising) FEET PER MINUTE
NO. OF DTW READINGS = 218
INJECTION/WITHDRAWAL (1/2): 1

DATE	TIME (24 HOUR)	DTW (FT)	t (MINS)	t (DAYS)	RESIDUAL IH/DD (FT)	CORRECTED IH/DD (FT)
01/18/93	13:19:30	27.89	0.12	0.000	1.62	1.62
01/18/93	13:19:30	27.87	0.12	0.000	1.64	1.64
01/18/93	13:19:31	28.26	0.13	0.000	1.25	1.25
01/18/93	13:19:31	28.57	0.13	0.000	0.94	0.94
01/18/93	13:19:31	28.66	0.13	0.000	0.85	0.85
01/18/93	13:19:31	28.62	0.14	0.000	0.89	0.89
01/18/93	13:19:31	28.31	0.14	0.000	1.20	1.20
01/18/93	13:19:32	28.05	0.14	0.000	1.47	1.47
01/18/93	13:19:32	28.00	0.15	0.000	1.51	1.51
01/18/93	13:19:32	28.17	0.15	0.000	1.34	1.34
01/18/93	13:19:32	28.33	0.15	0.000	1.18	1.18
01/18/93	13:19:32	28.38	0.16	0.000	1.14	1.14
01/18/93	13:19:33	28.47	0.16	0.000	1.04	1.04
01/18/93	13:19:33	28.39	0.16	0.000	1.12	1.12
01/18/93	13:19:33	28.26	0.17	0.000	1.25	1.25
01/18/93	13:19:33	28.18	0.17	0.000	1.33	1.33
01/18/93	13:19:33	28.19	0.17	0.000	1.32	1.32
01/18/93	13:19:34	28.26	0.18	0.000	1.25	1.25
01/18/93	13:19:34	28.34	0.18	0.000	1.17	1.17
01/18/93	13:19:34	28.34	0.18	0.000	1.17	1.17
01/18/93	13:19:34	28.35	0.19	0.000	1.16	1.16
01/18/93	13:19:34	28.30	0.19	0.000	1.21	1.21
01/18/93	13:19:35	28.26	0.19	0.000	1.25	1.25
01/18/93	13:19:35	28.26	0.20	0.000	1.25	1.25
01/18/93	13:19:35	28.27	0.20	0.000	1.24	1.24
01/18/93	13:19:35	28.31	0.20	0.000	1.20	1.20
01/18/93	13:19:35	28.33	0.21	0.000	1.18	1.18
01/18/93	13:19:36	28.33	0.21	0.000	1.18	1.18
01/18/93	13:19:36	28.30	0.21	0.000	1.21	1.21
01/18/93	13:19:36	28.29	0.22	0.000	1.22	1.22
01/18/93	13:19:36	28.29	0.22	0.000	1.22	1.22
01/18/93	13:19:36	28.30	0.22	0.000	1.21	1.21
01/18/93	13:19:37	28.31	0.23	0.000	1.20	1.20
01/18/93	13:19:37	28.31	0.23	0.000	1.20	1.20
01/18/93	13:19:37	28.31	0.23	0.000	1.20	1.20
01/18/93	13:19:37	28.31	0.24	0.000	1.20	1.20
01/18/93	13:19:37	28.31	0.24	0.000	1.20	1.20

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GMWY, DW-19, INJECTION



DATA SET:
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02/01/96

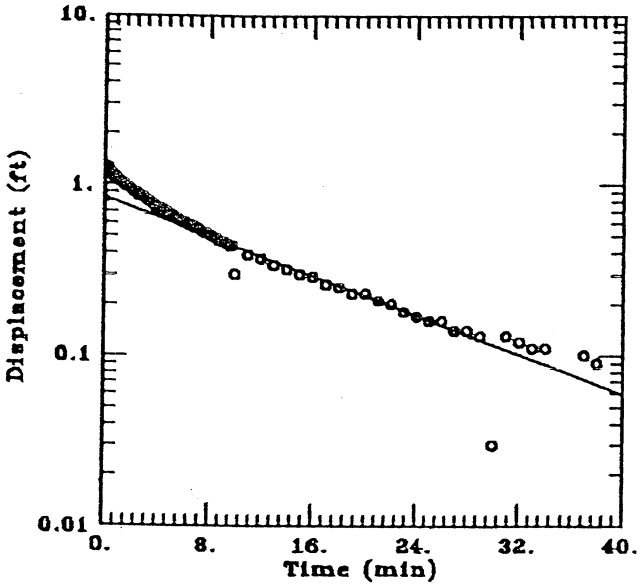
AQUIFER TYP
Unconfined
SOLUTION ME
Bouwer-Rice

ESTIMATED P
K = 0.0001228
y0 = 0.9658 ft

TEST DATA:
H0 = 1.22 ft
rc = 0.08 ft
rw = 0.33 ft
L = 5. ft
b = 9.49 ft
H = 9.49 ft

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GMWY, DW-19, WITHDRAWAL



DATA SET:
C:\GMWY\PRT\AQT
02/01/96

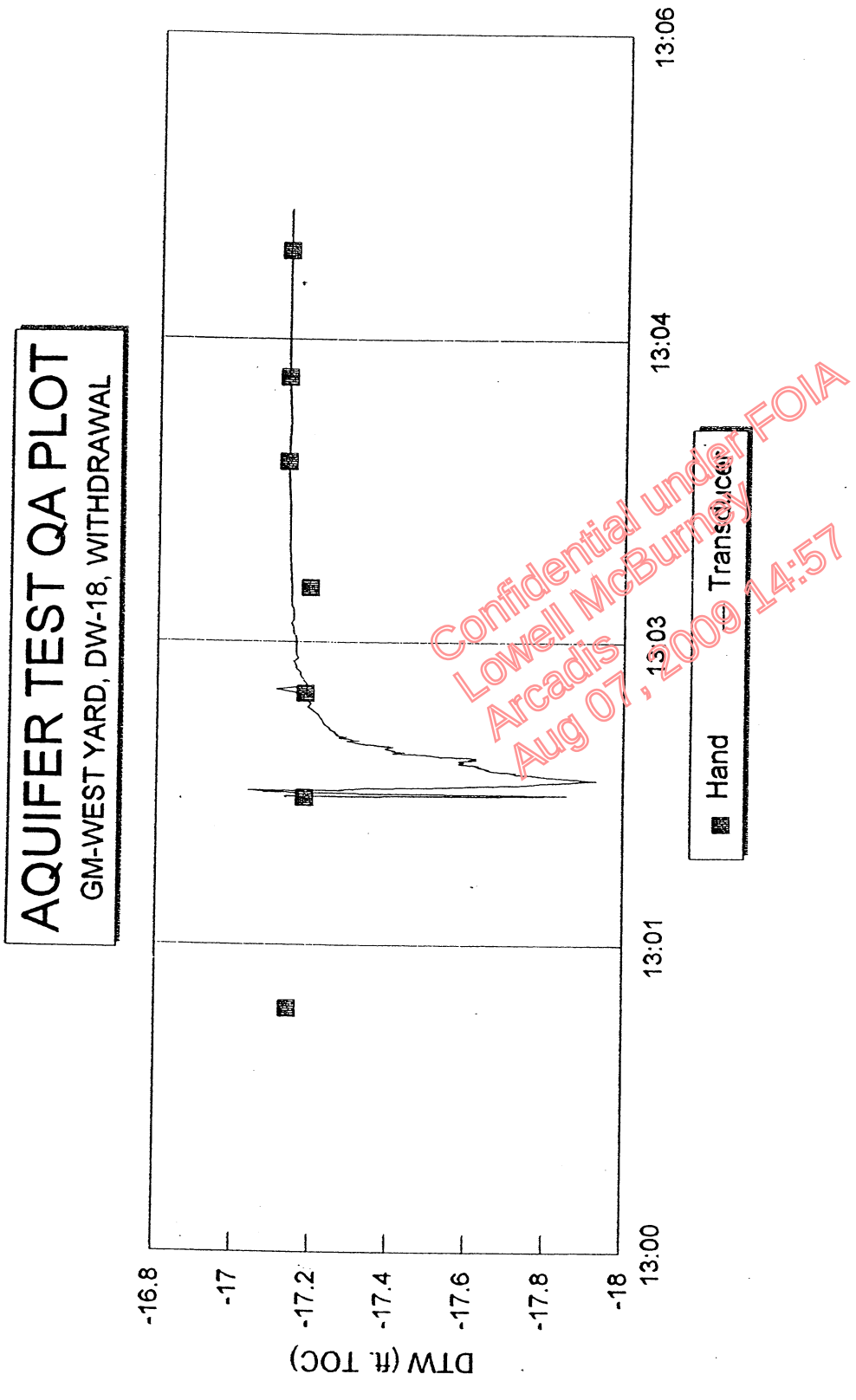
AQUIFER TYP
Unconfined
SOLUTION ME
Bouwer-Rice

ESTIMATED P
K = 4.5761E-05
y0 = 0.8399 ft

TEST DATA:
H0 = 1.27 ft
rc = 0.08 ft
rw = 0.33 ft
L = 5. ft
b = 9.49 ft
H = 9.49 ft

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SITE: GENERAL MOTORS, PONTIAC, MI. WEST YARD
WELL: DW-18, WITHDRAWAL
TIME OF SLUG INJ/WITH = 13:02:37 MILITARY TIME
STATIC WATER LEVEL = 17.14 FEET BELOW MEASURING POINT
TREND = (- = rising) FEET PER MINUTE
NO. OF DTW READINGS = 151
INJECTION/WITHDRAWAL (1/2): 2

DATE	TIME (24 HOUR)	DTW (FT)	t (MINS)	t (DAYS)	RESIDUAL IH/DD (FT)	CORRECTED IH/DD (FT)
01/18/93	13:03:07	17.17	0.50	0.000	0.03	0.03
01/18/93	13:03:08	17.10	0.52	0.000	-0.04	-0.04
01/18/93	13:03:09	17.19	0.53	0.000	0.05	0.05
01/18/93	13:03:10	17.18	0.55	0.000	0.04	0.04
01/18/93	13:03:11	17.17	0.57	0.000	0.03	0.03
01/18/93	13:03:12	17.17	0.58	0.000	0.03	0.03
01/18/93	13:03:13	17.17	0.60	0.000	0.03	0.03
01/18/93	13:03:14	17.16	0.62	0.000	0.02	0.02
01/18/93	13:03:15	17.16	0.63	0.000	0.02	0.02
01/18/93	13:03:16	17.15	0.65	0.000	0.01	0.01
01/18/93	13:03:17	17.16	0.67	0.000	0.02	0.02
01/18/93	13:03:18	17.16	0.68	0.000	0.02	0.02
01/18/93	13:03:19	17.16	0.70	0.000	0.02	0.02
01/18/93	13:03:20	17.16	0.72	0.000	0.02	0.02
01/18/93	13:03:21	17.16	0.73	0.001	0.02	0.02
01/18/93	13:03:22	17.16	0.75	0.001	0.02	0.02
01/18/93	13:03:23	17.16	0.77	0.001	0.02	0.02
01/18/93	13:03:24	17.15	0.78	0.001	0.01	0.01
01/18/93	13:03:25	17.15	0.80	0.001	0.01	0.01
01/18/93	13:03:26	17.15	0.82	0.001	0.01	0.01
01/18/93	13:03:27	17.14	0.83	0.001	0.00	0.00
01/18/93	13:03:28	17.15	0.85	0.001	0.01	0.01
01/18/93	13:03:29	17.15	0.87	0.001	0.01	0.01
01/18/93	13:03:30	17.15	0.88	0.001	0.01	0.01
01/18/93	13:03:31	17.15	0.90	0.001	0.01	0.01
01/18/93	13:03:32	17.14	0.92	0.001	0.00	0.00
01/18/93	13:03:33	17.14	0.93	0.001	0.00	0.00
01/18/93	13:03:34	17.14	0.95	0.001	0.00	0.00
01/18/93	13:03:35	17.14	0.97	0.001	0.00	0.00
01/18/93	13:03:36	17.14	0.98	0.001	0.00	0.00
01/18/93	13:03:37	17.14	1.00	0.001	0.00	0.00
01/18/93	13:03:49	17.14	1.20	0.001	-0.00	-0.00
01/18/93	13:04:01	17.14	1.40	0.001	-0.00	-0.00
01/18/93	13:04:13	17.13	1.60	0.001	-0.01	-0.01
01/18/93	13:04:25	17.14	1.80	0.001	-0.00	-0.00
01/18/93	13:04:37	17.13	2.00	0.001	-0.01	-0.01
01/18/93	13:04:49	17.13	2.20	0.002	-0.01	-0.01

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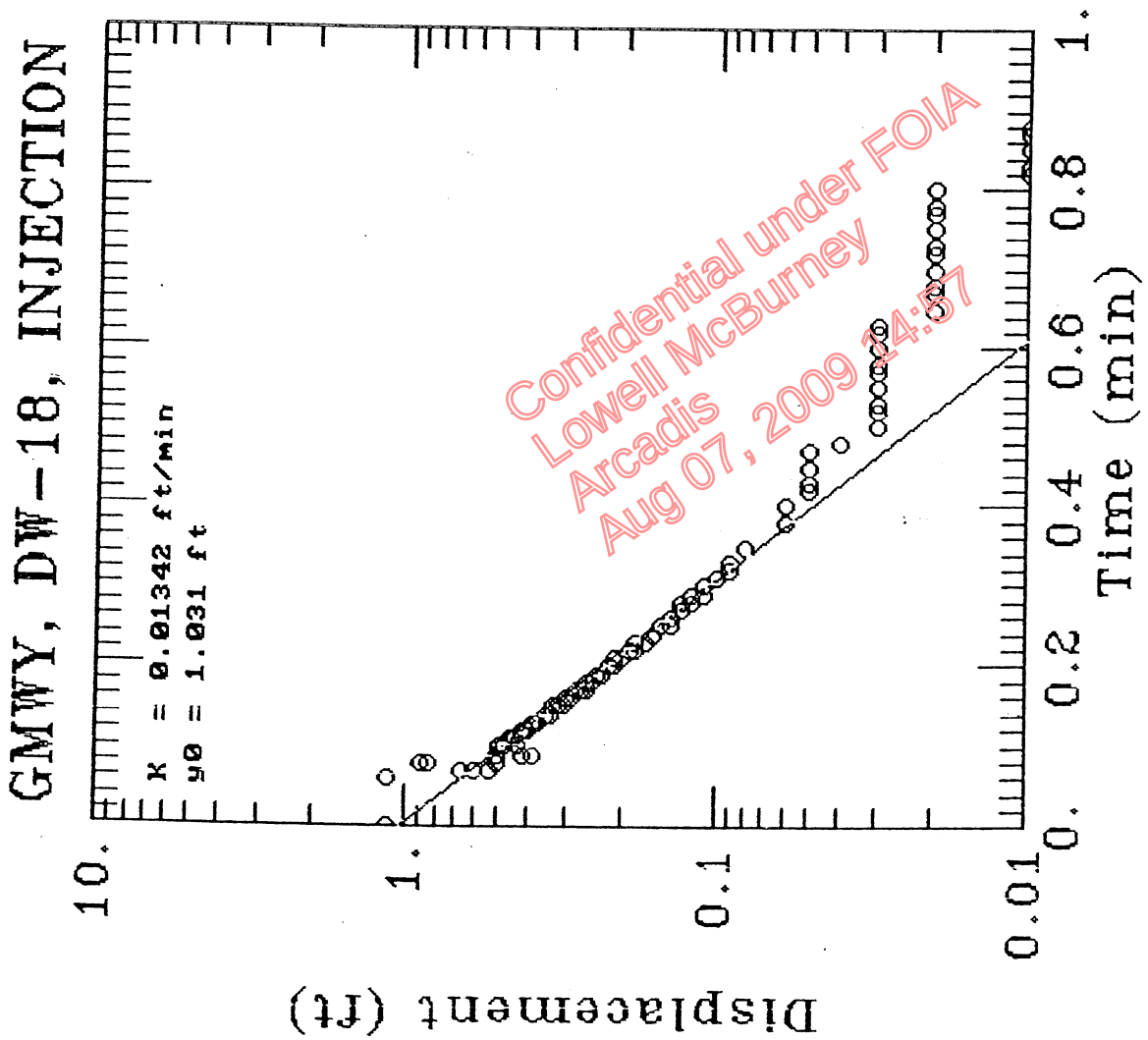
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SITE: GENERAL MOTORS, PONTIAC, MI. WEST YARD
WELL: DW-18, WITHDRAWAL
TIME OF SLUG INJ/WITH = 13:02:37 MILITARY TIME
STATIC WATER LEVEL = 17.14 FEET BELOW MEASURING POINT
TREND = (- = rising) FEET PER MINUTE
NO. OF DTW READINGS = 151
INJECTION/WITHDRAWAL (1/2): 2

DATE	TIME (24 HOUR)	DTW (FT)	t (MINS)	t (DAYS)	RESIDUAL IH/DD (FT)	CORRECTED IH/DD (FT)
01/18/93	13:02:44	17.72	0.12	0.000	0.58	0.58
01/18/93	13:02:44	17.69	0.12	0.000	0.55	0.55
01/18/93	13:02:45	17.67	0.13	0.000	0.53	0.53
01/18/93	13:02:45	17.65	0.13	0.000	0.51	0.51
01/18/93	13:02:45	17.65	0.13	0.000	0.51	0.51
01/18/93	13:02:45	17.65	0.14	0.000	0.51	0.51
01/18/93	13:02:45	17.64	0.14	0.000	0.50	0.50
01/18/93	13:02:46	17.63	0.14	0.000	0.49	0.49
01/18/93	13:02:46	17.63	0.15	0.000	0.49	0.49
01/18/93	13:02:46	17.62	0.15	0.000	0.48	0.48
01/18/93	13:02:46	17.63	0.15	0.000	0.49	0.49
01/18/93	13:02:46	17.61	0.16	0.000	0.47	0.47
01/18/93	13:02:47	17.59	0.16	0.000	0.45	0.45
01/18/93	13:02:47	17.58	0.16	0.000	0.44	0.44
01/18/93	13:02:47	17.59	0.17	0.000	0.45	0.45
01/18/93	13:02:47	17.59	0.17	0.000	0.45	0.45
01/18/93	13:02:47	17.58	0.17	0.000	0.44	0.44
01/18/93	13:02:48	17.58	0.18	0.000	0.44	0.44
01/18/93	13:02:48	17.62	0.18	0.000	0.48	0.48
01/18/93	13:02:48	17.60	0.18	0.000	0.46	0.46
01/18/93	13:02:48	17.62	0.19	0.000	0.48	0.48
01/18/93	13:02:48	17.62	0.19	0.000	0.48	0.48
01/18/93	13:02:49	17.60	0.19	0.000	0.46	0.46
01/18/93	13:02:49	17.53	0.20	0.000	0.39	0.39
01/18/93	13:02:49	17.52	0.20	0.000	0.38	0.38
01/18/93	13:02:49	17.50	0.20	0.000	0.36	0.36
01/18/93	13:02:49	17.48	0.21	0.000	0.34	0.34
01/18/93	13:02:50	17.45	0.21	0.000	0.31	0.31
01/18/93	13:02:50	17.41	0.21	0.000	0.27	0.27
01/18/93	13:02:50	17.44	0.22	0.000	0.30	0.30
01/18/93	13:02:50	17.42	0.22	0.000	0.28	0.28
01/18/93	13:02:50	17.41	0.22	0.000	0.27	0.27
01/18/93	13:02:51	17.41	0.23	0.000	0.27	0.27
01/18/93	13:02:51	17.39	0.23	0.000	0.25	0.25
01/18/93	13:02:51	17.39	0.23	0.000	0.25	0.25
01/18/93	13:02:51	17.39	0.24	0.000	0.25	0.25
01/18/93	13:02:51	17.40	0.24	0.000	0.26	0.26

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SITE: GENERAL MOTORS, PONTIAC MI. WEST YARD
WELL: DW-18, INJECTION
TIME OF SLUG INJ/WITH = 12:56:05 MILITARY TIME
STATIC WATER LEVEL = 17.14 FEET BELOW MEASURING POINT
TREND = (- = rising) FEET PER MINUTE
NO. OF DTW READINGS = 158
INJECTION/WITHDRAWAL (1/2): 1

DATE	TIME (24 HOUR)	DTW (FT)	t (MINS)	t (DAYS)	RESIDUAL IH/DD (FT)	CORRECTED IH/DD (FT)
01/18/93	12:58:29	17.13	2.40	0.002	0.01	0.01
01/18/93	12:58:41	17.15	2.60	0.002	-0.01	-0.01
01/18/93	12:58:53	17.14	2.80	0.002	0.00	0.00
01/18/93	12:59:05	17.14	3.00	0.002	0.00	0.00
01/18/93	12:59:17	17.13	3.20	0.002	0.01	0.01
01/18/93	12:59:29	17.14	3.40	0.002	0.00	0.00
01/18/93	12:59:41	17.14	3.60	0.003	0.00	0.00
01/18/93	12:59:53	17.14	3.80	0.003	0.00	0.00
01/18/93	13:00:05	17.15	4.00	0.003	-0.01	-0.01
01/18/93	13:00:17	17.14	4.20	0.003	0.00	0.00

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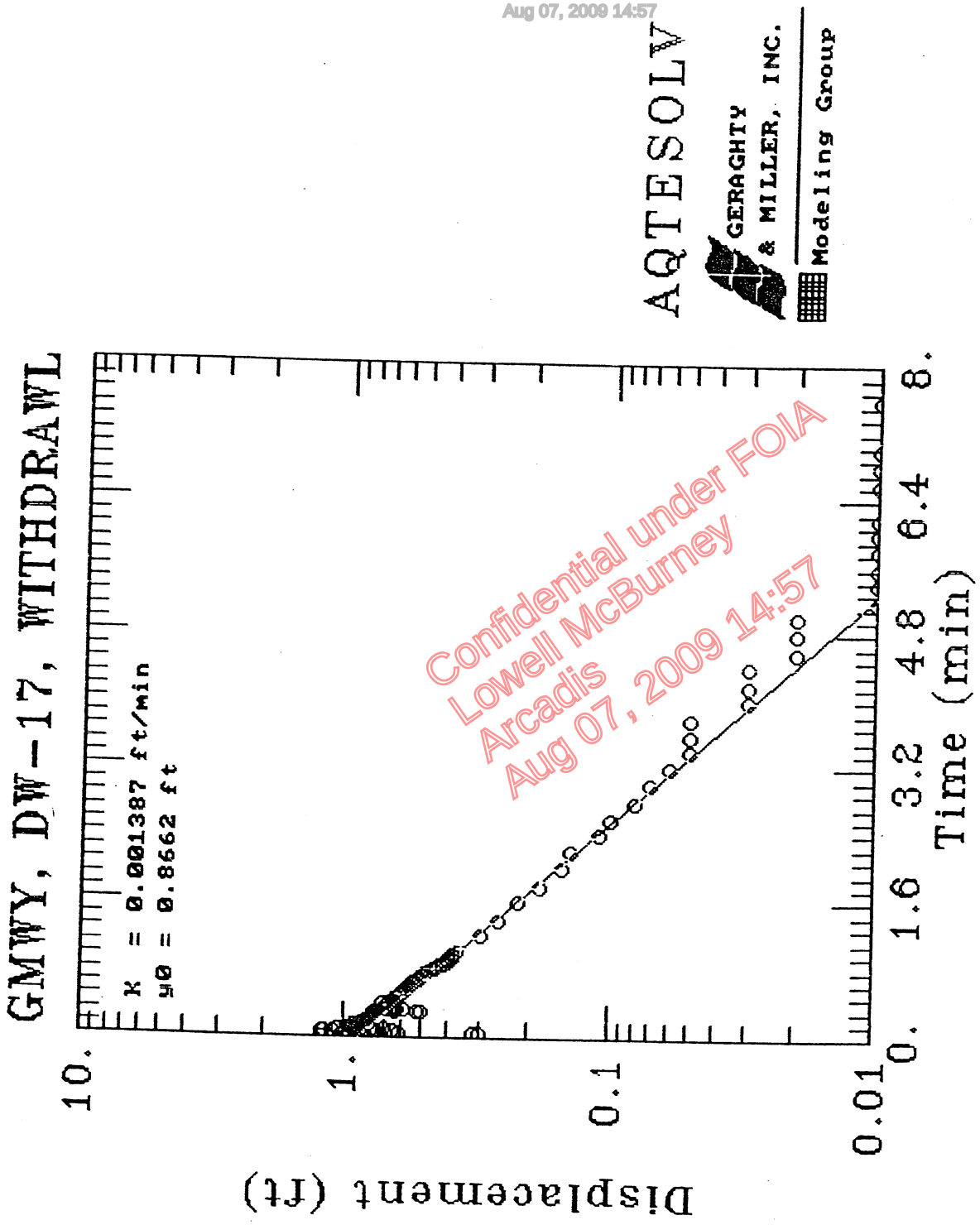
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SITE: GENERAL MOTORS, PONTIAC MI WEST YARD
WELL: DW-18, INJECTION
TIME OF SLUG INJ/WITH = 12:56:05 MILITARY TIME
STATIC WATER LEVEL = 17.14 FEET BELOW MEASURING POINT
TREND = (- = rising) FEET PER MINUTE
NO. OF DTW READINGS = 158
INJECTION/WITHDRAWAL (1/2): 1

DATE	TIME (24 HOUR)	DTW (FT)	t (MINS)	t (DAYS)	RESIDUAL IH/DD (FT)	CORRECTED IH/DD (FT)
01/18/93	12:56:20	16.98	0.24	0.000	0.16	0.16
01/18/93	12:56:20	16.99	0.25	0.000	0.15	0.15
01/18/93	12:56:20	16.99	0.25	0.000	0.15	0.15
01/18/93	12:56:20	17.00	0.25	0.000	0.14	0.14
01/18/93	12:56:20	17.00	0.26	0.000	0.14	0.14
01/18/93	12:56:21	17.00	0.26	0.000	0.14	0.14
01/18/93	12:56:21	17.00	0.26	0.000	0.14	0.14
01/18/93	12:56:21	17.01	0.27	0.000	0.13	0.13
01/18/93	12:56:21	17.01	0.27	0.000	0.13	0.13
01/18/93	12:56:21	17.01	0.27	0.000	0.13	0.13
01/18/93	12:56:22	17.01	0.28	0.000	0.13	0.13
01/18/93	12:56:22	17.01	0.28	0.000	0.13	0.13
01/18/93	12:56:22	17.02	0.28	0.000	0.12	0.12
01/18/93	12:56:22	17.02	0.29	0.000	0.12	0.12
01/18/93	12:56:22	17.03	0.29	0.000	0.11	0.11
01/18/93	12:56:23	17.03	0.29	0.000	0.11	0.11
01/18/93	12:56:23	17.03	0.30	0.000	0.11	0.11
01/18/93	12:56:23	17.03	0.30	0.000	0.11	0.11
01/18/93	12:56:23	17.03	0.30	0.000	0.11	0.11
01/18/93	12:56:23	17.04	0.31	0.000	0.10	0.10
01/18/93	12:56:24	17.04	0.31	0.000	0.10	0.10
01/18/93	12:56:24	17.04	0.31	0.000	0.10	0.10
01/18/93	12:56:24	17.05	0.32	0.000	0.09	0.09
01/18/93	12:56:24	17.05	0.32	0.000	0.09	0.09
01/18/93	12:56:24	17.05	0.32	0.000	0.09	0.09
01/18/93	12:56:25	17.05	0.33	0.000	0.09	0.09
01/18/93	12:56:25	17.05	0.33	0.000	0.09	0.09
01/18/93	12:56:25	17.05	0.33	0.000	0.09	0.09
01/18/93	12:56:26	17.06	0.35	0.000	0.08	0.08
01/18/93	12:56:27	17.03	0.37	0.000	0.11	0.11
01/18/93	12:56:28	17.08	0.38	0.000	0.06	0.06
01/18/93	12:56:29	17.08	0.40	0.000	0.06	0.06
01/18/93	12:56:30	17.09	0.42	0.000	0.05	0.05
01/18/93	12:56:31	17.10	0.43	0.000	0.05	0.05
01/18/93	12:56:32	17.10	0.45	0.000	0.05	0.05
01/18/93	12:56:33	17.10	0.47	0.000	0.05	0.05
01/18/93	12:56:34	17.10	0.48	0.000	0.04	0.04

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SITE: GENERAL MOTORS, PONTIAC, MI. WEST YARD
WELL: DW-17, WITHDRAWAL
TIME OF SLUG INJ/WITH = 11:31:00 MILITARY TIME
STATIC WATER LEVEL = 7.49 FEET BELOW MEASURING POINT
TREND = (- = rising) FEET PER MINUTE
NO. OF DTW READINGS = 176
INJECTION/WITHDRAWAL (1/2): 2

DATE	TIME (24 HOUR)	DTW (FT)	t (MINS)	t (DAYS)	RESIDUAL IH/DD (FT)	CORRECTED IH/DD (FT)
01/18/93	11:33:32	7.60	2.40	0.002	0.11	0.11
01/18/93	11:33:44	7.59	2.60	0.002	0.10	0.10
01/18/93	11:33:56	7.57	2.80	0.002	0.08	0.08
01/18/93	11:34:08	7.56	3.00	0.002	0.07	0.07
01/18/93	11:34:20	7.55	3.20	0.002	0.06	0.06
01/18/93	11:34:32	7.54	3.40	0.002	0.05	0.05
01/18/93	11:34:44	7.54	3.60	0.003	0.05	0.05
01/18/93	11:34:56	7.54	3.80	0.003	0.05	0.05
01/18/93	11:35:08	7.52	4.00	0.003	0.03	0.03
01/18/93	11:35:20	7.52	4.20	0.003	0.03	0.03
01/18/93	11:35:32	7.52	4.40	0.003	0.03	0.03
01/18/93	11:35:44	7.51	4.60	0.003	0.02	0.02
01/18/93	11:35:56	7.51	4.80	0.003	0.02	0.02
01/18/93	11:36:08	7.51	5.00	0.003	0.02	0.02
01/18/93	11:36:20	7.50	5.20	0.004	0.01	0.01
01/18/93	11:36:32	7.50	5.40	0.004	0.01	0.01
01/18/93	11:36:44	7.50	5.60	0.004	0.01	0.01
01/18/93	11:36:56	7.50	5.80	0.004	0.01	0.01
01/18/93	11:37:08	7.50	6.00	0.004	0.01	0.01
01/18/93	11:37:20	7.50	6.20	0.004	0.01	0.01
01/18/93	11:37:32	7.49	6.40	0.004	0.00	0.00
01/18/93	11:37:44	7.50	6.60	0.005	0.01	0.01
01/18/93	11:37:56	7.50	6.80	0.005	0.01	0.01
01/18/93	11:38:08	7.50	7.00	0.005	0.01	0.01
01/18/93	11:38:20	7.49	7.20	0.005	0.00	0.00
01/18/93	11:38:32	7.49	7.40	0.005	0.00	0.00
01/18/93	11:38:44	7.50	7.60	0.005	0.01	0.01
01/18/93	11:38:56	7.49	7.80	0.005	-0.01	-0.01

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SITE: GENERAL MOTORS, PONTIAC, MI. WEST YARD
WELL: DW-17, WITHDRAWAL
TIME OF SLUG INJ/WITH = 11:31:08 MILITARY TIME
STATIC WATER LEVEL = 7.49 FEET BELOW MEASURING POINT
TREND = (- = rising) FEET PER MINUTE
NO. OF DTW READINGS = 176
INJECTION/WITHDRAWAL (1/2): 2

DATE	TIME (24 HOUR)	DTW (FT)	t (MINS)	t (DAYS)	RESIDUAL IH/DD (FT)	CORRECTED IH/DD (FT)
01/18/93	11:31:23	8.27	0.24	0.000	0.78	0.78
01/18/93	11:31:23	8.27	0.25	0.000	0.78	0.78
01/18/93	11:31:23	8.27	0.25	0.000	0.78	0.78
01/18/93	11:31:23	8.26	0.25	0.000	0.77	0.77
01/18/93	11:31:23	8.26	0.26	0.000	0.77	0.77
01/18/93	11:31:24	8.26	0.26	0.000	0.77	0.77
01/18/93	11:31:24	8.25	0.26	0.000	0.76	0.76
01/18/93	11:31:24	8.25	0.27	0.000	0.76	0.76
01/18/93	11:31:24	8.25	0.27	0.000	0.76	0.76
01/18/93	11:31:24	8.25	0.27	0.000	0.76	0.76
01/18/93	11:31:25	8.25	0.28	0.000	0.76	0.76
01/18/93	11:31:25	8.24	0.28	0.000	0.75	0.75
01/18/93	11:31:25	8.24	0.28	0.000	0.75	0.75
01/18/93	11:31:25	8.24	0.29	0.000	0.75	0.75
01/18/93	11:31:25	8.24	0.29	0.000	0.75	0.75
01/18/93	11:31:26	8.24	0.29	0.000	0.75	0.75
01/18/93	11:31:26	8.23	0.30	0.000	0.74	0.74
01/18/93	11:31:26	8.23	0.30	0.000	0.74	0.74
01/18/93	11:31:26	8.23	0.30	0.000	0.74	0.74
01/18/93	11:31:26	8.22	0.31	0.000	0.73	0.73
01/18/93	11:31:27	8.22	0.31	0.000	0.73	0.73
01/18/93	11:31:27	8.00	0.31	0.000	0.50	0.50
01/18/93	11:31:27	8.01	0.32	0.000	0.52	0.52
01/18/93	11:31:27	8.25	0.32	0.000	0.76	0.76
01/18/93	11:31:27	8.12	0.32	0.000	0.63	0.63
01/18/93	11:31:28	8.08	0.33	0.000	0.59	0.59
01/18/93	11:31:28	8.13	0.33	0.000	0.64	0.64
01/18/93	11:31:28	8.17	0.33	0.000	0.68	0.68
01/18/93	11:31:29	8.11	0.35	0.000	0.62	0.62
01/18/93	11:31:30	8.12	0.37	0.000	0.63	0.63
01/18/93	11:31:31	8.17	0.38	0.000	0.68	0.68
01/18/93	11:31:32	8.20	0.40	0.000	0.71	0.71
01/18/93	11:31:33	8.16	0.42	0.000	0.67	0.67
01/18/93	11:31:34	8.12	0.43	0.000	0.63	0.63
01/18/93	11:31:35	8.12	0.45	0.000	0.63	0.63
01/18/93	11:31:36	8.13	0.47	0.000	0.64	0.64
01/18/93	11:31:37	8.11	0.48	0.000	0.62	0.62

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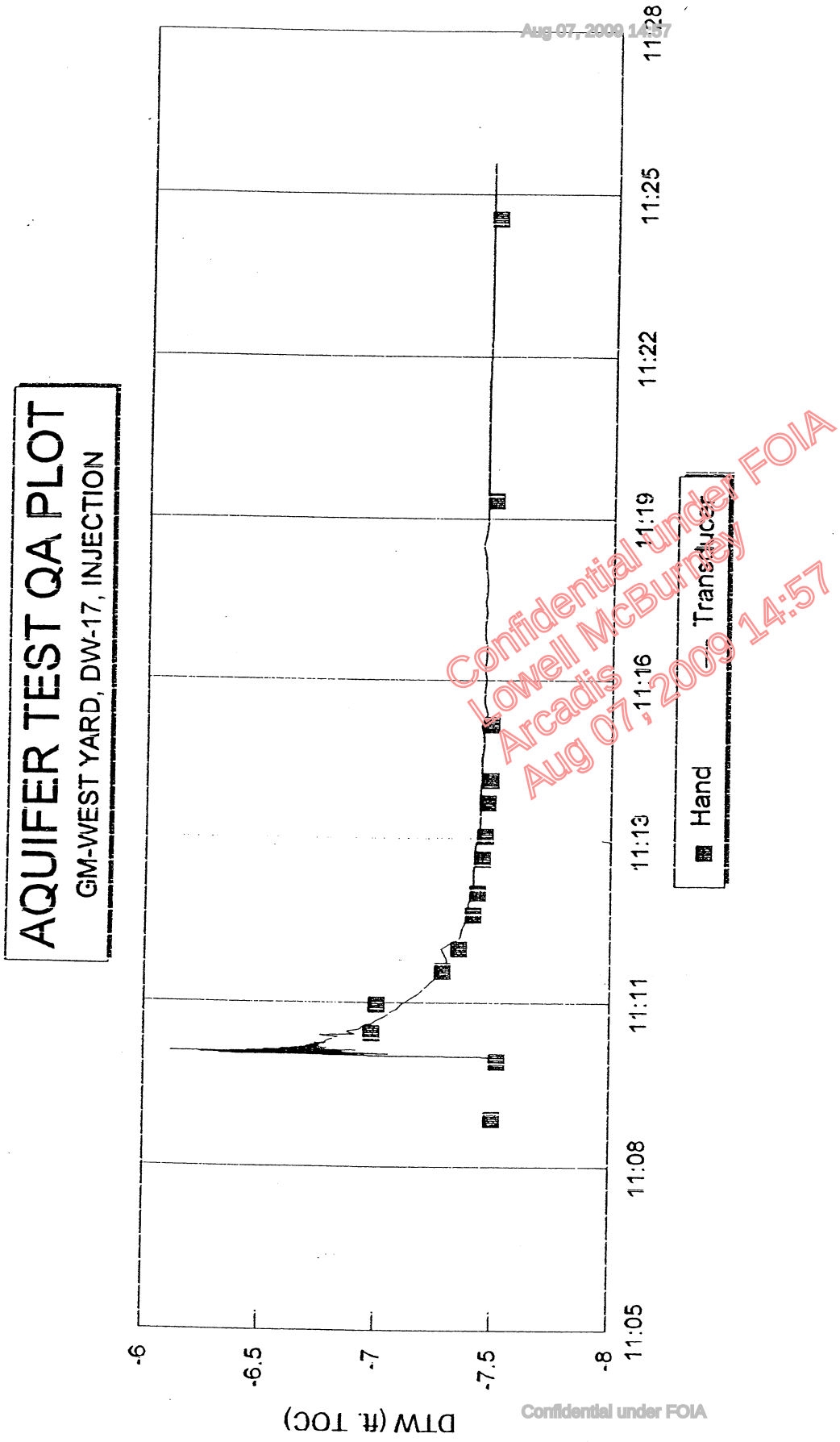
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SITE: GENERAL MOTORS, PONTIAC, MI WEST YARD
WELL: DW-17, WITHDRAWAL
TIME OF SLUG INJ/WITH = 11:31:08 MILITARY TIME
STATIC WATER LEVEL = 7.49 FEET BELOW MEASURING POINT
TREND = (- = rising) FEET PER MINUTE
NO. OF DTW READINGS = 176
INJECTION/WITHDRAWAL (1/2): 2

DATE	TIME (24 HOUR)	DTW (FT)	t (MINS)	t (DAYS)	RESIDUAL IH/DD (FT)	CORRECTED IH/DD (FT)
01/18/93	11:30:08	7.49	-1.00	-0.001	0.00	0.00
01/18/93	11:31:08	7.45	0.00	0.000	-0.04	-0.04
01/18/93	11:31:08	7.45	0.00	0.000	-0.04	-0.04
01/18/93	11:31:08	7.45	0.01	0.000	-0.04	-0.04
01/18/93	11:31:09	7.45	0.01	0.000	-0.04	-0.04
01/18/93	11:31:09	7.50	0.01	0.000	0.01	0.01
01/18/93	11:31:09	7.60	0.02	0.000	0.11	0.11
01/18/93	11:31:09	7.69	0.02	0.000	0.20	0.20
01/18/93	11:31:09	7.60	0.02	0.000	0.11	0.11
01/18/93	11:31:10	7.83	0.03	0.000	0.34	0.34
01/18/93	11:31:10	8.10	0.03	0.000	0.61	0.61
01/18/93	11:31:10	7.85	0.03	0.000	0.36	0.36
01/18/93	11:31:10	7.47	0.04	0.000	-0.02	-0.02
01/18/93	11:31:10	7.42	0.04	0.000	-0.07	-0.07
01/18/93	11:31:11	7.64	0.04	0.000	0.15	0.15
01/18/93	11:31:11	7.88	0.05	0.000	0.39	0.39
01/18/93	11:31:11	8.02	0.05	0.000	0.53	0.53
01/18/93	11:31:11	7.47	0.05	0.000	-0.02	-0.02
01/18/93	11:31:11	7.11	0.06	0.000	-0.38	-0.38
01/18/93	11:31:12	7.79	0.06	0.000	0.30	0.30
01/18/93	11:31:12	8.49	0.06	0.000	1.00	1.00
01/18/93	11:31:12	8.22	0.07	0.000	0.73	0.73
01/18/93	11:31:12	7.81	0.07	0.000	0.32	0.32
01/18/93	11:31:12	8.10	0.07	0.000	0.61	0.61
01/18/93	11:31:13	8.66	0.08	0.000	1.17	1.17
01/18/93	11:31:13	8.69	0.08	0.000	1.20	1.20
01/18/93	11:31:13	8.24	0.08	0.000	0.75	0.75
01/18/93	11:31:13	8.13	0.09	0.000	0.64	0.64
01/18/93	11:31:13	8.47	0.09	0.000	0.98	0.98
01/18/93	11:31:14	8.59	0.09	0.000	1.10	1.10
01/18/93	11:31:14	8.33	0.10	0.000	0.84	0.84
01/18/93	11:31:14	8.19	0.10	0.000	0.70	0.70
01/18/93	11:31:14	8.38	0.10	0.000	0.89	0.89
01/18/93	11:31:14	8.52	0.11	0.000	1.03	1.03
01/18/93	11:31:15	8.38	0.11	0.000	0.89	0.89
01/18/93	11:31:15	8.25	0.11	0.000	0.76	0.76
01/18/93	11:31:15	8.39	0.12	0.000	0.90	0.90

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SITE: GENERAL MOTORS, PONTIAC MI., WEST YARD
WELL: DW-17, INJECTION
TIME OF SLUG INJ/WITH = 11:10:00 MILITARY TIME
STATIC WATER LEVEL = 7.50 FEET BELOW MEASURING POINT
TREND = (- = rising) FEET PER MINUTE
NO. OF DTW READINGS = 192
INJECTION/WITHDRAWAL (1/2): 1

DATE	TIME (24 HOUR)	DTW (FT)	t (MINS)	t (DAYS)	RESIDUAL IH/DD (FT)	CORRECTED IH/DD (FT)
01/18/93	11:10:32	6.88	0.53	0.000	0.62	0.62
01/18/93	11:10:33	6.90	0.55	0.000	0.61	0.61
01/18/93	11:10:34	6.93	0.56	0.000	0.57	0.57
01/18/93	11:10:35	6.93	0.58	0.000	0.57	0.57
01/18/93	11:10:36	6.93	0.60	0.000	0.57	0.57
01/18/93	11:10:37	6.94	0.61	0.000	0.56	0.56
01/18/93	11:10:38	6.95	0.63	0.000	0.55	0.55
01/18/93	11:10:39	6.95	0.65	0.000	0.55	0.55
01/18/93	11:10:40	6.98	0.66	0.000	0.52	0.52
01/18/93	11:10:41	6.99	0.68	0.000	0.51	0.51
01/18/93	11:10:42	6.99	0.70	0.000	0.51	0.51
01/18/93	11:10:43	7.00	0.71	0.000	0.50	0.50
01/18/93	11:10:44	7.00	0.73	0.001	0.50	0.50
01/18/93	11:10:45	7.01	0.75	0.001	0.49	0.49
01/18/93	11:10:46	7.02	0.76	0.001	0.48	0.48
01/18/93	11:10:47	7.03	0.78	0.001	0.47	0.47
01/18/93	11:10:48	7.03	0.80	0.001	0.47	0.47
01/18/93	11:10:49	7.04	0.81	0.001	0.46	0.46
01/18/93	11:10:50	7.05	0.83	0.001	0.45	0.45
01/18/93	11:10:51	7.05	0.85	0.001	0.45	0.45
01/18/93	11:10:52	7.06	0.86	0.001	0.44	0.44
01/18/93	11:10:53	7.07	0.88	0.001	0.43	0.43
01/18/93	11:10:54	7.07	0.90	0.001	0.43	0.43
01/18/93	11:10:55	7.08	0.91	0.001	0.42	0.42
01/18/93	11:10:56	7.09	0.93	0.001	0.41	0.41
01/18/93	11:10:57	7.09	0.95	0.001	0.41	0.41
01/18/93	11:10:58	7.10	0.96	0.001	0.40	0.40
01/18/93	11:10:59	7.10	0.98	0.001	0.40	0.40
01/18/93	11:11:00	7.10	1.00	0.001	0.40	0.40
01/18/93	11:11:12	7.18	1.20	0.001	0.32	0.32
01/18/93	11:11:24	7.23	1.40	0.001	0.27	0.27
01/18/93	11:11:36	7.29	1.60	0.001	0.22	0.22
01/18/93	11:11:48	7.30	1.80	0.001	0.20	0.20
01/18/93	11:12:00	7.27	2.00	0.001	0.23	0.23
01/18/93	11:12:12	7.36	2.20	0.002	0.14	0.14
01/18/93	11:12:24	7.37	2.40	0.002	0.13	0.13
01/18/93	11:12:36	7.39	2.60	0.002	0.11	0.11

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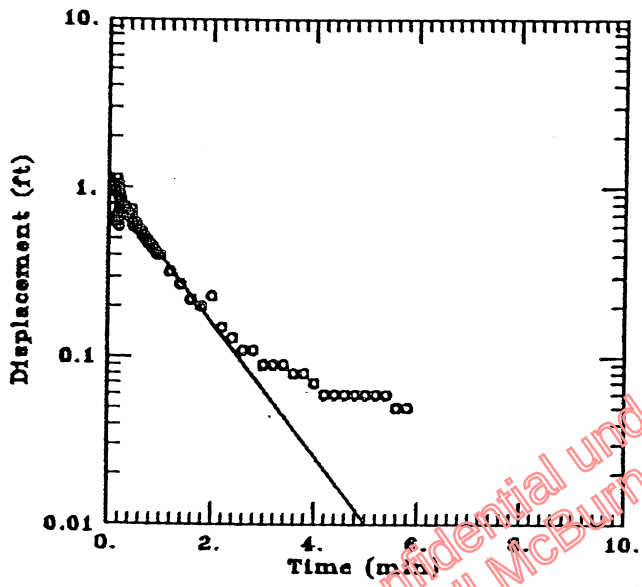
SITE: GENERAL MOTORS, PONTIAC MI., WEST YARD
WELL: DW-17, INJECTION
TIME OF SLUG INJ/WITH = 11:10:00 MILITARY TIME
STATIC WATER LEVEL = 7.50 FEET BELOW MEASURING POINT
TREND = (- = rising) FEET PER MINUTE
NO. OF DTW READINGS = 192
INJECTION/WITHDRAWAL (1/2): 1

DATE	TIME (24 HOUR)	DTW (FT)	t (MINS)	t (DAYS)	RESIDUAL IH/DD (FT)	CORRECTED IH/DD (FT)
01/18/93	11:10:07	6.44	0.12	0.000	1.06	1.06
01/18/93	11:10:08	6.33	0.12	0.000	1.17	1.17
01/18/93	11:10:08	6.79	0.13	0.000	0.71	0.71
01/18/93	11:10:08	7.05	0.13	0.000	0.45	0.45
01/18/93	11:10:08	6.67	0.13	0.000	0.83	0.83
01/18/93	11:10:08	6.32	0.14	0.000	1.19	1.19
01/18/93	11:10:09	6.25	0.14	0.000	1.25	1.25
01/18/93	11:10:09	6.54	0.14	0.000	0.96	0.96
01/18/93	11:10:09	7.00	0.15	0.000	0.50	0.50
01/18/93	11:10:09	6.90	0.15	0.000	0.61	0.61
01/18/93	11:10:09	6.40	0.15	0.000	1.10	1.10
01/18/93	11:10:10	6.11	0.16	0.000	1.39	1.39
01/18/93	11:10:10	6.50	0.16	0.000	1.00	1.00
01/18/93	11:10:10	6.88	0.16	0.000	0.62	0.62
01/18/93	11:10:10	6.84	0.17	0.000	0.66	0.66
01/18/93	11:10:10	6.55	0.17	0.000	0.95	0.95
01/18/93	11:10:11	6.37	0.17	0.000	1.13	1.13
01/18/93	11:10:11	6.54	0.18	0.000	0.96	0.96
01/18/93	11:10:11	6.83	0.18	0.000	0.67	0.67
01/18/93	11:10:11	6.87	0.18	0.000	0.63	0.63
01/18/93	11:10:11	6.58	0.19	0.000	0.92	0.92
01/18/93	11:10:12	6.45	0.19	0.000	1.05	1.05
01/18/93	11:10:12	6.61	0.19	0.000	0.90	0.90
01/18/93	11:10:12	6.91	0.20	0.000	0.59	0.59
01/18/93	11:10:12	6.80	0.20	0.000	0.70	0.70
01/18/93	11:10:12	6.55	0.20	0.000	0.95	0.95
01/18/93	11:10:13	6.52	0.21	0.000	0.98	0.98
01/18/93	11:10:13	6.67	0.21	0.000	0.83	0.83
01/18/93	11:10:13	6.84	0.21	0.000	0.66	0.66
01/18/93	11:10:13	6.72	0.22	0.000	0.78	0.78
01/18/93	11:10:13	6.59	0.22	0.000	0.91	0.91
01/18/93	11:10:14	6.60	0.22	0.000	0.90	0.90
01/18/93	11:10:14	6.71	0.23	0.000	0.79	0.79
01/18/93	11:10:14	6.79	0.23	0.000	0.71	0.71
01/18/93	11:10:14	6.73	0.23	0.000	0.77	0.77
01/18/93	11:10:14	6.64	0.24	0.000	0.86	0.86
01/18/93	11:10:15	6.64	0.24	0.000	0.86	0.86

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GM-WEST YARD, DW-17, INJECTION



DATA SET:
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02/01/96

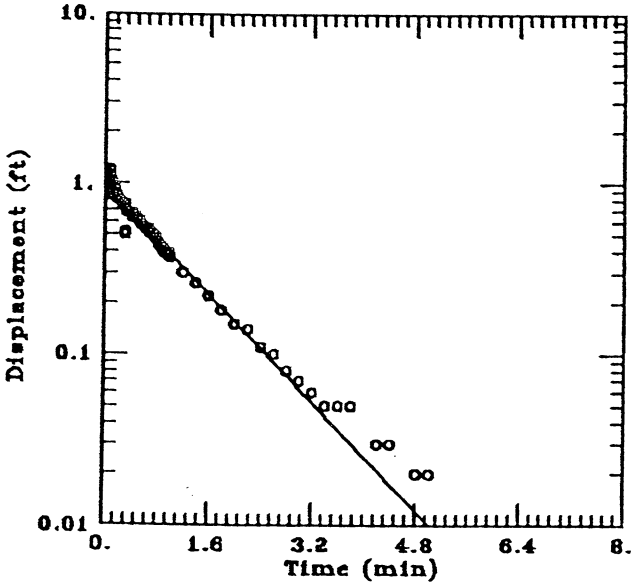
AQUIFER TYP
Unconfined
SOLUTION ME
Bouwer-Rice

ESTIMATED P
K = 0.00151 ft
y0 = 0.9956 ft

TEST DATA:
H0 = 1.13 ft
rc = 0.083 ft
rw = 0.33 ft
L = 5. ft
b = 10.29 ft
H = 10.29 ft

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GMWY, DW-17, WITHDRAWL



DATA SET:
C:\GMWY\PRT\AQT
02/01/96

AQUIFER TYP
Unconfined
SOLUTION ME
Bouwer-Rice

ESTIMATED P
K = 0.001476 f
y0 = 0.9499 ft

TEST DATA:
H0 = 1.2 ft
rc = 0.083 ft
rw = 0.33 ft
L = 5. ft
b = 9.8 ft
H = 9.8 ft

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SITE: GENERAL MOTORS, PONTIAC MI., WEST YARD
WELL: DW-16, WITHDRAWAL
TIME OF SLUG INJ/WITH = 12:14:25 MILITARY TIME
STATIC WATER LEVEL = 7.26 FEET BELOW MEASURING POINT
TREND = (- = rising) FEET PER MINUTE
NO. OF DTW READINGS = 269
INJECTION/WITHDRAWAL (1/2): 2

DATE	TIME (24 HOUR)	DTW (FT)	t (MINS)	t (DAYS)	RESIDUAL IH/DD (FT)	CORRECTED IH/DD (FT)
01/19/93	13:37:25	8.15	83.00	0.058	0.89	0.89
01/19/93	13:38:25	8.15	84.00	0.058	0.89	0.89
01/19/93	13:39:25	8.15	85.00	0.059	0.89	0.89
01/19/93	13:40:25	8.15	86.00	0.060	0.89	0.89
01/19/93	13:41:25	8.14	87.00	0.060	0.88	0.88
01/19/93	13:42:25	8.14	88.00	0.061	0.88	0.88
01/19/93	13:43:25	8.13	89.00	0.062	0.87	0.87
01/19/93	13:44:25	8.12	90.00	0.063	0.86	0.86
01/19/93	13:45:25	8.10	91.00	0.063	0.84	0.84
01/19/93	13:46:25	8.10	92.00	0.064	0.84	0.84

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SITE: GENERAL MOTORS, PONTIAC MI. WEST YARD
WELL: DW-16, WITHDRAWAL
TIME OF SLUG INJ/WITH = 12:14:25 MILITARY TIME
STATIC WATER LEVEL = 7.26 FEET BELOW MEASURING POINT
TREND = (- = rising) FEET PER MINUTE
NO. OF DTW READINGS = 269
INJECTION/WITHDRAWAL (1/2): 2

DATE	TIME (24 HOUR)	DTW (FT)	t (MINS)	t (DAYS)	RESIDUAL IH/DD (FT)	CORRECTED IH/DD (FT)
01/19/93	12:24:13	8.51	9.80	0.007	1.25	1.25
01/19/93	12:24:25	8.50	10.00	0.007	1.23	1.23
01/19/93	12:25:25	8.50	11.00	0.008	1.24	1.24
01/19/93	12:26:25	8.51	12.00	0.008	1.25	1.25
01/19/93	12:27:25	8.50	13.00	0.009	1.23	1.23
01/19/93	12:28:25	8.49	14.00	0.010	1.23	1.23
01/19/93	12:29:25	8.48	15.00	0.010	1.22	1.22
01/19/93	12:30:25	8.48	16.00	0.011	1.22	1.22
01/19/93	12:31:25	8.47	17.00	0.012	1.21	1.21
01/19/93	12:32:25	8.46	18.00	0.012	1.20	1.20
01/19/93	12:33:25	8.46	19.00	0.013	1.20	1.20
01/19/93	12:34:25	8.44	20.00	0.014	1.18	1.18
01/19/93	12:35:25	8.44	21.00	0.015	1.18	1.18
01/19/93	12:36:25	8.44	22.00	0.015	1.18	1.18
01/19/93	12:37:25	8.43	23.00	0.016	1.17	1.17
01/19/93	12:38:25	8.43	24.00	0.017	1.17	1.17
01/19/93	12:39:25	8.41	25.00	0.017	1.15	1.15
01/19/93	12:40:25	8.41	26.00	0.018	1.15	1.15
01/19/93	12:41:25	8.41	27.00	0.019	1.15	1.15
01/19/93	12:42:25	8.41	28.00	0.019	1.15	1.15
01/19/93	12:43:25	8.40	29.00	0.020	1.14	1.14
01/19/93	12:44:25	8.39	30.00	0.021	1.13	1.13
01/19/93	12:45:25	8.38	31.00	0.022	1.11	1.11
01/19/93	12:46:25	8.38	32.00	0.022	1.11	1.11
01/19/93	12:47:25	8.36	33.00	0.023	1.10	1.10
01/19/93	12:48:25	8.36	34.00	0.024	1.10	1.10
01/19/93	12:49:25	8.36	35.00	0.024	1.10	1.10
01/19/93	12:50:25	8.35	36.00	0.025	1.09	1.09
01/19/93	12:51:25	8.34	37.00	0.026	1.08	1.08
01/19/93	12:52:25	8.34	38.00	0.026	1.08	1.08
01/19/93	12:53:25	8.33	39.00	0.027	1.07	1.07
01/19/93	12:54:25	8.33	40.00	0.028	1.06	1.06
01/19/93	12:55:25	8.33	41.00	0.028	1.06	1.06
01/19/93	12:56:25	8.32	42.00	0.029	1.06	1.06
01/19/93	12:57:25	8.32	43.00	0.030	1.06	1.06
01/19/93	12:58:25	8.32	44.00	0.031	1.06	1.06
01/19/93	12:59:25	8.31	45.00	0.031	1.05	1.05

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SITE: GENERAL MOTORS, PONTIAC MI. WEST YARD
WELL: DW-16, WITHDRAWAL
TIME OF SLUG INJ/WITH = 12:14:25 MILITARY TIME
STATIC WATER LEVEL = 7.26 FEET BELOW MEASURING POINT
TREND = (- = rising) FEET PER MINUTE
NO. OF DTW READINGS = 269
INJECTION/WITHDRAWAL (1/2): 2

DATE	TIME (24 HOUR)	DTW (FT)	t (MINS)	t (DAYS)	RESIDUAL IH/DD (FT)	CORRECTED IH/DD (FT)
01/19/93	12:14:55	8.60	0.50	0.000	1.34	1.34
01/19/93	12:14:56	8.60	0.52	0.000	1.34	1.34
01/19/93	12:14:57	8.60	0.53	0.000	1.34	1.34
01/19/93	12:14:58	8.60	0.55	0.000	1.34	1.34
01/19/93	12:14:59	8.59	0.57	0.000	1.33	1.33
01/19/93	12:15:00	8.44	0.58	0.000	1.18	1.18
01/19/93	12:15:01	8.61	0.60	0.000	1.35	1.35
01/19/93	12:15:02	8.60	0.62	0.000	1.34	1.34
01/19/93	12:15:03	8.61	0.63	0.000	1.35	1.35
01/19/93	12:15:04	8.60	0.65	0.000	1.34	1.34
01/19/93	12:15:05	8.60	0.67	0.000	1.34	1.34
01/19/93	12:15:06	8.60	0.68	0.000	1.34	1.34
01/19/93	12:15:07	8.60	0.70	0.000	1.34	1.34
01/19/93	12:15:08	8.60	0.72	0.000	1.34	1.34
01/19/93	12:15:09	8.60	0.73	0.001	1.34	1.34
01/19/93	12:15:10	8.60	0.75	0.001	1.34	1.34
01/19/93	12:15:11	8.60	0.77	0.001	1.34	1.34
01/19/93	12:15:12	8.60	0.78	0.001	1.34	1.34
01/19/93	12:15:13	8.60	0.80	0.001	1.34	1.34
01/19/93	12:15:14	8.60	0.82	0.001	1.34	1.34
01/19/93	12:15:15	8.59	0.83	0.001	1.33	1.33
01/19/93	12:15:16	8.59	0.85	0.001	1.33	1.33
01/19/93	12:15:17	8.60	0.87	0.001	1.34	1.34
01/19/93	12:15:18	8.59	0.88	0.001	1.33	1.33
01/19/93	12:15:19	8.59	0.90	0.001	1.33	1.33
01/19/93	12:15:20	8.59	0.92	0.001	1.33	1.33
01/19/93	12:15:21	8.59	0.93	0.001	1.33	1.33
01/19/93	12:15:22	8.59	0.95	0.001	1.33	1.33
01/19/93	12:15:23	8.59	0.97	0.001	1.33	1.33
01/19/93	12:15:24	8.59	0.98	0.001	1.33	1.33
01/19/93	12:15:25	8.59	1.00	0.001	1.33	1.33
01/19/93	12:15:37	8.58	1.20	0.001	1.32	1.32
01/19/93	12:15:49	8.59	1.40	0.001	1.33	1.33
01/19/93	12:16:01	8.58	1.60	0.001	1.32	1.32
01/19/93	12:16:13	8.58	1.80	0.001	1.32	1.32
01/19/93	12:16:25	8.58	2.00	0.001	1.32	1.32
01/19/93	12:16:37	8.58	2.20	0.002	1.32	1.32

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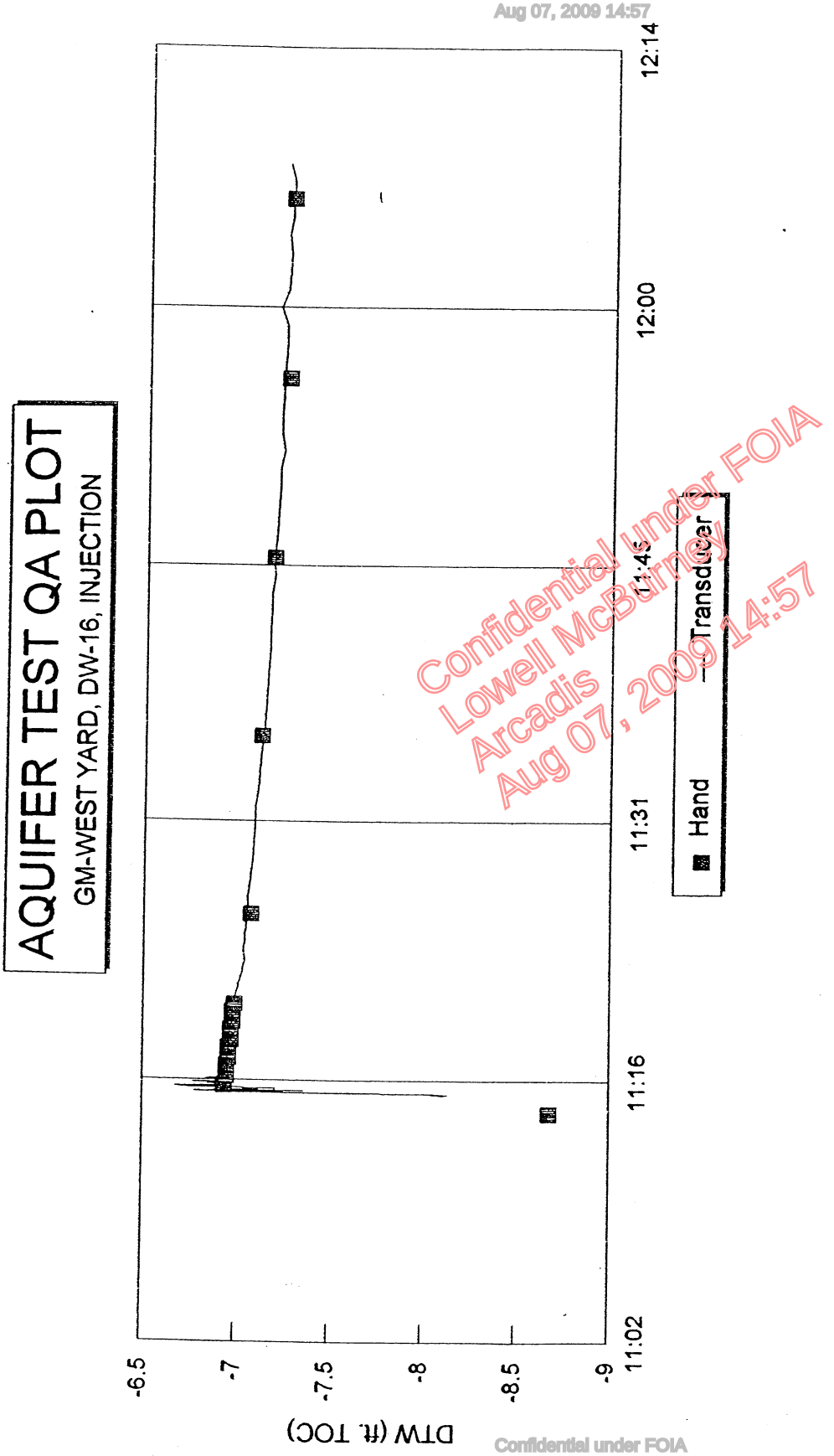
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SITE: GENERAL MOTORS, PONTIAC MI. WEST YARD
WELL: DW-16, WITHDRAWAL
TIME OF SLUG INJ/WITH = 12:14:25 MILITARY TIME
STATIC WATER LEVEL = 7.26 FEET BELOW MEASURING POINT
TREND = (- = rising) FEET PER MINUTE
NO. OF DTW READINGS = 269
INJECTION/WITHDRAWAL (1/2): 2

DATE	TIME (24 HOUR)	DTW (FT)	t (MINS)	t (DAYS)	RESIDUAL IH/DD (FT)	CORRECTED IH/DD (FT)
01/19/93	12:14:32	9.17	0.12	0.000	1.91	1.91
01/19/93	12:14:32	9.19	0.12	0.000	1.93	1.93
01/19/93	12:14:33	9.15	0.13	0.000	1.89	1.89
01/19/93	12:14:33	9.19	0.13	0.000	1.93	1.93
01/19/93	12:14:33	9.07	0.13	0.000	1.81	1.81
01/19/93	12:14:33	9.13	0.14	0.000	1.86	1.86
01/19/93	12:14:33	9.11	0.14	0.000	1.85	1.85
01/19/93	12:14:34	9.13	0.14	0.000	1.86	1.86
01/19/93	12:14:34	9.07	0.15	0.000	1.81	1.81
01/19/93	12:14:34	9.04	0.15	0.000	1.78	1.78
01/19/93	12:14:34	9.07	0.15	0.000	1.81	1.81
01/19/93	12:14:34	9.01	0.16	0.000	1.75	1.75
01/19/93	12:14:35	9.09	0.16	0.000	1.83	1.83
01/19/93	12:14:35	9.09	0.16	0.000	1.83	1.83
01/19/93	12:14:35	9.12	0.17	0.000	1.86	1.86
01/19/93	12:14:35	9.01	0.17	0.000	1.75	1.75
01/19/93	12:14:35	9.11	0.17	0.000	1.85	1.85
01/19/93	12:14:36	9.10	0.18	0.000	1.84	1.84
01/19/93	12:14:36	9.09	0.18	0.000	1.83	1.83
01/19/93	12:14:36	9.16	0.18	0.000	1.90	1.90
01/19/93	12:14:36	9.15	0.19	0.000	1.89	1.89
01/19/93	12:14:36	9.19	0.19	0.000	1.93	1.93
01/19/93	12:14:37	9.50	0.19	0.000	2.24	2.24
01/19/93	12:14:37	9.19	0.20	0.000	1.93	1.93
01/19/93	12:14:37	9.31	0.20	0.000	2.05	2.05
01/19/93	12:14:37	9.39	0.20	0.000	2.13	2.13
01/19/93	12:14:37	9.43	0.21	0.000	2.17	2.17
01/19/93	12:14:38	9.52	0.21	0.000	2.26	2.26
01/19/93	12:14:38	9.55	0.21	0.000	2.29	2.29
01/19/93	12:14:38	9.53	0.22	0.000	2.27	2.27
01/19/93	12:14:38	9.57	0.22	0.000	2.31	2.31
01/19/93	12:14:38	9.55	0.22	0.000	2.29	2.29
01/19/93	12:14:39	9.47	0.23	0.000	2.21	2.21
01/19/93	12:14:39	9.61	0.23	0.000	2.35	2.35
01/19/93	12:14:39	9.58	0.23	0.000	2.32	2.32
01/19/93	12:14:39	9.47	0.24	0.000	2.21	2.21
01/19/93	12:14:39	9.45	0.24	0.000	2.19	2.19

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SITE: GENERAL MOTORS, PONTIAC MI. WEST YARD
WELL: DW-16, INJECTION
TIME OF SLUG INJ/WITH = 11:16:00 MILITARY TIME
STATIC WATER LEVEL = 8.68 FEET BELOW MEASURING POINT
TREND = (- = rising) FEET PER MINUTE
NO. OF DTW READINGS = 229
INJECTION/WITHDRAWAL (1/2): 1

DATE	TIME (24 HOUR)	DTW (FT)	t (MINS)	t (DAYS)	RESIDUAL IH/DD (FT)	CORRECTED IH/DD (FT)
01/19/93	11:25:48	7.05	9.80	0.007	1.64	1.64
01/19/93	11:26:00	7.05	10.00	0.007	1.63	1.63
01/19/93	11:27:00	7.05	11.00	0.008	1.63	1.63
01/19/93	11:28:00	7.06	12.00	0.008	1.62	1.62
01/19/93	11:29:00	7.08	13.00	0.009	1.60	1.60
01/19/93	11:30:00	7.08	14.00	0.010	1.60	1.60
01/19/93	11:31:00	7.09	15.00	0.010	1.59	1.59
01/19/93	11:32:00	7.09	16.00	0.011	1.59	1.59
01/19/93	11:33:00	7.10	17.00	0.012	1.58	1.58
01/19/93	11:34:00	7.11	18.00	0.012	1.57	1.57
01/19/93	11:35:00	7.12	19.00	0.013	1.57	1.57
01/19/93	11:36:00	7.13	20.00	0.014	1.55	1.55
01/19/93	11:37:00	7.13	21.00	0.015	1.55	1.55
01/19/93	11:38:00	7.14	22.00	0.015	1.54	1.54
01/19/93	11:39:00	7.15	23.00	0.016	1.53	1.53
01/19/93	11:40:00	7.15	24.00	0.017	1.53	1.53
01/19/93	11:41:00	7.16	25.00	0.017	1.52	1.52
01/19/93	11:42:00	7.16	26.00	0.018	1.52	1.52
01/19/93	11:43:00	7.17	27.00	0.019	1.52	1.52
01/19/93	11:44:00	7.17	28.00	0.019	1.52	1.52
01/19/93	11:45:00	7.18	29.00	0.020	1.50	1.50
01/19/93	11:46:00	7.17	30.00	0.021	1.51	1.51
01/19/93	11:47:00	7.18	31.00	0.022	1.50	1.50
01/19/93	11:48:00	7.19	32.00	0.022	1.49	1.49
01/19/93	11:49:00	7.20	33.00	0.023	1.48	1.48
01/19/93	11:50:00	7.20	34.00	0.024	1.48	1.48
01/19/93	11:51:00	7.20	35.00	0.024	1.48	1.48
01/19/93	11:52:00	7.22	36.00	0.025	1.46	1.46
01/19/93	11:53:00	7.21	37.00	0.026	1.47	1.47
01/19/93	11:54:00	7.21	38.00	0.026	1.47	1.47
01/19/93	11:55:00	7.22	39.00	0.027	1.47	1.47
01/19/93	11:56:00	7.22	40.00	0.028	1.47	1.47
01/19/93	11:57:00	7.22	41.00	0.028	1.46	1.46
01/19/93	11:58:00	7.23	42.00	0.029	1.45	1.45
01/19/93	11:59:00	7.23	43.00	0.030	1.45	1.45
01/19/93	12:00:00	7.20	44.00	0.031	1.48	1.48
01/19/93	12:01:00	7.23	45.00	0.031	1.45	1.45

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SITE: GENERAL MOTORS, PONTIAC MI., WEST YARD
WELL: DW-16, INJECTION
TIME OF SLUG INJ/WITH = 11:16:00 MILITARY TIME
STATIC WATER LEVEL = 8.68 FEET BELOW MEASURING POINT
TREND = (- = rising) FEET PER MINUTE
NO. OF DTW READINGS = 229
INJECTION/WITHDRAWAL (1/2): 1

DATE	TIME (24 HOUR)	DTW (FT)	t (MINS)	t (DAYS)	RESIDUAL IH/DD (FT)	CORRECTED IH/DD (FT)
01/19/93	11:16:30	6.90	0.50	0.000	1.78	1.78
01/19/93	11:16:31	6.90	0.52	0.000	1.78	1.78
01/19/93	11:16:32	6.90	0.53	0.000	1.78	1.78
01/19/93	11:16:33	6.91	0.55	0.000	1.77	1.77
01/19/93	11:16:34	6.91	0.57	0.000	1.77	1.77
01/19/93	11:16:35	6.85	0.58	0.000	1.83	1.83
01/19/93	11:16:36	6.91	0.60	0.000	1.77	1.77
01/19/93	11:16:37	6.86	0.62	0.000	1.82	1.82
01/19/93	11:16:38	6.93	0.63	0.000	1.75	1.75
01/19/93	11:16:39	6.75	0.65	0.000	1.93	1.93
01/19/93	11:16:40	6.79	0.67	0.000	1.89	1.89
01/19/93	11:16:41	6.89	0.68	0.000	1.79	1.79
01/19/93	11:16:42	6.91	0.70	0.000	1.77	1.77
01/19/93	11:16:43	6.91	0.72	0.000	1.77	1.77
01/19/93	11:16:44	6.91	0.73	0.001	1.77	1.77
01/19/93	11:16:45	6.91	0.75	0.001	1.77	1.77
01/19/93	11:16:46	6.91	0.77	0.001	1.77	1.77
01/19/93	11:16:47	6.91	0.78	0.001	1.77	1.77
01/19/93	11:16:48	6.91	0.80	0.001	1.77	1.77
01/19/93	11:16:49	6.91	0.82	0.001	1.77	1.77
01/19/93	11:16:50	6.89	0.83	0.001	1.79	1.79
01/19/93	11:16:51	6.84	0.85	0.001	1.84	1.84
01/19/93	11:16:52	6.87	0.87	0.001	1.81	1.81
01/19/93	11:16:53	6.92	0.88	0.001	1.76	1.76
01/19/93	11:16:54	6.92	0.90	0.001	1.76	1.76
01/19/93	11:16:55	6.90	0.92	0.001	1.78	1.78
01/19/93	11:16:56	6.91	0.93	0.001	1.77	1.77
01/19/93	11:16:57	6.92	0.95	0.001	1.76	1.76
01/19/93	11:16:58	6.91	0.97	0.001	1.77	1.77
01/19/93	11:16:59	6.92	0.98	0.001	1.76	1.76
01/19/93	11:17:00	6.91	1.00	0.001	1.77	1.77
01/19/93	11:17:12	6.93	1.20	0.001	1.75	1.75
01/19/93	11:17:24	6.93	1.40	0.001	1.75	1.75
01/19/93	11:17:36	6.93	1.60	0.001	1.75	1.75
01/19/93	11:17:48	6.94	1.80	0.001	1.74	1.74
01/19/93	11:18:00	6.94	2.00	0.001	1.74	1.74
01/19/93	11:18:12	6.94	2.20	0.002	1.74	1.74

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SITE: GENERAL MOTORS, PONTIAC MI., WEST YARD
WELL: DW-16, INJECTION
TIME OF SLUG INJ/WITH = 11:16:00 MILITARY TIME
STATIC WATER LEVEL = 8.68 FEET BELOW MEASURING POINT
TREND = (- = rising) FEET PER MINUTE
NO. OF DTW READINGS = 229
INJECTION/WITHDRAWAL (1/2): 1

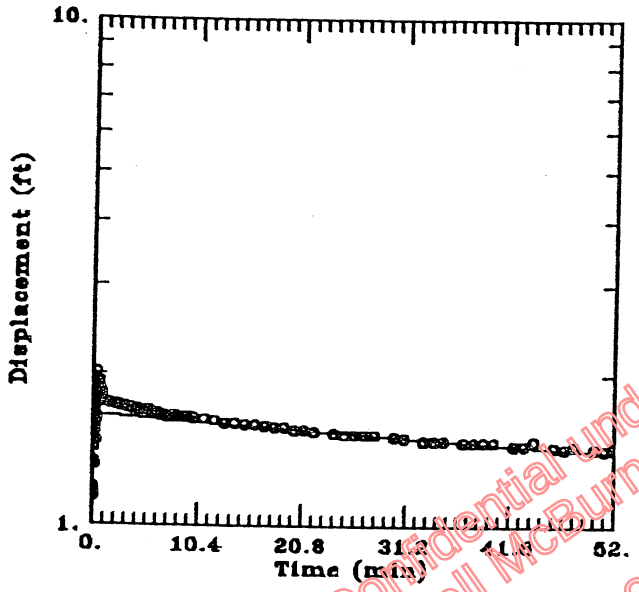
DATE	TIME (24 HOUR)	DTW (FT)	t (MINS)	t (DAYS)	RESIDUAL IH/DD (FT)	CORRECTED IH/DD (FT)
01/19/93	11:16:07	7.19	0.12	0.000	1.49	1.49
01/19/93	11:16:07	7.12	0.12	0.000	1.57	1.57
01/19/93	11:16:08	7.15	0.13	0.000	1.53	1.53
01/19/93	11:16:08	7.06	0.13	0.000	1.62	1.62
01/19/93	11:16:08	6.96	0.13	0.000	1.72	1.72
01/19/93	11:16:08	7.03	0.14	0.000	1.65	1.65
01/19/93	11:16:08	7.00	0.14	0.000	1.68	1.68
01/19/93	11:16:09	7.07	0.14	0.000	1.61	1.61
01/19/93	11:16:09	6.96	0.15	0.000	1.72	1.72
01/19/93	11:16:09	6.94	0.15	0.000	1.74	1.74
01/19/93	11:16:09	7.13	0.15	0.000	1.55	1.55
01/19/93	11:16:09	7.10	0.16	0.000	1.58	1.58
01/19/93	11:16:10	6.88	0.16	0.000	1.81	1.81
01/19/93	11:16:10	6.94	0.16	0.000	1.74	1.74
01/19/93	11:16:10	7.13	0.17	0.000	1.55	1.55
01/19/93	11:16:10	7.10	0.17	0.000	1.58	1.58
01/19/93	11:16:10	7.25	0.17	0.000	1.43	1.43
01/19/93	11:16:11	6.78	0.18	0.000	1.90	1.90
01/19/93	11:16:11	7.25	0.18	0.000	1.43	1.43
01/19/93	11:16:11	6.94	0.18	0.000	1.74	1.74
01/19/93	11:16:11	7.22	0.19	0.000	1.47	1.47
01/19/93	11:16:11	7.15	0.19	0.000	1.53	1.53
01/19/93	11:16:12	7.00	0.19	0.000	1.68	1.68
01/19/93	11:16:12	7.03	0.20	0.000	1.65	1.65
01/19/93	11:16:12	7.14	0.20	0.000	1.54	1.54
01/19/93	11:16:12	7.09	0.20	0.000	1.59	1.59
01/19/93	11:16:12	7.06	0.21	0.000	1.62	1.62
01/19/93	11:16:13	7.08	0.21	0.000	1.60	1.60
01/19/93	11:16:13	6.99	0.21	0.000	1.69	1.69
01/19/93	11:16:13	7.00	0.22	0.000	1.68	1.68
01/19/93	11:16:13	7.05	0.22	0.000	1.64	1.64
01/19/93	11:16:13	7.01	0.22	0.000	1.67	1.67
01/19/93	11:16:14	6.89	0.23	0.000	1.79	1.79
01/19/93	11:16:14	7.36	0.23	0.000	1.32	1.32
01/19/93	11:16:14	6.89	0.23	0.000	1.79	1.79
01/19/93	11:16:14	7.00	0.24	0.000	1.69	1.69
01/19/93	11:16:14	7.33	0.24	0.000	1.35	1.35

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GMWY, DW-16, INJECTION



DATA SET:
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02/01/96

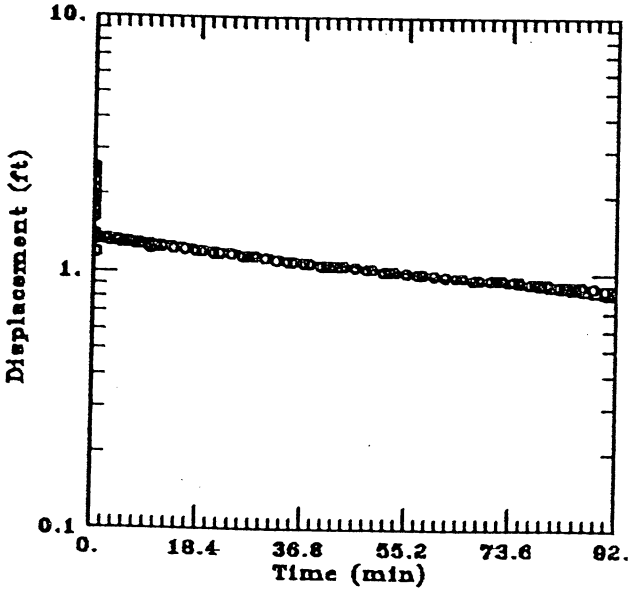
AQUIFER TYP
Unconfined
SOLUTION ME
Bouwer-Rice

ESTIMATED P
K = 5.2622E-06
y0 = 1.659 ft

TEST DATA:
H0 = 1.8 ft
rc = 0.08 ft
rw = 0.33 ft
L = 5. ft
b = 13.67 ft
H = 13.67 ft

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GMWY, DW-16, WITHDRAWAL



DATA SET:
C:\GMWY\PRT\AQT
02/01/96

AQUIFER TYP
Unconfined
SOLUTION ME
Bouwer-Rice

ESTIMATED P
K = 1.0089E-05
y0 = 1.403 ft

TEST DATA:
H0 = 2.53 ft
rc = 0.08 ft
rw = 0.33 ft
L = 5. ft
b = 15.09 ft
H = 15.09 ft

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SITE: GENERAL MOTORS, PONTIAC MI. WEST YARD
WELL: MW-12, WITHDRAWAL
TIME OF SLUG INJ/WITH = 15:08:37 MILITARY TIME
STATIC WATER LEVEL = 20.58 FEET BELOW MEASURING POINT
TREND = (- = rising) FEET PER MINUTE
NO. OF DTW READINGS = 164
INJECTION/WITHDRAWAL (1/2): 2

DATE	TIME (24 HOUR)	DTW (FT)	t (MINS)	t (DAYS)	RESIDUAL IH/DD (FT)	CORRECTED IH/DD (FT)
01/19/93	15:11:01	20.57	2.40	0.002	-0.01	-0.01
01/19/93	15:11:13	20.57	2.60	0.002	-0.01	-0.01
01/19/93	15:11:25	20.58	2.80	0.002	-0.00	-0.00
01/19/93	15:11:37	20.57	3.00	0.002	-0.01	-0.01
01/19/93	15:11:49	20.57	3.20	0.002	-0.01	-0.01
01/19/93	15:12:01	20.57	3.40	0.002	-0.01	-0.01
01/19/93	15:12:13	20.57	3.60	0.003	-0.01	-0.01
01/19/93	15:12:25	20.57	3.80	0.003	-0.01	-0.01
01/19/93	15:12:37	20.57	4.00	0.003	-0.01	-0.01
01/19/93	15:12:49	20.56	4.20	0.003	-0.02	-0.02
01/19/93	15:13:01	20.56	4.40	0.003	-0.02	-0.02
01/19/93	15:13:13	20.56	4.60	0.003	-0.02	-0.02
01/19/93	15:13:25	20.56	4.80	0.003	-0.02	-0.02
01/19/93	15:13:37	20.56	5.00	0.003	-0.02	-0.02
01/19/93	15:13:49	20.56	5.20	0.004	-0.02	-0.02
01/19/93	15:14:01	20.56	5.40	0.004	-0.02	-0.02

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SITE: GENERAL MOTORS, PONTIAC MI., WEST YARD
WELL: MW-12, WITHDRAWAL
TIME OF SLUG INJ/WITH = 15:08:37 MILITARY TIME
STATIC WATER LEVEL = 20.58 FEET BELOW MEASURING POINT
TREND = (- = rising) FEET PER MINUTE
NO. OF DTW READINGS = 164
INJECTION/WITHDRAWAL (1/2): 2

DATE	TIME (24 HOUR)	DTW (FT)	t (MINS)	t (DAYS)	RESIDUAL IH/DD (FT)	CORRECTED IH/DD (FT)
01/19/93	15:08:52	20.90	0.24	0.000	0.32	0.32
01/19/93	15:08:52	20.90	0.25	0.000	0.32	0.32
01/19/93	15:08:52	20.90	0.25	0.000	0.32	0.32
01/19/93	15:08:52	20.89	0.25	0.000	0.31	0.31
01/19/93	15:08:52	20.89	0.26	0.000	0.31	0.31
01/19/93	15:08:53	20.89	0.26	0.000	0.31	0.31
01/19/93	15:08:53	20.89	0.26	0.000	0.31	0.31
01/19/93	15:08:53	20.88	0.27	0.000	0.30	0.30
01/19/93	15:08:53	20.87	0.27	0.000	0.29	0.29
01/19/93	15:08:53	20.87	0.27	0.000	0.29	0.29
01/19/93	15:08:54	20.87	0.28	0.000	0.29	0.29
01/19/93	15:08:54	20.87	0.28	0.000	0.29	0.29
01/19/93	15:08:54	20.87	0.28	0.000	0.29	0.29
01/19/93	15:08:54	20.86	0.29	0.000	0.28	0.28
01/19/93	15:08:54	20.86	0.29	0.000	0.28	0.28
01/19/93	15:08:55	20.85	0.29	0.000	0.27	0.27
01/19/93	15:08:55	20.85	0.30	0.000	0.27	0.27
01/19/93	15:08:55	20.85	0.30	0.000	0.27	0.27
01/19/93	15:08:55	20.85	0.30	0.000	0.27	0.27
01/19/93	15:08:55	20.84	0.31	0.000	0.26	0.26
01/19/93	15:08:56	20.84	0.31	0.000	0.26	0.26
01/19/93	15:08:56	20.83	0.31	0.000	0.25	0.25
01/19/93	15:08:56	20.83	0.32	0.000	0.25	0.25
01/19/93	15:08:56	20.83	0.32	0.000	0.25	0.25
01/19/93	15:08:56	20.83	0.32	0.000	0.25	0.25
01/19/93	15:08:57	20.83	0.33	0.000	0.25	0.25
01/19/93	15:08:57	20.82	0.33	0.000	0.24	0.24
01/19/93	15:08:57	20.82	0.33	0.000	0.24	0.24
01/19/93	15:08:58	20.81	0.35	0.000	0.23	0.23
01/19/93	15:08:59	20.80	0.37	0.000	0.22	0.22
01/19/93	15:09:00	20.78	0.38	0.000	0.20	0.20
01/19/93	15:09:01	20.77	0.40	0.000	0.19	0.19
01/19/93	15:09:02	20.77	0.42	0.000	0.18	0.18
01/19/93	15:09:03	20.75	0.43	0.000	0.17	0.17
01/19/93	15:09:04	20.75	0.45	0.000	0.17	0.17
01/19/93	15:09:05	20.73	0.47	0.000	0.15	0.15
01/19/93	15:09:06	20.73	0.48	0.000	0.15	0.15

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SITE: GENERAL MOTORS, PONTIAC MI., WEST YARD
WELL: MW-12, WITHDRAWAL
TIME OF SLUG INJ/WITH = 15:08:37 MILITARY TIME
STATIC WATER LEVEL = 20.58 FEET BELOW MEASURING POINT
TREND = (- = rising) FEET PER MINUTE
NO. OF DTW READINGS = 164
INJECTION/WITHDRAWAL (1/2): 2

DATE	TIME (24 HOUR)	DTW (FT)	t (MINS)	t (DAYS)	RESIDUAL IH/DD (FT)	CORRECTED IH/DD (FT)
01/19/93	15:07:37	20.58	-1.00	-0.001	0.00	0.00
01/19/93	15:08:37	20.55	0.00	0.000	-0.03	-0.03
01/19/93	15:08:37	20.55	0.00	0.000	-0.03	-0.03
01/19/93	15:08:37	20.58	0.01	0.000	0.00	0.00
01/19/93	15:08:38	20.93	0.01	0.000	0.35	0.35
01/19/93	15:08:38	21.08	0.01	0.000	0.50	0.50
01/19/93	15:08:38	20.27	0.02	0.000	-0.31	-0.31
01/19/93	15:08:38	21.16	0.02	0.000	0.58	0.58
01/19/93	15:08:38	21.14	0.02	0.000	0.56	0.56
01/19/93	15:08:39	20.51	0.03	0.000	-0.07	-0.07
01/19/93	15:08:39	20.34	0.03	0.000	-0.24	-0.24
01/19/93	15:08:39	21.27	0.03	0.000	0.69	0.69
01/19/93	15:08:39	20.74	0.04	0.000	0.16	0.16
01/19/93	15:08:39	20.17	0.04	0.000	-0.41	-0.41
01/19/93	15:08:40	21.07	0.04	0.000	0.49	0.49
01/19/93	15:08:40	21.26	0.05	0.000	0.68	0.68
01/19/93	15:08:40	20.89	0.05	0.000	0.31	0.31
01/19/93	15:08:40	20.38	0.05	0.000	-0.20	-0.20
01/19/93	15:08:40	20.53	0.06	0.000	-0.05	-0.05
01/19/93	15:08:41	20.61	0.06	0.000	0.03	0.03
01/19/93	15:08:41	20.47	0.06	0.000	-0.11	-0.11
01/19/93	15:08:41	20.90	0.07	0.000	0.32	0.32
01/19/93	15:08:41	20.70	0.07	0.000	0.12	0.12
01/19/93	15:08:41	20.72	0.07	0.000	0.14	0.14
01/19/93	15:08:42	21.00	0.08	0.000	0.42	0.42
01/19/93	15:08:42	21.02	0.08	0.000	0.44	0.44
01/19/93	15:08:42	20.87	0.08	0.000	0.29	0.29
01/19/93	15:08:42	21.04	0.09	0.000	0.46	0.46
01/19/93	15:08:42	21.07	0.09	0.000	0.49	0.49
01/19/93	15:08:43	21.21	0.09	0.000	0.63	0.63
01/19/93	15:08:43	21.27	0.10	0.000	0.69	0.69
01/19/93	15:08:43	21.20	0.10	0.000	0.62	0.62
01/19/93	15:08:43	21.17	0.10	0.000	0.59	0.59
01/19/93	15:08:43	21.16	0.11	0.000	0.58	0.58
01/19/93	15:08:44	21.15	0.11	0.000	0.57	0.57
01/19/93	15:08:44	21.13	0.11	0.000	0.55	0.55
01/19/93	15:08:44	21.12	0.12	0.000	0.54	0.54

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SITE: GENERAL MOTORS, PONTIAC MI., WEST YARD
WELL: MW-12, INJECTION
TIME OF SLUG INJ/WITH = 14:48:19 MILITARY TIME
STATIC WATER LEVEL = 20.57 FEET BELOW MEASURING POINT
TREND = (- = rising) FEET PER MINUTE
NO. OF DTW READINGS = 187
INJECTION/WITHDRAWAL (1/2): 1

DATE	TIME (24 HOUR)	DTW (FT)	t (MINS)	t (DAYS)	RESIDUAL IH/DD (FT)	CORRECTED IH/DD (FT)
01/19/93	14:50:43	20.51	2.40	0.002	0.06	0.06
01/19/93	14:50:55	20.50	2.60	0.002	0.07	0.07
01/19/93	14:51:07	20.53	2.80	0.002	0.04	0.04
01/19/93	14:51:19	20.53	3.00	0.002	0.04	0.04
01/19/93	14:51:31	20.53	3.20	0.002	0.04	0.04
01/19/93	14:51:43	20.53	3.40	0.002	0.04	0.04
01/19/93	14:51:55	20.53	3.60	0.003	0.04	0.04
01/19/93	14:52:07	20.53	3.80	0.003	0.04	0.04
01/19/93	14:52:19	20.53	4.00	0.003	0.04	0.04
01/19/93	14:52:31	20.54	4.20	0.003	0.03	0.03
01/19/93	14:52:43	20.54	4.40	0.003	0.03	0.03
01/19/93	14:52:55	20.54	4.60	0.003	0.03	0.03
01/19/93	14:53:07	20.54	4.80	0.003	0.03	0.03
01/19/93	14:53:19	20.54	5.00	0.003	0.03	0.03
01/19/93	14:53:31	20.54	5.20	0.004	0.03	0.03
01/19/93	14:53:43	20.54	5.40	0.004	0.03	0.03

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SITE: GENERAL MOTORS, PONTIAC MI., WEST YARD
WELL: MW-12, INJECTION
TIME OF SLUG INJ/WITH = 14:48:19 MILITARY TIME
STATIC WATER LEVEL = 20.57 FEET BELOW MEASURING POINT
TREND = (- = rising) FEET PER MINUTE
NO. OF DTW READINGS = 187
INJECTION/WITHDRAWAL (1/2): 1

DATE	TIME (24 HOUR)	DTW (FT)	t (MINS)	t (DAYS)	RESIDUAL IH/DD (FT)	CORRECTED IH/DD (FT)
01/19/93	14:48:34	20.10	0.24	0.000	0.47	0.47
01/19/93	14:48:34	20.11	0.25	0.000	0.47	0.47
01/19/93	14:48:34	20.11	0.25	0.000	0.47	0.47
01/19/93	14:48:34	20.11	0.25	0.000	0.46	0.46
01/19/93	14:48:34	20.11	0.26	0.000	0.46	0.46
01/19/93	14:48:35	20.12	0.26	0.000	0.45	0.45
01/19/93	14:48:35	20.12	0.26	0.000	0.45	0.45
01/19/93	14:48:35	20.12	0.27	0.000	0.45	0.45
01/19/93	14:48:35	20.12	0.27	0.000	0.45	0.45
01/19/93	14:48:35	20.13	0.27	0.000	0.44	0.44
01/19/93	14:48:36	20.13	0.28	0.000	0.44	0.44
01/19/93	14:48:36	20.14	0.28	0.000	0.43	0.43
01/19/93	14:48:36	20.14	0.28	0.000	0.43	0.43
01/19/93	14:48:36	20.14	0.29	0.000	0.43	0.43
01/19/93	14:48:36	20.14	0.29	0.000	0.43	0.43
01/19/93	14:48:37	20.14	0.29	0.000	0.43	0.43
01/19/93	14:48:37	20.15	0.30	0.000	0.42	0.42
01/19/93	14:48:37	20.15	0.30	0.000	0.42	0.42
01/19/93	14:48:37	20.15	0.30	0.000	0.42	0.42
01/19/93	14:48:37	20.09	0.31	0.000	0.48	0.48
01/19/93	14:48:38	20.36	0.31	0.000	0.21	0.21
01/19/93	14:48:38	20.21	0.31	0.000	0.36	0.36
01/19/93	14:48:38	20.16	0.32	0.000	0.41	0.41
01/19/93	14:48:38	20.16	0.32	0.000	0.41	0.41
01/19/93	14:48:38	19.82	0.32	0.000	0.75	0.75
01/19/93	14:48:39	19.82	0.33	0.000	0.75	0.75
01/19/93	14:48:39	20.34	0.33	0.000	0.23	0.23
01/19/93	14:48:39	20.19	0.33	0.000	0.38	0.38
01/19/93	14:48:40	20.18	0.35	0.000	0.39	0.39
01/19/93	14:48:41	20.19	0.37	0.000	0.38	0.38
01/19/93	14:48:42	20.21	0.38	0.000	0.36	0.36
01/19/93	14:48:43	20.14	0.40	0.000	0.43	0.43
01/19/93	14:48:44	20.31	0.42	0.000	0.26	0.26
01/19/93	14:48:45	20.23	0.43	0.000	0.35	0.35
01/19/93	14:48:46	20.23	0.45	0.000	0.35	0.35
01/19/93	14:48:47	20.19	0.47	0.000	0.38	0.38
01/19/93	14:48:48	20.24	0.48	0.000	0.33	0.33

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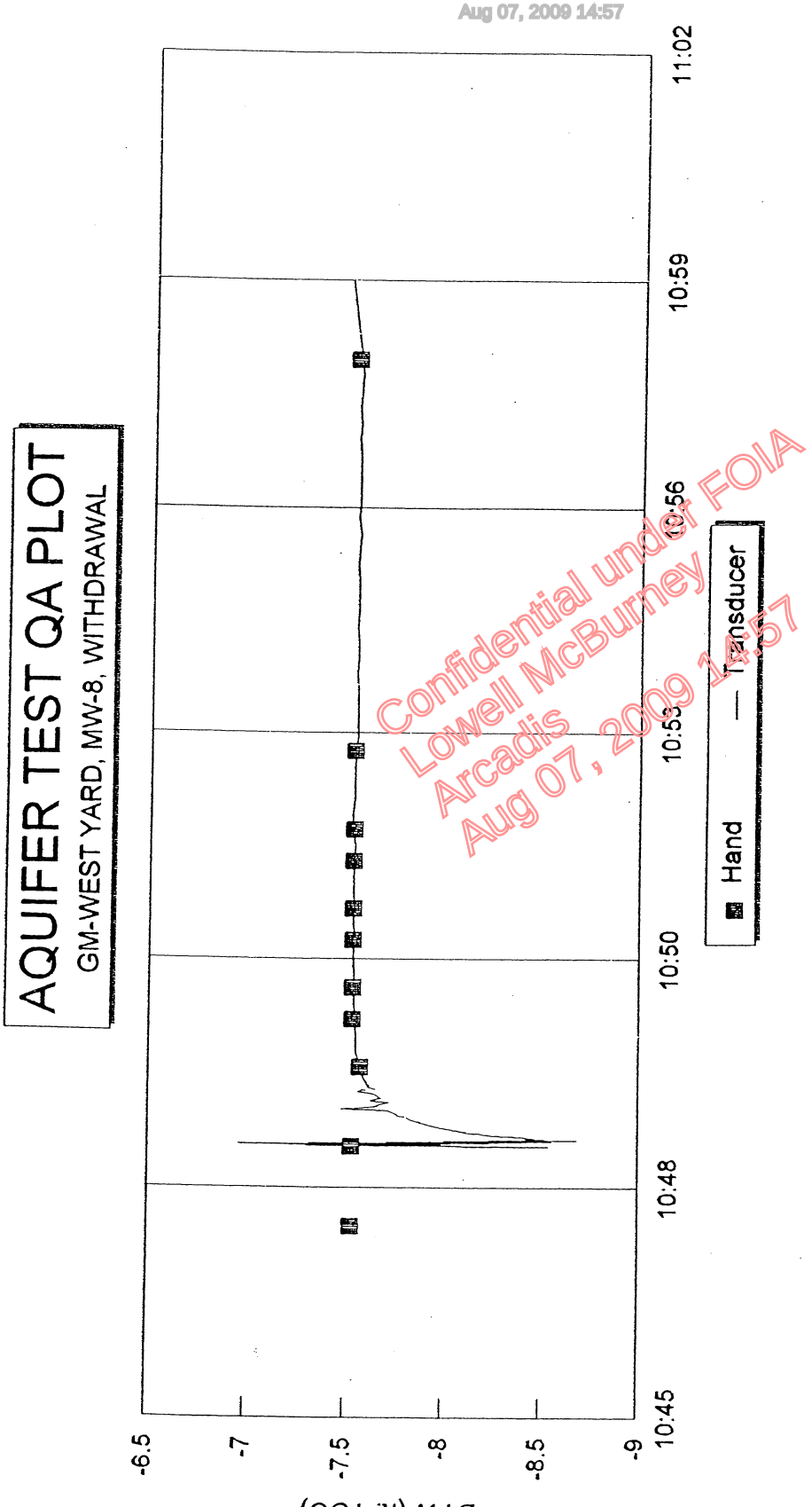
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SITE: GENERAL MOTORS, PONTIAC MI., WEST YARD
WELL: MW-12, INJECTION
TIME OF SLUG INJ/WITH = 14:48:19 MILITARY TIME
STATIC WATER LEVEL = 20.57 FEET BELOW MEASURING POINT
TREND = (- = rising) FEET PER MINUTE
NO. OF DTW READINGS = 187
INJECTION/WITHDRAWAL (1/2): 1

DATE	TIME (24 HOUR)	DTW (FT)	t (MINS)	t (DAYS)	RESIDUAL IH/DD (FT)	CORRECTED IH/DD (FT)
01/19/93	14:47:19	20.57	-1.00	-0.001	0.00	0.00
01/19/93	14:48:19	20.54	0.00	0.000	0.03	0.03
01/19/93	14:48:19	20.54	0.00	0.000	0.03	0.03
01/19/93	14:48:19	20.54	0.01	0.000	0.03	0.03
01/19/93	14:48:20	20.53	0.01	0.000	0.04	0.04
01/19/93	14:48:20	20.53	0.01	0.000	0.04	0.04
01/19/93	14:48:20	20.56	0.02	0.000	0.01	0.01
01/19/93	14:48:20	20.52	0.02	0.000	0.05	0.05
01/19/93	14:48:20	20.52	0.02	0.000	0.05	0.05
01/19/93	14:48:21	20.52	0.03	0.000	0.05	0.05
01/19/93	14:48:21	20.52	0.03	0.000	0.05	0.05
01/19/93	14:48:21	20.52	0.03	0.000	0.05	0.05
01/19/93	14:48:21	20.52	0.04	0.000	0.05	0.05
01/19/93	14:48:21	20.52	0.04	0.000	0.05	0.05
01/19/93	14:48:22	20.52	0.04	0.000	0.05	0.05
01/19/93	14:48:22	20.52	0.05	0.000	0.05	0.05
01/19/93	14:48:22	20.52	0.05	0.000	0.05	0.05
01/19/93	14:48:22	20.53	0.05	0.000	0.04	0.04
01/19/93	14:48:22	20.53	0.06	0.000	0.04	0.04
01/19/93	14:48:23	20.53	0.06	0.000	0.04	0.04
01/19/93	14:48:23	20.53	0.06	0.000	0.04	0.04
01/19/93	14:48:23	20.53	0.07	0.000	0.04	0.04
01/19/93	14:48:23	20.53	0.07	0.000	0.04	0.04
01/19/93	14:48:23	20.53	0.07	0.000	0.04	0.04
01/19/93	14:48:24	20.53	0.08	0.000	0.04	0.04
01/19/93	14:48:24	20.53	0.08	0.000	0.04	0.04
01/19/93	14:48:24	20.52	0.08	0.000	0.05	0.05
01/19/93	14:48:24	20.53	0.09	0.000	0.04	0.04
01/19/93	14:48:24	20.53	0.09	0.000	0.04	0.04
01/19/93	14:48:25	20.53	0.09	0.000	0.04	0.04
01/19/93	14:48:25	20.53	0.10	0.000	0.04	0.04
01/19/93	14:48:25	20.53	0.10	0.000	0.04	0.04
01/19/93	14:48:25	20.34	0.10	0.000	0.23	0.23
01/19/93	14:48:25	20.23	0.11	0.000	0.34	0.34
01/19/93	14:48:26	20.17	0.11	0.000	0.40	0.40
01/19/93	14:48:26	20.12	0.11	0.000	0.45	0.45
01/19/93	14:48:26	19.95	0.12	0.000	0.62	0.62

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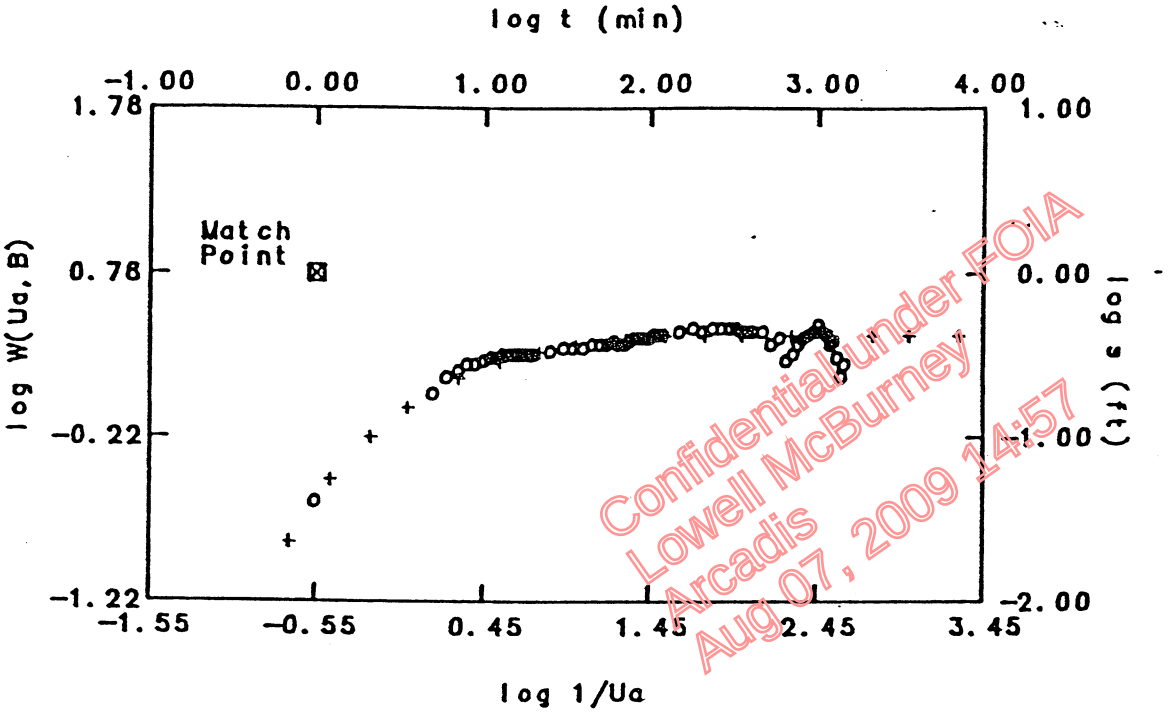


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CPC PONTIAC, OB. WELL SV2



o – Data
+ – Type Curve
Unconf. Elastic: beta = 0.03

MATCH POINT			SOLUTION		
t	=	1.000E+0000	Transmissivity	=	1.036E+0003 gpd/ft
s	=	1.000E+0000	Hydraulic. Cond.	=	9.414E+0001 gpd/sq ft
1/Ua	=	2.818E-0001	Storativity	=	1.516E-0003
W(Ua,B)	=	6.026E-0001			

WELL INFORMATION		
WELL IDENTIFICATION	:	SV2
DATE OF AQUIFER TEST	:	08/31/91
AQUIFER THICKNESS (b)	:	1.100E+0001 ft
DISCHARGE RATE (Q)	:	1.500E+0000 gpm
PUMPING WELL RADIUS (r)	:	8.300E-0002 ft
DISTANCE OF OBS. WELL FROM PUMPING WELL (d)	:	1.500E+0001 ft

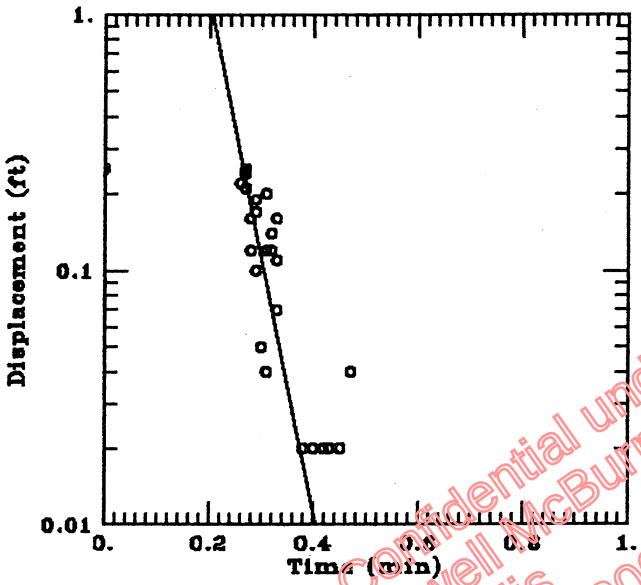
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GROUNDWATER TECHNOLOGY, INC.

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GMWY, MW-7, INJECTION



DATA SET:
c:\GMWY\PRT\7IN
01/31/96

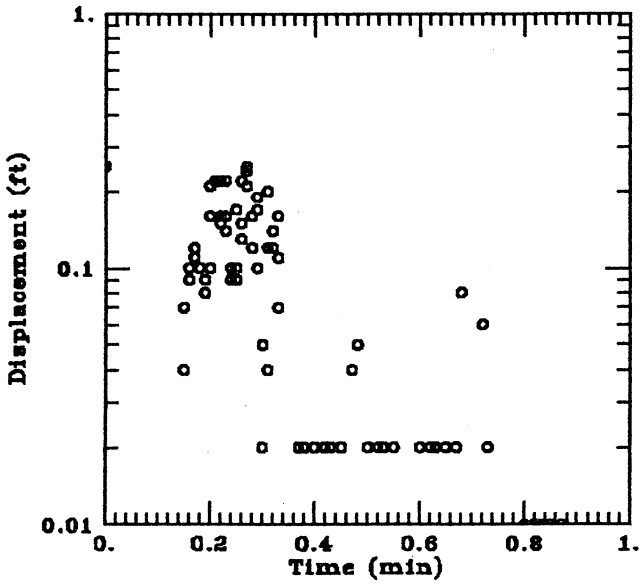
AQUIFER TYP
Unconfined
SOLUTION ME
Bouwer-Rice

ESTIMATED P
K = 0.01888 ft
y0 = 119.7 ft

TEST DATA:
H0 = 0.25 ft
rc = 0.08 ft
rw = 0.33 ft
L = 10. ft
b = 9.41 ft
H = 9.41 ft

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GMWY, MW-7, WITHDRAWAL



DATA SET:
c:\gmwy\prt\aqt
02/01/96

AQUIFER TYP
Unconfined
SOLUTION ME
Bouwer-Rice

ESTIMATED P
K = 0.003248 f
y0 = 0.01 ft

TEST DATA:
H0 = 0.25 ft
rc = 0.08 ft
rw = 0.33 ft
L = 10. ft
b = 10.41 ft
H = 10.41 ft

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SITE: GENERAL MOTORS, PONTIAC MI., WEST YARD
WELL: MW-7, INJECTION
TIME OF SLUG INJ/WITH = 14:03:56 MILITARY TIME
STATIC WATER LEVEL = 20.59 FEET BELOW MEASURING POINT
TREND = (- = rising) FEET PER MINUTE
NO. OF DTW READINGS = 163
INJECTION/WITHDRAWAL (1/2): 1

DATE	TIME (24 HOUR)	DTW (FT)	t (MINS)	t (DAYS)	RESIDUAL IH/DD (FT)	CORRECTED IH/DD (FT)
01/19/93	14:02:56	20.59	-1.00	-0.001	0.00	0.00
01/19/93	14:03:56	20.61	0.00	0.000	-0.02	-0.02
01/19/93	14:03:56	20.61	0.00	0.000	-0.02	-0.02
01/19/93	14:03:56	20.61	0.01	0.000	-0.02	-0.02
01/19/93	14:03:57	20.61	0.01	0.000	-0.02	-0.02
01/19/93	14:03:57	20.61	0.01	0.000	-0.02	-0.02
01/19/93	14:03:57	20.61	0.02	0.000	-0.02	-0.02
01/19/93	14:03:57	20.61	0.02	0.000	-0.02	-0.02
01/19/93	14:03:57	20.62	0.02	0.000	-0.03	-0.03
01/19/93	14:03:58	20.61	0.03	0.000	-0.02	-0.02
01/19/93	14:03:58	20.61	0.03	0.000	-0.02	-0.02
01/19/93	14:03:58	20.61	0.03	0.000	-0.02	-0.02
01/19/93	14:03:58	20.61	0.04	0.000	-0.02	-0.02
01/19/93	14:03:58	20.61	0.04	0.000	-0.02	-0.02
01/19/93	14:03:59	20.61	0.04	0.000	-0.02	-0.02
01/19/93	14:03:59	20.62	0.05	0.000	-0.03	-0.03
01/19/93	14:03:59	20.62	0.05	0.000	-0.03	-0.03
01/19/93	14:03:59	20.62	0.05	0.000	-0.03	-0.03
01/19/93	14:03:59	20.61	0.06	0.000	-0.02	-0.02
01/19/93	14:04:00	20.62	0.06	0.000	-0.03	-0.03
01/19/93	14:04:00	20.61	0.06	0.000	-0.02	-0.02
01/19/93	14:04:00	20.62	0.07	0.000	-0.03	-0.03
01/19/93	14:04:00	20.62	0.07	0.000	-0.03	-0.03
01/19/93	14:04:00	20.61	0.07	0.000	-0.02	-0.02
01/19/93	14:04:01	20.61	0.08	0.000	-0.02	-0.02
01/19/93	14:04:01	20.61	0.08	0.000	-0.02	-0.02
01/19/93	14:04:01	20.61	0.08	0.000	-0.02	-0.02
01/19/93	14:04:01	20.60	0.09	0.000	-0.01	-0.01
01/19/93	14:04:01	20.61	0.09	0.000	-0.02	-0.02
01/19/93	14:04:02	20.61	0.09	0.000	-0.02	-0.02
01/19/93	14:04:02	20.61	0.10	0.000	-0.02	-0.02
01/19/93	14:04:02	20.61	0.10	0.000	-0.02	-0.02
01/19/93	14:04:02	20.61	0.10	0.000	-0.02	-0.02
01/19/93	14:04:02	20.62	0.11	0.000	-0.03	-0.03
01/19/93	14:04:03	20.62	0.11	0.000	-0.03	-0.03
01/19/93	14:04:03	20.62	0.11	0.000	-0.03	-0.03
01/19/93	14:04:03	20.62	0.12	0.000	-0.03	-0.03

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SITE: GENERAL MOTORS, PONTIAC MI., WEST YARD
WELL: MW-7, INJECTION
TIME OF SLUG INJ/WITH = 14:03:56 MILITARY TIME
STATIC WATER LEVEL = 20.59 FEET BELOW MEASURING POINT
TREND = (- = rising) FEET PER MINUTE
NO. OF DTW READINGS = 163
INJECTION/WITHDRAWAL (1/2): 1

DATE	TIME (24 HOUR)	DTW (FT)	t (MINS)	t (DAYS)	RESIDUAL IH/DD (FT)	CORRECTED IH/DD (FT)
01/19/93	14:04:03	20.62	0.12	0.000	-0.03	-0.03
01/19/93	14:04:03	20.62	0.12	0.000	-0.03	-0.03
01/19/93	14:04:04	20.62	0.13	0.000	-0.03	-0.03
01/19/93	14:04:04	20.62	0.13	0.000	-0.03	-0.03
01/19/93	14:04:04	20.62	0.13	0.000	-0.03	-0.03
01/19/93	14:04:04	20.61	0.14	0.000	-0.02	-0.02
01/19/93	14:04:04	20.61	0.14	0.000	-0.02	-0.02
01/19/93	14:04:05	20.61	0.14	0.000	-0.02	-0.02
01/19/93	14:04:05	20.59	0.15	0.000	0.00	0.00
01/19/93	14:04:05	20.55	0.15	0.000	0.04	0.04
01/19/93	14:04:05	20.52	0.15	0.000	0.07	0.07
01/19/93	14:04:05	20.50	0.16	0.000	0.09	0.09
01/19/93	14:04:06	20.50	0.16	0.000	0.09	0.09
01/19/93	14:04:06	20.49	0.16	0.000	0.10	0.10
01/19/93	14:04:06	20.48	0.17	0.000	0.11	0.11
01/19/93	14:04:06	20.47	0.17	0.000	0.12	0.12
01/19/93	14:04:06	20.47	0.17	0.000	0.12	0.12
01/19/93	14:04:07	20.49	0.18	0.000	0.10	0.10
01/19/93	14:04:07	20.49	0.18	0.000	0.10	0.10
01/19/93	14:04:07	20.49	0.18	0.000	0.10	0.10
01/19/93	14:04:07	20.51	0.19	0.000	0.08	0.08
01/19/93	14:04:07	20.50	0.19	0.000	0.09	0.09
01/19/93	14:04:08	20.50	0.19	0.000	0.09	0.09
01/19/93	14:04:08	20.49	0.20	0.000	0.10	0.10
01/19/93	14:04:08	20.43	0.20	0.000	0.16	0.16
01/19/93	14:04:08	20.38	0.20	0.000	0.21	0.21
01/19/93	14:04:08	20.37	0.21	0.000	0.22	0.22
01/19/93	14:04:09	20.37	0.21	0.000	0.22	0.22
01/19/93	14:04:09	20.37	0.21	0.000	0.22	0.22
01/19/93	14:04:09	20.37	0.22	0.000	0.22	0.22
01/19/93	14:04:09	20.43	0.22	0.000	0.16	0.16
01/19/93	14:04:09	20.44	0.22	0.000	0.15	0.15
01/19/93	14:04:10	20.45	0.23	0.000	0.14	0.14
01/19/93	14:04:10	20.43	0.23	0.000	0.16	0.16
01/19/93	14:04:10	20.37	0.23	0.000	0.22	0.22
01/19/93	14:04:10	20.49	0.24	0.000	0.10	0.10
01/19/93	14:04:10	20.50	0.24	0.000	0.09	0.09

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SITE: GENERAL MOTORS, PONTIAC MI., WEST YARD
WELL: MW-7, INJECTION
TIME OF SLUG INJ/WITH = 14:03:56 MILITARY TIME
STATIC WATER LEVEL = 20.59 FEET BELOW MEASURING POINT
TREND = (- = rising) FEET PER MINUTE
NO. OF DTW READINGS = 163
INJECTION/WITHDRAWAL (1/2): 1

DATE	TIME (24 HOUR)	DTW (FT)	t (MINS)	t (DAYS)	RESIDUAL IH/DD (FT)	CORRECTED IH/DD (FT)
01/19/93	14:04:11	20.50	0.24	0.000	0.09	0.09
01/19/93	14:04:11	20.50	0.25	0.000	0.09	0.09
01/19/93	14:04:11	20.49	0.25	0.000	0.10	0.10
01/19/93	14:04:11	20.42	0.25	0.000	0.17	0.17
01/19/93	14:04:11	20.46	0.26	0.000	0.13	0.13
01/19/93	14:04:12	20.44	0.26	0.000	0.15	0.15
01/19/93	14:04:12	20.37	0.26	0.000	0.22	0.22
01/19/93	14:04:12	20.34	0.27	0.000	0.25	0.25
01/19/93	14:04:12	20.35	0.27	0.000	0.24	0.24
01/19/93	14:04:12	20.38	0.27	0.000	0.21	0.21
01/19/93	14:04:13	20.43	0.28	0.000	0.16	0.16
01/19/93	14:04:13	20.47	0.28	0.000	0.12	0.12
01/19/93	14:04:13	20.43	0.28	0.000	0.16	0.16
01/19/93	14:04:13	20.40	0.29	0.000	0.19	0.19
01/19/93	14:04:13	20.42	0.29	0.000	0.17	0.17
01/19/93	14:04:14	20.49	0.29	0.000	0.10	0.10
01/19/93	14:04:14	20.54	0.30	0.000	0.05	0.05
01/19/93	14:04:14	20.54	0.30	0.000	0.05	0.05
01/19/93	14:04:14	20.57	0.30	0.000	0.02	0.02
01/19/93	14:04:14	20.55	0.31	0.000	0.04	0.04
01/19/93	14:04:15	20.47	0.31	0.000	0.12	0.12
01/19/93	14:04:15	20.39	0.31	0.000	0.20	0.20
01/19/93	14:04:15	20.47	0.32	0.000	0.12	0.12
01/19/93	14:04:15	20.47	0.32	0.000	0.12	0.12
01/19/93	14:04:15	20.45	0.32	0.000	0.14	0.14
01/19/93	14:04:16	20.43	0.33	0.000	0.16	0.16
01/19/93	14:04:16	20.52	0.33	0.000	0.07	0.07
01/19/93	14:04:16	20.48	0.33	0.000	0.11	0.11
01/19/93	14:04:17	20.64	0.35	0.000	-0.05	-0.05
01/19/93	14:04:18	20.57	0.37	0.000	0.02	0.02
01/19/93	14:04:19	20.57	0.38	0.000	0.02	0.02
01/19/93	14:04:20	20.57	0.40	0.000	0.02	0.02
01/19/93	14:04:21	20.57	0.42	0.000	0.02	0.02
01/19/93	14:04:22	20.57	0.43	0.000	0.02	0.02
01/19/93	14:04:23	20.57	0.45	0.000	0.02	0.02
01/19/93	14:04:24	20.55	0.47	0.000	0.04	0.04
01/19/93	14:04:25	20.54	0.48	0.000	0.05	0.05

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SITE: GENERAL MOTORS, PONTIAC MI., WEST YARD
WELL: MW-7, INJECTION
TIME OF SLUG INJ/WITH = 14:03:56 MILITARY TIME
STATIC WATER LEVEL = 20.59 FEET BELOW MEASURING POINT
TREND = (- = rising) FEET PER MINUTE
NO. OF DTW READINGS = 163
INJECTION/WITHDRAWAL (1/2): 1

DATE	TIME (24 HOUR)	DTW (FT)	t (MINS)	t (DAYS)	RESIDUAL IH/DD (FT)	CORRECTED IH/DD (FT)
01/19/93	14:04:26	20.57	0.50	0.000	0.02	0.02
01/19/93	14:04:27	20.57	0.52	0.000	0.02	0.02
01/19/93	14:04:28	20.57	0.53	0.000	0.02	0.02
01/19/93	14:04:29	20.57	0.55	0.000	0.02	0.02
01/19/93	14:04:30	20.58	0.57	0.000	0.01	0.01
01/19/93	14:04:31	20.58	0.58	0.000	0.01	0.01
01/19/93	14:04:32	20.57	0.60	0.000	0.02	0.02
01/19/93	14:04:33	20.57	0.62	0.000	0.02	0.02
01/19/93	14:04:34	20.57	0.63	0.000	0.02	0.02
01/19/93	14:04:35	20.57	0.65	0.000	0.02	0.02
01/19/93	14:04:36	20.57	0.67	0.000	0.02	0.02
01/19/93	14:04:37	20.51	0.68	0.000	0.08	0.08
01/19/93	14:04:38	20.58	0.70	0.000	0.01	0.01
01/19/93	14:04:39	20.53	0.72	0.000	0.06	0.06
01/19/93	14:04:40	20.57	0.73	0.001	0.02	0.02
01/19/93	14:04:41	20.59	0.75	0.001	-0.00	-0.00
01/19/93	14:04:42	20.60	0.77	0.001	-0.01	-0.01
01/19/93	14:04:43	20.59	0.78	0.001	0.00	0.00
01/19/93	14:04:44	20.58	0.80	0.001	0.01	0.01
01/19/93	14:04:45	20.58	0.82	0.001	0.01	0.01
01/19/93	14:04:46	20.58	0.83	0.001	0.01	0.01
01/19/93	14:04:47	20.58	0.85	0.001	0.01	0.01
01/19/93	14:04:48	20.58	0.87	0.001	0.01	0.01
01/19/93	14:04:49	20.53	0.88	0.001	0.06	0.06
01/19/93	14:04:50	20.55	0.90	0.001	0.04	0.04
01/19/93	14:04:51	20.62	0.92	0.001	-0.03	-0.03
01/19/93	14:04:52	20.59	0.93	0.001	0.00	0.00
01/19/93	14:04:53	20.59	0.95	0.001	0.00	0.00
01/19/93	14:04:54	20.58	0.97	0.001	0.01	0.01
01/19/93	14:04:55	20.58	0.98	0.001	0.01	0.01
01/19/93	14:04:56	20.58	1.00	0.001	0.01	0.01
01/19/93	14:05:08	20.58	1.20	0.001	0.01	0.01
01/19/93	14:05:20	20.59	1.40	0.001	0.00	0.00
01/19/93	14:05:32	20.59	1.60	0.001	0.00	0.00
01/19/93	14:05:44	20.63	1.80	0.001	-0.04	-0.04
01/19/93	14:05:56	20.59	2.00	0.001	-0.00	-0.00
01/19/93	14:06:08	20.59	2.20	0.002	-0.00	-0.00

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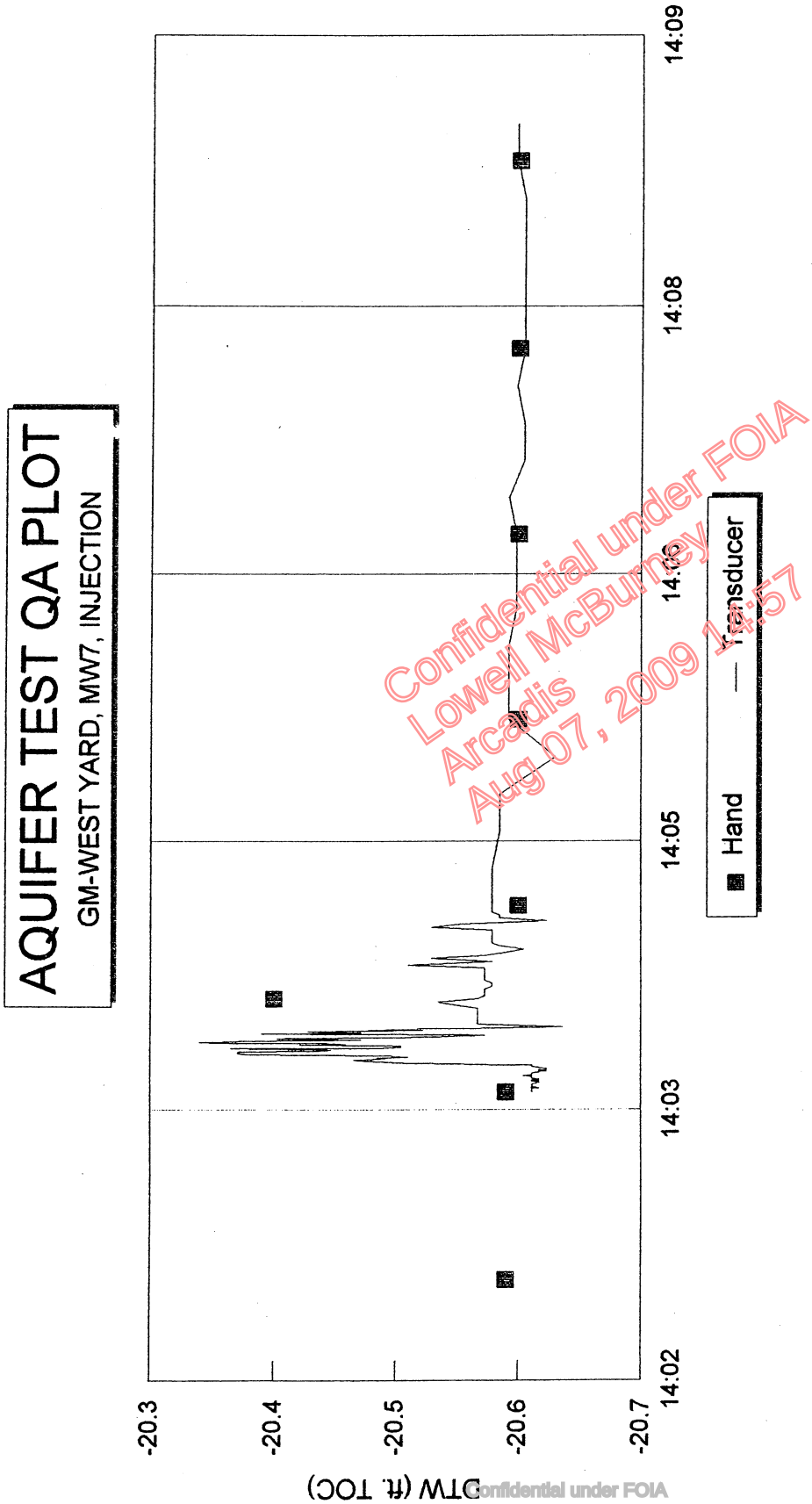
SITE: GENERAL MOTORS, PONTIAC MI., WEST YARD
WELL: MW-7, INJECTION
TIME OF SLUG INJ/WITH = 14:03:56 MILITARY TIME
STATIC WATER LEVEL = 20.59 FEET BELOW MEASURING POINT
TREND = (- = rising) FEET PER MINUTE
NO. OF DTW READINGS = 163
INJECTION/WITHDRAWAL (1/2): 1

DATE	TIME (24 HOUR)	DTW (FT)	t (MINS)	t (DAYS)	RESIDUAL IH/DD (FT)	CORRECTED IH/DD (FT)
01/19/93	14:06:20	20.59	2.40	0.002	-0.00	-0.00
01/19/93	14:06:32	20.60	2.60	0.002	-0.01	-0.01
01/19/93	14:06:44	20.60	2.80	0.002	-0.01	-0.01
01/19/93	14:06:56	20.60	3.00	0.002	-0.01	-0.01
01/19/93	14:07:08	20.59	3.20	0.002	-0.00	-0.00
01/19/93	14:07:20	20.60	3.40	0.002	-0.01	-0.01
01/19/93	14:07:32	20.60	3.60	0.003	-0.01	-0.01
01/19/93	14:07:44	20.60	3.80	0.003	-0.01	-0.01
01/19/93	14:07:56	20.60	4.00	0.003	-0.01	-0.01
01/19/93	14:08:08	20.60	4.20	0.003	-0.01	-0.01
01/19/93	14:08:20	20.60	4.40	0.003	-0.01	-0.01
01/19/93	14:08:32	20.60	4.60	0.003	-0.01	-0.01
01/19/93	14:08:44	20.60	4.80	0.003	-0.01	-0.01
01/19/93	14:08:56	20.60	5.00	0.003	-0.01	-0.01
01/19/93	14:09:08	20.60	5.20	0.004	-0.01	-0.01

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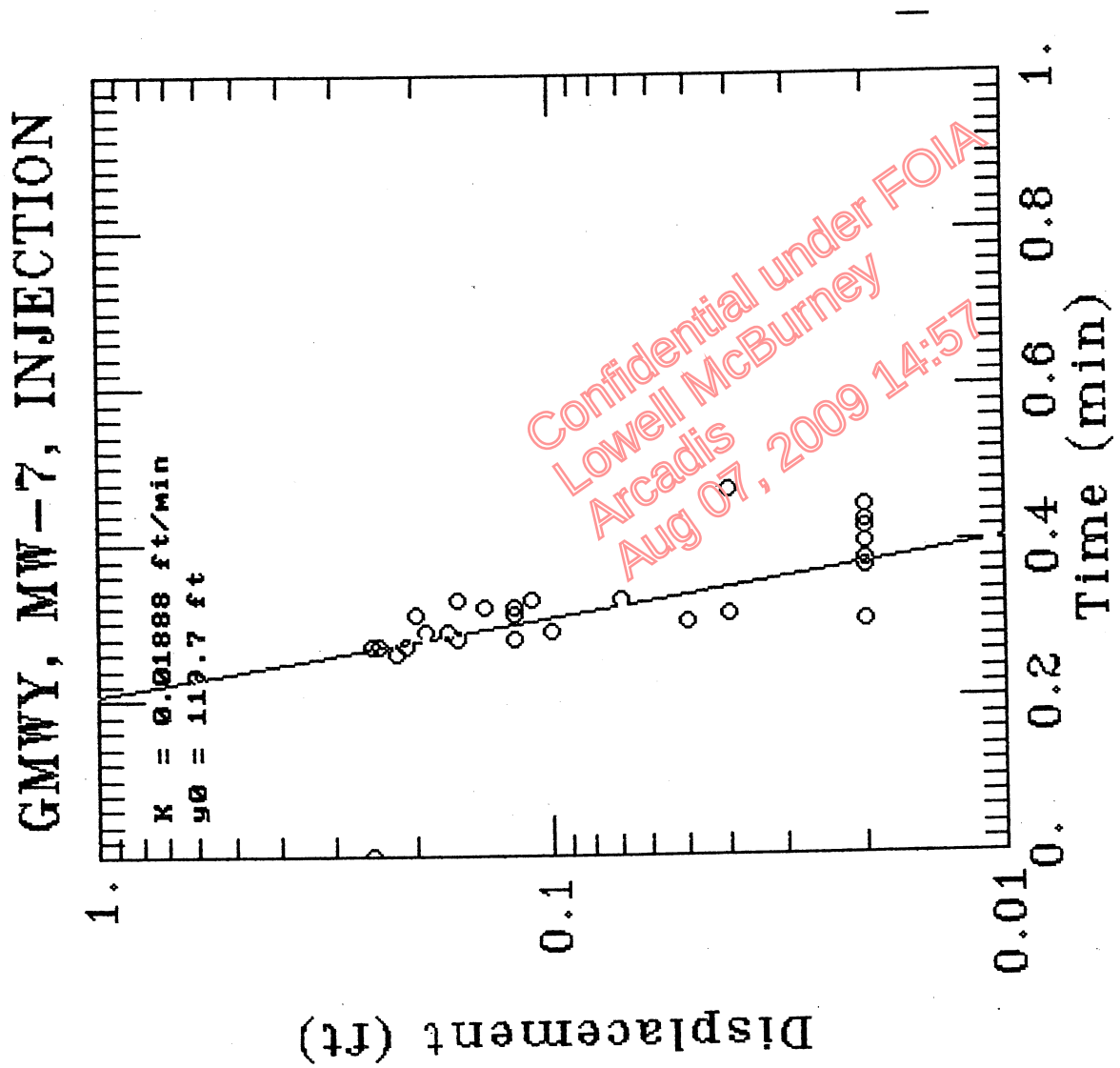
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SITE: GENERAL MOTORS, PONTIAC MI., WEST YARD
WELL: MW7, WITHDRAWAL
TIME OF SLUG INJ/WITH = 14:10:44 MILITARY TIME
STATIC WATER LEVEL = 20.60 FEET BELOW MEASURING POINT
TREND = (- = rising) FEET PER MINUTE
NO. OF DTW READINGS = 163
INJECTION/WITHDRAWAL (1/2): 2

DATE	TIME (24 HOUR)	DTW (FT)	t (MINS)	t (DAYS)	RESIDUAL IH/DD (FT)	CORRECTED IH/DD (FT)
01/19/93	14:09:44	20.60	-1.00	-0.001	0.00	0.00
01/19/93	14:10:44	20.59	0.00	0.000	-0.01	-0.01
01/19/93	14:10:44	20.59	0.00	0.000	-0.01	-0.01
01/19/93	14:10:44	20.59	0.01	0.000	-0.01	-0.01
01/19/93	14:10:45	20.59	0.01	0.000	-0.01	-0.01
01/19/93	14:10:45	20.59	0.01	0.000	-0.01	-0.01
01/19/93	14:10:45	20.59	0.02	0.000	-0.01	-0.01
01/19/93	14:10:45	20.59	0.02	0.000	-0.01	-0.01
01/19/93	14:10:45	20.59	0.02	0.000	-0.01	-0.01
01/19/93	14:10:46	20.59	0.03	0.000	-0.01	-0.01
01/19/93	14:10:46	20.59	0.03	0.000	-0.01	-0.01
01/19/93	14:10:46	20.57	0.03	0.000	-0.03	-0.03
01/19/93	14:10:46	20.66	0.04	0.000	0.06	0.06
01/19/93	14:10:46	20.78	0.04	0.000	0.18	0.18
01/19/93	14:10:47	20.48	0.04	0.000	-0.12	-0.12
01/19/93	14:10:47	20.60	0.05	0.000	0.00	0.00
01/19/93	14:10:47	20.49	0.05	0.000	-0.11	-0.11
01/19/93	14:10:47	20.49	0.05	0.000	-0.11	-0.11
01/19/93	14:10:47	20.61	0.06	0.000	0.01	0.01
01/19/93	14:10:48	20.95	0.06	0.000	0.35	0.35
01/19/93	14:10:48	20.93	0.06	0.000	0.33	0.33
01/19/93	14:10:48	20.80	0.07	0.000	0.20	0.20
01/19/93	14:10:48	20.97	0.07	0.000	0.36	0.36
01/19/93	14:10:48	20.86	0.07	0.000	0.26	0.26
01/19/93	14:10:49	20.92	0.08	0.000	0.32	0.32
01/19/93	14:10:49	20.91	0.08	0.000	0.31	0.31
01/19/93	14:10:49	20.99	0.08	0.000	0.39	0.39
01/19/93	14:10:49	21.00	0.09	0.000	0.40	0.40
01/19/93	14:10:49	20.86	0.09	0.000	0.26	0.26
01/19/93	14:10:50	20.63	0.09	0.000	0.02	0.02
01/19/93	14:10:50	20.81	0.10	0.000	0.21	0.21
01/19/93	14:10:50	20.93	0.10	0.000	0.33	0.33
01/19/93	14:10:50	20.51	0.10	0.000	-0.09	-0.09
01/19/93	14:10:50	20.65	0.11	0.000	0.05	0.05
01/19/93	14:10:51	20.52	0.11	0.000	-0.08	-0.08
01/19/93	14:10:51	20.73	0.11	0.000	0.13	0.13
01/19/93	14:10:51	20.90	0.12	0.000	0.30	0.30

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SITE: GENERAL MOTORS, PONTIAC MI., WEST YARD
WELL: MW7, WITHDRAWAL
TIME OF SLUG INJ/WITH = 14:10:44 MILITARY TIME
STATIC WATER LEVEL = 20.60 FEET BELOW MEASURING POINT
TREND = (- = rising) FEET PER MINUTE
NO. OF DTW READINGS = 163
INJECTION/WITHDRAWAL (1/2): 2

DATE	TIME (24 HOUR)	DTW (FT)	t (MINS)	t (DAYS)	RESIDUAL IH/DD (FT)	CORRECTED IH/DD (FT)
01/19/93	14:10:51	20.99	0.12	0.000	0.39	0.39
01/19/93	14:10:51	20.94	0.12	0.000	0.34	0.34
01/19/93	14:10:52	20.83	0.13	0.000	0.23	0.23
01/19/93	14:10:52	20.74	0.13	0.000	0.14	0.14
01/19/93	14:10:52	20.68	0.13	0.000	0.07	0.07
01/19/93	14:10:52	20.66	0.14	0.000	0.06	0.06
01/19/93	14:10:52	20.67	0.14	0.000	0.07	0.07
01/19/93	14:10:53	20.67	0.14	0.000	0.07	0.07
01/19/93	14:10:53	20.67	0.15	0.000	0.07	0.07
01/19/93	14:10:53	20.66	0.15	0.000	0.06	0.06
01/19/93	14:10:53	20.64	0.15	0.000	0.04	0.04
01/19/93	14:10:53	20.63	0.16	0.000	0.03	0.03
01/19/93	14:10:54	20.63	0.16	0.000	0.02	0.02
01/19/93	14:10:54	20.61	0.16	0.000	0.01	0.01
01/19/93	14:10:54	20.61	0.17	0.000	0.01	0.01
01/19/93	14:10:54	20.61	0.17	0.000	0.01	0.01
01/19/93	14:10:54	20.64	0.17	0.000	0.04	0.04
01/19/93	14:10:55	20.63	0.18	0.000	0.02	0.02
01/19/93	14:10:55	20.63	0.18	0.000	0.02	0.02
01/19/93	14:10:55	20.62	0.18	0.000	0.02	0.02
01/19/93	14:10:55	20.61	0.19	0.000	0.01	0.01
01/19/93	14:10:55	20.61	0.19	0.000	0.01	0.01
01/19/93	14:10:56	20.61	0.19	0.000	0.01	0.01
01/19/93	14:10:56	20.62	0.20	0.000	0.02	0.02
01/19/93	14:10:56	20.62	0.20	0.000	0.02	0.02
01/19/93	14:10:56	20.61	0.20	0.000	0.01	0.01
01/19/93	14:10:56	20.61	0.21	0.000	0.01	0.01
01/19/93	14:10:57	20.61	0.21	0.000	0.01	0.01
01/19/93	14:10:57	20.61	0.21	0.000	0.01	0.01
01/19/93	14:10:57	20.61	0.22	0.000	0.01	0.01
01/19/93	14:10:57	20.61	0.22	0.000	0.01	0.01
01/19/93	14:10:57	20.61	0.22	0.000	0.01	0.01
01/19/93	14:10:58	20.61	0.23	0.000	0.01	0.01
01/19/93	14:10:58	20.61	0.23	0.000	0.01	0.01
01/19/93	14:10:58	20.61	0.23	0.000	0.01	0.01
01/19/93	14:10:58	20.60	0.24	0.000	0.00	0.00
01/19/93	14:10:58	20.59	0.24	0.000	-0.01	-0.01

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SITE: GENERAL MOTORS, PONTIAC MI., WEST YARD
WELL: MW7, WITHDRAWAL
TIME OF SLUG INJ/WITH = 14:10:44 MILITARY TIME
STATIC WATER LEVEL = 20.60 FEET BELOW MEASURING POINT
TREND = (- = rising) FEET PER MINUTE
NO. OF DTW READINGS = 163
INJECTION/WITHDRAWAL (1/2): 2

DATE	TIME (24 HOUR)	DTW (FT)	t (MINS)	t (DAYS)	RESIDUAL IH/DD (FT)	CORRECTED IH/DD (FT)
01/19/93	14:10:59	20.59	0.24	0.000	-0.01	-0.01
01/19/93	14:10:59	20.74	0.25	0.000	0.14	0.14
01/19/93	14:10:59	21.09	0.25	0.000	0.48	0.48
01/19/93	14:10:59	21.11	0.25	0.000	0.51	0.51
01/19/93	14:10:59	21.10	0.26	0.000	0.50	0.50
01/19/93	14:11:00	21.09	0.26	0.000	0.49	0.49
01/19/93	14:11:00	21.10	0.26	0.000	0.50	0.50
01/19/93	14:11:00	21.10	0.27	0.000	0.50	0.50
01/19/93	14:11:00	21.05	0.27	0.000	0.45	0.45
01/19/93	14:11:00	21.05	0.27	0.000	0.45	0.45
01/19/93	14:11:01	21.05	0.28	0.000	0.45	0.45
01/19/93	14:11:01	21.04	0.28	0.000	0.44	0.44
01/19/93	14:11:01	21.02	0.28	0.000	0.42	0.42
01/19/93	14:11:01	20.97	0.29	0.000	0.37	0.37
01/19/93	14:11:01	20.88	0.29	0.000	0.28	0.28
01/19/93	14:11:02	20.89	0.29	0.000	0.29	0.29
01/19/93	14:11:02	21.02	0.30	0.000	0.41	0.41
01/19/93	14:11:02	21.05	0.30	0.000	0.45	0.45
01/19/93	14:11:02	21.12	0.30	0.000	0.52	0.52
01/19/93	14:11:02	21.14	0.31	0.000	0.53	0.53
01/19/93	14:11:03	21.10	0.31	0.000	0.50	0.50
01/19/93	14:11:03	21.10	0.31	0.000	0.50	0.50
01/19/93	14:11:03	21.09	0.32	0.000	0.48	0.48
01/19/93	14:11:03	21.10	0.32	0.000	0.50	0.50
01/19/93	14:11:03	21.12	0.32	0.000	0.52	0.52
01/19/93	14:11:04	21.17	0.33	0.000	0.57	0.57
01/19/93	14:11:04	21.17	0.33	0.000	0.57	0.57
01/19/93	14:11:04	21.17	0.33	0.000	0.57	0.57
01/19/93	14:11:05	21.38	0.35	0.000	0.77	0.77
01/19/93	14:11:06	21.20	0.37	0.000	0.60	0.60
01/19/93	14:11:07	20.49	0.38	0.000	-0.11	-0.11
01/19/93	14:11:08	20.49	0.40	0.000	-0.11	-0.11
01/19/93	14:11:09	20.49	0.42	0.000	-0.11	-0.11
01/19/93	14:11:10	20.48	0.43	0.000	-0.12	-0.12
01/19/93	14:11:11	20.48	0.45	0.000	-0.12	-0.12
01/19/93	14:11:12	20.48	0.47	0.000	-0.12	-0.12
01/19/93	14:11:13	20.48	0.48	0.000	-0.12	-0.12

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SITE: GENERAL MOTORS, PONTIAC MI., WEST YARD
WELL: MW7, WITHDRAWAL
TIME OF SLUG INJ/WITH = 14:10:44 MILITARY TIME
STATIC WATER LEVEL = 20.60 FEET BELOW MEASURING POINT
TREND = (- = rising) FEET PER MINUTE
NO. OF DTW READINGS = 163
INJECTION/WITHDRAWAL (1/2): 2

DATE	TIME (24 HOUR)	DTW (FT)	t (MINS)	t (DAYS)	RESIDUAL IH/DD (FT)	CORRECTED IH/DD (FT)
01/19/93	14:11:14	20.48	0.50	0.000	-0.12	-0.12
01/19/93	14:11:15	20.48	0.52	0.000	-0.12	-0.12
01/19/93	14:11:16	20.48	0.53	0.000	-0.12	-0.12
01/19/93	14:11:17	20.48	0.55	0.000	-0.12	-0.12
01/19/93	14:11:18	20.48	0.57	0.000	-0.12	-0.12
01/19/93	14:11:19	20.48	0.58	0.000	-0.12	-0.12
01/19/93	14:11:20	20.48	0.60	0.000	-0.12	-0.12
01/19/93	14:11:21	20.47	0.62	0.000	-0.13	-0.13
01/19/93	14:11:22	20.48	0.63	0.000	-0.12	-0.12
01/19/93	14:11:23	20.48	0.65	0.000	-0.12	-0.12
01/19/93	14:11:24	20.48	0.67	0.000	-0.12	-0.12
01/19/93	14:11:25	20.48	0.68	0.000	-0.12	-0.12
01/19/93	14:11:26	20.48	0.70	0.000	-0.12	-0.12
01/19/93	14:11:27	20.47	0.72	0.000	-0.13	-0.13
01/19/93	14:11:28	20.40	0.73	0.001	-0.20	-0.20
01/19/93	14:11:29	20.49	0.75	0.001	-0.11	-0.11
01/19/93	14:11:30	20.46	0.77	0.001	-0.14	-0.14
01/19/93	14:11:31	20.52	0.78	0.001	-0.08	-0.08
01/19/93	14:11:32	20.49	0.80	0.001	-0.11	-0.11
01/19/93	14:11:33	20.48	0.82	0.001	-0.12	-0.12
01/19/93	14:11:34	20.47	0.83	0.001	-0.13	-0.13
01/19/93	14:11:35	20.47	0.85	0.001	-0.13	-0.13
01/19/93	14:11:36	20.47	0.87	0.001	-0.13	-0.13
01/19/93	14:11:37	20.47	0.88	0.001	-0.13	-0.13
01/19/93	14:11:38	20.47	0.90	0.001	-0.13	-0.13
01/19/93	14:11:39	20.47	0.92	0.001	-0.13	-0.13
01/19/93	14:11:40	20.47	0.93	0.001	-0.13	-0.13
01/19/93	14:11:41	20.47	0.95	0.001	-0.13	-0.13
01/19/93	14:11:42	20.47	0.97	0.001	-0.13	-0.13
01/19/93	14:11:43	20.47	0.98	0.001	-0.13	-0.13
01/19/93	14:11:44	20.46	1.00	0.001	-0.14	-0.14
01/19/93	14:11:56	20.47	1.20	0.001	-0.13	-0.13
01/19/93	14:12:08	20.46	1.40	0.001	-0.14	-0.14
01/19/93	14:12:20	20.47	1.60	0.001	-0.13	-0.13
01/19/93	14:12:32	20.46	1.80	0.001	-0.14	-0.14
01/19/93	14:12:44	20.47	2.00	0.001	-0.13	-0.13
01/19/93	14:12:56	20.47	2.20	0.002	-0.13	-0.13

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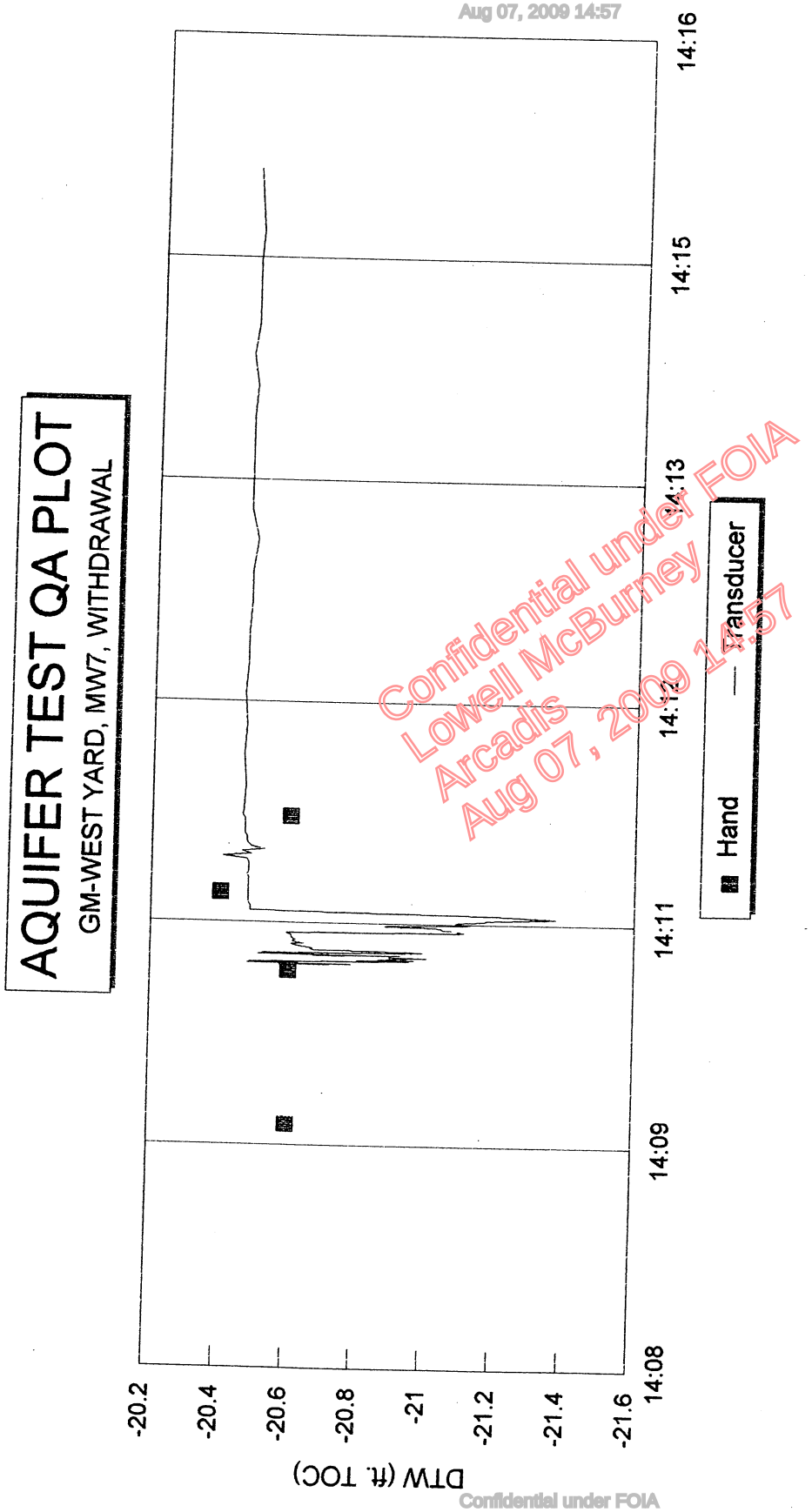
SITE: GENERAL MOTORS, PONTIAC MI., WEST YARD
WELL: MW7, WITHDRAWAL
TIME OF SLUG INJ/WITH = 14:10:44 MILITARY TIME
STATIC WATER LEVEL = 20.60 FEET BELOW MEASURING POINT
TREND = (- = rising) FEET PER MINUTE
NO. OF DTW READINGS = 163
INJECTION/WITHDRAWAL (1/2): 2

DATE	TIME (24 HOUR)	DTW (FT)	t (MINS)	t (DAYS)	RESIDUAL IH/DD (FT)	CORRECTED IH/DD (FT)
01/19/93	14:13:08	20.47	2.40	0.002	-0.13	-0.13
01/19/93	14:13:20	20.47	2.60	0.002	-0.13	-0.13
01/19/93	14:13:32	20.49	2.80	0.002	-0.11	-0.11
01/19/93	14:13:44	20.47	3.00	0.002	-0.13	-0.13
01/19/93	14:13:56	20.47	3.20	0.002	-0.13	-0.13
01/19/93	14:14:08	20.47	3.40	0.002	-0.13	-0.13
01/19/93	14:14:20	20.47	3.60	0.003	-0.13	-0.13
01/19/93	14:14:32	20.47	3.80	0.003	-0.13	-0.13
01/19/93	14:14:44	20.46	4.00	0.003	-0.14	-0.14
01/19/93	14:14:56	20.47	4.20	0.003	-0.13	-0.13
01/19/93	14:15:08	20.47	4.40	0.003	-0.13	-0.13
01/19/93	14:15:20	20.47	4.60	0.003	-0.13	-0.13
01/19/93	14:15:32	20.48	4.80	0.003	-0.12	-0.12
01/19/93	14:15:44	20.47	5.00	0.003	-0.13	-0.13
01/19/93	14:15:56	20.47	5.20	0.004	-0.13	-0.13

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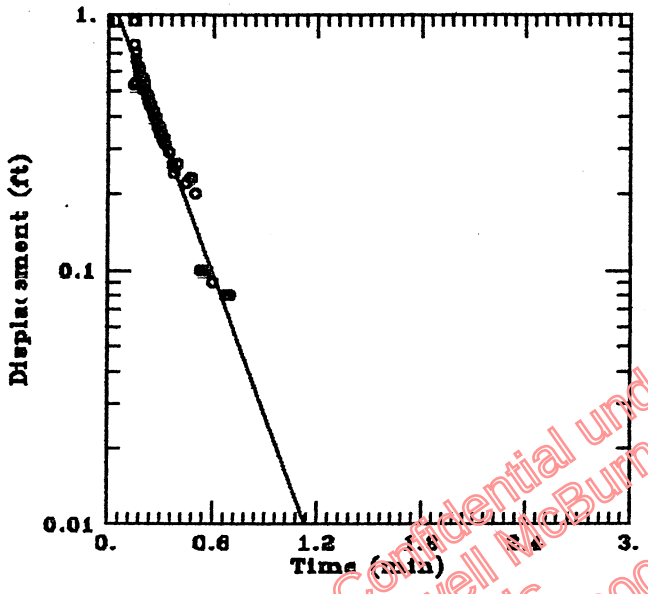


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GMWY, MW-8, INJECTION



DATA SET:
C:\GMWY\PRT\AQT
02/01/96

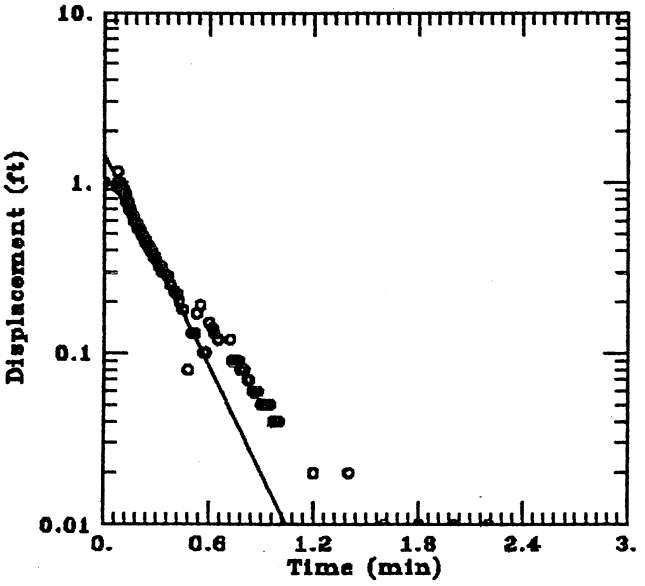
AQUIFER TYP
Unconfined
SOLUTION ME
Bouwer-Rice

ESTIMATED P
K = 0.00378 ft
y0 = 1.283 ft

TEST DATA:
H0 = 0.84 ft
rc = 0.08 ft
rw = 0.33 ft
L = 10. ft
b = 13.47 ft
H = 13.47 ft

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GMWY, MW-8, WITHDRAWAL



DATA SET:
C:\GMWY\PRT\AQT
02/01/96

AQUIFER TYP
Unconfined
SOLUTION ME
Bouwer-Rice

ESTIMATED P
K = 0.003843 f
y0 = 1.458 ft

TEST DATA:
H0 = 1. ft
rc = 0.08 ft
rw = 0.33 ft
L = 10. ft
b = 13.47 ft
H = 12.47 ft

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SITE: GENERAL MOTORS, PONTIAC MI., WEST YARD
WELL: MW-8, INJECTION
TIME OF SLUG INJ/WITH = 10:22:26 MILITARY TIME
STATIC WATER LEVEL = 7.53 FEET BELOW MEASURING POINT
TREND = (- = rising) FEET PER MINUTE
NO. OF DTW READINGS = 194
INJECTION/WITHDRAWAL (1/2): 1

DATE	TIME (24 HOUR)	DTW (FT)	t (MINS)	t (DAYS)	RESIDUAL IH/DD (FT)	CORRECTED IH/DD (FT)
01/19/93	10:21:26	7.53	-1.00	-0.001	0.00	0.00
01/19/93	10:22:26	7.56	0.00	0.000	-0.02	-0.02
01/19/93	10:22:26	7.54	0.00	0.000	-0.01	-0.01
01/19/93	10:22:26	7.54	0.01	0.000	-0.01	-0.01
01/19/93	10:22:27	7.55	0.01	0.000	-0.02	-0.02
01/19/93	10:22:27	7.54	0.01	0.000	-0.01	-0.01
01/19/93	10:22:27	7.54	0.02	0.000	-0.01	-0.01
01/19/93	10:22:27	7.56	0.02	0.000	-0.02	-0.02
01/19/93	10:22:27	7.49	0.02	0.000	0.04	0.04
01/19/93	10:22:28	7.41	0.03	0.000	0.12	0.12
01/19/93	10:22:28	7.35	0.03	0.000	0.18	0.18
01/19/93	10:22:28	7.34	0.03	0.000	0.19	0.19
01/19/93	10:22:28	7.31	0.04	0.000	0.22	0.22
01/19/93	10:22:28	7.14	0.04	0.000	0.39	0.39
01/19/93	10:22:29	7.09	0.04	0.000	0.44	0.44
01/19/93	10:22:29	7.35	0.05	0.000	0.18	0.18
01/19/93	10:22:29	7.12	0.05	0.000	0.41	0.41
01/19/93	10:22:29	6.84	0.05	0.000	0.69	0.69
01/19/93	10:22:29	6.93	0.06	0.000	0.60	0.60
01/19/93	10:22:30	7.17	0.06	0.000	0.36	0.36
01/19/93	10:22:30	6.73	0.06	0.000	0.81	0.81
01/19/93	10:22:30	6.88	0.07	0.000	0.65	0.65
01/19/93	10:22:30	6.93	0.07	0.000	0.60	0.60
01/19/93	10:22:30	6.75	0.07	0.000	0.78	0.78
01/19/93	10:22:31	6.88	0.08	0.000	0.65	0.65
01/19/93	10:22:31	6.61	0.08	0.000	0.92	0.92
01/19/93	10:22:31	6.36	0.08	0.000	1.17	1.17
01/19/93	10:22:31	6.98	0.09	0.000	0.55	0.55
01/19/93	10:22:31	6.66	0.09	0.000	0.88	0.88
01/19/93	10:22:32	6.14	0.09	0.000	1.39	1.39
01/19/93	10:22:32	6.43	0.10	0.000	1.10	1.10
01/19/93	10:22:32	6.88	0.10	0.000	0.65	0.65
01/19/93	10:22:32	6.51	0.10	0.000	1.02	1.02
01/19/93	10:22:32	6.11	0.11	0.000	1.42	1.42
01/19/93	10:22:33	6.18	0.11	0.000	1.35	1.35
01/19/93	10:22:33	6.86	0.11	0.000	0.67	0.67
01/19/93	10:22:33	7.30	0.12	0.000	0.24	0.24

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SITE: GENERAL MOTORS, PONTIAC MI., WEST YARD
WELL: MW-8, INJECTION
TIME OF SLUG INJ/WITH = 10:22:26 MILITARY TIME
STATIC WATER LEVEL = 7.53 FEET BELOW MEASURING POINT
TREND = (- = rising) FEET PER MINUTE
NO. OF DTW READINGS = 194
INJECTION/WITHDRAWAL (1/2): 1

DATE	TIME (24 HOUR)	DTW (FT)	t (MINS)	t (DAYS)	RESIDUAL IH/DD (FT)	CORRECTED IH/DD (FT)
01/19/93	10:22:33	6.67	0.12	0.000	0.86	0.86
01/19/93	10:22:33	5.94	0.12	0.000	1.59	1.59
01/19/93	10:22:34	6.19	0.13	0.000	1.34	1.34
01/19/93	10:22:34	6.77	0.13	0.000	0.76	0.76
01/19/93	10:22:34	7.00	0.13	0.000	0.53	0.53
01/19/93	10:22:34	7.30	0.14	0.000	0.23	0.23
01/19/93	10:22:34	7.18	0.14	0.000	0.35	0.35
01/19/93	10:22:35	6.79	0.14	0.000	0.74	0.74
01/19/93	10:22:35	6.59	0.15	0.000	0.94	0.94
01/19/93	10:22:35	6.78	0.15	0.000	0.76	0.76
01/19/93	10:22:35	7.00	0.15	0.000	0.53	0.53
01/19/93	10:22:35	6.99	0.16	0.000	0.54	0.54
01/19/93	10:22:36	6.86	0.16	0.000	0.67	0.67
01/19/93	10:22:36	6.82	0.16	0.000	0.71	0.71
01/19/93	10:22:36	6.90	0.17	0.000	0.63	0.63
01/19/93	10:22:36	6.96	0.17	0.000	0.57	0.57
01/19/93	10:22:36	6.95	0.17	0.000	0.58	0.58
01/19/93	10:22:37	6.92	0.18	0.000	0.61	0.61
01/19/93	10:22:37	6.92	0.18	0.000	0.61	0.61
01/19/93	10:22:37	6.95	0.18	0.000	0.58	0.58
01/19/93	10:22:37	6.98	0.19	0.000	0.55	0.55
01/19/93	10:22:37	6.98	0.19	0.000	0.55	0.55
01/19/93	10:22:38	6.97	0.19	0.000	0.56	0.56
01/19/93	10:22:38	6.97	0.20	0.000	0.56	0.56
01/19/93	10:22:38	7.00	0.20	0.000	0.53	0.53
01/19/93	10:22:38	7.02	0.20	0.000	0.51	0.51
01/19/93	10:22:38	7.01	0.21	0.000	0.52	0.52
01/19/93	10:22:39	7.00	0.21	0.000	0.53	0.53
01/19/93	10:22:39	7.02	0.21	0.000	0.51	0.51
01/19/93	10:22:39	7.05	0.22	0.000	0.48	0.48
01/19/93	10:22:39	7.05	0.22	0.000	0.48	0.48
01/19/93	10:22:39	7.04	0.22	0.000	0.49	0.49
01/19/93	10:22:40	7.05	0.23	0.000	0.48	0.48
01/19/93	10:22:40	7.06	0.23	0.000	0.47	0.47
01/19/93	10:22:40	7.07	0.23	0.000	0.46	0.46
01/19/93	10:22:40	7.08	0.24	0.000	0.45	0.45
01/19/93	10:22:40	7.08	0.24	0.000	0.45	0.45

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SITE: GENERAL MOTORS, PONTIAC MI., WEST YARD
WELL: MW-8, INJECTION
TIME OF SLUG INJ/WITH = 10:22:26 MILITARY TIME
STATIC WATER LEVEL = 7.53 FEET BELOW MEASURING POINT
TREND = (- = rising) FEET PER MINUTE
NO. OF DTW READINGS = 194
INJECTION/WITHDRAWAL (1/2): 1

DATE	TIME (24 HOUR)	DTW (FT)	t (MINS)	t (DAYS)	RESIDUAL IH/DD (FT)	CORRECTED IH/DD (FT)
01/19/93	10:22:41	7.09	0.24	0.000	0.44	0.44
01/19/93	10:22:41	7.09	0.25	0.000	0.44	0.44
01/19/93	10:22:41	7.10	0.25	0.000	0.43	0.43
01/19/93	10:22:41	7.11	0.25	0.000	0.43	0.43
01/19/93	10:22:41	7.11	0.26	0.000	0.42	0.42
01/19/93	10:22:42	7.11	0.26	0.000	0.42	0.42
01/19/93	10:22:42	7.12	0.26	0.000	0.41	0.41
01/19/93	10:22:42	7.13	0.27	0.000	0.40	0.40
01/19/93	10:22:42	7.13	0.27	0.000	0.40	0.40
01/19/93	10:22:42	7.14	0.27	0.000	0.39	0.39
01/19/93	10:22:43	7.14	0.28	0.000	0.39	0.39
01/19/93	10:22:43	7.15	0.28	0.000	0.38	0.38
01/19/93	10:22:43	7.16	0.28	0.000	0.37	0.37
01/19/93	10:22:43	7.16	0.29	0.000	0.37	0.37
01/19/93	10:22:43	7.16	0.29	0.000	0.37	0.37
01/19/93	10:22:44	7.17	0.29	0.000	0.36	0.36
01/19/93	10:22:44	7.18	0.30	0.000	0.36	0.36
01/19/93	10:22:44	7.18	0.30	0.000	0.36	0.36
01/19/93	10:22:44	7.19	0.30	0.000	0.34	0.34
01/19/93	10:22:44	7.19	0.31	0.000	0.34	0.34
01/19/93	10:22:45	7.19	0.31	0.000	0.34	0.34
01/19/93	10:22:45	7.20	0.31	0.000	0.33	0.33
01/19/93	10:22:45	7.20	0.32	0.000	0.33	0.33
01/19/93	10:22:45	7.21	0.32	0.000	0.32	0.32
01/19/93	10:22:45	7.21	0.32	0.000	0.32	0.32
01/19/93	10:22:46	7.22	0.33	0.000	0.31	0.31
01/19/93	10:22:46	7.22	0.33	0.000	0.31	0.31
01/19/93	10:22:46	7.22	0.33	0.000	0.31	0.31
01/19/93	10:22:47	7.24	0.35	0.000	0.29	0.29
01/19/93	10:22:48	7.27	0.37	0.000	0.26	0.26
01/19/93	10:22:49	7.29	0.38	0.000	0.24	0.24
01/19/93	10:22:50	7.27	0.40	0.000	0.26	0.26
01/19/93	10:22:51	7.13	0.42	0.000	0.40	0.40
01/19/93	10:22:52	7.23	0.43	0.000	0.30	0.30
01/19/93	10:22:53	7.31	0.45	0.000	0.22	0.22
01/19/93	10:22:54	7.30	0.47	0.000	0.23	0.23
01/19/93	10:22:55	7.30	0.48	0.000	0.23	0.23

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SITE: GENERAL MOTORS, PONTIAC MI., WEST YARD
WELL: MW-8, INJECTION
TIME OF SLUG INJ/WITH = 10:22:26 MILITARY TIME
STATIC WATER LEVEL = 7.53 FEET BELOW MEASURING POINT
TREND = (- = rising) FEET PER MINUTE
NO. OF DTW READINGS = 194
INJECTION/WITHDRAWAL (1/2): 1

DATE	TIME (24 HOUR)	DTW (FT)	t (MINS)	t (DAYS)	RESIDUAL IH/DD (FT)	CORRECTED IH/DD (FT)
01/19/93	10:22:56	7.33	0.50	0.000	0.20	0.20
01/19/93	10:22:57	7.47	0.52	0.000	0.06	0.06
01/19/93	10:22:58	7.43	0.53	0.000	0.10	0.10
01/19/93	10:22:59	7.43	0.55	0.000	0.10	0.10
01/19/93	10:23:00	7.44	0.57	0.000	0.10	0.10
01/19/93	10:23:01	7.44	0.58	0.000	0.09	0.09
01/19/93	10:23:02	7.44	0.60	0.000	0.09	0.09
01/19/93	10:23:03	7.42	0.62	0.000	0.11	0.11
01/19/93	10:23:04	7.40	0.63	0.000	0.13	0.13
01/19/93	10:23:05	7.45	0.65	0.000	0.08	0.08
01/19/93	10:23:06	7.45	0.67	0.000	0.08	0.08
01/19/93	10:23:07	7.45	0.68	0.000	0.08	0.08
01/19/93	10:23:08	7.45	0.70	0.000	0.08	0.08
01/19/93	10:23:09	7.47	0.72	0.000	0.06	0.06
01/19/93	10:23:10	7.46	0.73	0.001	0.07	0.07
01/19/93	10:23:11	7.46	0.75	0.001	0.07	0.07
01/19/93	10:23:12	7.47	0.77	0.001	0.06	0.06
01/19/93	10:23:13	7.47	0.78	0.001	0.06	0.06
01/19/93	10:23:14	7.47	0.80	0.001	0.06	0.06
01/19/93	10:23:15	7.48	0.82	0.001	0.05	0.05
01/19/93	10:23:16	7.48	0.83	0.001	0.05	0.05
01/19/93	10:23:17	7.44	0.85	0.001	0.10	0.10
01/19/93	10:23:18	7.41	0.87	0.001	0.12	0.12
01/19/93	10:23:19	7.49	0.88	0.001	0.05	0.05
01/19/93	10:23:20	7.49	0.90	0.001	0.04	0.04
01/19/93	10:23:21	7.49	0.92	0.001	0.05	0.05
01/19/93	10:23:22	7.49	0.93	0.001	0.04	0.04
01/19/93	10:23:23	7.50	0.95	0.001	0.03	0.03
01/19/93	10:23:24	7.49	0.97	0.001	0.04	0.04
01/19/93	10:23:25	7.49	0.98	0.001	0.04	0.04
01/19/93	10:23:26	7.49	1.00	0.001	0.04	0.04
01/19/93	10:23:38	7.50	1.20	0.001	0.03	0.03
01/19/93	10:23:50	7.50	1.40	0.001	0.03	0.03
01/19/93	10:24:02	7.51	1.60	0.001	0.02	0.02
01/19/93	10:24:14	7.50	1.80	0.001	0.03	0.03
01/19/93	10:24:26	7.51	2.00	0.001	0.02	0.02
01/19/93	10:24:38	7.52	2.20	0.002	0.01	0.01

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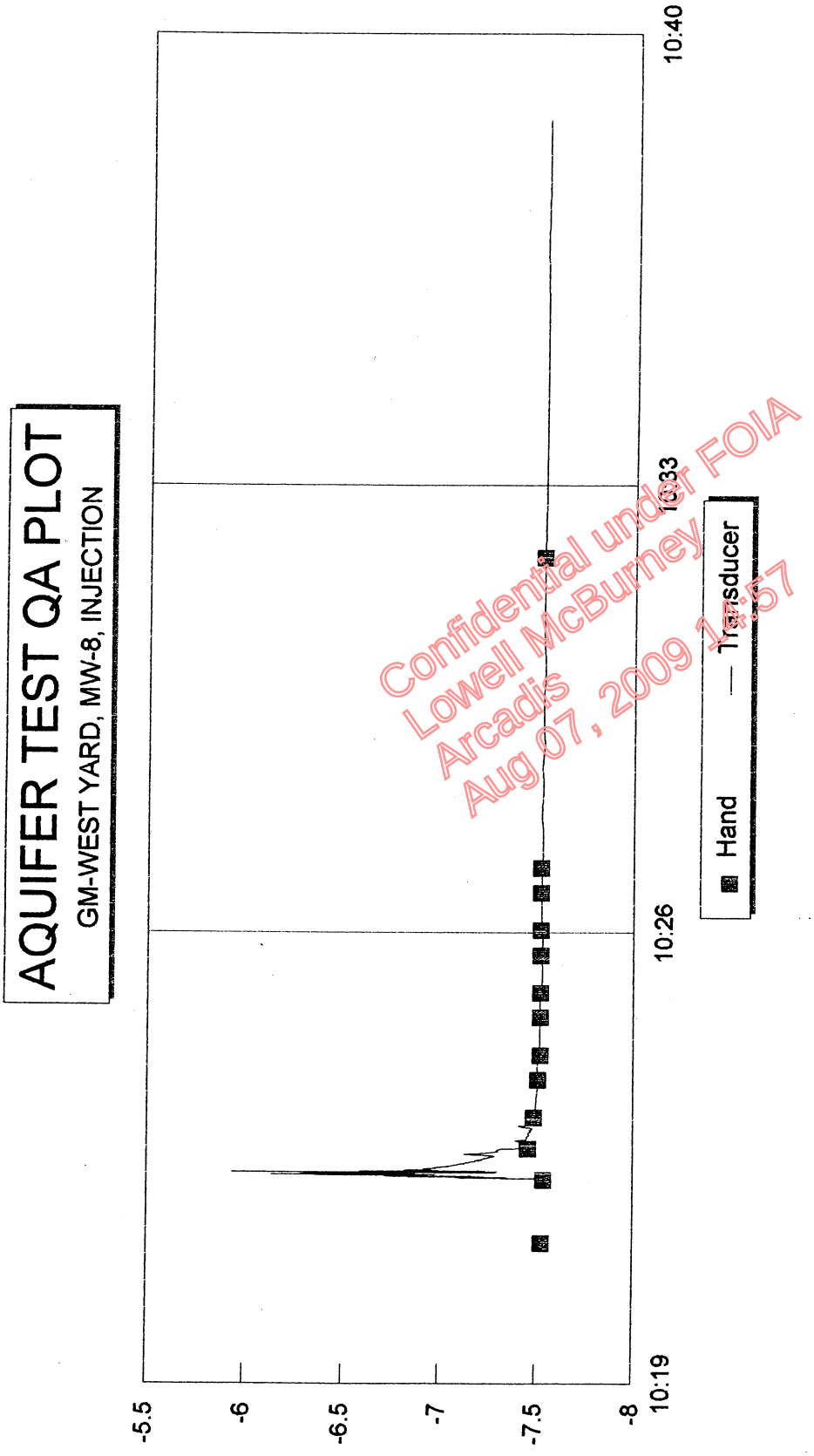
SITE: GENERAL MOTORS, PONTIAC MI., WEST YARD
WELL: MW-8, INJECTION
TIME OF SLUG INJ/WITH = 10:22:26 MILITARY TIME
STATIC WATER LEVEL = 7.53 FEET BELOW MEASURING POINT
TREND = (- = rising) FEET PER MINUTE
NO. OF DTW READINGS = 194
INJECTION/WITHDRAWAL (1/2): 1

DATE	TIME (24 HOUR)	DTW (FT)	t (MINS)	t (DAYS)	RESIDUAL IH/DD (FT)	CORRECTED IH/DD (FT)
01/19/93	10:24:50	7.52	2.40	0.002	0.01	0.01
01/19/93	10:25:02	7.52	2.60	0.002	0.01	0.01
01/19/93	10:25:14	7.52	2.80	0.002	0.01	0.01
01/19/93	10:25:26	7.52	3.00	0.002	0.01	0.01
01/19/93	10:25:38	7.53	3.20	0.002	0.00	0.00
01/19/93	10:25:50	7.53	3.40	0.002	0.00	0.00
01/19/93	10:26:02	7.52	3.60	0.003	0.01	0.01
01/19/93	10:26:14	7.53	3.80	0.003	0.00	0.00
01/19/93	10:26:26	7.53	4.00	0.003	0.00	0.00
01/19/93	10:26:38	7.52	4.20	0.003	0.01	0.01
01/19/93	10:26:50	7.52	4.40	0.003	0.01	0.01
01/19/93	10:27:02	7.52	4.60	0.003	0.01	0.01
01/19/93	10:27:14	7.52	4.80	0.003	0.01	0.01
01/19/93	10:27:26	7.52	5.00	0.003	0.01	0.01
01/19/93	10:27:38	7.53	5.20	0.004	0.00	0.00
01/19/93	10:27:50	7.53	5.40	0.004	0.00	0.00

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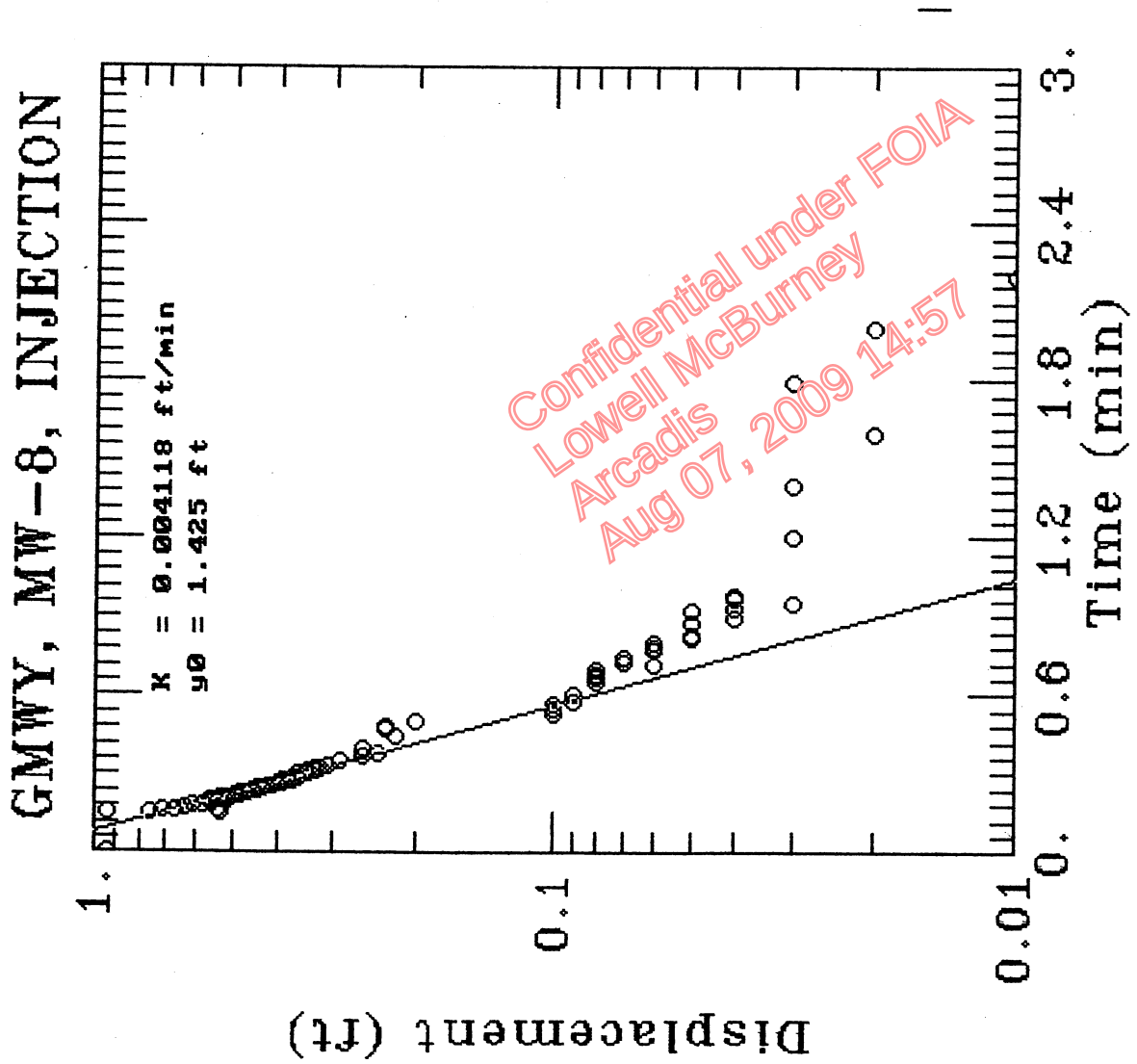
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SITE: GENERAL MOTORS, PONTIAC MI., WEST YARD
WELL: MW-8, WITHDRAWAL
TIME OF SLUG INJ/WITH = 10:48:31 MILITARY TIME
STATIC WATER LEVEL = 7.53 FEET BELOW MEASURING POINT
TREND = (- = rising) FEET PER MINUTE
NO. OF DTW READINGS = 188
INJECTION/WITHDRAWAL (1/2): 2

DATE	TIME (24 HOUR)	DTW (FT)	t (MINS)	t (DAYS)	RESIDUAL IH/DD (FT)	CORRECTED IH/DD (FT)
01/19/93	10:47:31	7.53	-1.00	-0.001	0.00	0.00
01/19/93	10:48:31	8.19	0.00	0.000	0.66	0.66
01/19/93	10:48:31	8.54	0.00	0.000	1.01	1.01
01/19/93	10:48:31	7.65	0.01	0.000	0.12	0.12
01/19/93	10:48:32	6.97	0.01	0.000	-0.57	-0.57
01/19/93	10:48:32	7.33	0.01	0.000	-0.20	-0.20
01/19/93	10:48:32	7.99	0.02	0.000	0.46	0.46
01/19/93	10:48:32	7.76	0.02	0.000	0.23	0.23
01/19/93	10:48:32	7.38	0.02	0.000	-0.15	-0.15
01/19/93	10:48:33	7.98	0.03	0.000	0.45	0.45
01/19/93	10:48:33	7.88	0.03	0.000	0.35	0.35
01/19/93	10:48:33	7.19	0.03	0.000	-0.34	-0.34
01/19/93	10:48:33	7.85	0.04	0.000	0.32	0.32
01/19/93	10:48:33	8.23	0.04	0.000	0.70	0.70
01/19/93	10:48:34	7.64	0.04	0.000	0.11	0.11
01/19/93	10:48:34	7.32	0.05	0.000	-0.21	-0.21
01/19/93	10:48:34	8.18	0.05	0.000	0.65	0.65
01/19/93	10:48:34	8.40	0.05	0.000	0.87	0.87
01/19/93	10:48:34	7.71	0.06	0.000	0.18	0.18
01/19/93	10:48:35	8.00	0.06	0.000	0.47	0.47
01/19/93	10:48:35	8.56	0.06	0.000	1.03	1.03
01/19/93	10:48:35	8.40	0.07	0.000	0.87	0.87
01/19/93	10:48:35	8.01	0.07	0.000	0.47	0.47
01/19/93	10:48:35	8.47	0.07	0.000	0.94	0.94
01/19/93	10:48:36	8.69	0.08	0.000	1.16	1.16
01/19/93	10:48:36	8.54	0.08	0.000	1.01	1.01
01/19/93	10:48:36	8.49	0.08	0.000	0.96	0.96
01/19/93	10:48:36	8.53	0.09	0.000	1.00	1.00
01/19/93	10:48:36	8.52	0.09	0.000	0.99	0.99
01/19/93	10:48:37	8.45	0.09	0.000	0.92	0.92
01/19/93	10:48:37	8.43	0.10	0.000	0.90	0.90
01/19/93	10:48:37	8.47	0.10	0.000	0.94	0.94
01/19/93	10:48:37	8.47	0.10	0.000	0.94	0.94
01/19/93	10:48:37	8.43	0.11	0.000	0.90	0.90
01/19/93	10:48:38	8.44	0.11	0.000	0.91	0.91
01/19/93	10:48:38	8.44	0.11	0.000	0.91	0.91
01/19/93	10:48:38	8.40	0.12	0.000	0.87	0.87

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SITE: GENERAL MOTORS, PONTIAC MI., WEST YARD
WELL: MW-8, WITHDRAWAL
TIME OF SLUG INJ/WITH = 10:48:31 MILITARY TIME
STATIC WATER LEVEL = 7.53 FEET BELOW MEASURING POINT
TREND = (- = rising) FEET PER MINUTE
NO. OF DTW READINGS = 188
INJECTION/WITHDRAWAL (1/2): 2

DATE	TIME (24 HOUR)	DTW (FT)	t (MINS)	t (DAYS)	RESIDUAL IH/DD (FT)	CORRECTED IH/DD (FT)
01/19/93	10:48:38	8.39	0.12	0.000	0.86	0.86
01/19/93	10:48:38	8.37	0.12	0.000	0.84	0.84
01/19/93	10:48:39	8.37	0.13	0.000	0.84	0.84
01/19/93	10:48:39	8.30	0.13	0.000	0.77	0.77
01/19/93	10:48:39	8.29	0.13	0.000	0.76	0.76
01/19/93	10:48:39	8.30	0.14	0.000	0.77	0.77
01/19/93	10:48:39	8.27	0.14	0.000	0.74	0.74
01/19/93	10:48:40	8.23	0.14	0.000	0.70	0.70
01/19/93	10:48:40	8.23	0.15	0.000	0.70	0.70
01/19/93	10:48:40	8.21	0.15	0.000	0.68	0.68
01/19/93	10:48:40	8.21	0.15	0.000	0.68	0.68
01/19/93	10:48:40	8.20	0.16	0.000	0.66	0.66
01/19/93	10:48:41	8.20	0.16	0.000	0.66	0.66
01/19/93	10:48:41	8.19	0.16	0.000	0.66	0.66
01/19/93	10:48:41	8.16	0.17	0.000	0.63	0.63
01/19/93	10:48:41	8.15	0.17	0.000	0.62	0.62
01/19/93	10:48:41	8.13	0.17	0.000	0.59	0.59
01/19/93	10:48:42	8.11	0.18	0.000	0.58	0.58
01/19/93	10:48:42	8.11	0.18	0.000	0.58	0.58
01/19/93	10:48:42	8.12	0.18	0.000	0.59	0.59
01/19/93	10:48:42	8.10	0.19	0.000	0.57	0.57
01/19/93	10:48:42	8.08	0.19	0.000	0.54	0.54
01/19/93	10:48:43	8.09	0.19	0.000	0.56	0.56
01/19/93	10:48:43	8.08	0.20	0.000	0.54	0.54
01/19/93	10:48:43	8.06	0.20	0.000	0.53	0.53
01/19/93	10:48:43	8.06	0.20	0.000	0.53	0.53
01/19/93	10:48:43	8.05	0.21	0.000	0.52	0.52
01/19/93	10:48:44	8.04	0.21	0.000	0.51	0.51
01/19/93	10:48:44	8.04	0.21	0.000	0.51	0.51
01/19/93	10:48:44	8.02	0.22	0.000	0.49	0.49
01/19/93	10:48:44	8.02	0.22	0.000	0.49	0.49
01/19/93	10:48:44	8.02	0.22	0.000	0.49	0.49
01/19/93	10:48:45	8.01	0.23	0.000	0.47	0.47
01/19/93	10:48:45	8.00	0.23	0.000	0.47	0.47
01/19/93	10:48:45	7.99	0.23	0.000	0.46	0.46
01/19/93	10:48:45	7.99	0.24	0.000	0.46	0.46
01/19/93	10:48:45	7.98	0.24	0.000	0.45	0.45

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SITE: GENERAL MOTORS, PONTIAC MI., WEST YARD
WELL: MW-8, WITHDRAWAL
TIME OF SLUG INJ/WITH = 10:48:31 MILITARY TIME
STATIC WATER LEVEL = 7.53 FEET BELOW MEASURING POINT
TREND = (- = rising) FEET PER MINUTE
NO. OF DTW READINGS = 188
INJECTION/WITHDRAWAL (1/2): 2

DATE	TIME (24 HOUR)	DTW (FT)	t (MINS)	t (DAYS)	RESIDUAL IH/DD (FT)	CORRECTED IH/DD (FT)
01/19/93	10:48:46	7.97	0.24	0.000	0.44	0.44
01/19/93	10:48:46	7.96	0.25	0.000	0.43	0.43
01/19/93	10:48:46	7.96	0.25	0.000	0.43	0.43
01/19/93	10:48:46	7.95	0.25	0.000	0.42	0.42
01/19/93	10:48:46	7.95	0.26	0.000	0.42	0.42
01/19/93	10:48:47	7.95	0.26	0.000	0.42	0.42
01/19/93	10:48:47	7.94	0.26	0.000	0.41	0.41
01/19/93	10:48:47	7.93	0.27	0.000	0.40	0.40
01/19/93	10:48:47	7.92	0.27	0.000	0.39	0.39
01/19/93	10:48:47	7.92	0.27	0.000	0.39	0.39
01/19/93	10:48:48	7.92	0.28	0.000	0.39	0.39
01/19/93	10:48:48	7.92	0.28	0.000	0.39	0.39
01/19/93	10:48:48	7.90	0.28	0.000	0.37	0.37
01/19/93	10:48:48	7.90	0.28	0.000	0.37	0.37
01/19/93	10:48:48	7.89	0.29	0.000	0.36	0.36
01/19/93	10:48:49	7.89	0.29	0.000	0.36	0.36
01/19/93	10:48:49	7.88	0.30	0.000	0.35	0.35
01/19/93	10:48:49	7.88	0.30	0.000	0.35	0.35
01/19/93	10:48:49	7.88	0.30	0.000	0.35	0.35
01/19/93	10:48:49	7.87	0.31	0.000	0.33	0.33
01/19/93	10:48:50	7.87	0.31	0.000	0.33	0.33
01/19/93	10:48:50	7.86	0.31	0.000	0.33	0.33
01/19/93	10:48:50	7.85	0.32	0.000	0.32	0.32
01/19/93	10:48:50	7.85	0.32	0.000	0.32	0.32
01/19/93	10:48:50	7.85	0.32	0.000	0.32	0.32
01/19/93	10:48:51	7.85	0.33	0.000	0.32	0.32
01/19/93	10:48:51	7.84	0.33	0.000	0.31	0.31
01/19/93	10:48:51	7.83	0.33	0.000	0.30	0.30
01/19/93	10:48:52	7.82	0.35	0.000	0.29	0.29
01/19/93	10:48:53	7.81	0.37	0.000	0.28	0.28
01/19/93	10:48:54	7.78	0.38	0.000	0.25	0.25
01/19/93	10:48:55	7.76	0.40	0.000	0.23	0.23
01/19/93	10:48:56	7.75	0.42	0.000	0.22	0.22
01/19/93	10:48:57	7.73	0.43	0.000	0.20	0.20
01/19/93	10:48:58	7.71	0.45	0.000	0.18	0.18
01/19/93	10:48:59	7.48	0.47	0.000	-0.05	-0.05
01/19/93	10:49:00	7.61	0.48	0.000	0.08	0.08

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SITE: GENERAL MOTORS, PONTIAC MI., WEST YARD
WELL: MW-8, WITHDRAWAL
TIME OF SLUG INJ/WITH = 10:48:31 MILITARY TIME
STATIC WATER LEVEL = 7.53 FEET BELOW MEASURING POINT
TREND = (- = rising) FEET PER MINUTE
NO. OF DTW READINGS = 188
INJECTION/WITHDRAWAL (1/2): 2

DATE	TIME (24 HOUR)	DTW (FT)	t (MINS)	t (DAYS)	RESIDUAL IH/DD (FT)	CORRECTED IH/DD (FT)
01/19/93	10:49:01	7.66	0.50	0.000	0.13	0.13
01/19/93	10:49:02	7.66	0.52	0.000	0.13	0.13
01/19/93	10:49:03	7.70	0.53	0.000	0.17	0.17
01/19/93	10:49:04	7.72	0.55	0.000	0.19	0.19
01/19/93	10:49:05	7.63	0.57	0.000	0.10	0.10
01/19/93	10:49:06	7.63	0.58	0.000	0.10	0.10
01/19/93	10:49:07	7.68	0.60	0.000	0.15	0.15
01/19/93	10:49:08	7.67	0.62	0.000	0.14	0.14
01/19/93	10:49:09	7.66	0.63	0.000	0.13	0.13
01/19/93	10:49:10	7.65	0.65	0.000	0.12	0.12
01/19/93	10:49:11	7.63	0.67	0.000	0.10	0.10
01/19/93	10:49:12	7.56	0.68	0.000	0.03	0.03
01/19/93	10:49:13	7.59	0.70	0.000	0.06	0.06
01/19/93	10:49:14	7.65	0.72	0.000	0.12	0.12
01/19/93	10:49:15	7.62	0.73	0.001	0.09	0.09
01/19/93	10:49:16	7.62	0.75	0.001	0.09	0.09
01/19/93	10:49:17	7.62	0.77	0.001	0.09	0.09
01/19/93	10:49:18	7.61	0.78	0.001	0.08	0.08
01/19/93	10:49:19	7.61	0.80	0.001	0.08	0.08
01/19/93	10:49:20	7.60	0.82	0.001	0.07	0.07
01/19/93	10:49:21	7.60	0.83	0.001	0.07	0.07
01/19/93	10:49:22	7.59	0.85	0.001	0.06	0.06
01/19/93	10:49:23	7.59	0.87	0.001	0.06	0.06
01/19/93	10:49:24	7.59	0.88	0.001	0.06	0.06
01/19/93	10:49:25	7.58	0.90	0.001	0.05	0.05
01/19/93	10:49:26	7.58	0.92	0.001	0.05	0.05
01/19/93	10:49:27	7.58	0.93	0.001	0.05	0.05
01/19/93	10:49:28	7.58	0.95	0.001	0.05	0.05
01/19/93	10:49:29	7.57	0.97	0.001	0.04	0.04
01/19/93	10:49:30	7.57	0.98	0.001	0.04	0.04
01/19/93	10:49:31	7.57	1.00	0.001	0.04	0.04
01/19/93	10:49:43	7.55	1.20	0.001	0.02	0.02
01/19/93	10:49:55	7.55	1.40	0.001	0.02	0.02
01/19/93	10:50:07	7.54	1.60	0.001	0.01	0.01
01/19/93	10:50:19	7.54	1.80	0.001	0.01	0.01
01/19/93	10:50:31	7.54	2.00	0.001	0.01	0.01
01/19/93	10:50:43	7.54	2.20	0.002	0.01	0.01

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